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. The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every

Chard's Extra Heavy Machinery Oil.

Chard's Anti-Corrosive Cylinder Oil. Chard's Patent Lubricene and Gear Grease

R.J. Chard, Sole Proprietor, 6 Burling Slip, New York Wanted-Small Clean Brass Castings, 300 to 500 lb. weekly. Foundries address "Cash," Box 773, N. Y. city No.4 Blaisdell Drill, good as new, Bolt Cutter, several Second-hand Lathes, Engines, and Boilers, for sale by

Wm. M. Hawes, Fall River, Mass. The Inventors' Institute, New York, has removed to the Cooper Union Building. Sales of Patent Rights negotiated and Inventions exhibited for subscribers. Send for circular

Fragrant Vanity Fair Tobacco and Cigarettes. 7 First Prize Medals-Vienna, 1873; Philadelphia, 1876; Paris, 1878; Sydney, 1879-awarded Wm. S. Kimball & Co., Rochester, N. Y.

The most durable and economical protective coatings in the world for tin roofs, exposed brick walls, etc., are H. W. Johns' Asbestos Roof Paints. They are prepared ready for use in six standard colors, and owing to their wonderful covering properties, cost the consumer no more than the cheap articles commonly used. They are for sale everywhere. Samples and price lists will be sent free by the H. W. Johns M'f'g Co., sole manufacturers of genuine Asbestos materials, 87 Maiden Lane,

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The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass. The Tools, Fixtures, and Patterns of the Taunton Foundry and Machine Company for sale, by the George Place Machinery Agency, 121 Chambers St., New York.

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Skinner & Wood, Erie, Pa. Portable and Stationary Engines, are full of orders. and withdraw their illustrated advertisement. Send for their new circulars.

Sweetland & Co., 126 Union St., New Haven, Conn. manufacture the Sweetland Combination Chuck.

Power, Foot, and Hand Presses for Metal Workers Lowest prices. Peerless Punch & Shear Co. 52 Dey St., N.Y. Recipes and Information on all Industrial Processes.

Park Benjamin's Expert Office, 50 Astor House, N. Y. For the best Stave, Barrel, Keg. and Hogshead Machinery, address H. A. Crossley, Cleveland, Ohio.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y. The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability Write for information. C. H. Brown & Co., Fitchburg, Mass.

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paugh, Jr. & Bros., 531 Jefferson St., Philadelphia, Pa. Stave, Barrel, Keg, and Hogshead Machinery a spe cialty, by E. & B. Holmes, Buffalo, N. Y.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works. Drinker St., Philadelphia. Pa.

Nickel Plating.-Sole manufacturers cast nickel anodes pure nickel salts, importers Vienna lime, crocus etc. Condit. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

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ing. By T. P. Pemberton. Sent on receipt of price, one dollar. Address T. P. Pemberton, 5 Dey St., Room 13, New York.

Scientific American.

National Institute of Steam and Mechanical Engineer ing, Bridgeport, Conn. Blast Furnace Construction and Management. The metallurgy of iron and steel. Practical Instruction in Steam Engineering, and a good situation when competent. Send for pamphlet.

Horizontal Steam Engines and Boilers of best of struction. Atlantic Steam Engine Works, Brooklyn, N.Y. Peck's Patent Drop Press. See adv., page 333

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, Agt., 32 Cortlandt St., N. Y.

For Yale Mills and Engines, see page 316.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 301. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Soloman's Parallel Vise, Taylor. Stiles & Co., Riegelsville. N.J. Clark Rubber Wheels adv. See page 317.

Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for illustrated catalogue.

Blake "Lion and Eagle" Imp'd Crusher. See p. 333. Rubber Hose and Linen Hose; all sizes in stock and to order. Greene, Tweed & Co., 118 Chambers St., N. Y.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10.000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Brass & Copper in sheets, wire & blanks. See ad. p. 332 The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

For best Indirect Radiators, see adv., page 333. The "Fitchburg" Automatic Cut-off Horizontal En-

The "Haskins" Engines and Boilers. Send for pamphlet. Fitchburg Steam Engine Co., Fitchb'g, Mass Eagle Anvils, 10 cents per pound. Fully warranted.

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Diamond Engineer, J. Dickinson, 64 Nassau St., N.Y. 4 to 40 H. P. Steam Engines. See adv. p. 317.

