Business and Lersonal.

The Charge for Insertion under this head is \$1 a Line.

Agricultural Implements, Farm Machinery, Seeds Fertilizers. R. II, Allen & Co., 139 & 191 Water St., N. Y. Magic Lanterns, and 100 Choice Views, for \$85 and upwards, for Churches and Public Exhibitions. Phys well on small investments. Catalogues free. McAllister,

Manufacturing Optician, 49 Nassau St., New York, Diamond Carbon, of all sizes and shapes, for drilling rock, sawing stone, and turning emery wheels, also Glaziers' Diamonds. J. Dickinson. \$4 Nassau St., N.Y.

Wanted-PatentOffice Reportsfrom 85%. Newell

Planing Mill Machinery Wanted—Address, price and terms, Hunter & Tilley, Berkley, Norfolk, Va.

Whole or Half Interest in Patent for Sale. Article retails for 25c. I. C. Cowles, 3 Granger Block, Syra-

cuse, N. Y. For Sale-Patent Office Reports from 1848 to 1873

Price \$15. P. M. Kafer, Trenton, N. J Wanted, by a man of large experience and aeduained with all modern haprovements for economizing power, a position as Engineer, or Salesman of Machinery. Address Engineer, P. O. Box 4875, New York.

Scientific American for Sale-31 Vols. for \$30-2 of them bound, L. P. Laffray, Amsterdam, N. Y.

For small size Serew Cutting Engine Lathes and Drill Lathes, address Star Tool Co., Providence, R. I.

Wanted-Official Patent Office Gazette, Volume 1. for which a fair price will be paid. C. O. Thompson,

A 21/2 Horse Steam Engine and Boiler, in perfect order, with ganges, punth, and everything complete. Sold for want of use. Price \$225. Apply to Win. Campbell, 87 Center Street, New York.

Inventors of Electrical and Telegraphic arrangements are invited to communitente with the Electro-Magnetis are invited to communite the site of the Electro-Magnetis are invited to communite the Electro-Magnetis are invited to community and the Electro-Magnetis are invited to the Electro-Magnetis are inv ments are invited to communitene with the Electro-Mannelle M'f'g Co., 36 Broad St., P. O. Box 1804, New York.

Oflers, \$1 per doz., that are Reliable on all Machinery. S. F. Burgess, West Morris, Conn.

The Advertising Agency of Geo. P. Rowell & Co., Il Park Row, New York, is an institution worthy of note by advertisers. Having advertised somewhat extensively through this agency, we know it to be conducted " on the schure," and confidently recommend it both to husiness men and the press. We frankly say this much in answer to an inquiry — [Moore's Bural New Yorker.]

Seasoning jumber—for descriptive circular of best method, send to H. E. Wells, Van Wert, Ohlo,

Genuine Concord Axlcs-Brown, Fisherville, N.H.

Protect Your Houses-Champion Burglar Alarm Co., No. 40 West 18th St., New York. Sendfor circular, Wanted, by Mannfactoryof Steam Engines and Standard Articles, \$20,000. Address John, 1802 Olive St.

Second Hand Machinist's Tools for Sale, Cheap. D. Frisble & Co., New Haven, Conn.

Partners Wanted-More working capital needed. Grounds, Shops, Tools, and Machinery, all in good working order. A rare chance for parties desirous of engaging in the manufacturing business. Correspondence solicited. Address D. Whiting, Ashland, Ohio.

Sheet Metal Drawing Presses—For the best and cheapest, address The Baltimore Sheet Metal Machine Company, Baltimore, Md.

Spinning Rings of a Superior Quality-Whitinsville Spinning Ring Co., Whitinsville, Mass. Send for sample and price list.

Mining, Wrecking, Pumping. Drainage, or Irrigaing Machinery, forsale or rent. See advertisement. Andrews' Patent, inside page.

Faught's Patent Round Braided Belting—The est thing out—Manufactured only by C. W. Arny, 301 & 803 Cherry St., Philadelphia. Pa. Send for Circular.

For Sale-One "Cottrell & Babcock" Water Wheel Regulator, in good order—by D. Arthur Brown & Co., Fisherville, N. H.

Fairy Electric Engines, with battery complete, \$6; without battery, \$4. Electro-Magnetic Manu-

facturing Co., 36 Broad St .-- P.O. Box 1804, New York. Price only \$3.50.—The Tom Thumb Electric A compact working Telegraph Apparatus, for sending messages, making magnets, the electric light, 'giving alarms, and variousother purposes. Can be put in operation by any lad. includes battery, key, and wires. Neatly packed and sent to all parts of the world on receipt

of price. F. C. Beach & Co., 268 Broadway, New York. Cast Iron Sinks, Wash Stands, Drain Pipe, and Sewer traps. Send for Price List. Bailey, Farrell & Co., Pittsburgh, Pa.

Pratt's Liquid Paint Dryer and White Japan surpasses the English Patent Dryers and Brown Japan in color, quality, and price. Send for descriptive circular to A. W. Pratt & Co., 53 Fulton Street, New York.

For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, &e.

Many New England Manufactories have Gas Works, which light them at one fourth the cost of coat gas. For particulars, address Providence Steam and Gas Pipe Co., Providence, R. I.

Hotchkiss Air Spring Forge Hammer, best in the market, Prices low. D. Frisble & Co., New Haven, Ct. For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular

Mechanical Expert in Patent Cases, T.D. Stetson,

For the best Portable Engine in the world, address Buxter Steam Engine Co., 18 Park Place, New York All Fruit-can Tools, Ferracute, Bridgeton, N. J.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon, 470 Grand Street New York.

Brown's Coalyand Quarry and Contractor's Apparatus for holsting and conveying materials by Iron cable W. D. Andrews & Bro., 414 Water St., New York.

For Surface Planers, small size, and for Box Corner Grooving Machines, send to A. Davis, Lowell,

The "Scientific American" Office, New York, is fitted with the Miniature Electric Telegraph. By touching little buttons on the desks of the managers signals are sent to persons in the various departments of the establishment. Chean and effective. Splendid for shops, offices dwellings. Works for any distance. Price \$6, with good Battery. F. C. Beach & Co., 263 Broadway, New York, Makers. Send for free illustrated Catalogue

Temples and Oilcans. Draper, Hopedaic, Mass.

For best Presses, Dies, and Fruit Can Tools, Bliss & Willams, cor. of Plymouth and Jay, Brooklyn, N. Y. Peck's Patent Drop Press. For circulars, address Milo, Peck & Co., New Haven, Conn.

Engines and Boilers a Specialty-Ist class; new patterns; late patents; reduced prices. Plain and Cut off Hor'l and Vert'l Engines; Hoisting Engines; the celebrated Ames' Portable Engines; Boilers of all kinds; Climax Furbine; and the best Saw Millin the market. Large stock always on hand. Hampson, Whitehili & Co., 33 Cortlandt St., New York. Works at Newburgh, N. Y.

Buy Boult's Paneling, Moulding, and Dove-tailing Machine. Send for circular and sa Mach'y Co., Battle Creek, Mich., Box 227.

Small Tools and Gear Wheels for Models. List ree. Goodnow & Wightman, 23 Cornhill, Boston, Mass.



M. E. W. can remove fruit stains by using the means described on p. 283, vol. 31.-E. G. F. will find full directions for mounting mans on n. 91, vol. 31.-T. A. R. must send a sample of the paint, before we can tell him what it contains. W. S. V. will find directions for polishing shells on p. 122, vol.27.-W. L. will find that we published a recipe fora copper dip on p. 90, vol. 31.—G. W. E. Jr. will find the formula for safety valves on p. 107, vol. 31. For information on small boilers, see the same page.-Y. will find directions for mitering frames on p. 312, vol. 30. For polish for walnut wood, see p. 315, vol. 30. For filling, see p. 347, vol. 31.—E. M. will find a recipe for coloring gold on p. 43, vol. 30.—M. will find the needed information as to removing superfluous hair on p. 229, vol. 28.—G. R. will find recipes for colored fires on p. 219, vol. 31.-J. C. S. will find directions for making marine glue on p. 43, vol. 32.— G. G. will find descriptions of Puscher's and other methodsfor Dainting on zinc on p. 116, Science Record for 1874.—A. P. will find a recipe for boot blacking on p. 45, vol. 31.—W. L. D. will find directions for making cement for joining glass on p. 379, vol. 31, and p. 90, vol. 30.-E. A. N. will find directions for making molds for plaster casts on p. 58, vol. 24. -P. W. will find a formula for calculating the size of a cylindrical vessel on p. 281, vol. 25.-G. W. R. will find a recipe for metal for models on p. 11, vol. 31.—R. V. T. will find a recipe for waterproof shoe grease on p. 155, vol. 26.—C. A. K. will find directions for nickel plating with a battery on p. 171, vol. 30. Mucilage is described on p. 202 vol. 31.

C. W. M. asks: How can I make varnish for gilt work? A. Take gum lae125, dragon's blood 125, annatto 125, saffron 32 parts. Dissolve each resin in 1,000 parts absolute alcohol; two separate mixtures must be made with the dragon's blood and annatto, in 1,000 parts of such alcohol; and a proper portion of each should be added with the gamboge to the varnish.

(2) M. H. K. says: I am putting up a short line of telegraph wire; on account of difficulty in getting a good ground connection, I think of using two wires. Can you tell me how to join them, cuble fashion, in some simple and inexpensive way, so as to get the benefit of their united strength for some long stretches? I must secure insulation properly. A. Use steel wire covered with kerite for your wires, and you will have both strength and insulation. 2. My hattery consists of carbons, porous cups, zincs, and containing vessels. What is the best and most lasting solution to use in them? A. For your battery, use nitric acid in the porous cups, and sulphuric acid diluted with ten parts of water for the solution containing the zinc

(3) A. F. asks: What metal would answer bestfor covering the frame of a bread-delivering wagon, to carry the warm bread and leave it unaffected? A. Metal would be unsuitable. Painted cloth is usually employed for the tops of bread wagons.

(4) J.C.C. asks: 1. If I start from New York at noon of May 25, and travel westward, keeping exact pace with the sun, and I meet a man every ten miles, where will I meet the first man who will tell me it is noon of May 26? A. In longitude 180° west from the place in which time or longitude is reckoned.

How is the diurnal revolution of the earth de monstrated by the vibration of a pendulum? A. If a pendulum is set swinging in a north and sonth piaue, at any place other than the equator, the plane of swing will be shifted.

