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Manufacturers of Lock Nuts will please send price and description to Box 23, West Troy, N. Y.

Wanted.—Light Second-hand T iron to lay 1 1/4 miles track. Send prices to Potsdam (N. Y.) Lumber Co.

The \$5 Rifle advertised in this issue by Messrs. Turner & Ross, well known and reliable dealers, is really a great bargain, and it is sold for a great deal less than its actual cost. They fill orders promptly.

Wanted—Blowing Engine, large air, small steam cylinder. Address Vacuum Oil Co., Rochester, N. Y.

Noise-Quelling Nozzles for Locomotives, Steamboats, etc. T. Shaw, 915 Ridge Ave., Philadelphia, Pa.

Organ Blowing Hydraulic Engines; best and cheapest. Roosevelt, 40 W. 18th St., N. Y.

For New Illustrated Catalogue of Foot Lathes, Scroll Saws, Small Steam Engines and Amateur's Tools, send stamp to Chase & Woodman, Newark, N. J.

Shaw's Mercury Gauges, U. S. Standard of Pressure, 915 Ridge Ave., Philadelphia, Pa.

Shop Stoves. Crawford & McCrimmon, Brazil, Ind.

Bolt Forging Mach. & Power Hammers a specialty. Send for circulars. Forsaith & Co., Manchester, N. H.

For Town & Village use, Comb'd Hand Fire Engine & Hose Carriage, \$350. Forsaith & Co., Manchester, N. H.

Best and Cheapest Wagon Tire Upsetter, only \$12. Circular free. H. W. Seaman & Co., Millport, N. Y.

John T. Noye & Son, Buffalo, N. Y., are Manufacturers of Burr Mill Stones and Flour Mill Machinery of all kinds, and dealers in Dufour & Co.'s Bolting Cloth. Send for large illustrated catalogue.

Power & Foot Presses, Ferracute Co., Bridgeton, N. J.

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. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

Steel Castings from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

For Best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay Sts., Brooklyn, N. Y.

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

For the best Gate Valves of all kinds, apply to D. Kennedy & Co., 88 John St., N. Y.

Boulter's Superior Muffles, Assayers and Cupellers Portable Furnaces, Slides, Tile, Fire Brick and Fire Clay for sale. 1,609 North St., Philadelphia, Pa.

"Little All Right," the smallest and most perfect Revolver in the world. Radically new both in principle and operation. Send for circular. All Right Firearm's Co., Lawrence, Mass., U. S. A.

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

Felt of every description for Manufacturers' purposes, especially adapted for Polishing, can be furnished in any thickness, size, or shape. Tingle, House & Co., Manufacturers. Salesroom, 69 Duane St., N. Y. Factory at Glenville, Conn.

To Millwrights and Parties in want of Engines, Boilers Shafting, Gearing, Pulleys, etc., upon receipt of specifications we will give you promptly bottom prices for same. B. W. Payne & Sons, Corning, N. Y.

Extraordinary Offers in New and Second-hand Pipe Organs. Prices \$100 to \$1,600. Roosevelt, 40 W. 18th St., N. Y.

Kreider, Campbell & Co., 1030 Germantown Avenue, Philadelphia, Pa., Machinists and Steam Engine Builders, Millstone Manufacturers, Contractors for Mills for all kinds of Grinding. Estimates furnished.

Improved Wood-working Machinery made by Walker Bros., 78 and 75 Laurel St., Philadelphia, Pa.

Skinner Portable Engine Improved, 2 1/2 to 10 H. P. Skinner & Wood, Erie, Pa.

Fine Taps and Dies for Jeweler's, Dentist's, and Machinist's use, in cases. Pratt & Whitney, Hartford, Ct.

To Clean Boiler Tubes—Use National Steel Tube Cleaner; tempered and strong. Chalmers Spence Co., N. Y.

Blake's Belt Studs. The most durable fastening for rubber and leather belts. Greene, Tweed & Co., N. Y.

More than twelve thousand crank shafts made by Chester Steel Castings Co. now running; 8 years constant use prove them stronger and more durable than wrought iron. See advertisement, page 366.

