TO INVENTORS.

An experience of more than thirty years, and the preparation of not less than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. In addition to our facilities for preparing drawings and specifications quickly, the applicant can rest assured that his case will be filed in the Patent Office without delay. Every application, in which the fees have been paid, is sent complete—mcluding the model to the Patent Office the same day the papers are signed at our office, or received by mail, so there is no delay in filing the case a complaint we often hear from other sources. Another idvantage to the inventor in securing his patent through the Scientific American Patent Agency, it insures a special notice of the invention in the SCIENTIFIC AMERICAN, which publication often opens negotiations for the sale of the patent or manufacture of the article. A synopsis of the patent laws in foreign countries may be found on another page, and persons contemplating the securing of patents abroad are invited to write to this office for prices, which have been reduced in accordance with the times. and our perfected facilities for conducting the business Address MUNN & CO., office SCIENTIFIC AMERICAN.

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

National Steam Pump is now on exhibition at the American Institute; also 46 Cortlandt St., N. Y.

Magic Lanterns and Stereopticons of all prices. Views illustrating every subject for public exhibitions. Profitable business for a man with a small capital. Also ian- colony, up to January, 1878, was nearly £46,440,000.

John Hartrick & Co., 47 Gold street, New York. Northrop's Sheet Iron Roofing makes most durable

fireproof roof. Used on all kinds of buildings. Send for circular and prices. Northrop & Co., Pittsburgh, Pa. Vertical & Yacht Engines. N.W.Twiss, New Haven, Ct.

"W.H.B."-Guy C. Hotchkiss, Field & Co., 622 East 14th street, New York, have a Hydraulic Sheet Punch for sale. Capacity 72 holes at one time; worked by direct acting steam cy.inder. Price \$1,000.

Wanted.-Light Motor, 2 or 3 horse power, to propel Aerial Car. Gas or oil engine preferred. Address R.W. Cowan, P. O. Box 409, Montreal, Canada.

Engines. 16 to 5 H. P. Geo. F. Shedd, Waltham, Mass Wanted.-Low priced, second hand Lewis, Oliver & Phillips Bolt Header. G. C. Chase, Manchester, N. H. Scroll Saw Designs. L. H. Russell, Stratford, Conn.

H. Prentiss & Co., 14 Dey St., N. Y., Manufs. Tape Dies, Screw Plates, Reamers, etc. Send for list.

Extension of time.-Proposals for Jacksonville Water Works will be received until November 21, 1878. See advertisement page 237, October 12, 1878.

Best Turbine Water Wheel, Alcott's, Mt. Holly, N. J. Right to manufacture a salable patented article desired by an old established house; would pay royalty or purchase. G. Thomas, Box 23, West Troy, N. Y.

Useful Books for Engineers and Mechanics. Cata logues free. E. & F. N. Spon, 446 Broome St., New York.

Manufacturers of Improved Goods who desire to build up a lucrative foreign trade, will do well to insert a well displayed advertisement in the SCIENTIFIC AMERICAN Export Edition. This paper has a very large foreign circulation.

The Lawrence Engine is the best. See ad. page 270. For the most substantial Wood-Working Tools, address E. & F. Gleason, 52 Canal St., Philadelphia, Pa.

Warranted best and cheapest Planers, Jointers, Universal Woodworkers, Band and Scroll Saws, etc., manufactured by Bentel, Margedant & Co., Hamilton, Obio. ELECTRIC LIGHTING. A Practical Treatise Magneto Call Bells for Telephone Lines. The Best.

No battery required. Bunnell, 112 Liberty St., N. Y. Diamond Engineer, J. Dickinson, 64 Nassau St., N.Y. Eagle Anvils 9 cents per pound. Fully warranted.

Diamond Self-clamp Paper Cutter and Bookbinders Machinery. Howard Iron Works, Buffalo, N. Y. Notice .-- Charles N. Elliott, of N. Y., is no longer con-

nected officially with the Ingersoll Rock Drill Company and is not authorized to collect moneys or transact any business whatever for the same.

Kreider, Campbell & Co., 1030 Germantown Ave., Phila., Pa., contractors for mills for all kinds of grinding. Alcott's Turbine received the Centennial Medal.

The only Engine in the market attached to boiler having cold bearings. F.F.& A.B.Landis, Lancaster, Pa Dead Pulleys, that stop the running of Loose Pulleys

and Belts, taking the strain from Line Shaft when Machine is not in use. Taper Sleeve Pulley Works, Erle, Pa. Pulverizing Mills for all hard substances and grinding purposes. Walker Bros. & Co., 23d and Wood St., Phila.

Bronze is an indestructible machine. See advertisement. Solid Emery Vulcanite Wheels-The Solid Original Emery Wheel – other kinds imitations and inferior. Caution – Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. 'Ihebest is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

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

NEW BOOKS AND PUBLICATIONS.

VICTORIAN RAILWAYS. Report of the Board of Land and Works, for the year ending December 31, 1877. Melbourne, Australia, 1878.

At the close of 1877 there were in the colony 931 miles of railway open for traffic, and 32 in coarse of completion. The construction of 161 miles more had been authorized by parliament. The average number of miles open for traffic the whole year was 787. The total train mileage was 3,420,960 miles; the number of passenger journeys, averaging 21% miles, was 3,395,709. The average earnings per mile of road were \$7,215; the average expenses, \$3,765. The proportions of passenger and goods traffic to the total revenue were 40 and 00 per centrespectively. A colored map of the four rail way systems of the colony, and illustrations of the different types of locomotives and carriages used, accom-| pany the report.

ANNUAL REPORT OF THE DEPARTMENT OF MINES, New South Wales, for the year 1877. Sydney, Australia, 1878.

The mineral resources of New South Wales include

gold, coal, tin, copper, iron, silver, lead, and antimony. The aggregate value of all the mining products of the able business for a man what a small capital. The task to business for a many, to be the start, the second start of the second phones in underground operations in this country; and expresses the hope that by the introduction of better mechanical appliances a fresh stimulus would be given to mining research, and mining operations would be carried on with greater expedition and economy.

INDUSTRIAL SCIENCE DRAWING: Elements of Free-Hand Geometrical Drawing. By S. Edward Warren, C.E. New York: John Wiley & Sons, 1878. Price \$1.