Nickel Anodes, Nickel Salts, Pumice Stone, Rouge, & Composition for Polishers. Greenc, Tweed & Co., N.Y. Air Compressors. Clayton Stm. PumpW'ks,Bk'lyn, N.Y. The best Truss ever used. Send for descriptive circuarto N. Y. Elastic Truss Co., 683 Broadway, New York. Houston's Four-Sided Moulder. See adv., page 332.

Magic Lanterns, Stereopticons, and Views of all kinds and prices for public exhibitions. A profitable business for a person with small capital. Also lanterns for home amusement, etc. Send stamp for 116 page catalogue to McAllister, M'f'g Optician, 49 Nassau St., New York.

H. A. Lee's Moulding Machines, Worcester, Mass.

Wanted-A First-class, Second-hand Planer, 42/ x 42", to plane 16' to 18'. Give full description. Noble & Hall, Erie, Pa.

New Economizer Portable Engine. See illus. adv. p. 332 Ruhber Packing, Soap Stone Packing, Empire Gum Core Packing; quantities to suit. Greene, Tweed & Co. Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Saw Mill Machinery. Stearns Mfg. Co. See p. 333. Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 333. Totten & Co., Pittsburg.

Vacuum Cylinder Oils. See adv., page 333. Lightning Screw Plates and Labor-saving Tools.p. 333.



HINTS TO CORRESPONDENTS.

No attention will be paid to communications unles accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers. 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. Correspondents whose inquiries do not appear after

a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. 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.

Any numbers of the Scientific American Supple MENT referred to in these columns may be had at this office. Price 10 cents each

(1) M. asks how many horse power can be obtained from an engine with cylinder 8 inches in diameter by 11 in length, working 70 strokes per minute, and supplied with steam at a pressure of 60 pounds. A. With 60 lbs pressure of steam in the boiler probably from 10 to 12 horse power. See Supplement, 253, for rules for calculating horse power of engines

(2) W. C. G. writes: I have always been led to suppose the atmospheric pressure to be 15 lb. to the square inch. How does it come that the vacuum gauge shows 30 lb.? A. It is 30 inches or mercury; not 301b. pressure, as you suppose. With the mercury column gauge 2 inches height of column is equal 1 lb. pressure nearly, hence a 30 inch column is only equal to

(3) R. S. asks: In what way do yacht engines, going at a speed of twenty-six miles an hour, gain their speed? Is it by gearing or direct action, and what sized engine would it take to run a boat 35 x 8 feet at that speed? A. The speed you mention is one which has not been attained fairly through the water. In these

The Student's Illustrated Guide to Practical Draught- No power you could put in your boat (35 x 8 feet) would scribing for both we think you will not dispense with give it a speed of twenty-six miles per hour.

> (4) G. C. writes: We have under construction a pair of compound engines; the sizes of cylinders are, two 8 inches by 10 inches, and two 16 inches by 10 inches, for a yacht which we are now having built. We purpose using a keel or pipe condenser, and, under the circumstances, the pump will be about 10 inches above the condenser pipe. What we want to ask you is as follows: 1. Can a single acting pump with discharge valve (Corliss style) clear the pipe from water? A. Yes. 2. If a foot valve should be placed just below the pump would it assist in emptying the pipe? Is a foot valve under the circumstances absolutely necessary? A. A foot valve is necessary in your case. 3. The size of our pump is 7 inches diameter by 2 inches stroke, is it large enough? A. Not half large enough. Make it 5 inch to 6 inch stroke.

> (5) F. C. S. writes: We are running a double set of machinery such as is generally used in a shoe manufactory, also an elevator, with an engine 6x14, making 120 revolutions at 60 lb. of steam. Now we propose to add on nearly as much again machinery with the same engine, by increasing its speed to 170, and carry 70 lb. of steam. Is it practicable? A. Yes.

(6) S. McC. writes: I am building an engine for a small steam yacht (similar to the Black Hawk, No. 14, Scientific American Supplement), 4 inch bore by 41/2 stroke. What size steam ports and feed pipe would you recommend to get the greatest possible speed? A. Steam ports 3/2 inch by 31/4 inch; exhaust ports % inch by 31/4 inch. A feed pipe 3/4 inch diameter will be ample.

(7) S. A. H. asks: What is the best arrangement of carburetor to be used in machine formak- Its proportion in the fertilizer merely serves as ing gas from henzine? Have tried filling a vessel with an index of the richness of the latter in substances cotton and saturating with benzine (80°), and forcing air through it, but the cotton packs so solid in short time monia or ammoniacal compounds, readily assimithat the air won't permeate it. A. Use Sisal hemp instead of cotton.