(5) J. W. asks: When were surnames first used? A. Among the Romans, date unknown. They were used about A. D. 900 in France; and in England in the time of Edward II.

Why does plunging red hot steel into water make it harder, when the same process makes copper softer? A. It has never been satisfactorily explained.

What would be the length of the longest board, 3 feet wide and square on the ends, that could be placed diagonally across the floor of a room 12x16 feet? A. In general, a problem of this kind can best be solved by approximation. The solution would occupy too much space for insertion here.

- (6) I. Z. usks: Can very thin sheet iron scraps be used for making iron bars by the usual process for making bars with the common scrap?
- (7) T. A. G. says: 1. I have a small engine, 34x2 inches stroke. Can it be made to run a sew ing machine? A. Yes. 2. How large a boiler would it take to run it for 5 hours at a time, the boiler to be made like a kettle and hang down in a small arch made on purpose? A. It should hold from 15 to 20 gallons of water. 3. What would be the best metal for such a boiler? A. Copper.
- (8) S. J. says: I have a plan for the purpose of propelling a balloon. How much weight will a cubic foot of gas, such as is used for the purpose, raise? A. A cubic foot of gas will not raise any weight; but if it weighs less than the air, the latter will exert a lifting force equal to the difference of weight between equal bulks of the air

consider frequent blowing? A. It will depend upon the quality of thewater, and the way the boller steams. In ordinary cases, twice a day will an-

In No. 59,same date, the last equation is: $\ell\text{=}8^{\circ}\text{!!}25\times$

I cannot read the fraction with certainty; please put it in words. A. Divide the lright by the friction, take the square root of the quotient, and multiply it by 8025.

(10) G. S. asks: What is power? A. The amount of work done in a given time.

(11) J. G. A. asks: What is a good method for curing and drying figs to be put up in boxes? sionally in ovens

With what can I varnish a paper balloon, so that it will hold hydrogen gas? A. Boiled linseed oil.

- (12) E. P. C. says: I am running a high the steam side. but when the valve is in the center put two strips in the exhaust port of the valve to 1/4 of the stroke.
- (13) G. B. asks: 1. How is roofing tar prepared, to be used with paper and gravel? A. See the specifications of patented processes. 2. For what purpose is the gravel put on? A. To give consistence.
- (14) E. A. asks: Would the draft of a street carbe increased by connecting the whiffletree at 24 inches from the front of the car, instead of at 12? A. If the line of draft were parallel to the plane of the rails, in the two cases, there would be no difference. If this line were oblique to the plane of the rails, the draft would be easier for that position which had the greatest component of force resolved in a direction parallel to the plane.
- (15) D. N. asks: How can I calculate the extra pressure of steam above the pressure in the water cylinder of a steam pump? I want a steam pump to throw water at 180 lbs. Pressure per square inch; and if the water cylinder is 14 inches in diameter (area nearly 154 inches), 154×180=27,720, total pressure in pump; and if the steam cylinder is 24 inches in diameter, and the steam 62 hs., the area is 45 $2\times62=26,024$, which is a little over the total pressure in the pump. If they were hoth alike, the pump would stand still. How can I calculate how much extra pressure it will require to drive it at50 or 100 strokesper minute? A.Itis a matterthat can only be determined by experiment, and the constants will vary for different lands of pumps. The simplest way to make the experiment is to takeindicator diagrams from the steam and water cylinders of the pump.
- (16) G. A. M. says: We bought an engine, and it is claimed that it gives 3 horse power without using steam power high enough to makeit dangerous. The boiler is upright, with one flue 7 inches in diameter; while the diameter of the shell is 23 inches, and hight 5 feet from ash pan to top of dome. The thickness of shell is 3-16, and the shell is of very pure iron. The boiler leaks with 80 lbs. steam. The engine is vertical, standing on separate base. The cylinder is of 3 inches diameter X4 inches stroke, making 200 revolutions per minute, with a plain slide valve, cutting off at about 1/4 stroke. Engine exhausts into smoke pipe. I cannot make this nearly 3 horse power by any rule you have ever given. A. We scarcely think that the engine is working up to 3 horse power.
- (17) D. K. says: D. S. T. says that he has been running for 18 months an engine with 10x16 inches cylinder, and some of the bolts that hold the face plate to the steam chest and the cylinder head are being cutaway as if by acid. You reply that it was probably caused by water being carried over with the steam. I have been running 8 and 10 inch engines for the last 12 years. I have had considerable trouble of the same kind, but I do not think that it is caused altogether by wet steam. I between rufters, which I wish to use for the ventiam now running two engines from one boiler; the lating shaft. Where should the openings in said first engine is in the same house as the boiler, and has a short steam connection. About 18 months at bottom, and be careful to have openings to adthe pistons began to leak steam. On taking off the cylinder head, I found that the rings on the piston vent the roof from spreading. did not fill the cylinder, being too small in diameter. On taking the follower off the piston, I found surface of the piston head, which was exposed to the action of the tallow, were eaten awayvery badly. The surface of the metal seemed to be dissolved, so that I could scrape a portion of it away with my thumb nail. I then cleaned all thedirtoff until the outside ring was large enough to fill the cylinder, put them to their places, and put a ring of tin against the edge of the rings so that the folwhich we have frequently called attention before, namely, the evil effects of the acid and other seleterious ingredients in impure tallow. Good tallow,

(9) R. A. B. says: In No. 18 you recommend cle, that many engineers prefer as our correspon a good heater and frequentblowing. What do you dent does) to use oil, and we think that their precaution is a wise one.

(18) D. I. F. says, in reply to J. C. & Co., who asks how much should thetail end of a 20 foot bolt be lower than the head: All first class millers claim that 1/4 inch fall to each foot in length is enough. A. We are much obliged for this information, which will doubtless be useful to many of our readers. We would be glad to hear from other millers.

(19) H. B. I. says: On p. 10. vol. 31, J. G. H. says: "To run a saw mill, we have an engine 14x36 inches stroke with an 8 feet driving wheel, belting to a pulley on the main countershaft of only 3½ feet diameter, surface 15 inches. This pulley is so small (in order to give thenecessary speed) that the belt will slip. Can we (by putting in anothercoun-A. In the East, they are did in the sun, or occa- tershaft) improve the mill by belting from the engine and then to the present countershaft, thereby giving an opportunity to increase the pulleys to a size that will prevent slip? The engine is said to be 60 horse power. It is argued that this extra shaft would take so much more power that the enpressure propeller with a cylinder $20x^{20}$ inches. gine would not drive the mill. Can you tell us The main valve has $\frac{1}{2}$ inch lead and $\frac{1}{2}$ inch lap on about how much power it would consume to drive gine would not drive the mill. Can you tell us this extra countershaft, it being about 8 feet long? of its stroke, the exhanst port opens into both To which you maswer that the change would be steam ports % of an inch. Do you think that, if I decided improvement, and, instead of a loss, more of the power of the engine would be utilized than fill up the clearance, it would be an improvement at present. For this I cannot secany reason. The to the engine? If so, how much would you advise dilliculty seems to be that the transmitting power me to put in? The engine makes 106 revolutions of his main belt is not sufficient either for the with 80 lbs. of steam, following half stroke. At istrength of hisengine or the work he has to do. Put in enough to keep the exhaust open for about | How is he to increase the transmitting power of his belt by only enlarging his leading pulley, or by adding two wheels and a shaft to his already overloaded belt? In my practice, I have found that a 15 inch belt will sometimes slip when driven by a 14x18 engine and 3 feet driving wheel, which, with twice the number of strokes per minute, would transmit double the power that his arrangement will. I would recommend, therefore, that, if he must use a 36 inch stroke engine, and cannot get a 16 foot driving wheel in, he put on two fifteen inch belts side by side, if he has room to increase the width of his pulleys sufficiently. For a circular mill. I use a 14x18 engine and 8 feet driving wheel, or 14x13 and 6 feet driving wheel, with a 15 inch belt. For some years past I have recommended these dimensions, preferring the latter, and with no countershaft at all for either of them. 'They make a cheap, simple, and powerful mill. A. The reason for the advantage would be that he could use larger pulleys. If you run a large pulley at the same number of revolutions per minute as a small one, the velocity of the belt is greatest in the first case; and as the same power is transmitted as before, the tension of the beit does not need to be

(20) G. M. B. asks: How can I construct a receptacle in a garret for water from the roof of a house? It must not let the water be frozen in winter or spoiled in summer. A. Make your garret tight; and the water in an ordinary tank of 2 inch plank, grooved, dowelled, and lined with sheet lcad, will not freeze in an occupied house, norspoil in summer, if well ventilated and occasionally used. Make the tank broad on the floor and not very high, and place it where there may be some support beneath the floor.

(21) N. C. P. asks: If I take two screwdrivers with similar points and handles, and one of them is 6 inches longer than the other. I have more power with the longer, and can turn a screw with it that I cannot with the short one? Why is this? A.It is because a screw driver is generally inclined somewhat, when in use, so that, in the case of the long screw driver, the force acts at the end of a longer lever arm. If both tools were secured so that they had to be held at right angles to the plane of the work, one would be as efficient asthe other.

(22) O. B. asks: How is roofing tar prepared for use, with paper and gravel? A. Spread the paper upon the reof and secure the edges with large tacks; heat the tar in an iron vessel and spread it upon the paper when in a fluid state; before the tar cools, apply the gravel, the coarsersize first and then the finer. The gravel must be washed clean before being used.