Though nominally a second edition, this is substan-

tially a new work. Part I. treats of plane drawing; Part II., on drawing from "the round," is largely new; and Part IIL, on the elements of geometric beauty, is almost wholly new.

FERNS IN THEIR HOMES AND OURS. With 8 ch rom-lithographs of rare ferns. By John Robinson. Salem, Mass.: S. E. Cassino. 12mo. Price \$1.50.

In this attractive little book Professor Robinson has described the growth, structure, and distribution of ferns, and their cultivation under glass, in ferneries, and out of doors. Dr. A. S. Packard furnishes 10 illustrations for a chapter on fern pests and means for their destruction.

A MANUAL OF THE MECHANICS OF ENGINEER-ING AND OF THE MECHANICS OF ENGINEER-ING AND OF THE CONSTRUCTION OF MA-CHINES. By Dr. Phil. Julius Wiesbach. Second volume. Part II. Translated by A. Jay Du Bois, Ph. D., with additions by R. H. Buel, C.E. New York: John Wiley & Sons, 1878.

This, the second half of the second volume of Wies bach's mechanics, is devoted to heat, steam, and steam engines. The character of Dr. Wiesbach's work is too well known to require comment here. Mr. Buel has undertaken to supply any deficiencies with regard to American steam engineering.

by Hippolyte Fontaine. Translated from the French by Dr. Paget Higgs, Assoc. Inst. C.E. With 48 illustrations. 8vo. pp. 194. \$3. E. & F. N. Spon, N. Y.

This work is designed to show what are, in the present state of science, the judicious applications of electric lighting, to record the services that this new light is capable of rendering to a multitude of industries, and to combat false ideas founded on the possibility of its universal use.



(1) T. F. V. asks: What is best for drinking water to run through, black, galvanized or lead pipe? A. Lead and galvanized iron pipes should not be used as conduits for drinking water. The black enameled pipe answers very well, but in many cases wood

The Cameron Steam Pump mounted in Phosphor silver 193 dwts., copper 18% dwts. For red 18 carat ring gold the following proportions are used: fine gold 40 dwts., silver 41/2 dwts., copper 85 dwts.

> (6) A. B. asks (1) for the ingredients and manner of mixing and making crucibles. A. There are in common use two methods of making crucibles, one by forcibly shaping the moist ingredients in a double mould; the other by pouring the "slip," of the consistence of cream, into porous moulds of a species of stucco In the latter case a series of the moulds are placed upon a table and filled with the semi-fluid composition. By the time this operation is finished on 50 or 60 moulds the workman returns to the filled, and alternately pours the slip out of them, leaving only a small quantity sufficient to give the requisite thickness to the bottom. In each of the moulds so filled a perfect crucible is formed by the abstraction of the water of that portion of the slip" in immediate contact with the stucco, and the crucible will be either thicker or thinner in proportion to the time this absorbent action has been allowed to go on. 70 or 80 crucibles may thus be formed in 15 minutes. The moulds and their contents are placed in a slow oven. In a short time from the contraction of the clay in drying the crucibles may be removed and the moulds dried thoroughly and used again. As soon as the crucibles, formed by either of the above methods, have become perfectly dry they are baked by subjecting them to the heat of a potter's kiln. The composition of which crucibles are made differs according to the uses for which they are intended. The following may be taken as good cimens-(German), Stourbridge clay, 8 parts; cement (old crucibles ground to fine powder), 3 parts; coke, 5 parts; graphite, 4 parts. Or Stourbridge clay, 4 parts; cement, 2 parts; coke powder and pipe clay, of each 1 part. Suitable for brass founders. (Hessian)-Clay (containing about 10 per cent of silica), about 75 percent; sand (containing a little alumina and lime), 25 per cent. (Black lead)—Fine refractory clay, 1 part; graphite, 2 to 3 parts; a little sand is often added. French clay crucibles are made of Paris clay with a small quantity of very fine sand. 2. Also tell me, is black lead and plumbago the same thing? A. Yes.

> (7) T. A. Y.-You can get a patent on your article if it is new. You might also patent the machine for producing it.

> (8) C. W. G. writes: I want to get two or three practicalbooks on vacht building. I cannot find any that suits me. I have those you published in the SUPPLEMENT by Paddlefast, but I want something more complete with numerous plans. A. We believe the instructions in the SUPPLEMENT are the only practical work of the kind published.

Is iron when galvanized dipped in melted zinc? A Үев.

(9) F. L. A. asks: 1. What preparation is used in drawing on zinc plates, so that when acid is applied it will eat everything from the surface except drawing? What acid is employed, and how? A. Coat the zinc, while warm, with an even film of wax or a varnish of wax and asphaltum, and after scratching the design through the coating with a suitabletool, place a rim of wax, or a putty of wax and pitch, around the edges, and cover the plate, while in a horizontal position, with dilute nitric acid. See p. 219 horizontal position, with dilute nitric acid, (37), vol. 34, SCIENTIFIC AMERICAN. 2. Will any other plate answer as well as zinc to electrotype from? A. No. 3. How is the acid removed after it has eaten to a sufficient depth? A. By washing with water.

used to make the thick foam (or thin) on beer or other malted liquors. A. The poisonous alkaloid is never used, to our knowledge, in beer or other liquor. The only effectit would have on beer would be to increase its bitter taste.

(11) W. J. S. asks: How can paper be prepared so that the action of the atmosphere will change it to several different colors in such a manner that it can be used, like a barometer, for foretelling the weather? A. Saturate the paper with a moderately concentrated aqueous solution of cobalt chloride; press and dry. When properly prepared dry air develops a blue color and moist air a pink tint. The arrangement does not foretell the weather, but simply indicates the hygroscopic condition of the surrounding air.