(8) C. E. K. asks: 1. Is it possible for any individuals to be so charged with electricity (naturally) that, by approaching a finger to a gas jet, a spark will be emitted from the finger of sufficient strength to ignite the gas? A man of good an thority says he witnessed such a perfomance in Denver. A The human body is not a generator of high tension electricity, but it frequently becomes charged with it by the friction of the shoes on the carpet when the conditions are favorable. It is not at all uncommon to light the gas with an electric spark from the tips of the fingers, after walking over-the carpet, and it may be done in the winter in almost any house heated by a furnace, provided the atmosphere is in a favorable state. 2. Is there any book of designs for amateur turners in wood and metals? A. Yes; you should write the booksellers and dealers in scroll saws and lathes who advertise in our columns.

(9) S. D. W. asks: 1. Does the alarm or whistling buoy give out its warning in a dead calm and smooth sea? A. Yes. 2. From where does it derive give out enough heat to make a room comfortable in its power? A. The buoy has a constant rising and fallng motion from the swell when there is no sea.

(10) W. H. K. writes: 1. I intend building a steam yacht (Sharpie model) 15 feet long, 41/4 feet beam amidships, 2 feet in depth. Please give me the dimensions of the boiler, cylinder, stroke. A. Engine 214 inches cylinder by 4 inch stroke; boiler 20 inches diameter by 34 inches high, with 114 inch tubes; propeller 18 inches to 20 inches diameter. 2. Do you think the boiler for a steam yacht, described in Scien-TIFIC AMERICAN SUPPLEMENT, No 182, is perfectly safe? A. If well made, yes. 3. Can I huild a good canoe or row boat with the sides exactly perpendicular, and at a right angle with the bottom ? A. Yes, if you give beam enough so that the boat is not crank. 4. Please give give me a cheap method of waterproofing tent drilling A. See Scientific American, Vol. 39, p. 331 (9). 5. What is meant by 8 oz. canvas, 10 oz, etc.? A. Weight per yard. 6. Where can I obtain a book on canoe building? A. We know of no work specially devoted to this subject. Consult bac'a numbers of the Scien TIFIC AMERICAN SUPPLEMENT. 7. Can I build a folding canvas canoe, and where can I obtain the plans, etc.? A. There have been several patents taken out for folding canvas boats. Several of them have been decribed in the Scientific American. You can obtain opies of the patents at the usual rates

(11) J. B. S. asks: How can I melt pure gum rubber? A. You cannot melt it without partial decomposition. It may be softened by a moderate heat or by hot water so as to admit of moulding.

(12) C. W. J. asks for a sure and simple cure for warts. A. Touch the warts daily with nitric acid. It is said that they soon disappear under this

(13) H. A. H. asks: What preparation other than emery can be used to remove rust stains in the barrels of a breech loading gun? It has been proven that the too frequent use of emery alters the pattern. A. Dilute sulphuric acid will remove rust but will not render the surface smooth, and it will probably alter the "pattern" as quickly as emery. Better protect the barrel against rust.

(14) H. B. P. writes: A friend and myself are building a small launch engine of the following size: Cylinder 2^{9}_{16} inches, by 5 inches, steam pressure in boiler, 110 lb. to square inch; number of revolutions of screw per minute, about 220. Please inform me: 1. What sized boiler we would require? A. A vertical tubular boiler, about 18 inches diameter and 34 inches height. 2. What sized boat the engine would drive? A. 15 feet or 16 feet in length and 48 to 50 inches beam. 3. What would be the diameter and pitch of screw? A. Propeller 18 inches diameter and 30 to 34 inch pitch.

(15) H. B. B. asks for a metal or alloy that can be easily melted on a common kitchen stove, that will cast readily, stand friction tolerably well, and will not be expensive. A. Use type metal (old type). Out of which paper, the Scientific American or its paration that will prevent iron rust on bottom of SUPPLEMENT, can I get the more mechanical knowledge aquarium tanks? Have used asphaltum varnish, but and information generally? A. Every scientific student same wears off in a short time. A. Good asphaltum Eclipse Portable Engine. See illustrated adv., p. 317. high-speed yachts everything else is sacrificed to speed. and mechanic should have both papers. After sub- i varnish is about the best thing.

either of them. 3. Everything being equal, which will go the faster and be more economical. a boat furnished with side wheels or a propeller? A. In a large boat with light draught, side wheels; in a very small boat, or very deep or changeable draught, screw propeller.