I propose to construct a henery, which I wish to ventilate. The uprights are to be ceiled on both sides, and the roof also. There is to be no plate on the uprights; there will be a space between the uprights connected with a cupola, through space between rafters, which I wish to use for the ventiago. I commenced using tallow as a lubricant in mit fresh air direct from the outside, which openthe cylinder; and after using it about six months, ings may be at bottom. You will require some

(23) J. M. H. say that the bolts were half enten away on the part unted at a distance of 2½ miles from my office; there that passed through the follower; and the whole is a fall of 250 feet. The water enters the building surface of the inside arm, and inside surface of through a 11/2 inch (inside) pipe, but escapes through the outside ring, together with the whole inside a short nozzle (% inch) opening, turning an enclosed water wheel, escaping thence through a 5 inch pipe. Now under the most favorable conditions, namely, a perfectly straight pipe or connections from reservoir, how much water can pass through this % inch opening per hour? The city the piston, and packed between the rings with tin meter charges me 15,000 gallons daily. The 11/2 inch pipe connects with street mains, distant about 100 feet. A. You omit to state two of the most important elements required in a calculation of this lowers would press against them. Then I put the kind; first, the size of the main pipe, which is 21/2 follower on, with new bolts, and started the en- miles long, and second, the extent to which it is gine, using lard oil as a lubricant for about six tapped to supply other buildings before it reaches months. Then I examined the piston again, and yours. Friction in pipes is a very material impedfound that it had not been eaten away at all. A. iment to the flow of water, and increases inversely This is very useful information on a subject to to their size; and of course every tap reduces the pressure. But none of these conditions would have to be regarded, provided the flow of water at the nozzle was determined by experiment. so far as our experience goes, does not injure an the quantity discharged, say for the first fifteen engine; but it is so difficult to Obtain the pure arti- | minutes of each hour of the day, and divide the

sum by the number of hours taken; the quotient will be the average flow per quarter hour, and from this the discharge per day may be correctly ascertained.

(24) R. R. S. asks: How can I join the facia and crown at the foot of the rake and side rafter, where they are in line, and the foot of the rafter is cut square? A. We presume the difficulty arises from the fact that the facia or corona of yourraking cornice is vertical on the face, and that of your level cornice is inclined on the face at a right angle to the pitch of the roof. Where the upper line of your crown molding on the rake meets that of the crown molding on the level cornice, commence a regular miter, returning the raking cornice in towardthe building on a level, but with the facia set atright angles to pitch of roof; then letthelevel cornice of the building die against this return, which it can do, leaving a small triangularpiece of the return exposed, and still have the upper line of its crown molding on a line with that of the raking cornice. If we have rightly comprehended your difficulty, this will be a solution of it.

(25) H. E. E. says: A neighbor has a water mill, with brick walling. I think common mortar was used, and the walls leak. What kind of cement is used in cementing cisterns, and how can I mix and apply it to this wall? Must we turn off the head of water and wait till the wall is dry, or can it be applied while wet? A. Sylvester's method for expelling moisture from external walls consists in using two washes or solutions for covering the surface of brick walls; one is composed of Castilesoap and water, and the other of alum and water. The proportions are: Three quarters of a pound of soap to one gallon of water, and half a pound of alum to four gallons of water; both substances to be perfectly dissolved in the water before being used. The wall should be clean and dry, and the temperature of the air should not be below 50° Fah. when the compositions are applied. The tirst, or soap wash, should be laid on when at boiling heat with a tlat brush, taking care not to form a froth on the brickwork. This wash should remain twenty-four hours, so us to become dry and hard before the second (alum) wash is applied, which should be done in the same manner as the first, The temperature of this wash may be 60° or 70°. and itshould also remain twenty-four hours before a second coat of the soap wash is put on; and these coats are to be repeated alternately until the wall is made impervious to water. This process was adopted by William L. Dearborn, C. E., on the brick face walls of the gate house of the 86th street reservoir, in Central Park, New York, where an infiltration had shown itself; the application was successful, the walls proving impervious to the entrance of water under a pressure of 36 feet head, and they remained so for 61/2 years when reported by him in 1870. In an experiment, four coatings rendered the bricks unpermeable under the press ure of 40 feet head.

(26) W. B. C. asks: What is the simplest method of smelting lead ore, containing some silverand copper? A. The galena is smelted in a reverberatory furnace and the pig lead is remelted and refined, the silver being extracted from the pig lead and not from the ore.

(27) J. J. K. asks: How can I polish tinware? A. Rub with rottenstone and sweetoil, and then with soft leather.

(28) G. T. L. asks: What makes corn pop, thatis, burst open and swell up to a white, spongy mass? A. The conversion of the water (contained in grain) into steam.

(29) J. S. asks: How can I make soluble blue, for laundry use? A. Grind indigo into an impalpable powder, and make into a paste with powdered starch.

(30) P. L. V. II. asks: Which was the first steamship that crossed the Atlantic? A. The Savannah, in 1819 built by Crocker and Fickitt, of New York city.

(31) M. D. II. asks: 1. What do scene painters use for sizing canvas? A. Try a thin dilute sulphuric acid upon zinc scraps, in a close glue size. 2. With what are the colors mixed? vessel. The oxygen mayconyeniently be obtained A. Water, size, and turpentine. Use the ordinary pigments. 3. What is a good work on the art of painting in water colors? A. Rowbotham's.

(32) C. K. asks: What substance is used to harden lithographic crayons? A. Melt them up andadda little shellac.

(33) L. K. Y. asks: Of what shape is the Leclanché battery, and of what metals and chemicals is it composed? A. See p. 362, vol. 31,

How can I make a fine powder to give burnishers a high polish without scratching them? A. If you refer to agate burnishers, use putty powder or

Please give me a recipe for solder for white mct-

(34) C. D. B. asks: How can I make gnnsulphur and charcoal together, add the saltpeter. mix, damp, press into cakes, dry, and granulate.

(35) G. B. M. asks: Why do various text books give different melting points for the metals? A. The meiting points of the various metals have not been satisfactorily determined for which reasm there are several authorities. Wagner's "Technology" is a recent work. and is probably as good an authority on the subject as can be consulted. Watt's "Chemical Dictionary" will give you several meiting points for each metal without specifying the most reliable. In such case each person must satisfy himself, by the estimation he holds of the several experimentors and the general character of

(36) A. B. C. says: I have a thick coat of a blue color, which has gone duite rusty in places best method would probably be to have it dved.

(37) P. B. P. asks: How can I make an ormolu dip? A. Brush on a thin paste of nitrate of potassa, alum, and oxide of iron, colored with any soluble pigment,

How can I make a solution of sal ammoniac? A. Sal ammoniac (chloride of ammonium) is quite soluble in water.

What is gray iron? A. The lower grades of cast iron are so called from their gravish color.

(38) E. S. V. asks: 1. What is a good method of keeping ink from freezing? I have tried placing alcohol one quarter inch thick all around the bottle, but it freezes through it. Is there any substance known, either in a liquid or a dry state, that is a perfect non-conductor of beat? If so, would it, if placed around a bottle of ink, keep it from freezing? A. There are no perfect non-con ductors, but the loss of heat may be retarded by surrounding the bodies to be protected by wrap pings of such excellent non-conductors as cotton woolen, or similar fabrics. All such bodies of a light and porous character, including in their cavities air in a state of rest, are among the best non-con ductors. 2. Why does not alcohol itself freeze? It certainly is not a non-conductor of heat, else it would not let ink freeze through it. If it be a conductor of heat, why does it not part with its own heat, and freeze up? A. Because its freezing point is lower than the temperatures to which it can be exposed. At a temperature of -166° Fah. it thickens, and at a still lower temperature would freeze.

(39) J. A. C. asks: How is copperas made A. Protosulphate of iron (copperas, or green vitriol) is prepared by dissolving 1 part of pure iron (or 11/2 parts of its sulphide) by the aid of heat in 11/2 parts of oil of vitriol diluted with 4 parts of water. On filtering the solution quickly, it deposits beautiful, transparent, bluish green crystals on cooling. These effloresce in a dry air, and form a white crust, which soon becomes of a rusty brown color, owing to their absorption of oxygen.

What acid will eat iron the fastest? A. Nitric.

(40) W. D. K. asks: How is the fulminate it into the common copper cartridge? A. The fulminate is made into a thick paste, and the requisite quantity forced into the cap, which is then carefully and thoroughly dried, and covered with a coat of varnish to protect it from the weather.

Please give me a good recipe for coloring woolen cloth a permanent black. A. Wool is dyed black by the following process: It is boiled for 2 hours in a decoction of nut galls, and afterwards kept for 2 hours more in a bath composed of logwood and sulphate of iron, kept during the whole time at a scalding heat but not boiling. During the operation it must be frequently exposed to the air, because the green oxide of iron of which the sulphate is composed must be converted into a red oxide by absorbing oxygen before the cloth can again acquire a proper color. The common proportions are 5 parts nut galls, 5 parts sulphate of iron (copperas), and 30 parts of logwood for every 100 of cloth. A littleacetate of copper is commonly added to the sulphate of iron, to improve the color.

(41) C. V. asks: Is there any known solve ent for mica? A. The different forms of mica arc double silicates of alumina, which contain in addition a small quantity of water and some alkaline fluoride. It is soluble in a mixture of hydrofluoric and sulphuric acids

(42) J. B. & B. ask: What is the best pow der or composition to usefor polishing or burnishing German silver moldings? A. Putty powder is much used for this purpose.

(43) W. B. asks: 1. Arepure hydrogen and oxygen gas, combined, explosive? A. Yes. 2. How can I produce and combine them on a small scale? I have a solid piece of steel about four feet square and three inches thick. I wish to make an aperture in it about four inches in diameter. Can I, with theabove gases, bring heat to bear on the spot, intenseenough to allow of cutting through with a bit? Λ . The hydrogen may be obtained by the action of vessel. The oxygen may conveniently be obtained by heating, in an iron or copper bottle, a quantity of chlorate of potash mixed with one quarter its veight of black oxide of manganese (powdered). Perhaps the best instrument for your purpose would be the ordinary concentric oxyhydrogen blowpipe, in which the oxygen is made to enter the center of the hydrogen flame, something on the principle of the argand burner, only on a very small scale. The action of this flame on your steel plate would be to speedily burn its way through

(44) F. P. L. acks: 1. What is used in giv ing canvas for oil painting the first coat? A. The filling or ground is generally made by painting the eanvas with coats of thin oil color, which must completely cover the threads of the fabric, which latter must be free from projecting lines and powder? A. Take crystalline flour of saltpeter, knots. The color of the filling is a matter of great free from chlorine, 75 parts, refined sulphur in importance, as it is impossible to paint a richly colrolls if parts, willow charcoal 15 parts. Grind the orcd picture on a dull, unsuitable ground. Upon ored picture on a dull, unsuitable ground. Upon the whole, a white filling is to be preferred, but inexperienced artists are apt to produce a cold and poor effect on a white ground by laying on the colors unskillfully. Pale cream and warm drab are other colors much used for filling earwas, 2. What will keep the canvas from wrinkling after the first coat is applied? A. The canvas must be strained on a wooden frame before any filling is

> (45) W. F. H. asks: How can I bleach or whiten leather that has been tanned in the ordinary way, without injury to the material? A. It is doubtful whetherthis can be accomplished, as the | The composition of wheat (grain), organic and insame agents which will preserve the coloringmatter will affect the leather.