Diamond Planers. J. Dickinson, 64 Nassau St., N. Y. Safety Linen Hose for factories, hotels, and stores, at lowest rates. Greene, Tweed & Co., 18 Park Place, N. Y.



(1) J. H. asks: Can you give us a rule to measure the height of a tree or other standing object near enough for practical purposes? A. Place a small mirror in a level position on the ground, at a little distance from the tree, and then step backward until you see the top of the tree reflected in the center of the mirror. Height of tree = $\frac{\text{Your height} \times \text{distance of tree from mirror}}{\text{Your distance from mirror}}$.

(2) F. C. H. says: 1. I have a boiler that has 22 square feet of heating surface, contains 20 gallons water up to water gauge, will evaporate 20 gallons of water per hour, with ordinary firing. What horse power is it? A. As we have frequently explained, there is no standard for measuring the power of the boiler, that is generally accepted. 2. I have seen men working in a foundry pass their finger through the melted iron as it ran from the cupola without receiving any burn whatever. Can you explain the philosophy of this experiment? A. The moisture on the skin is converted into vapor, which forms a protective covering. 3. How can the ordinary bars of cast iron (pig iron) be broken so as to be melted in a crucible or small cupola? How are very heavy masses of cast iron broken, such as cannons, heavy machinery, etc., to be remelted? A. Cast iron can be broken with blows from a heavy hammer. Dynamite has sometimes been used for large masses.

(3) J. A. M. asks: What is the method of setting the valves of the Corliss engine, and regulating the cut-off? A. Advance the eccentric until the valve has the proper lead, and then adjust the tripping arrangement by trial.

(4) A. W. asks: What is the best thing for making a person grow? A. Good food and good habits.

(5) L. M. C. asks: 1. What is steam packing? How is it constructed and used in the pistons of steam engines? A. It ordinarily consists of metallic rings, which are set out by the pressure of steam. 2. What course would you advise a young man twenty years of age to pursue in order to learn to be a competent steam engineer? A. He should pursue a course of instruction such as is given in our best technical schools.

(6) J. W. S. asks: 1. How much advantage has the best automatic governor cut-off engines over the best throttling engines? A. You will find some notes on the subject on p. 321, vol. 30, of the SCIENTIFIC AMERICAN. 2. Is a valve which cuts off and admits the steam better than two valves for doing the same, one riding on the back of the other? A. Generally the clearance will be somewhat less in the case of the former arrangement, and there will be less mechanism and fewer wearing parts.

(7) P. G. asks: Is there any tool giving the exact length of a circle, in drawing that circle? Would such a tool be of any practical use? A. We do not know of any such instrument. It would be of some use if simple and cheap.

(8) T. J. R. asks: 1. Would it not be a better plan if, in reducing the area of grate bars in burning screenings with a blower, instead of bricking up the sides of the furnace to reduce the center over the grate bars? A. This idea is practically carried out in the dead plates or coking plates that are usually fitted. 2. What is the rule for finding the flow of steam through a pipe into the atmosphere? A. You will find rules in the SCIENTIFIC AMERICAN, p. 113, vol. 29.

(9) A. G. says: I have a 5 horse power engine and a horizontal boiler about 4 1/2 feet long. The boiler does not make steam fast enough. I want to burn coal dust to save fuel. Please tell me what is best to increase the draught, a blower, or shall I turn the exhaust in the firebox above the flues? Also what is best to keep the boiler from rusting? A. Try exhausting into the stack. Paint your boiler to prevent rusting. There is a black varnish made from mineral oil that is largely used.

(10) F. C. J. says: I have a boat 16 feet long and 4 feet beam with an engine which has a 4 inch stroke and 2 inch bore. What sized boiler will I require and how many tubes? What is the greatest rate of speed I can make? A. Boiler 2 feet in diameter, 3 feet high, with from 50 to 60 square feet of heating surface. Probable speed, 5 miles an hour in smooth water.

(11) R. C. says: I have a 5 foot wheel that runs on the end of a shaft that is 18 inches long and 1 1/2 inch thick; it runs a belt over a 10 inch pulley. I run the large wheel by hand. Can I gain speed and save labor by putting a small cogwheel on the shaft with a larger one over it with a crank to run it? What will be the size of cogwheels that I will have to have? A. We think the present arrangement is likely to be more effective than the one proposed. If you wish to have greater speed change the pulleys.