(16) G. W. L. writes: I bought a second hand engine and boiler. It is a locomotive boiler; the engine is horizontal. Not having any force pump to test it with, I filled it full with cold water, then fired it up until gauge showed 73 lb. Now, I would like to know whether you think it would be safe to carry fifty pounds steam pressure? A. We could not say without an examination of the boiler. 2. Could I make a foundation of concrete for engine, and would it be as cheap as one of stone or brick, and could I make foundation of concrete myself; if so, how is concrete made? Engine is nine by twelve inch cylinder. A. You would probably fail with concrete foundation. Use brick or stone. 3. The steam gauge I got with old boiler I put on another boiler to try it with steam gauge on boiler. When the steam gauge used regular on boiler indicated fifteen pounds pressure, the other would only indicate one pound; then when the steam gauge usedregular indicated seventy pounds pressure, the other only indicated fifty pounds. I would like to know the cause of it, if I am not asking too much. A. It is evident one or both your gauges need correcting. You should have them tested.

(17) F. G. writes: I have been greatly interested by an article entitled "Value of Swamp Muck," contained in No. 5, Vol. 43, of the Scientific American. Please tell me in what shape nitrogen can be sold, and by what process it can be brought to that shape. A. Nitrogen alone has no commercial value. which yield, in the process of decomposition, amlated by the vegetable or plant. 2 I have a cellar dug in soft wet soil. I intend to arch it with cement mixed with sand and crushed shells. What should be the proportion of the mixture? A. You will find full directions for mixing cements in SUPPLEMENT 123. 3. What radius would you consider safe for thearch? A. It would be impossible to say without knowing the size and proportions of the cellar.

(18) G. R. F. writes: I want to make a railroad to run a quantity of stone a distance of about a quarter of a mile, to build a pier. I have heard that there are wooden roads in the United States doing good work Would hard wood rails, without iron facings, answer for such a purpose, to use ordinary railroad wagon wheels, and carry a load of, say, two tons? A. Yes, such roads are in successful use at mines in the northern part of this State; but the load must be governed by the character of the timber.

(19) L. B. C. asks: Would the upper pipe from a waterback in a stove carried up stairs and attached to a coil and then returned to the boiler below winter, and would it obstruct the circulation enough to cause a cracking sound in the pipes? We learn hot water is being used for heating buildings in New York. Cannot the steam and hot water in the ordinary copper boiler generally used be utilized as above stated? A. A small room may be heated in this way, but the trade should not recommend it, as it is not possible to warm a room from the same waterback and keep the water in the boiler as hot as before. If the room is of more importance than the boiler, take the pipe first to the coil, and the return from the coil to the boiler; but if you wish to get the hottest water at the boiler, take the connection for the coil from the top of the boiler and return to the bottom. The pipe from the back, or boiler to the coil, should rise as directly as possible to the highest point of the coil, at which point an air cock should be placed, thence gradually descend through the pipes to the return. The rising pipe should be covered, so as to prevent loss of heat until the water gets to its greatest height.

(20) "Ventilator" asks for the best method of ventilating an office. We have tried several ways, but they all cause the inmates to take cold. A. If the air admitted through the ventilator is in such abundance as to cause a draught, it should be remedied, but we think the trouble lies with the position the heating apparatus (coils, stove, or register) occupies in a room. When the source of heat in a room is in the center, or against the rear or inner (partition) walls, the natural course of the currents of air in that room are up at the heater and down at the coldest sides of the room, and especially in front of the windows; from thence it flows along the floor to the heater again, and any one in this return cold current is apt to take cold. If your outside walls are plastered on the bricks, have them fired and replastered, and heat with a long coil, run the length of the outside walls.