(46) F. C. R. asks: Will wine keep its natural flavor if shipped across the Atlantic Ocean? What shall I do to get it to its proper hue? A. The A. Wines are sometimes improved by an ocean voyage.

(47) J. G. M. & Co. ask: How can we lacquertin to a blue color? A. Use Prusslan blue ground in pale'shellac varnish.

(48) I. L. asks: What is the best flux for reducing photographer's waste? A. Carbonate of soda

What is a good method of japanning tin, for use for outdoor signs? A. Grind the pigment of the required color in shellac varnish.

(49) J. C. asks: 1. Please give me a recipe for making stove polish. A. Use finely powdered graphite. 2. How can I make a stove polish which, applied with a brush, produces a gloss while dry ing? A. Fuse 2 lbs. asphalt in an iron pot, add 1 pint boiled oil; mix, remove from the fire, and add a little turpentine when cool. Some makers add

(50) R. K. says: I have a lot of leaves for making manure. Can you tell me of anything to mix with them, to make them rot faster than water and wood ashes? A. A certain degree of moisture and air is necessary; and hence the gardener should turn the heap over frequently and apply water when the process appears impeded, excluding rain when the heap is chilled with too much

(51) W. H. B. asks: What is meant by 'proof," in connection with alcoholic liquids? A Alcohol is said to be proof when, at 60° Fah., it has a specific gravity of 0.92. If above this gravity, it s said to be below proof.

(52) A. B. W. asks: What is a vinaigrette A. A small box or bottle, used as a smelling bottle, for holding aromatic vinegar contained in a sponge, or smelling salts.

1. Would not the drinking of vinegar (cider or wood) act as a disinfectant to the disagreeable odorgiven off with the breath? A. No. 2. Would such a remedy be healthy? A. If excessively used, no. 3. Would the effect be only temporary; and if so, about how long would it last? A. The effect would be temporary upon the breath; the period of its effect upon the stomach would vary with different constitutions. Bad breath is generally due to one of two causes, unclean teeth or imperfect digestion (dyspensia). Cider vinegar certainly would not remove the first cause, and the second would not be improved by it.

(53) B. H. S. says: You state that agua am monia willtake nitricacid stains out of cloth, I think you are mistaken; as I havetried it as soon as the acid has touched the cloth. A. If the coloring matter is not destroyed, aqua ammonia will in all probability restore it, as we have tried it hundreds of times with success. In case the coloring matter is destroyed by the nitric acid, neither aqua ammonia nor anything else can restore what is not

(54) S. W. C. asks: Having an iron safe, the fireproof material of which has broken loose. I wish to know how to replace the filling? A. Mix plaster of Paris with a strong solution of alum water, and use quickly.

(55) N. L. C. asks: Can you tell me of any substance resembling flour or corn starch that will always remain white after being sifted into gum arabic and exposed to the air? A. If otherwise suitable, some unalterable body, like finely pulverized barytes, would keep better than organic bodcs such as corn starch, etc.

(56) F. N. B. asks: 1. Please give me a test for sulphur in well or spring water. A. Saturate a slip of paper with sugar of lead (lead acetate), and expose it near the surface of the water for a shorttime. If the paper is discolored, it shows the presence of sulphuretted hydrogen. Another method is to take a small quantity of the water, into which pour a small quantity of a strong solution of sugar of lead; the darkening of the water is proof of the presence of sulphuretted hydrogen. 2. Can water and sulphur be united artifi-cially, to form whatis known as "sulphur water?" A. Yes; sulphuretted hydrogen gas is very soluble in water, and may be obtained by the action of di-lute sulphuric acid on sulphide of iron.

(57) C. B. asks: What is the cause of the sound on a cold night, imitating explosions of a light nature? I suppose it to be from the freezing of the ground. A. It is probably due to the freezing of the sap in green wood, such as the trunks of trees, etc., and is attributed to the expansion of the liquid on freezing, causing a rupture of the

(58) L. N. L. says: In the Agricultural Reportfor the year 1868, I find the following statement: "Wheat contains some lime, one ounce in a bushel of grain (and a little more in the straw), while it contains rather more soda than lime, about five times as much magnesia, nearly nine times as much as potash, and more than thirteen stand. It fully explains all the requisite details. times as much phosphoric acid." Is this correct? A. We find that 100 parts of the dried grain give 2 per cent of ashes, and 100 parts of the driedstraw give 4 per cent of ashes. In the following table you can compare the amount of the inorganic matters of the grain and straw. 100 parts of the

ies contain :	Grain.	Straw.
Potash	30.02	17498
Soda	3.82	2.47
Limc	1.15	742
Magnesia	13:39	1:91
Phosphoric acid	40:79	2 75
Oxide of iron	0.91	-15
Sulphuric acid		3.09
Silica	3.89	63:89
	99-97	100:00

organic constituents included, is: Carbon 46:10, hydrogen 5.80, oxygen 43.40, nitrogen 2.29, ashes 2.41. In an ounce of phosphoric acid, there are about 210 grains of phosphorus.

(59) A. W. asks: Which is the best acid for etching on lead? A. Use dilute nitrie acid.

(60) G. F. P. says: I have seen very fine specimens of etching on lithographic stone, the hollowsbeing as regular and even as though cut with a chisel. How is this accomplished? A. The design is transferred to the stone, which must be previously perfectly clean; the surface of the stone is then moistened with dilute nitric acid, to which a small quantity of gum arabic has been added to prevent the roughening of the stone.

(61) J. E. W. asks: What should I do with canary that has lost his voice? He seems in good health, except that at times he will sit and pant as though he had some difficulty about his brenth, A. We know of no remedy. We judge, from your description, that the bird has the asthma.

(62) R. M. asks: Are there any chemicals that will produce gas in a boiler fast enough to run 1/2 horse power engine? A. No.

(63) C. H. C. says: In Dick's "Practical Astronomer" there is an account of a telescope invented by Messrs, Wilson and Rogers of England, It contains an intermediateglass called a corrector, composed of a plano-convex lens of crown glass and a plano-concave lens of flint glass, placed in the cone of rays that come from the object glass: it lengthens the focus to six feet, where a perfectly achromatic image is formed. Could I obtain a patent on such telescopes, or make them to sell, without a patent? A. C. F. Gauss, in his "Diop.. trisehe Untersuchungen," 1840, says: "The dialytic telescope has, instead of the flint lens, a combination of flint and crown placed close together. This combination is not achromatic, as the violet image, if in the same foeus as the red, is larger than the red. This defect is unavoidable, but it may be compensated by proper calculation of the oculars. But the dialytic lenses being movable tovard the crown objective, the requisite difference of focus for each ocular may be attained." As the eye is not achromatic, the secondary spectrum of a good object glass is of slight importance. We cannot recommend the dialytic telescope as an object of study, but the usual forms might be profitably constructed.

(64) A. H. T. asks: How long should the focus of an eight inch objective lens for a telescope be? A. One hundred and fifty feet.

(65) R. D. asks: Will grapes grown in New Jersey serve for making raisins, and what is the process? A. A monthly report of the Department of Agriculture, of 1872, says: Several grape growers of California have succeeded in producing raisins of fine quality. Growers sowing a vineyard, on the foot hills near Nevada City, have produced, from 450 lbs. grapes, 150 lbs. raisins of superior flavor, claimed to be equal to the best. Malaga, and worth 24 cents per pound. This furnishes a fine margin for profit, as it secures 8 cents per pound for grapes, which is a very remunerative figure for California. We think that the climate in the vicinity of New York is entirely too cold for the production of raisins.

(66) R. S. G. asks: 1. What is the latest and ost approved method of generating oxygen gas? A. Heat together in a flask 1 part by weight of black oxide of manganese and 4 parts of chlorate of potash. 2. What is the proportion of carbonic aeld gas to ordinary air, to produce asphyxia? A. Anything exceeding 4 per cent.

(67) H. D. asks . 1. Does the ordinary gun or ritte powder in use give perfect satisfaction? A. No. 2. Wherein is it defective? A. The principal objections are the large volume of smoke, and the incomplete combustion, which necessitates the frequent cleaning of the gun. 3. How does the white gunpowder injure the mechanism of guns, as it is claimed to do? A. Of this powder there are several grades, the highest and most powerful of which is not suitable for a gun or ritle powder; and if so used is injurious on the same principle that gun cotton, dynamite, or nitroglycerin would be if used for the same purpose.

(68) A. M. says: While viewing a drop of water, the size of a pin's point, through a microscope, the animaleulæ gradually became motionless and dim, and upon examination I found that the water had evaporated and left a stain on the obect glass, which I wiped away. 1. I would like to know what became of the auimalculæ that I had seen in the drop. A. The animalculæ could not have evaporated; they undoubtedly remained upon the glass. 2. Did any remain in the little dry stain? A. We should say so. 3. Did I terminate their cxistence by wiping away that stain? A. Yes. You had only to examine the glass again with the microscope to prove the presence or absence of the animaleulæ. 4. What book is best suited for an amateur microscopist? A. Beale's" How to Work with the Microscope " is one of the standard authorities, being plain, simple, and easy to under-

(69) S. N. M. says, in answer to R. O. B., who asked: Is there any rule by which a person can find the radius when the are and chord are given? There is no formulated rule, but I can tell how to find the diameter from the given data, if the arc is not greater than a semicircle. By taking pains and a day or two of time, a table can be calculated, showing the lengths of the arcs of any number of degrees and parts of a quadrant, corresponding to the natural sincs in the common tables when R = 100,000 and also the ratio of a sine to the are. Thus: 360°: 2Rr::any number of degrees and parts: length of the arc. Divide the length of the arc so found by the natural sine (of the tables); it give: the ratio of the sine to the arc. Example.-Given the length of arc=26; length of ehord=2, to find diameter. Having made my table, I find this ratio, 1:13, to be the sine and areof 70°, By the formula above: 360°:62832(2Rπ):: 70°: 1.22173, length of the arc, when R=1. Then

 $\frac{1.22173}{20000}$ =1.3=1/2 the given arc. Then $70^{\circ}:1.3::340^{\circ}$

6.6857=circumference of the required circle, and 2.128 its diameter. If the ratio of the sine to arc is

greater than 1:1:5708, the arc is greater than a semicircle, and indeterminate by this means. As the ratio of the arc to the sine increases slower in the first half of the quadrant than in the last half, the number of degrees may be approximately octimated by the given lengths of the 1/2 arc and 1/2 chord; and by a few trials, the ratio can be found without going through the long process of making out a full table of the quadrant. A. This is not a new method, but is worth investigation.