How can ink powders be made so that by the addition of cold water they will produce first class black. red, green, blue, and violet ink? A. See p. 315(15), vol. 38, SCIENTIFIC AMERICAN. Soluble nigrosine (in 200 parts of water) also makes a good bluish-black ink. For 3B, gentiana-violet B (dissolve in 300 parts of water for use); for blue, water blue BR, 5B, or 2B (dissolve in 200 parts water). These latter are aniline colors, and the inks require no gum.

or refer to some work that does describe it? A. "The bottle. Lathe and its Uses."

amount of sail that I can carry. A. The size of small boat sails is determined only by custom and experience If your boat is stiff for its width it will carry a sprit ail 61/2 feet on the mast and 81/2 feet on the boom

(16) R. W. M. writes: A shaft 60 feet long. 40 feet of which is 3 inches in diameter, and the remaining 20 feet only 21/2 inches in diameter, has been thrown out of line by unequal settlement of building. Can it be lined up true without being taken out of boxes to have the boxes lined up? A. This is quite possible if the amount of spring is not excessive.

(17) R. C. K.-A thermometer will .ndiate a lower temperature in the wind than out of it.

(18) O. E. D. asks: How much power is ost in using the common treadle and crank motion? A. None, as we understand your meaning, if the mechanism is properly constructed. In practice, however, there is usually a considerable loss on account of friction or from other causes.

(19) A. J. asks for the best and cheapest process of manufacturing vinegar from wine and cider, and which is best and cheapest made, wine or cider vinegar. A. See pp 284 (50), and 86, vol. 37, and 122 (6), 218 (4), and 171 (47), vol. 34, SCIENTIFIC AMERICAN. Consult Dussauce's "Treatise on the Manufacture of Vinegar." Wine vinegar is generally considered the best

(20) X. asks: 1. How to construct a cheap and efficient " call " for the telephone described on p. 75, SCIENTIFIC AMERICAN, No. 5, current volume? A. Connect a small bell that will jingle easily, with the telephone cord, by means of a short piece of thread, which should be slack when the telephone is used. 2. The telephones are separated by a distance of 5 blocks, and it works splendid, except when the wind blows. The wind produces a humming noise in the telephones which can be heard all over the room. What will prevent this? A. We do not know of a way to prevent the noise

(21) C.-You will find a good article on the subject of testing oils in Normandy's "Commercial Analysis."

(22) P. A. F. writes: I desire to know if during an epidemic of diphtheria, scarlet fever, whooping cough, or any other contagious disease to which children are subject, any injury will be done or benefit be obtained by keeping a teaspoonful of carbolic acid on a plate in sleeping rooms and all other rooms in the house? Will the acid in a crystal or diluted state be best to use? I often see it recommended to be used in time of epidemics, but they never tell how to use it. A. Carbolic acid is often used in this way. The odor of the substance is not pleasant, otherwise no bad effect need be apprehended. The acid need not be diluted. In cases of contagious diseases the disinfectant is usually mixed with about 20 parts of water and sprayed over the carpets, linen, and other fabrics in the infected apartments.

(23) P. R.-We do not understand your queries.

(24) S. H. C.—Energy of water in foot lbs. $\left(\begin{array}{c} \text{pounds discharged} \\ \text{per second} \end{array}\right) \times \left(\begin{array}{c} \text{velocity of discharge} \\ \text{in feet per second} \end{array}\right)$ 64.4.

(25) X. Y. Z. asks for a recipe for modeling wax, such as is used by modelers of small fine (10) H. M. H. asks whether strychnine is figures. A. Lead plaster, 8 ozs.; beeswax, 8 ozs.; Burgundy pitch, 8 ozs. Melt together and stir in sufficient prepared chalk to form a paste. Mould ,it in small sticks for use.

> (26) C. V. writes: I have a number of good wine casks that have become musty. I have tried to sweeten them by washing and steaming, but have failed to get them in a condition to put wine in. A. Burn a little sulphnr in the empty casks, bung, and let them stand for a day.

> (27) W. W. R. asks how to make a good white ink to write on black paper or cardboard. A. Try finely ground (or freshly precipitated) barium sulphate or "flake white " mixed with a little gum water. Where can I obtain stone bottles varying in size from one gill to one pint in size? A. These sizes are seldom met with in stores: they are made to order.

(28) J. M. G. writes: I have a problem to propose for solution which has puzzled me. It is this: suppose a quart hottle of powder, sealed and sunk into red use "rubine extra" (dissolves in 150 parts of water); the sea, say 3 miles deep, or at such a depth that the for violet, methyl-violet 5B, or BR, Hofmann's violet pressure all round is greater than the explosive force of the powder. fired by a wire and galvanic battery. Will the glass be broken, or the bottle hold the gas of the exparts water); for green, methyl-green (dissolves in 100 ploded powder, or the powder burn without any explosion? A. If such conditions could be realized there would be no explosion. The powder would burn, and Can you give a description of the geometrical lathe, the products of its combustion would remain in the

(29) J. G. S. writes: I send two balls taken

Hydraulic Cylinders, Wheels, and Pinions, Machinery Castings; all kinds; strong and durable; and easily Tensile strength not less than 65,000 lbs. to worked squarein. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

Wheelbarrows .- Over 50 styles, with felloe-plated, bolted wheels. Pugsley & Chapman, 8 Liberty St., N.Y. North's Lathe Dog. 347 N. 4th St., Philadelphia, Pa. Sheet Metal Presses, Ferracute Co., Bridgeton, N. J.

Nickel Plating.—A white deposit guaranteed by using ourmaterial. Condit,Hanson& Van Winkle,Newark,N.J. English Agency, 18 Caroline St., Birmingham,

Boilers ready for shipment, new and 2d hand. For a good boiler, send to Hilles & Jones, Wilmington, Del.

Punching Presses, Drop Hammers, and Dies for working Metals, etc. The Stiles & Parker Press Co., Middletown, Conn

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon & Co., 470 Grand St., N. Y.

Presses, Dies, and Tools for working Sheet Metals, etc. Fruit and other Can Tools. Bliss & Williams, Brooklyn, N. Y., and Paris Exposition, 1878.

tubes are preferable where they can be employed.