(21) T. H. S. writes: 1. I have a factory the rooms of which are 100 feet long and 70 feet wide and heating with 2 inch wrought iron pipes suspended in the rooms and supplied with steam from the boiler. Can you inform me how many rows of pipe will be required? Give the number of square feet of heating surface required for 100 cubic feet of air space. A. Allow from one-half to three-fourths of a square foot of pipe surface to each square foot of glass in the windows. For more data on this question, see Scientific American, January 17, 1880, page 39. 2. Can a room of same size as the foregoing, which is below the level of the boiler. be satisfactorily heated by hot water so as to avoid wasting the condensed water, or. if heated by steam, is there any means by which the condensed water can be returned to the boiler without pumping? A. Any of the direct-return steam traps will return the water from below the water line into the hoiler without the help of a pump, if the main distributing steam pipes are large

(22) E. W. L. asks for a receipt for a pre-

- (23) M. R. asks: Which of two engines will give most power: one of two cylinders, 3 inches two waters are alike in this respect. diameter.416 inch stroke: or one of one cylinder.3 inches diameter, 9 inch stroke? How much power will I get from either of above, 40 lb. steam, 75 revolutions per and 75 revolutions— $\frac{3}{4}$ to $\frac{3}{8}$ horse power.
- engine, cylinder 16x36, placed 10 feet away? Should it be as large as 4 inches diameter, and will it do to be not SUPPLEMENT. more than 21/2 inches diameter? A. It should not be on mainshaft is 12 inches diameter: it belongs to above engine? A. Cannot say, as you do not give the speed at which either engine or governor is to run, nor the dimensions of the governor. You should write the maker of the governor, or determine the proper speed by ex-
- (25) H. S. M. writes: 1. Suppose a gun barrel doubled in length without breech pin; put a charge of powder in the middle, and a ball on each side of it, to be driven in opposite directions; fire the charge; would the effect of each ball be equal to one fired from an ordinary gun with same charge of powder? A. You must suppose the conditions perfectly equalized, that the powder has equal effect on both balls. The sum of the effect on the two balls would equal that on one by one only. 2. If not, how is the principle of action and reaction being equal sustained? A. The principle of action and reaction is not affected by the result.
- of zinc cement is mixed by dentists and used, what proportion of the ingredients is used, and how to obviate the disagreeable taste that zinc chloride produces? In what manner should the cement be introduced into cavities? A. That in most general use for ordinary plugging is composed of oxide of zinc, 5; silex, 2; borax, 1; moistened with a solution of 1 oz. zinc chloride in well made. 2. What should be the length of sweep to 6 drachms of water. Where it is to be used as a cap- which the horse is attached to make the small- ping or temporary filling over freshly exposed pulps the fluid should be zinc chloride, 1 oz.; water, 1 to 2 oz.; making a solution of only sufficient strength to cause the mixture to set. The cavity having been cleaned, creosote should be applied to the exposed pulp, and the oxychloride introduced in a semifluid state, and protected by a rubber dam from the fluids of the mouth until properly hardened (half an hour usually suffices). It is advisable to allow several days to intervene for the more thorough solidification of the cap prior to the removal of the excess of material and final insertion of the metal stopping.
- (27) C. B. asks: How can I prepare gum dextrine? A. Crushed malt, 1 lb.; warm water, 2 gallons; mix, heat to 145° Fah; add 5 lb. starch. raise the heat to 160°, and mash for about 25 minutes or until the liquid becomes thin and clear. Then run off imme diately, and boil for 3 or 4 minutes to prevent the formation of sugar; filter, and evaporate the liquid to dry-
- (28) E. R. H. asks: 1. What can I use with sand and silicate of soda to make the latter water proof when making artificial stone of great strength: is there any acid that will do it? A. Dilute sulphuric and muriatic acid, also carbonic acid, have been used
- (29) I. H. P. writes: I have now on hand a lot of sumac leaves gathered in July and August, to experiment on. I wish to make the extract fluid and solid from the sumac leaves. My chemist has made samples; he uses acid which eats up the leaves and leaves behind a heavy thick pasty substance. Would this do? I intended to manufacture it in my chemical works. If you can enlighten me on this I shall be under many obligations to you. Can you give me the name of a work treating on it? A. Dry, powder, leach with hot water, filter, and evaporate the liquid (preferably in a vacuum pan) to the proper consistency at a moderate temperature. From your statements we cannot judge of the extract pre-
- (30) P. W. asks how to get the rust off my hand, made by cast iron? Am at present using pumice stone and castile soap, but it takes too much. A. Try a little dilute muriatic acid; then plenty of water.
- (31) J. S. asks how to mould sealing wax. A. The moulds usually employed are of heavy iron (so as to conductaway the heat rapidly). They are made in two pieces, each representing half the matrix. The strained Axle. railway car, C. B. Morse. 233,634 wax is poured in from the top (end of stick). The mass of iron quickly chills the moulded stick, and when the mould is opened the stick does not adhere to the smooth metal. The sticks then go through an ironing process which imparts the smooth gloss. If the wax is not properly compounded and strained the casts are likely to be imperfect under the best management.
- (32) E. A. H. asks: To what extent blocks of wood of about 2 inches in thickness be rendered fireproof? What is the easiest wood to treat and what the best process? A. Blocks of wood may be rendered superficially non-inflammable by saturating the fiber as far as possible with a strong aqueous solution of sodium tungstate (commercial). The most satisfactory way is to place the wood in a strong iron vessel, exhaust the air as far as possible with a suitable pump, then let in the hot solution and subject 1t to pressure, which forces the liquidinto the fiber. Light porous woods are more readily saturated than the heavier and denser kinds. Wood thus impregnated will not take fire in contact with temporary flame. All organic bodies when heated high enough suffer destructive distillation, and as the gases evolved are quite inflammable, such bodies cannot be made strictly fireproof.
- (33) J. J. W. asks (1) how much water and weight of quicklime to make cream of lime. A. One of lime to thirty or forty of water. 2. Also how much of same it would require to throw down the lime in ordinary limestone water. I wish to use about 30,000 gallons per day thus purified. A. It depends altogether upon the amount of lime and carbonic acid in