(70) J. N. McC. says, in reply to several correspondents, who ask as to burning slack: "My experience is that slack requires the grate bars to be very open. I have always used the widest I could get, not less than an inch between the bars; I have used bars with openings of 11/2 inches. The only secret in using it with any kind of a furnace is to have the grate bars open enough, so that the fire can be kept open from the underside of the grates, with the poker. Some coal, of course, will go through at first; but coarse coal or wood can be used to start with, and you must rake out what falls through the grate, and put it in again. The coal will soon cake so that it will not waste. To build a furnace for the purpose, I would make it wider than usual, with doors in the side of the front, similar to furnaces for burning sawdust. For some varieties of coal, it will be found beneficial to wet the coal before throwing it into the furnace; it helps it to run together. Then put in the coal at the side doors, and let it alone till it cakes; then take your poker and roll it into the center of the tire. It will then be in large lumps and will not waste; and you will always have a good fire in the center. Never smother it with fresh coal."

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

R. B.-A very highly siliceous slate, perfectly compact and homogeneous.-J. E. E.-Your specimen does not contain silver.

J. E. D. asks: How can I make cream candy for feeding weak colonies of bees during the winter? How is the granular condition of the sugar overcome?-E. W. H. asks: How are honey locust seeds prepared for sowing?—N. N. asks: Can you tell me how to color coral after it has been burned? -P. W. says : I havea tame frog which in summer lives on flies. What shall I give it in winter?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjecte:

On Steam Boiler Explosions. By C. R. C. and by

On Brass Bearings. By T. J. B. On Utilizing Water Power. By H. C. K. Ona Cheap Locomotive. By F.G. W.

Oasprings and Wells of Water. By — On Turneling. By J. H. S. On a Flying Machine. By M. B. E. and by L. S. On Phosphorus, By

On Multiplication and Division. By G. B. G.

Also enquiries and answers from the following:

E. S. V.-K.-M.-,J. B.-L. R. C.-W. H, L.-T. A.J. -P. B. S.-L. W.-I. E. N.-C. O'B.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquirles relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, arc thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following are sent: "Who makes balloons? Who sells machines for hulling barley, and also for grinding oatmeal? Where can machines for marking boxwood rules be obtained? Are there any makers of railway ticket printing machines in the United States?" All such personal enquiries are printed, as will be observed, in the column of "Business and Personal." which is specially set apart for that purpose subject to the charge mentioned at the besd of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Granted in the Week ending

December 29, 1874.

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Air and gas, carbureting. A. W. Porter	158,184
Ammonia, mauufacture of, L. S. Fales	158,265
Atomizer, hydrocarbon, C. E. Robinson	
Auger, carth, Hitchings and Eynon	158,276
Augers, twist, W. Tucker	158,337
Bags, filling, J. D. Platt	158,506
Rale tie, W. G. Cain	
Barking wood, machine for, O. W. Clark	
Barrel heads, planing, E. and B. Holmes	158,213
Beefsteak crusher, J. W. James	158,280
Beer barrels, vent plug for, J. A. Munn	158,303
Beer cooling house, atc., J. J. Schillinger	158,319
Belt shifter, Hill and Proctor	158,173
Biacult board, A. P. Forman	158,266
Blind stop, W. A. Clark	158,200
Boiler, agricultural, J. G. Smith	159,322
Bolt, door, F. W. Brocksleper	158,241
Bootand shoe chan el opener, F. D. Ballou	158,232
Bread, compound for, J. C. Pooley	158,183