(2) Reader asks: Can you give a method of making champagne cider? A. Good pale vinous cider, 1 hogshead; proof spirit, 3 gallons; honey or sugar, 14 lbs.; mix, and let them remain together in a temperate situation for a month; then add one quart of orange flower water, and fine it down with % gallon of skimmed milk.

ber gum (as it comes from the rubber boot factory) so as to run into a mould such as is used in casting printers' rollers? A. Vulcanized rubber cannot be melted in the way you propose, as it suffers partial decomposition in the operation, and does not again assume its original qualities on cooling.

value of gold? A. Coin value: 24 carats fine = pure gold. 1 grain=4.5 cents. 2311 grains=\$1. 1 dwt.= \$1.021/2. 1 ounce (troy) = \$20.67. (5) M. S. asks: What is the proper compo-

sition for 18 carat gold? A. 18 dwts. fine gold, 2% dwts.

Those who wish to follow the instructions for building yacht, should first read the initial directions in SUPPLE-MENTS 30 and 32.

(13) W. F. asks: Have the actions of the (3) "Scientific" asks: How can I melt rub- gyroscope ever been explained, and if so, what is the Why does the north pole always point to the same place in the heavens? A. It is due to the persistency of a rotating body in maintaining its plane

of rotation against the force of gravitation.

(14) H. G. writes: I have been casting small wheels out of zinc in a brass mould. I have gine? For instance: assuming the stroke to a steam (4) E. S. F. asks: What is the intrinsic poured the metal at different temperatures, but there are always cracks in the outer ring of the wheel. What is the trouble? A. The zinc contracts in cooling, and as the mould is rigid it must of necessity crack. Use a sand mould or employ a tougher metal.

(15) B. B. S. writes: I have a small sail-

(12) C. D. H.-In SUPPLEMENTS 30 and 32 out of the piston head of my engine; there were quite complete directions for building a small rowboat were a number of them. I would like to know how they given, which were not repeated in succeeding numbers. were formed and of what. I use pure tallow or beeswax as a lubricant for my cylinder. A. The balls consist the family boat, the Whitehall boat, the canoe or the principally of metallic iron (dust) and partially charred or decomposed wax. They are formed by the friction of the head under imperfect lubrication.

(30) F. S. B.-To correct spherical aberration in your speculum use a small polishing tool charged with a paste of putty powder, and work carefully from the periphery inward, testing the speculum occasionally.

(31) "A Reader" asks: 1. What is meant by steam being cut off at the stroke of a steam enengine to be 4 feet, cut off at 1/2 of the stroke, how many feet will the piston he driven, by expansion only, during the completion of one revolution of the engine? A. Two feet. 2. Please give the horse power, and the rule for working it, of a steam engine of the following dimensions: Diameter of cylinder, 10 inches; length of stroke 4 feet, cut off at 1/2 of the stroke, revolutions 45

What does squaring the circle mean in a mathematical sense? A. Finding a square whose area shall equal that of the circle.

(32) J. R. D. asks: 1. Should a launch be built, 26 feet by 5 feet, with lines moulded after the Flirt (SCIENTIFIC AMERICAN SUPPLEMENT No. S1), what should be the increased dimensions of the boiler, engine, screw, etc., to speed 10 or 12 miles easily per hour? A. Make everything to scale throughout. 2. About what difference in cost of boiler between steel or iron, the latter to sustain a safe working pressure of 200 lbs. per square inch, the former a inch thick? A. Probably not more than 20 per cent 3. What is the most suitable wood material in all respects for such boat building? Is not red cedar, and will it conform well when steamed? A. The most suitable wood for small boats is common cedar, with oak or hackmatack frame.

(33) W. L.-To harden magnets heat them to a dark cherry red, plunge them in cool water, then draw to a straw color. You will find methods of magnetizing given in No. 142 of SCIENTIFIC AMERICAN SUP-PLEMENT in "How to make a Working Telephone."

(34) C. T. A. asks: 1. What is the expansive bulk of mercury per degree of heat in an open vessel? A. The rate of expansion varies with the temper-ature. Between 32° and 212° Fah. 1,000,000 parts of mer cury become 1,018,153. 2. What is the expansive bulk please state the number and date of the patent desired, of mercury per degree of heat under a vacuum? A. The same as in an open vessel. 3. If a bottle is half filled with morcury and half air, a glass tube, open at both ends, inserted through the cork and descending into the mercury, will the mercury rise higher than if the bottle was filled to the cork? A. Yes. 4, Would the difference in those proportions vary the rise of mer-cury in the tube? A. Yes. 5. If air is used in combination with mercury, will the elasticity of the air ren der the rise of the mercury in the column unreliable for thermometers?" A. Yes.

(35) W. H.-Consult an advanced treatise on algebra.

(36) A "music teacher" writes: Do you know of any device that will do away with pen and ink to copy notes (in music) from the original, do it cheap, and at the same time enable anybody to use it? A. We think a series of rubber stamps would facilitate the operation.

(37) J. M. W. writes: I am building a small steam engine (horizontal), 3 inches bore and 5 inches stroke, to run 300 revolutions per minute, with from 50 to 90 lbs. of steam, cutting off at 34 stroke. Will steam ways 1 inch by $\frac{1}{2}$ inch be large enough? Exhaust 1 inch x 1 inch, bridges 1/2 inch, steam pipe 1/2 inch, exhaust pipe ¾ inch. How will these proportions answer? A. These proportions seem to be ample.

(38) H. C. S. asks: 1. What is the difference between ferrocyanide of potassium and the yellow prussiate of potash? A. They are the same. 2. What is the difference between bichromate of potash and red prussiate of potash? A. Potassium bichromate $(K_2Cr_2O_1)$ is a potassium salt of chromic acid (H_2CrO_4) . The red prussiate (potassium ferricyanide-K.(FeCy.)2 -is the potassium salt of hydroferricyanic acid.

Can you give me a recipe for artificial honey? A You may try the following: Glucose (grape or starch sugar), 1 lb.; cane sugar, 2 ozs.; water, q. s. To this add a sufficient quantity of potato or corn starch boiled with water to a jelly, and about an ounce of gum arabic. Small amounts of molasses and flour are sometimes added.

What is used for strengthening essence of orange? A. As we understand you, tartaric acid.

(39) A. S., Jr., asks: What per cent of glycerin will prevent the congelation of water at 0° Fah, at -24° and at -32° , respectively, under ordinary conditions? A. An aqueous solution containing 10 per cent of glycerin, specific gravity 1.024, freezes at 30.2° Fah.; with 50 per cent of glycerin, specific gravity 1'127, freezes at -24'2° Fah.; with 60 per cent, freezes below -31° Fah.