- water. Must be determined by chemical analysis, as no
- (34) S. S. K. asks a recipe for an amber varnish, suitable for varnishing a new violin. A. Fuse 6 lb, very pale clear amber in the gum pot, and add to minute? A. The power, under similar conditions, it 2 gallons of hot clarified oil. Boil until it strings would be the same with 40 lb. average piston pressure very strong, remove from the fire and stir in 4 gallons oil of turpentine. Allow plenty of time before polish-(24) D. M. S. asks: What is proper size ing. 2. Is there any work published on the new profor steam pipe leading from boiler with 90 lb. steam, to cess of milling? A. We believe not; but you will find several articles on the subject in back numbers of the
- (35) S. R. asks how the pulp is obtained; less than 4 inches. 2. What size should pulley be on from sawdust, straw, or rags, of which water pails are Judson governor: valve is 41/2 inches diameter, pulley manufactured, and if there is any material or chemical put into the pulp to bind or hold it together. Also the pounds pressure per square inch required to bring this pulp to the consistency of pine wood. A. The materials are boiled for some time in aqueous solution of caustic soda, rinsed, and reduced to a pulp of suitable fiber in the ordinary beating engine. The pulp is mixed with a sufficient quantity of resin size, glue size, or both, and with suitable coloring materials, and pressed into the mould. The pulp is often heavily loaded with earths, kaolin, etc. Both the screw and hydraulic presses are employed.
- (36) D. M. T. writes: I have some trouble with nickel plated cast iron rusting through being exposed to a moist atmosphere. The work is carefully washed both before and after being plated, and has a ball when the whole force of the powder was acting heavy coat of the protecting metal, but still it rusts. I am told that in the east an undercoat of bronze or some similar material is used before plating, which prevents the rusting. Can you give me the process? A. (26) C. B. W. asks how the oxychloride Give the metal a thin coat of copper by electricity before nickel plating.
 - (37) M. S. O. writes: Having read a description of a home-made horse power in Supplement, No. 190, I would like to ask some questions in regard to the machine. 1. Do you think it would be a serviceable machine to run several hours per day? A. Yes, if est possible circle? A. Should not be less than about 12 feet. 3. How large should the main pulley be to drive a shaft 120 revolutions per minute, pulley on shaft being 10 inches in diameter? A. About 81/4 feet.
 - (38) N. G. B. writes: I frequently have ocsion to change the marks and brands on oak barrels that have been stained to give them the appearance of age. How can I retain the parts scratched to make the color uniform? I have tried a copperas solution, but it gives oak a bluish cast. A. Use a more dilute solution of the copperas, and add a little sal-ammoniac; or use dilute nitric acid.

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

G. M. W.-a, Powdered feldspar not kaolin. b and c. Partly decomposed mica schist. d, Clay slate. There is no such substance as that you mention. Second does not indicate oil. Quartz does not necessarily indicate the presence of metals.

[OFFICIAL.]