Bridge, truss, L. L. Buck	
Bridge, t uss, J. B. Winters	
Burner, lamp, J. Curzon	158,254
Butter bucketfastening, etc., Thielepape et al	158,334
Cap, etc., knitted, P. L. Slayton	
Car coupling, G. R. Moore	158,219
Car coupling, E. Stone	158,330
Car coupling, C. C. Wilson	158,346
Car. dumping. J. E. Bemis	158,236
Car, dumping, R. Eaton	
Car spring, J. W. Cochran	158,248
Carriage, child's, Bein and Ulrich (r)	6,199 158,288
Churnpower, F'. Rauh	158,311
Clocks, striking mechanism of, F. Clark	
Clod crusher, D. B. Baruet	
Column, Iron, L. Kirkup	158,285
Cooler, lardandliquor, A. F. Chesebrough Cooler, water, W. F. Garrison	
Cotton worm poison distributor, W. T. Willie	158,345
Cutlery, manufacture of, W. H. & G. W. Miller (r)	
Dash board, W. C. Peel	
Dental engine flexible shaft, E. T. Start 158,324	,158,325
Deutal engine hand piece, J. W. Gilbert Derrick for fluid cans, S. N. Blodgett	
Desk, school, F. M. Gilchrist	158,271
Digger and cultivator, potato, A. Crosby Doorplate, F. Avey	
Drill tube clamp, J. Fleming	
Drying animal charcoal, L. Colwell	
Egg carrier, J. L. Stevens	
Eievator safety lock, H. Carlile Embankments, construction of, E. Bush	158,244
Embankments, construction of, E. Bush Engineand pump, rotary, Smith and Robichon	
Engine, stationary, C. S. Crane (r)	6,194
Engine, balanced valve, R. Wright	
Eyecup, P. S, Stephens	158,224
Eyeieting machine, J. E. Wiggin	
Fencepicketmachine, I. Levy	158,291
Fence, portable, J. W. Harticy	158,210
Firearm, breech-loading, F. Smith	158,221
Firemen'sshield, E. Low	158,217
Flour bolt, G. T. and A. Smith (r)	
Fruit drier, W. S. Piummer	158,308
Furnaceand stove, J. B. Tnompsou	158,335 158,810
Furnace boiler oven, blast, H. Harris	158,289
Furnace grate, R. A. Hutchinson	15.9,279
Gas, coal, M. W. Kldder	
Gas regulator, Detwiler and Fajen	
Gas retorts, lining, E. G. Wellman	
Grain cleaner and scourer, A. Hough	158,278
Grate, M. Mahony	158,293 158,299
Grater, aimond, J. I.ev)	158,230
Griper, lifting, H. H. Stuart	158,832
Hammer, bush, R. K. Carpenter	
Harvester, J. P. Manny	158,177
Harvester rake, T. G. Glover	158,272
Harvester rake, T. G. Glov'er	158,272 158,180
Harvesterrake, T. G. Glover	158,272 158,180 158,287 158,270
Harvesterrake, T. G. Glov'er	158,272 158,180 158,287 158,270 158,274
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles	158,272 158,180 158,237 158,270 158,274 158,22 158,329
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles Horsesitoe, Kintzing and Hopper	158,272 158,180 158,287 158,270 158,274 158,22 158,329 158,284
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles	158,272 158,180 158,287 158,270 158,274 158,22 158,829 158,284 154,816
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimpiement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stilles Horsesltoe, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge	158,272 158,180 158,287 158,270 158,274 158,22 158,329 158,284 154,816 158,281 158,263
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hlnges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles Horseelive, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard	158,272 158,180 158,287 158,270 158,274 158,22 158,829 158,284 150,816 158,281 158,263 158,263 158,263
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles Horsestice, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor Knitting machine, Reedand Mulligan	158,272 158,180 158,287 158,274 158,22 158,529 158,284 151,816 158,281 158,263 158,304 158,172 158,318
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles Horsepower, R. Stiles Horsesitoe, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor Knitting machine, Reedand Mulligan Knitting machine, P. L. Slayton	158,272 158,180 158,287 158,274 158,274 158,22 158,284 151,816 158,281 158,281 158,304 158,417 158,317 158,318
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimplement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stiles Horseslive, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge Knife, cheese, Phillips and Young Knife, cheese, Phillips and Young Knifting machine, Hill and Proctor Knitting machine, Reedand Mulligan Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts Lens-selecting device, G. Meyer	158,272 158,180 158,287 158,274 158,274 158,22 158,22 158,281 158,281 158,263 158,263 158,304 158,731 158,173 158,185 158,185 158,185
Harvesterrake, T. G. Glover Hay tedder, H. Moore Hinges, cover for butt, H. T. Blake Hoe and chopper, combined, C. H. Gaylord Hog-holdlingimpiement, A. L. Hill Hook, snap, G. Reynolds Horsepower, R. Stilles Horsesloe, Kintzing and Hopper Hydrocarbon a tomizer, C. E. Robinson Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge Knife, cheese, Phillips and Young Kniftengrinding machine, Hill and Proctor Knitting machine, Reedand Mulligan Knitting machine, P. L. Slayton Leasher, etc., beading, Walden and Platta Lens-selecting device, G. Meyer Lock, door, J. H. Kinsman (r)	158,272 158,180 158,287 158,270 158,271 158,22 158,329 154,816 154,816 158,261 158,261 158,172 158,172 158,185 158,190 158,190
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, esal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr.	158,272 158,180 158,237 158,271 158,270 158,221 158,281 158,281 158,281 158,281 158,173 158,173 158,173 158,179 154,179 6,179 158,174 158,174 158,174 158,174 158,174 158,174 158,174 158,174
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, door, J. H. Kinsman (r). Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans.	158,272 158,180 158,287 158,287 158,274 158,22 158,284 158,284 158,268 158,268 158,73 158,185 158,190 158,190 158,174 158,172 158,174 158,174 158,282 158,282
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, door, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor.	158,272 158,180 158,287 158,227 158,229 158,229 158,229 158,289 158,281 158,381 158,172 158,172 158,173 158,185 158,185 158,185 158,185 158,185 158,185 158,186
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pie fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler.	158,272 158,180 158,287 158,274 158,221 158,299 158,299 158,299 158,281 158,281 158,190 158,190 158,190 158,190 158,119 6,196 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, door, J. H. Kinsman (r). Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood.	158,272 158,180 158,287 158,271 158,227 158,229 158,281 158,263 158,263 158,263 158,172 158,173 158,173 158,174 158,174 158,174 158,174 158,174 158,175 158,185 158,185 158,185 158,186 158,186 158,186 158,189 158,282 158,283 158,284 158,284 158,284 158,285 158,284 158,285 158,285 158,286 158
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife, cheese, Phillips and Young Knife, grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Piatts. Leans-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr.	158,272 158,287 158,287 158,271 158,271 158,221 158,224 151,816 152,281 158,268 158,268 158,304 158,172 158,173 158,173 6,196 158,174 158,174 158,174 158,185 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,185 158,174 158,185 158,285 158,385 158,285 158,3
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseeltoe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, door, J. H. Kinsman (r). Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond.	158,272 158,180 158,287 158,271 158,227 158,224 158,281 158,263 158,263 158,263 158,263 158,172 158,173 158,173 158,174 158,174 158,174 158,174 158,174 158,174 158,174 158,174 158,174 158,175 158,176 158,178 158,179 158,189 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,257 158,258
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platta. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, esal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Milror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett.	158,272 158,180 158,271 158,271 158,271 158,221 158,281 158,281 158,268 158,268 158,304 158,172 158,173 158,173 158,173 158,173 158,173 158,173 158,174 158,174 158,174 158,282 158,282 158,282 158,282 158,185 158,185 158,174 158,174 158,174 158,174 158,174 158,282 158,283 158,283 158,283 158,284 158,285 158
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseeloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, eal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paperarticles, forming, J. W. Jarboe.	158,272 158,180 158,287 158,271 158,227 158,224 158,281 158,263 158,263 158,263 158,263 158,172 158,173 158,173 158,174 158,174 158,174 158,174 158,174 158,175 158,174 158,174 158,174 158,175 158,175 158,175 158,189 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,281 158,278 158,278 158,278 158,278 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseeloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, eal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paperarticles, forming, J. W. Jarboe.	158,272 158,180 158,287 158,271 158,227 158,224 158,281 158,263 158,263 158,263 158,263 158,172 158,173 158,173 158,174 158,174 158,174 158,174 158,174 158,175 158,174 158,174 158,174 158,175 158,175 158,175 158,189 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,281 158,278 158,278 158,278 158,278 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265 158,265
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseeloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, escal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton.	158,272 158,180 158,227 158,227 158,221 158,22 158,224 158,263 158,263 158,263 158,263 158,172 158,173 158,173 158,174 158,174 158,174 158,174 158,175 158,189 158,189 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,283 158,265 158,
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Plpe coupling, C. E. Duilin.	158,272 158,182 158,287 158,227 158,227 158,229 158,282 158,284 158,268 158,268 158,317 158,172 158,131 158,173 158,173 158,174 158,202 158,286 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,256 158,189 158,256 158,189 158,256 158,189 158,257 158,258
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseeloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, escal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton.	158,272 158,180 158,271 158,271 158,271 158,271 158,281 158,284 158,281 158,268 158,301 158,170 158,170 158,170 158,170 158,170 158,185 158,185 158,186 158,187 158,188 158,188 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,281 158,189 158,281 158,189 158,281 158,189 158,281 158,281 158,281 158,281 158,281 158,281 158,281 158,281
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, vinding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Planter, seed, J. R. Sample.	158,272 158,180 158,227 158,271 158,227 158,529 158,529 158,529 158,528 158,263 158,263 158,171 158,173 158,173 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,171 158,271
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platta. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, esal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Milror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, vinding machine, B. F. Eaton. Paper, vinding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Planter, seed, J. R. Sample. Pilers, cutting, T. P. Farmer.	158,272 158,180 158,271 158,277 158,277 158,271 158,229 158,284 158,268 158,268 158,304 158,170 6,196 158,174 158,120 158,185 158,186 158,187 158,188 158,188 158,199 158,191 158,188 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,189 158,281 158,189 158,281 158,189 158,281 158,189 158,281 158,189 158,281 158,281 158,281 158,281 158,291 158,291 158,301 158,301 158,291 158,301 158,291 158,301 158,291 158,301 158,291 158,301
Harvesterrake, T. G. Glover. Hay tedder, H. Moore Hay tedder, H. Moore Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds Horsepower, R. Stiles. Horseelve, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer Pliane, bench, C. Nordell. Pianter, seed, J. R. Sample. Pilers, cutting, T. P. Farmer Plow, gang, M. S. Curtiss.	158,272 158,180 158,227 158,271 158,227 158,529 158,529 158,529 158,528 158,263 158,263 158,263 158,172 158,7313 158,173 158,171 158,172 158,202 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, esal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Milror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, vinding machine, B. F. Eaton. Photographic plate, P. Neff. Pipes, joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilow, H. D. Smitt. Plow, Wheel, I. R. Gilbert.	158,272 158,180 158,271 158,277 158,277 158,271 158,281 158,284 158,281 158,268 158,301 158,171 158,172 158,318 158,173 158,173 158,173 158,173 158,173 158,185 158,282 158,282 158,282 158,282 158,282 158,284 158,286 158,186 158,289 158,289 158,289 158,281 158,288 158,289
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslve, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platis. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper-ruled, H. D. Cone. Paper, ruled, C. F. Mayer. Pines, Joint for lead, C. F. Mayer. Piane, bench, C. Nordell. Pianter, seed, J. R. Sample. Pilers, cutting, T. P. Farmer Plow, H. D. Smith. Plow, gang, M. S. Curtiss. Plow, wheel, I. R. Gilbert. Pooket, safety, P. Smith. Power by fluids, transmitting, H. Picq.	158,272 158,287 158,287 158,287 158,281 158,284 158,281 158,281 158,281 158,281 158,381 158,190 158,191 6,196 158,185 158,281 158,192 158,282 158,281 158,192 158,282 158,283 158,281 158,281 158,282 158,282 158,283 158,281 158,283 158,283 158,285
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for plie fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Milror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, vinding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilanter, seed, J. R. Sample. Pilow, H. D. Smith. Plow, M. D. Smith. Plow, wheel, I. R. Gilbert. Power by fluids, transmitting, H. Picq.	158,272 158,180 158,271 158,271 158,271 158,227 158,529 158,284 158,268 158,261 158,185 158,11 158,185 158,171 158,185 158,171 158,185 158,185 158,185 158,185 158,186 158,186 158,187 158,188 158,282 158,282 158,281 158,282 158,282 158,282 158,281 158,281 158,282 158,281
Harvesterrake, T. G. Glover. Hay tedder, H. Moore Hay tedder, H. Moore Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds Horsepower, R. Stiles. Horseelve, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, escal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, H. D. Smitt. Plow, gang, M. S. Curtiss. Plow, wheel, I. R. Gilbert. Plow, gang, M. S. Curtiss.	158,272 158,180 158,227 158,271 158,227 158,529 158,529 158,529 158,263 158,263 158,263 158,263 158,172 158,7313 158,173 158,171 158,172 158,202 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,285 158,385 158,285 158,385 158,285 158,385 158,385 158,385 158,385 158,385 158,385 158,385 158,385
Harvesterrake, T. G. Glover. Hay tedder, H. Moore Hay tedder, H. Moore Hogse, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdlingimplement, A. L. Hill. Hook, snap, G. Reynolds Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone Paper, winding machine, B. F. Eaton. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilow, H. D. Smith. Plow, H. D. Smith. Plow, H. D. Smith. Plow, Shap, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow.	158,272 158,180 158,271 158,271 158,271 158,221 158,282 158,582 158,284 158,263 158,263 158,172 158,131 158,173 158,173 158,173 158,185 158,174 158,202 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283 158,383 158,283 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383 158,383
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hogse, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife, cheese, Phillips and Young Knife, cheese, Phillips and Young Knifenginding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Leather, etc., beading, Walden and Piatta. Leans-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Mill spindle, W. S. Bacon. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper-winding machine, B. F. Eaton. Paper-winding machine, B. F. Eaton. Photographic plate, P. Neff. Pilpes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Planter, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smith. Plow, gang, M. S. Curtts. Plow, wheel, I. R. Gilbert. Pooket, safety, P. Smith. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Prunn, G. H. Laub. Pump, G. H. Laub.	158,272 158,180 158,271 158,277 158,271 158,271 158,229 158,294 158,268 158,268 158,304 158,171 158,178 6,196 158,174 158,178 158,178 158,178 158,188 158,282 158,282 158,281 158,188 158,282 158,282 158,281 158,188 158,282 158,281 158,188 158,281 158,288 158,281 158,188 158,281 158,288 158,281 158,188 158,288 158,380 158,380 158,380 158,380 158,380
Harvesterrake, T. G. Glover. Hay tedder, H. Moore Hay tedder, H. Moore Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdingimplement, A. L. Hill. Hook, snap, G. Reynolds Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smith. Plow, H. D. Smith. Plow, H. D. Smith. Plow, wheel, I. R. Gilbert. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, G. H. Laub. Pump, G. H. Laub. Pump, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley.	158,272 158,180 158,271 158,277 158,271 158,271 158,229 158,294 158,268 158,268 158,304 158,171 158,178 6,196 158,174 158,178 158,178 158,178 158,188 158,282 158,282 158,281 158,188 158,282 158,282 158,281 158,188 158,282 158,281 158,188 158,281 158,288 158,281 158,188 158,281 158,288 158,281 158,188 158,288 158,380 158,380 158,380 158,380 158,380
Harvesterrake, T. G. Glover. Hay tedder, H. Moore Hay tedder, H. Moore Hogse, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseelve, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer Pilane, bench, C. Nordell. Pilane, seed, J. R. Sample. Pilers, cutting, T. P. Farmer Plow, B. S. Curtiss. Plow, wheel, I. R. Gilbert. Pocket, safety, P. Smith. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, Ducketforchafu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw tans, T.	158,272 158,180 158,237 158,271 158,227 158,529 158,529 158,529 158,263 158,263 158,263 158,263 158,172 158,173 158,173 158,173 158,174 158,202 158,281 158,281 158,281 158,281 158,281 158,282 158,282 158,282 158,283 158,282 158,283 158,283 158,283 158,281 158,283 158,281 158,283 158,281 158,283
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smith. Plow, H. D. Smith. Plow, H. D. Smith. Plow, Safety, P. Smith. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, G. H. Laub. Pump, G. H. Laub. Pump, Gorce, W. W. Green. Pumps, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw threading device, C. W. Roberts.	158,272 158,180 158,271 158,271 158,271 158,221 158,282 158,284 158,263 158,263 158,263 158,172 158,131 158,173 158,173 158,173 158,174 158,202 158,281 158,180 158,181 158,181 158,182 158,282 158,282 158,281 158,282 158,282 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,384 158,283 158,384 158,384 158,285 158,384
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hog-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Mait crusher, A. Dobler. Mill spindle, W. S. Bacon. Milror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, cutting, T. P. Farmer Plow, H. D. Smith. Plow, H. D. Smith. Plow, H. D. Smith. Plow, Safety, P. Smith. Plow, H. D. Smith. Plow, M. D. Smith. Plow, Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, G. H. Laub. Pump, force, W. W. Green. Pumps, bucketforchafu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw_threading device, C. W. Roberts.	158,272 158,180 158,271 158,271 158,271 158,221 158,282 158,284 158,268 158,312 158,185 158,172 158,185 158,173 158,185 158,174 158,282 158,282 158,281 158,185 158,179 6,196 158,179 6,196 158,179 158,181 158,182 158,282 158,282 158,282 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,287 158,381 158,287 158,381 158,287 158,381 158,287 158,187 158,381 158,287 158,187 158,381 158,287 158,381 158,287 158,181 158,287 158,181 158,287 158,181 158,287 158,381
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horsesloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, escal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper-winding machine, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, joint for lead, C. F. Mayer Plane, bench, C. Nordell. Pianer, seed, J. R. Sample. Pilers, cutting, T. P. Farmer Plow, gang, M. S. Curtiss. Plow, safety, P. Smith. Powerby fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning, Shears, J. J. Bristow. Pump, Deuketforchalu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw taps, cutting, W. Tucker. Screw taps, cutting, T. P. Kerfineld.	158,272 158,180 158,271 158,271 158,227 158,529 158,529 158,529 158,263 158,263 158,263 158,172 158,173 158,173 158,171 158,173 158,180 158,181 158,181 158,181 158,181 158,281
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hoch-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone Paper, vluding machine, B. F. Eaton. Photographic plate, P. Neff. Plipe coupling, C. E. Dulin. Plow, B. J. R. Sample. Pilare, seed, J. R. Sample. Pilare, seed, J. R. Sample. Pilare, cutting, T. P. Farmer. Plow, H. D. Smitt. Plow, M. D. Smitt. Plow, Mecl, I. R. Gilbert. Power by fulds, transmitting, H. Picq. Pruning shears, J. J. Bristow Pump, G. H. Laub. Pump, force, W. W. Green. Pumps, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw taps, cutting, W. Tucker. Scewing machine, T. S. Huntington. Sewing machine, etcl gage, F. D. Ballou.	158,272 158,180 158,271 158,271 158,271 158,271 158,281 158,282 158,284 158,268 158,317 158,172 158,185 158,173 158,180 158,171 158,281 158,189 158,189 158,189 158,256 158,181 158,257 158,281
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseelve, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, escal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper-winding machine, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, joint for lead, C. F. Mayer Pilane, bench, C. Nordell. Piane, seed, J. R. Sample. Pilers, cutting, T. P. Farmer Plow, gang, M. S. Curtiss. Pocket, safety, P. Smith. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears	158,272 158,180 158,271 158,271 158,271 158,221 158,282 158,282 158,283 158,263 158,263 158,263 158,172 158,173 158,173 158,173 158,174 158,202 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,282 158,283
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hoch-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horsesloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Duilin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smitt. Plow, Gang, M. S. Curtiss. Plow, wheel, I. R. Glibert. Power by fulds, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, force, W. W. Green. Pumps, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw threading device, C. W. Roberts. Separator, grain, G. & J. R. Beachler. Sewing machine, T. S. Huntington. Sewing machine, T. S. Huntington. Sewing machine, R. J. Cobb. Sewing machine, Released. Sewing machi	158,272 158,180 158,271 158,271 158,271 158,271 158,281 158,282 158,284 158,268 158,317 158,173 158,173 158,173 158,185 158,174 158,281 158,185 158,173 158,185 158,173 158,185 158,186 158,187 158,188 158,286 158,186 158,287 158,188 158,287 158,188 158,287 158,188 158,287 158,188 158,287 158,188 158,287 158,188 158,287 158,188 158,287 158,187 158,384 158,287 158,384 158,287 158,187 158,287
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hocholdlingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horseslive, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, Reedand Mulligan. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Piatta. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper-winding machine, B. F. Eaton. Paper-winding machine, B. F. Eaton. Paper-winding machine, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Dulin. Pipes, joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Plane, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smitt. Plow, gang, M. S. Curtiss. Plow, wheel, I. R. Glibert. Pocket, safety, P. Smith. Power by fluids, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, Force, W. W. Green. Pumps, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw taps, cutting, W. Tucker. Sceparator, grain, G. & J. R. Beachler. Sewing machine needle bar, G. A. Pairfield. Sewing machine needle bar, G. A. Pairfield. Sewing machine needle bar, G. D. Ballou. Shoe fastening, G. Merrill. Sleigh fender, J. J. Cobb.	158,272 158,180 158,271 158,271 158,271 158,271 158,221 158,284 158,281 158,268 158,391 158,185 158,170 6,196 158,170 158,170 158,170 158,185 158,185 158,186 158,187 158,188 158,282 158,281 158,188 158,282 158,281 158,188 158,281 158,189 158,281 158,181 158,181 158,283 158,281
Harvesterrake, T. G. Glover. Hay tedder, H. Moore. Hlnges, cover for butt, H. T. Blake. Hoe and chopper, combined, C. H. Gaylord. Hoch-holdingimplement, A. L. Hill. Hook, snap, G. Reynolds. Horsepower, R. Stiles. Horsesloe, Kintzing and Hopper. Hydrocarbon a tomizer, C. E. Robinson. Indicator, T. S. Keunard Insect destroyer, F. A. Eldridge. Knife, cheese, Phillips and Young Knife-grinding machine, Hill and Proctor. Knitting machine, P. L. Slayton Leather, etc., beading, Walden and Platts. Lens-selecting device, G. Meyer. Lock, door, J. H. Kinsman (r). Lock, seal, and indicator, J. L. Howard. Loom for pile fabrics, J. Cochrane, Jr. Loom picker rod, Kent and Parker. Lubricator, M. Evans. Lubricator, picker spindle, W. Taylor. Malt crusher, A. Dobler. Mill spindle, W. S. Bacon. Mirror attachment, H. S. Wood. Mower, lawn, A. Grosch, Jr. Needle blanks, etc., swaging, W. Trabue. Nut lock, A. F. Dimond. Organ reed board, R. Burdett. Paper and twine holder, B. F. Eaton. Paper, ruled, H. D. Cone. Paper, ruled, B. F. Eaton. Photographic plate, P. Neff. Pipe coupling, C. E. Duilin. Pipes, Joint for lead, C. F. Mayer. Plane, bench, C. Nordell. Pilane, bench, C. Nordell. Pilaner, seed, J. R. Sample. Pilers, cutting, T. P. Farmer. Plow, H. D. Smitt. Plow, Gang, M. S. Curtiss. Plow, wheel, I. R. Glibert. Power by fulds, transmitting, H. Picq. Press, hay, J. Wiley. Printed sheets, dry pressing, C. H. Weston. Pruning shears, J. J. Bristow. Pump, force, W. W. Green. Pumps, bucketforchaiu, W. C. Barker. Pyrometer, E. S. Hawley. Range, E. O. Brinckerhoff. Screw threading device, C. W. Roberts. Separator, grain, G. & J. R. Beachler. Sewing machine, T. S. Huntington. Sewing machine, T. S. Huntington. Sewing machine, R. J. Cobb. Sewing machine, Released. Sewing machi	158,272 158,180 158,271 158,271 158,271 158,221 158,282 158,582 158,582 158,583 158,172 158,173 158,173 158,173 158,180 158,181 158,180 158,181 158,181 158,181 158,181 158,181 158,181 158,181 158,181 158,181 158,282 158,282 158,282 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,283 158,384 158,283