(40) I. F. B. asks for the best way of freeing gas from aqua ammonia while passing through lime drier after leaving the retort. A. If you refer to coal gas, the ammoniacal vapors are not removed in the lime purifier, but in the hydraulic main, the condenser, and washer. See Scientific American Supplement No. 140.

(41) W. T. P. asks why a cannon ball when shot up perpendicular from the earth does not have the same velocity or force in coming down as in going up? A. Because the force of gravitation which causes the ball to descend is less than the force of the gunpowder which sent it up.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Many of our correspondents make inquiries which cannot properly be answered in these columns. Such inquiries, if signed by initials only, are liable to be cast into the waste basket.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

August 27, 1878,

AND EACH BEABING THAT DATE.

[Those marked (r) are reissued patents.] A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering and remit to Munn & Co., 37 Park Rów, New York city. Anchorfluke supporter and tripper, E. Robbins., 207,445 Animal trap, F. Egge...... 207,406

Animal trap, J. H. King	007 r00
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Carriage curtainfastener, G. R. Piervont Carriage jack, E. Prescott	207, 54 6 207,442
Carriage curtain fastener, G. R. Piervont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger	207,546 207,442 207,539
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carriage, E. M. Wright	207,546 207,442 207,539 207,532
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey	207,546 207,442 207,539 207.592 207,388
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chani links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r)	207,546 207,442 207,539 207,592 207,388 8,389
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey	207,546 207,442 207,539 207,592 207,388 8,389
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat. C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White	207,546 207,442 207,539 207,532 207,383 8,389 207,466
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr	207,546 207,542 207,539 207,552 207,383 8,389 207,466 207,359
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen	207,546 207,539 207,539 207,532 207,383 8,389 207,466 207,359 207,580
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers	207,546 207,549 207,559 207,552 207,388 8,389 207,466 207,359 207,580 207,552
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carriage, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams	207,546 207,549 207,559 207,552 207,582 207,383 8,389 207,466 207,359 207,580 207,552 207,581
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carriage, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams	207,546 207,549 207,559 207,552 207,582 207,383 8,389 207,466 207,359 207,580 207,552 207,581
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, nould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis	207,546 207,442 207,539 207,532 207,383 8,389 207,466 207,359 207,580 207,552 207,581 207,379 207,375
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, nould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis	207,546 207,442 207,539 207,532 207,383 8,389 207,466 207,359 207,580 207,552 207,581 207,379 207,375
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage junp seat. C. K. Mellinger Catridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger	207,546 207,442 207,539 207,532 207,383 8,389 207,466 207,550 207,550 207,551 207,551 207,571 207,375 207,383
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway	207,546 207,442 207,539 207,532 207,383 8,389 207,466 207,550 207,552 207,552 207,552 207,571 207,375 207,375 207,383 207,353
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Cartridge, E. M. Wright Chain, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr. Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, nocking, S. Willershausen Chair, nocking, S. Willershausen Chair, asheer, O. P. Ahlgren Clurn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway	207,546 207,542 207,539 207,552 207,582 207,383 8,389 207,580 207,552 207,581 207,575 207,575 207,379 207,375 207,375 207,352 207,352 207,352
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers. Churn, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coiter, S. Hathaway. Cooter, S. Hathaway.	207,546 207,442 207,539 207,532 207,532 207,383 8,399 207,359 207,550 207,552 207,551 207,379 207,375 207,383 207,353 207,353 207,351
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage junp seat, C. K. Mellinger Cartridge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, nocking, S. Willershausen Chair, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Colter, S. Hathaway. Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cuitivator, sulky, F. W. Degen	207,546 207,549 207,559 207,559 207,589 207,580 207,580 207,580 207,552 207,581 207,575 207,575 207,379 207,375 207,383 207,375 207,383 207,375 207,383 207,375 207,383 207,375
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carriage, E. M. Wright Chain, idental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, II. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams. Churn, dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen	207,546 207,442 207,539 207,539 207,539 207,538 8,539 207,466 207,550 207,552 207,551 207,551 207,351 207,351 207,351 207,351 207,351 207,351
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms	207,546 207,442 207,539 207,539 207,539 207,532 207,539 207,539 207,552 207,552 207,551 207,551 207,531 207,353 207,351 207,351 207,351 207,351 207,352 207,351 207,352
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat, C. K. Mellinger Carriage, E. M. Wright Chain, idental operating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, II. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams. Churn, dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen	207,546 207,442 207,539 207,539 207,539 207,532 207,539 207,539 207,552 207,552 207,551 207,551 207,531 207,353 207,351 207,351 207,351 207,351 207,352 207,351 207,352
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage junp seat. C. K. Mellinger Chain links. bending, J. F. Busey Chain, dental opcrating, J. O. Whitcomb (r) Chair, rocking, I. Lamprecht, Jr Chair, rocking, H. Lamprecht, Jr Chair, rocking, B. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, B. Willershausen Churn, B. I. Williams Churn, B. I. Williams Churn dasher, O. P. Ahlgren Coffee cleaning, etc., machine, H. Bamberger Coiter, S. Hathaway. Coorset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges	207,546 207,442 207,539 207,539 207,539 207,383 8,389 207,360 207,580 207,580 207,580 207,581 207,351 207,383 207,352 207,351 207,353 207,552 207,552 207,552 207,552 207,553 207,552 207,552 207,553 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,553 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,552 207,553 207,552 207,553 207,552 207,553 207,552 207,553 207,554 207,554 207,554 207,554 207,554 207,554 207,554 207,555
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Cartiage jump seat. C. K. Mellinger Catariage jump seat. C. K. Mellinger Chain links. bending, J. F. Busey Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Currator wheel, T. J. Bottoms Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan	207,546 207,442 207,552 207,552 207,580 207,359 207,580 207,552 207,552 207,552 207,573 207,573 207,375 207,375 207,383 207,375 207,383 207,351 207,351 207,384 207,580 207,385 207,378
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Catalinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson	207,546 207,442 207,539 207,539 207,539 207,383 8,339 207,366 207,550 207,552 207,580 207,552 207,573 207,375 207,375 207,375 207,375 207,375 207,351 207,351 207,352 207,410 207,378 207,378 207,378
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jump seat. C. K. Mellinger Chain links. bending, J. F. Busey Chain, inks. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, rocking, II. Lamprecht, Jr Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, nocking, S. Willershausen Chair, agers Churn, B. I. Williams Courn dasher, O. P. Ahlgren Cofter cleaning, etc., machine, H. Bamberger Cofter, S. Hathaway. Coorset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Curtain firture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Dish, covered, W. C. Homan Ditching machine, J. H. Wilson	207,546 207,442 207,539 207,539 207,532 207,383 8,389 207,580 207,580 207,580 207,580 207,581 207,581 207,578 207,578 207,375 207,375 207,378 207,378 207,378 207,378 207,378 207,378
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage junp seat, C. K. Mellinger Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cofter, S. Hathaway. Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for salt, etc., L. Morgan.	207,546 207,442 207,552 207,552 207,383 8,389 207,550 207,359 207,550 207,552 207,551 207,379 207,575 207,375 207,375 207,375 207,375 207,375 207,375 207,375 207,378 207,352 207,378 207,520 207,376 207,376 207,376