INDEX OF INVENTIONS

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

October 26, 1880,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Animal trap, H. B. Sledge

| ľ | Axie. ranway car, C. B. Morse | |
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| Į | Baling cotton, etc P. K. Dederick | 233,603 |
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| | Barge, grain. J. Good | 233,748 |
| ì | Basins, etc., device for cleaning overflows of wash, | |
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| | Bell, letter box, C. Hermann | 233,617 |
| i | Bicycle, H. W. Britton | 333,723 |
| Į | Bolts and rivets, machine for making, J. Morgan. | 233,685 |
| ļ | Book binder's press, J. W. Jones | 233,625 |
| ĺ | Book binding, L. Finger | 233,607 |
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| ì | Bulk, machine for handling articles in, F. Imhorst | 233,623 |
| ľ | Bung and faucet, F. Engelken | 233,740 |
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| i | Carbon bisulphideand sulphuricacid from pyrites | |
| | and apparatus therefor, manufacture of, E.C. | |
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| ĺ | Chamber pail, H. Gerken | 233,669 |
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| i | Dental hand piece, E. T. Starr | |
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| i | Drum heads, manufacture of celluloid coated, | |
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|--------------------------|---|-----------------------------|
| 74 | Refrigerator building, T. J. & E. H. Hughes | 233,621 |
| 95 00 | Roofs, machine for closing seams in sheet metal, | 933 999 |
| 97 | S. Woodhead | |
| 93 | | |
| 84 | same in manufacturing, J. H. Cheever | |
| 33 | , | |
| 49 | Saddle, J. Straus. | |
| B 5 B 4 | Saw, drag, J. P. Fosdyck | 233.610 |
| 24 | Saw machine, drag, L. M. Comstock | 233,731 |
| 62 | Saw mill carriage dog, G. F. Knight | |
| 02 | Sawing machine, S. W. Brown. | |
| 17 77 | Sawing machine, scroll, W. D. Herschel | |
|) () () | Screw threads, machine for cutting, J. H. Vinton. Secretary table, A. Iske | |
| 78 | Settee, lawn, J. E. Cotton | |
| 15 | Sewers or pipes, apparatus for forming cement, | , |
| 59 | W. Wilson | |
| 35 | Sewing machine. J. Keith | 233,626 |
|)4 | Sewing machine embroidering attachment, J. Jankowitch. | 933 767 |
| 64 | Sewing machine shuttle, T. J. Holton | 233,760 |
| 35 | Sewing machine shuttle, Miller & Diehl | |
| 54 77 | Sewing sweat linings into hats, machine for, J. | |
| 50 | ButcherSifter, scoop, W. J. Johnson | |
| 23 | Sink, G. & C. Hayes | |
| 94 | Slaughtering apparatus, H. P. Rankin | 233,698 |
| 38 | Snuff, catarrh, G. H. Buck | |
| 56 81 | Soldering cans, E. Norton | 233,688 |
| 58 51 | Soldering square cans, machine for, T. H. Hamilton | 233.673 |
| 9 | Soup compound, J. F. Tyrrell | 233,716 |
| 70 | Spinning frames, yarn protector and traveler clearer for ring, J. W. Wattles | |
| 13 | | |
| 98 73 | Stamp canceling device, Jemison & Watson Stamp, ticket, J. R. Robinson | |
| 38 | | 233,735 |
| 97 | Steam engine H. C. Hunt | |
| 13 | Steam generator. T. C. Joy | |
| 71 92 | Stirrup, H. E. Waehlte | |
| 14 | Essere, com, or ar mounton treatment and a | |
|)1 | Suspenders, J. Katzenberg (r) | |
| 9 | Tack extractor, G. J. Capewell | 233,599 |
| 14 15 | Tap and faucet, P. F. Gardner | |
| 24 | Telephone, G. L. Anders | |
| 12 | Theftdetecter, Frus & Fenn | |
| 8 | Thill coupling, J. F. C. Rider | 233,805 |
| 72 | Thrasher and separator, C. Tostenson | 333,818 |
| 9 | Thrasher, clover, Woodward & Bennet Tobacco case, J. W. Stone (r) | 9,437 |
| | | |
| 32 | Top, chromatic, H. Van Altena. Toy, bell, Kyser & Rex | 233,628 |
| 34 33 | Toy building block, composition, O. & G. Lilienthal | 233,780 |
| 52 | Toy pistol, J. B. Secor (r) Toy whip and cane handle, M. A. Gilman | 9,136 |
| 75 | Triangle, draughtsmay's, A. Herzog | |
| 5 | Truck, hand, W. B. Allen | 233.720 |
| 30 77 | Trunk, traveling, C. E. Marvine | |
| 30 | Truss, hernial, C. H. Tucker Tuyere, O. P. Clayton | |
| 33 | Valve, N. Curtis | 233,662 |
| | Vegetable cutter, E. A. Rice | 233,700 |
| 81 | Vehicle spring seat, J. O'Connor | |
| 9 ' | Velocipede, D. A. Gunn Velocipede, G. Lowden | 233,6 <i>1</i> 1 233,682 |
| i | Velocipede, W. Palmer | |
| 9 | Velocipede, G. W. Pressey | 233,640 |
| 9 33 | Veneering, ornamental, F. Koskul | 233,775 |
| 1 | Wagon box, S. C. Brown. Wagon jack, G. Lehman | |
| 3 | Wagon platform gearing, A. S. Wakely | 233,648 |
| 4 | Washingmachine, Hurd & Mosher | 233,763 |
| 6 4 | Water conductor and joint, J. L. Old | 233,590 |
| 6 | Water supply for cities and towns, system of, G. E. Beach | 233.594 |
| 3 | Water wheel, L. A. Pelton | 233,692 |
| 7] | Well, reservoir, D. H. Tichenor | 233,714 |
| 6 | Wells, apparatus for lining, W. Wilson | |
| 13 3 | Whistle and compass combined, L. W. Fairchild. | 233.742 |
| 1 | Wick trimmer, oil stove, Walker & Williams | 233,822 |
| 3 | Wire stretching device, W. R. Horsley | 233,619 |
| 2 ! 4 | Wires, machine for forming loops for, G. D. | 000 84 |
| 8 | Haworth | |
| | Wringer, J. Todd (r) | |
| 6 | | |
| 5 | DESIGNS. | |
| 1 | Carnet J Barrett | 11.029 |
| 8 | Carpet, W. J. Gadsby | |
| 3 ; 0 ' | Oil cloth, C. T. & V. E. Meyer11,996 to | 11,998 |
| 10 16 | Pencil case, L. W. Fairchild | 12,001 |
| 1 | Picture chart, S. Hursen Polishing head, C. L. Bellamy | |
| | Sewing machine case E. F. French | |
| 0 : 8 | Statue, R. Kasinski | 11,984 |
| 1 | Type, font of printing, J. Herriet | |
| 8 | Type, font of printing, A. Will12,004, Wall paper, E. Leissner | 11,995 |
| 6 | | 1000 |
| 1 | TRAILE MADIZO | |
| 7 | TRADE MARKS. | |
| 1 | Flour, B. R. Pegram, Jr | 8,077 |
| | | |