Stool, foot, E. H. Crooker
Stop-doublingmachine, etc., W. Masterson 158,295
Stove, J. H. Blake
Stove, heating, M. Curtis
Table, folding, N. S. Tiemann
Table slide, extension, J. Pleukharp 158,307
Thill coupling, O. J. Shannon
Timberframejoint coupling, E. Martin 158,294
Trap, fly, J. W. & T.S. Bray 158,288
Trunk hinge and stay, A. Romadka 158,317
Trunk, traveling, Moore & Mills 158,299
Twine, hailing, 1. A. Stringfellow
Valve, globe, J. N. Matlock
Valve, hydranlicsafety, J. F. Taylor 158,333
Valve, slide and steam, J. Anderson 158,229
Vehicle wheel, A. B. K. King
Vehicle wheel, W. Montgomery 159,298
Vehicle wheel, A. Wietlisbach
Vent plug for beer barrels, J. A. Nunn 158,908
Vests, device for laying out, J. Bauer 158,194
Washboard, W. Whitford
Washing compound, J. Braddock 158,163
Washing machine, E. Nafziger 158,181
Watch dust cap, O. F. Stedman 158,223
Waterproofingcompound, A. Starr 158.188
Waterwheel, W. H. & D. V. Holcomb 158,277
Weather strip, W.O. Chamberlain
Weather strip, Lynch & Stowell
Well boring horse power, M. Steward 158,328
Wheel, traction, G. W. Fitts
Whip hanger, W. Hall
Yoke and pole, neck, M. Dunham 158,260
DESIGNS PATENTED.

7.957 & 7.958.—Soda WATERAPPARATUS.—G.F. Meacham Newton, Mass. 7,959.-Buckt.re.-V. Price, Woodside, N. Y 7,960.—STATUARY.—J. Rogers, New York city.
7,961.—Martingale Rings.—H.F.Corning, Hartford, Ct. 7.962.—PAPER, ETC.—B. Lawrence, New York city

7,962.—FAPER, ETC.—B. Lawrence, New York City.
7,968.—STOCKING FABRIC.—W. Martin, Philadelphia, Pa
7,961.—COAL SCTTILE.—C. H. Morse, Rochester, N. Y.
7,966.—HEATING STOVES.—N. S. Vedder, Troy, N. Y.
7,966.—HANDLE TIPA.—H. W. Wright, Glastupbury, Ct. 7,967.-SAD IRON HANDLES. - W. J. Reagan, Royer's

Ford, Pn. 7,968.—PEX.—R. E. Cannon, Lexington, Ky.