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage junp seat, C. K. Mellinger Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cofter, S. Hathaway. Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for salt, etc., L. Morgan.	207,546 207,442 207,552 207,552 207,383 8,389 207,550 207,359 207,550 207,552 207,551 207,379 207,575 207,375 207,375 207,375 207,375 207,375 207,375 207,375 207,378 207,352 207,378 207,520 207,376 207,376 207,376
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Cataling, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r) Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chill mould, S. Rogers Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway Cooker, steam, R. N. Foote Coters exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms Curtain fature, S. Hedges Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dreidger for sait, etc., L. Morgan Drill, grain, T. C. Clark	207,546 207,442 207,539 207,539 207,539 207,530 207,530 207,530 207,530 207,530 207,530 207,530 207,531 207,333 207,335 207,335 207,335 207,335 207,335 207,335 207,335 207,335 207,338 207,337 207,378 207,377 207,378 207,378 207,377 207,378 207,377 207,377 207,378 207,377 207,37
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jack, E. Prescott Cartinge, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, rocking, II. Lamprecht, Jr Chair, rocking, II. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Churn, B. I. Williams Colurn dasher, O. P. Ahlgren Coffee cleaning, etc., machine, H. Bamberger Cofter, S. Hathaway Cofter, S. Hathaway Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson Drain trap, J. H. Bessing Dredger for sait, etc., L. Morgan Drill, grain, T. C. Clark Drill, scolter for grain, J. T. West Egg opener, G. W. H. Krey	207,546 207,442 207,539 207,539 207,539 207,580 207,580 207,580 207,580 207,580 207,580 207,581 207,581 207,575 207,575 207,575 207,375 207,375 207,375 207,353 207,353 207,353 207,353 207,353 207,352 207,352 207,353 207,353 207,352 207,352 207,352 207,353 207,352 207,352 207,353 207,353 207,352 207,353 207,353 207,353 207,353 207,353 207,353 207,355 207,355 207,355 207,355 207,355 207,357 207,37
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Cataling, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r). Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for sail, etc., L. Morgan Drills, colter for grain, J. T. West Egg opener, G. W. H. Krey Embalming, tubular needle for. S. Bodgers.	207,546 207,442 207,539 207,539 207,539 207,532 207,532 207,532 207,552 207,552 207,552 207,552 207,551 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,452 207,452 207,452 207,452 207,452 207,577 207,452 207,577 207,452 207,577 207,452
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Cataling, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r). Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for sail, etc., L. Morgan Drills, colter for grain, J. T. West Egg opener, G. W. H. Krey Embalming, tubular needle for. S. Bodgers.	207,546 207,442 207,539 207,539 207,539 207,532 207,532 207,532 207,552 207,552 207,552 207,552 207,551 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,452 207,452 207,452 207,452 207,452 207,577 207,452 207,577 207,452 207,577 207,452
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger Cataling, E. M. Wright Chain links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r). Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Churn, B. I. Williams Churn dasher, O. P. Ahlgren Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway Cooker, steam, R. N. Foote Corset exhibitor, S. B. Ferris Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for sail, etc., L. Morgan Drills, colter for grain, J. T. West Egg opener, G. W. H. Krey Embalming, tubular needle for. S. Bodgers.	207,546 207,442 207,539 207,539 207,539 207,532 207,532 207,532 207,552 207,552 207,552 207,552 207,551 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,452 207,452 207,452 207,452 207,452 207,577 207,452 207,577 207,452 207,577 207,452
Carriage curtain fastener, G. R. Pierpont Carriage jack, E. Prescott Carriage jack, E. Prescott Cartiage, E. M. Wright Chain links. bending, J. F. Busey Chair, dental opcrating, J. O. Whitcomb (r) Chair, folding, D. S. White Chair, rocking, H. Lamprecht, Jr Chair, rocking, S. Willershausen Chill mould, S. Rogers. Churn, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Cofter, S. Hathaway. Coorset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Current wheel, T. J. Bottoms. Current wheel, T. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson Drain trap, J. H. Blessing Dredger for salt, etc., L. Morgan Drill, grain, T. C. Clark Drills, colter for grain, J. T. West Egg opener, G. W. H. Krey Embalming, tubular needle for, S. Rodgers Engine, etc., electro-magnetic fire, L. G. Woolley Engine, hydraulic. Chandler & Silver	207,546 207,442 207,532 207,532 207,532 207,383 8,339 207,550 207,550 207,550 207,552 207,551 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,353 207,352 207,358 207,550 207,358 207,552 207,358 207,552 207,358 207,552 207,358 207,551 207,434 207,551 207,551 207,551 207,551 207,377
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Carriage curtain fastener, G. R. Pierpont. Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger. Catal links. bending, J. F. Busey. Chair, dental operating, J. O. Whitcomb (r). Chair, folding, D. S. White. Chair, rocking, H. Lamprecht, Jr. Chair, rocking, S. Willershausen. Chill mould, S. Rogers. Churn, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bott, H. M. Willis. Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway. Cooker, steam, R. N. Foote. Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen. Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson. Drain trap, J. H. Blessing Dreidger for sait, etc., L. Morgan. Dreill, grain, T. C. Clark Egg opener, G. W. H. Krey Embalming, tubular needle for, S. Rodgers Engine, etc., electro-magnetic fire, L. G. Woolley Engine, road, W. L. Hussey.	207,546 207,442 207,539 207,539 207,539 207,539 207,530 207,530 207,530 207,530 207,530 207,530 207,531 207,333 207,333 207,335 207,335 207,335 207,335 207,335 207,335 207,351 207,352 207,452 207,452 207,452 207,452 207,577 207,531 207,577 207,531 207,577 207,524 207,531
Carriage curtain fastener, G. R. Pierpont. Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger. Catal links. bending, J. F. Busey. Chair, dental operating, J. O. Whitcomb (r). Chair, folding, D. S. White. Chair, rocking, H. Lamprecht, Jr. Chair, rocking, S. Willershausen. Chill mould, S. Rogers. Churn, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bott, H. M. Willis. Coffee cleaning, etc., machine, H. Bamberger Cotter, S. Hathaway. Cooker, steam, R. N. Foote. Corset exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen. Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges Detecter, waste water, W. E. Worthen Dish, covered, W. C. Homan Ditching machine, J. H. Wilson. Drain trap, J. H. Blessing Dreidger for sait, etc., L. Morgan. Dreill, grain, T. C. Clark Egg opener, G. W. H. Krey Embalming, tubular needle for, S. Rodgers Engine, etc., electro-magnetic fire, L. G. Woolley Engine, road, W. L. Hussey.	207,546 207,442 207,539 207,539 207,539 207,539 207,530 207,530 207,530 207,530 207,530 207,530 207,531 207,333 207,333 207,335 207,335 207,335 207,335 207,335 207,335 207,351 207,352 207,452 207,452 207,452 207,452 207,577 207,531 207,577 207,531 207,577 207,524 207,531
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Carriage curtain fastener, G. R. Pierpont. Carriage jack, E. Prescott. Carriage jump seat. C. K. Mellinger. Catal links. bending, J. F. Busey Chair, dental operating, J. O. Whitcomb (r). Chair, folding, D. S. White. Chair, rocking, H. Lamprecht, Jr. Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Chair, rocking, S. Willershausen Churn, B. I. Williams Churn dasher, O. P. Ahlgren. Clevis bolt, H. M. Willis Coffee cleaning, etc., machine, H. Bamberger Coter, S. Hathaway. Cooker, steam, R. N. Foote. Corest exhibitor, S. B. Ferris. Cultivator, sulky, F. W. Degen Current wheel, T. J. Bottoms. Curtain fixture, S. Hedges. Detecter, waste water, W. E. Worthen Ditching machine, J. H. Wilson. Dirain trap, J. H. Blessing. Dredger for sait, etc., L. Morgan. Drill, grain, T. C. Clark Drills, colter for grain, J. T. West. Egg opener, G. W. H. Krey Emplaining, tubular needle for, S. Rodgers. Engine, etc., electro-magnetic fire, L. G. Woolley Engine, wind, L. H. Paimer. Feed cutter, L. Becker Feed water heater and filter, W. J. Austin Fence, P. Hayden Fence, K. McKinnon.	207,546 207,442 207,539 207,539 207,539 207,530 207,530 207,530 207,530 207,530 207,530 207,530 207,531 207,333 207,332 207,341 207,332 207,341 207,338 207,341 207,352 207,378 207,378 207,378 207,378 207,378 207,378 207,551 207,455 207,551 207,55
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 Hog picking machine, H. G. Locke.
 207,334