| Flour, B. R. Pegram, Jr | 8,077 |
|----------------------------|-------|
| Ointment, Crispin Brothers | 8,075 |
| Soap, T. A. Butler | 8,074 |
| | |

English Patents Issued to Americans.

From October 22 to October 29, 1880, inclusive. Amber working, F. J. Kaldenberg, New York Brakes, railroad, S. Fairman, Baltimore, •1d. Coke, manufacture of, H. C. Bull, Brooklyn, N. Y. Condensers, surface, C. B. White et al., San Fran., Cal. Dynamo-electric machine, C. A. Hussey et al., N. Y. city. Electric current, measuring, T. A. Edison, Menlo Park,

Electric lighting apparatus, H. S. Maxim, New York city. Firearms, E. G. Parkhurst, Hartford, Conn. Firearms, H. R. Houghton, New York city

Grain, separating iron particles from, S. Howes et al Silver Creek, N. Y. Gas combustion apparatus, A. W. Morton, B'klyn, N. Y. Gas, apparatus for lighting, G. T. Gauster, Reading, Pa. Gold ore separator, T. A. Edison, Menlo Park, N. J. Ice, manufacture of, J. C. De La Vergne et al., 1 Horseshoes, manufacture of, D. Billings, New York city.

Life saving raft, T. B. Griffith, Carver, Mass.

233.605 Spirit levels, W. W. Vaughn et al., San Joaquin, Cal. Tables, etc., for ships, J. F. Dabson, Boston, Mass. Wire annealing, W. Hewist, Trenton, N. J. Range, cooking, W. Young 233,653 Refrigerator, W. Keech 233,672 Wire annealing, W. Hewitt, Trenton, N. J.

Printing machine sheet delivery apparatus, W.

Pump, compression and vacuum, De La Vergne &