TRADE MARKS REGISTERED.

2.140.-LABELS.-A)len, Lane & Scott, Philadelphia, Pa. 2,141.-CIGARS.-Goldsmith & Newhurgh, Cincinnati, O. 2,142.-.JET.-Holzinger & Bruckheimer, New York city. 2,143.-BITTERS .- V. Keck, New York city. 2,144.-CLOTHING.-A. Nicoll, Brooklyn, N. Y 2,145.—CIGARS.—W. H. Romerman, Jacksonville, Ill. 2,146.—Shirt Bosoms.—S. Sibley, Boston, Mass. 3,147.—Roofing.—A. H. Soden, Newton, Mass. 2,148.—CORRETA.—Comfort Corset Co., Boston, Mass 2,149.—VARNIBHES.—Hyatt & Co., Newark, N. J.

SCHEDULE OF PATENT FEES.	
On each Caveat	810
On each Trade mark	825
On filing each application for a Patent (17 years)	815
On feeuing each original Patent	820
On appeal to Examiners-in-Chief	810
On appeal to Commissioner of Patents	820
On application for Reissue	830
On filing a Disclaimer	810
On an application for Design (3% years)	810
On application for Design (7 years)	
On application for Design (14 years)	

CANA IAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA,

DECEMBER 28 to DECEMBER 29, 1874.

4,295.—H. Smith, Hamburg, Waterloo county, Ont. Improvements in wind wheels, called "Smith's Improved Wind Power Wheel." Dec. 28, 1874.

4,246.—J. Tesseman and P. Smith, Dayton, Montgomerycounty, Ohio, U. S. Improvements in valve gear for steam engines and pumps, called "Improvements in SteamPump Valve Gear." Dec. 28, 1874.

4,207.—F. P. Mackelcan, Montreul, P.Q. Improvements on a machine for pulling stumps, called "The Farmer's Stump Machine." Dec. 28, 1814. 4,208.—W. G. P. Cassels, Toronto City, Ont. Improv

ments in stoves, called. The Improved Water Evapo rator." Dec. 28, 1874 4,209.—M. G. Wilson aug J. H. L. Wilson, Sherbrooke,

P. Q. Improvements in hollers, called "Wilson's Vegetable Boller." Dec. 28, 1874. 4.210.-R. D. Gibbs, Batavia, Genesee county, N. Y., U.S.

Improvements in devices for connecting theneck yoke with the draft poles of vehicles, called "Gibbs' Improved Neck Yoke Clasp." Dec. 29,1874. 4,211.—F. H. C. Mey, Buffalo, Eric county, N. Y., U. S.

Improvementson grain and mait dryers, called "Mey's Grain and Mait Dryer." Dec. 29, 1874. 4,212.-G. White, London Township, Middlesex county, Ont. Improvements on parts of carriages, called "White's Improvements on Carriage Axles, Springs,

Shaft Couplings, and Tyres." Dec. 29, 1874.
,213.-T. Gavin, Montresl. P. Q. "Ameliorationsaux

boltes a tamber les cendres de charbon de terre, par Thomas Gavin, 'c alled "improvements in Sifters for Sifting Coal Ashes.' Dec. 29,1874.

214.—D.W. Siprell, Rivière du Loup, Temiscouata county, P. Q. Improvements on rackreamers, called "Siprell's Stemp Business. Address DORMAN'S STENCIL AND STAMP WORKS, Baltimore, Md. 4.214. - D. W. Siprell, Rivière du Loup, Temiscouata county.

Improved Reamer." Dec. 29, 1874. 4,215.—F. H. Date, Niagara, Lincoln county, Ont. Improvements on the manufacture of illuminating gas.

ealled "Date's Manufacture of Bluminating Gas." Dec. 29,1864. 4.216. - C.M.Clintonand L. Wood, both of Itbaca, Tompkme

county, N. Y., E. C. Gregg and C. P. Gregg, Trumans-burg, Tompkinscounty, N. Y., U. S. Improvements in wheeled horse rakes, called "Clinton and Wood's Improved Horse Rake." Dec. 29, 1874.

Advertisements.

Back Page - . - - - \$1.00 a line. Inside Page - - - - - 75 cents a line.

Engravings may head advertise mats at the same rate per line, by measurement, as theetter press. Advertisements must be received at publication office as early as Friday morning to appear in next issue.

SHORT-HAND-Burns' System, books and "Journal."
Send for Circulars. BURNS & CO., Publishers, N.Y.

Splinting mules, clearer for, S. Mock. 158,218
Spinning ring, J. G. Lamb. 158,258
Spring torsion, R. Dudley. 158,258
Springs, manufacturing door, C. S. Van Wagoner. 158,339
Stone, dressing, F. L. King. 158,176
Since, dressing, F. L. King. FREE.

JUNT PUBLISHED.

Crown 8vo., cloth, 82.00

THE PRINCIPLES OF MECHANICS, AND THEIR Application to Prime Movers, Naval Architecture, Iron Bridges, Water Supply, &c. By W. J. Millar, C. E. Crown 8vo., cloth, \$1.50

Alk AS FUEL: or, PETROLEUM & OTHER MINERAL Olls utilized by Carburetting Air and rendering it Intammable. By Owen C. D. Ross, M. Inst. C. E. & F. N. SPON, 446 Broome Street, N. Y. E. MAYO'S PATENT BOLT CUTTER. Is Send for Illustrated Circular, Cincinnati, Ohio.

Will sell 160 at low prices. Send for circular and price list to Philadelphia Hydraulic Works, Eveling St., Phila., Pa.

STEEL CASTINGS. tuns to square inch. An invaluable substitute for expensive forgings, or for Cast Iron requiring great strengt Send for circular and price list to

Mc HAFFIE STEEL CO., Evelina St., Philadelphia, ! THE

Shapley Engine,

\$200 chesper than any Engine of same capacity. Compact, Simple, Durable. Economical. Warranted first class in every respect. Send for Catalogue with testimonials.

Iron and Wood Working Machinery, New and Second-band, TULLY & WILDE, 20 Platt St., N. Y.

WORCESTER FREE INSTITUTE.—A SCHOOL OF PRACTICAL SCIENCE.—APPRENTICE CLASS ENTER JANUARY 20.
C. O. THOMPSON, Worcester, Mass.



for making sto Model Steam Engines 15 in, bore, 3 in, stroke, price \$4; ditto 2 in, bore, 4 in, stroke, price \$10, same style as out. Catalogue of Small Toolsand Materials free.

GOODNOW & WIGHTMAN, 23 Cornhill, Boston, Mass.

DECATUR

For Sale.

5 ACRES GROUND—COMMODIOUS BUILDINGS—ALL NECROSARY MACHINERY—CAPACITY 200 HANDS—RAIL ROAD FACILITIES UNSURPASSED—ABUNDANT WATER—CHEAF FUEL—COST 80.000 DOLLARS. Will be Sold at a Great Bargain if taken soon. Address

L. BURROWS, Sec'y, Decatur, III.



PRIZE STATIONERY. - Money and Jeweiry in every package. Sample puckage, with agents' terms, went for 35c, Circular for stamp. Name this paper. KIRTLAND, ROSE & Co., Bertford or Saybrook, Conn

\$5.7.60 AGENTS' PROFITS per New article, hist patented. Sumples free to all. Address W. H. CHIDESTER, 267 Froadway New York.

Useful and Rare Chemicals.

USUM AHU KATE UNEMICALS.

1. A cheap Muchage, suitable for pasting Labels on Glass, Tin Cans. Wood, Iron and Stone.

2. The Soluble Glass Liquid and Jelly for Soap, Cement, Artificial Stone, Paint and Fireproofing Wood.

3. Hydroflupric and White Actis, for Etching.

4. Nickel-Plating Materials, Selts, Anodes, Rouge &c.

5. Glass Manufacturers' Articles, Manganese highest strenkth. Zaffre, Oxides of Coosit, Uranium, Tin, Copper, Aottinous, Bl., muth, Nickel, Ajurofnum, Loadstone.

6. Marble and Glass Puty. Felspar, Fluorapar, finest Silex, Cryolite. Taic, Asbestos, Yeliow Cadmium. Pharoah Serpents.

L. FREICHTTUM ANGERIA.

Serpents.
L. FEUCHTWANGER & CO.,
180 FULTON ST., NEW YORK.

Planing & Matching,

Moulding, Re-sawing and Tenoning Machines. Scroll Sawis and General Wood-Working Machinery. JOHN B. SCHENCK'S SONS 1 Matteawan, N. Y. Send for Catalogue. 2118 Liberty St., N. Y. City

Machinery of Improved Styles for making SHINGLES HEADING, AND STAVES SOLE MAKERS OF THE WELL KNOWN IMPROVED LAW'S PATENT SHINGLE AND HEADING SAWING MACHINE. FOR CICLULARS Address TREVOR & CO., Lockport. N. Y.

DICHARDSON, MERIAM & CO.,
Manufacturers of the latest improved Patent Daniels'
and Woodworth Planing Machines Matching, Sash and
Molding, Tenoning, Mortising, Boring, Shapling, Vertical
and Circular Re-sawing Machines. Saw Mills, Saw Arbora,
Scroll Saws, Railway, Cut-off, and Rip-saw Machines,
Spoke and Wood Turning Laches, and various other kinds
of Wood-working Machinery. Catalogues and price lists
sent on application. Manufactory, Worcester, Mass.
Warehouse, 107 Liberty Street. New York.

A DVERTISERS! Send twenty-five cents to GEO. P. ROWELL & CO., 41 Park Row, New York, fortheir Pumphlet of one hindres pages: containing lists of 3.(11) newspapers, and estimates showing cost of advertising.



THE Union Iron Mills, Pittsburgh, Pa. The attention of Engineers and Architects is called to our improved Wrought-Iron Beams and Girders (pattented), in which the compound welds between the stem and flanges, which have proved so objectionable in the sid mode of manufacturing, are entirely avoided. Weare prepared to furnish all sizes at terms as favorable as can be obtained elsewhere. For descriptive lithograph address, Carnegle, Kloman & Co., Union Iron Mills, Pittsburgh.Pa