 Horse checking device, J. Davies
 207,337

 Horse detacher, J. H. Voss.
 207,534

Lamp, C. H. Scholle..... 207,369 Lamp burner, W. R. Underhill. 207,576 Lamp, street, W. R. Underhill. 207,576 Lamp, vapor burning, J. S. Wood. 207,471 Lantern, C. T. Ham. 207,516 Leead, manufacture of white, J. C. Martin 207,516 Leather stretching machine, H. N. Dodge 207,508 ock, permutation, A. Heilbrun..... Mirror attachment, G. H. Wilcox 207,579 Motor, J. F. Driver et al.....

 Plow beam, Bump & Gear
 207,497

 Plow, side hill, Wilson & McCanles.
 207,468

 Plow stock, adjustable, J. K. Kirksey
 207,530

 Pump, cattle, E. Taylor
 207,458

 Scissors sharpener, W. H. Barwick
 207,339

 Screw cutting die stock, T. II. Rose
 207,436

 Scal, Testening, A. W. Flanders.
 207,409

 Seal, metallic, J. Sweeney.
 207,567

 Sewing machine, A. Steward
 207,207

Sewing machine, boot and shoe, L. R. Blake..... 207,340 Steam or gas, nozzle for, G. Beck 207.384
 Stench trap, B. J. Downey
 207,492

 Stovepipe drum, G. H. Simon
 207,560
 Stringed instruments, peg for, A. Stuttaford 207,566 Stump extracting machine, A. M. Michael 207,541 Stump extractor, A. J. Alley 207,881 Table, tailor's, A. Warth 207,575

[For the week ending August 20th.] TRADE MARKS.

	=	
2	Accordions and other reed, pipe, and flute instru-	
L	ments, The National Musical Instrument Manu-	
)	facturing Company	6,49
3	Chemicals, Anthony Pirz	6,48
1	Cigars, etc., Levy Brothers	6,503
	Cigars, California Cigar Box Company	6,490
	Cigars, etc., Kerbs & Spiess	6,493
ł	Cigars, etc., Edward Hilson	6.500
	Cologne, J. A. Lansing	6,502
ŀ		6,482
	Graphite for stove polish, etc., The Joseph Dixon	-
	Crucible Company	6,486
	Marble, Pleasantville Land Company	6,507
	Marking ink, Blackwood & Co	6,498
	Medicinal preparation, J. C. Kerr	6,494
	Medicinal preparation, Mrs. Joe Person	6 495
	Medicinal preparation, The Franklin Company	6,496
	Mustard, Burns & Byram	6,499
	Paper collars and cuffs, H. A. Mann, Jr	6,506
)	Piastic composition, The Bonsilate Company	6,509
	Printed publications, Keppler & Schwarzmann	6,501
	Salt, Richard Evans	6,492
	Shovels and scoops, E. H. Linley	6,484
	Smoking tobacco, etc., American News Co6.489,	6,508
	Smoking tobacco, B. Leidersdorf & Co.,	6,505
	Smoked, etc., beef, pork, etc., C. J. Comstock	6,487
	Soap, Day & Frick	6,491
	Stove polish, J. C. Jacoby & Co	6,488
	Woven cotton and woolen fabrics, 11. Fogg & Co	
	DESIGNS.	

Mait plow, C. Fey 207,495 Counterpane or quilt, William O'Hanion 10,786 Mechanical movement, J. H. Kersey 207,425 Funeral ornaments, C. E. McFarlan 10,784 Medical compound, J. Powers 207,398 Toilet cover, counterpane, etc., John Crossley 0,785 Umbrella handle, Amasa Lyon. ... 10,783

NEW PATENT LAW Spain, Cuba, Porto Rico, etc.

By the terms of the New Patent Law of Snain, which has lately gone into operation, the citizens of the United States may obtain Spanish Patents on very favorable

conditions. The Spanish Patent covers SPAIN, and all the Spanish Colonies, including CUBA, Puerto Rico, the Philippine Islands, etc. Total cost of obtaining the l'atent, \$.00. Duration of the Patent, 20 years, 10 years, and 5 years, as follows:

The Spanish Patent, if applied for by the original inventor before his American patent is actually issued, will run for 20 years. Total cost of the patent, \$100. It covers Spain, Cuba, etc. The Spanish Patent, if applied after the American patent has been issued, will run for 10 years. Total cost of patcnt, \$100. Covers Spain.

A Spanish Patent of Introduction, good for 5 years, can be taken by any person, whether inventor or merely in, troducer. Cost of such patent, \$100. Covers Spain, Cuba, and all the Spanish dominions.

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(42) F. J. F.—For information on canning		Toy, W. S. Clow 207.346	at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.
. ,		Toy, Bulldelore, W. Auto	
see article on p. 122, current volume, SCIENTIFIC AMEB-		Trace carrier, Goodrich & Parker 207,513	
ICAN,		Track clearer, A. Day (r) 8,388	
		Truck, car, J. Belou 207,480	
MINERALS, ETC.—Specimens have been re-		Truck, car, G. Souther 207,453	
ceived from the following correspondents, and		Track, hand, W. B. Allen 201,473	
examined, with the results stated:	Fire escape, D. F. Hunt 207,419	Turning tool, metal, H. Smith 207,562	Thesafestway to remit is by Postal Order, Draft, or
examined, with the results stated:	Flour bolting machine, A. W. Schoenleben 207,449	Type writing machine, C. L. Sholes 207,557, 207,558, 207,559	Express. Money carefully placed inside of envelopes,
Judham, OntarioNo. 1 is chalcopyrite. No. 2 is	Fork, manure, B. F. Barr 207,838	Types, dresser for printing, T. Mason 207,429	securely sealed, and correctly addressed, seldom goes
amethystine quartz. No. 3, dark muscovite. No. 4,	Fruit box, G. O. Cole 207,347	Umbrella, A. G. Kubail 207.357	astray, but is at the sender's risk. Address all letters
anatite in quartz. No. 4, ferronyrite. The rock is	Fruit box, J. J. Philbrick 207,440	Valve, air, J. H. Blessing	and make all orders, drafts, etc., payable to
probably auriferous. No. 6, pink orthoclase. No. 7,	Game counter, J. H. Dasey	valve for parrels, etc., self-closing J. A. Momtt 201,452	
	$1483 exnaust regulator, R. K. Huntoon \dots 201.421$	Valve, oscillating steam, C. J. Van Depoele 207.463	
fluorite. No. 8, garnets in dolerite. No. 9, hematite	Gas generator, J. W. Hodges 207,521	Valve, stop, J. O. Morse	
and orthoclasc. No. 10, rich magnetite. No. 11, cyan-	Gas generator, J. W. Hodges 207,521 Gas illuminating, D. W. Hunt 207,430	Valve, stop, J. O. Morse	37 Park Row, New York.
and orthoclasc. No. 10, rich magnetite. No. 11, cyan- iteW. G. SQuartz with iron sulphide-probably	Gas generator, J. W. Hodges	Valve, stop, J. O. Morse. 207,365 Ventilator, A. Unger. 207,373 Vessels, construction of, B. F. Delano 207,505	37 Park Row, New York. To Foreign Subscribers. —Under the facilities of the Postal Union, the SCIENTIFIC AMERICAN is now sent
and orthoclasc. No. 10, rich magnetite. No. 11, cyan- iteW. G. SQuartz with iron sulphide-probably contains a trace of goldA. F. JIt is a quartz	Gas generator, J. W. Hodges 207,521 Gas, illuminating, D. W. Hunt 207,430 Gas, manufacturing water, W. A. Goodyear. 207,413 Gas tubing, flexible, W. Bourguignon. 207,439	Valve, stop, J. O. Morse. 207,365 Ventilator, A. Unger 207,373 Vessels, construction of, B. F. Delano. 207,575 Vise, T. E. Dutton 207,349	37 Park Row, New York. To Foreign Subscribers.—Under the facilities of the Postal Union, the SCIENTIFIC AMERICAN is now sent by postdirect from New York, with regularity, to subscrib-
and orthoclasc. No. 10, rich magnetite. No. 11, cyan- iteW. G. SQuartz with iron sulphide-probably	Gas generator, J. W. Hodges 207,521 Gas, illuminating, D. W. Hunt 207,430 Gas, manufacturing water, W. A. Goodyear. 207,413 Gas tubing, flexible, W. Bourguignon. 207,439	Valve, stop, J. O. Morse. 207,365 Ventilator, A. Unger 207,375 Vessels, construction of, B. F. Delano 207,505 Vise, T. E. Dutton 207,339	37 Park Row, New York. To Foreign Subscribers.—Under the facilities of the Postal Union, the SCIENTIFIC AMERICAN is now sent by postdirect from New York, with regularity, to subscrib-
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