(12) E. I. O. Co. says: We have a 11 inch high pressure engine with about 2 feet stroke. In winter time we have great trouble in separating the sand, being so mixed up with the frost. If we could get warm water in our hatches it would be a great benefit to us? Can we condense the steam of the engine in our hatches and will it interfere with the power of the engine, and to what extent? A. By carrying the exhaust pipe into the water, and letting the steam escape through numerous small perforations, you can heat the water without producing back pressure, that is, if there

is constant circulation. You can put the pipe as far down as you please by arranging the discharge as indicated.

(13) R. R. R. asks: How is the Atlantic cable repaired when broken in mid ocean, and how do they find the place where the break occurs? A. The calculation is based on the principle that a current of electricity, having two or more courses open to it, will divide itself; and the current on each course will be in exact proportion to the resistance of that course as compared with the others. When the cable is laid, the resistance of the entire length is measured, and from this is calculated the average resistance per mile. Now if a break occurs, the current will escape through the water, and the resistance of the cable will be again measured and compared with its previous resistance; this gives the figures of a proportion from which the distance, in miles, is calculated; this calculation is made at Newfoundland, and at "Heart's Content," and a mean of the two results is taken. Two vessels furnished with grapples sail over the place indicated until the two ends are found, when they are drawn up and well spliced.

(14) S. H. K. says: I have found a vegetable color for the hair which makes a very natural brown or black. As I have it, it is not a fast color. When applied to the hair it can be washed off, but will not rub off. What can be combined with it to make it a fast color, or what could be applied to the hair, after the color is on, to set it? A. This can only be determined by experiment. You may try solution of chloride of tin, tannin, sumac decoction, acetate of iron, and alumina, cream of tartar, etc., applied before or after, or mixed with the dyestuff.

(15) W. J. C. says: I have a telegraph line 1/2 mile long, stove pipe wire, with ground plates 30x36 inches; one in a well and the other buried in moist earth with its upper edge flush with the surface. How many cells gravity, 4 1/4 x 4 1/4 inches, will give a fair sound, using two common office sounders? A. Your ground connection is not sufficient, and will require about ten cup cells, unless the magnet wire on your sounders is very fine. Connect your ground wire at each end with the gas or water pipes.

(16) L. H. McF. says: I have seen bottles of oil and phosphorus prepared in such a way that when the cork is removed, admitting air, the contents of the bottle become luminous. Please inform me what kind of oil and phosphorus, and how to incorporate them to use? A. Heat the oil (olive oil) to about the temperature of boiling water (212° Fah.) and drop in the phosphorus in small pellets. Ordinary stick phosphorus is used—it dissolves in the hot oil.

(17) M. R. asks: What fulminating material is used in small cartridges? A. The fulminate of mercury is generally used. To prepare it, 1 oz. of mercury is dissolved by a gentle heat in 8 1/4 measured ozs. of nitric acid (of specific gravity 1.4), and the solution is poured into 10 measured ozs. of alcohol (specific gravity .830); action soon ensues with the evolution of copious white fumes, and the fulminate is deposited in white crystalline grains, which are washed with cold water, and dried at a gentle heat. It explodes at a temperature of 390° Fah. by friction, percussion, and by contact with strong acids. For percussion caps and cartridge a little chlorate of potash, or more commonly niter, is added to the fulminate.

(18) I. F. D. asks: What metal will heat and cool the quickest? A. Pure cobalt, nickel and iron have the lowest specific heats.

Will ammonia act corrosively on copper or iron? A. On copper, yes; on iron, no.

Will a fluid continue to increase in pressure if confined in a vessel and kept at a degree or two above the boiling point? A. The pressure will remain constant as long as a uniform temperature is maintained.

(19) J. R. S. says: In order to remove sulphurous acid from an aqueous solution of gum, I find nothing available but carb. baryta, which is expensive. What is the cheapest method of removing the sulphurous acid from the solution? A. Use marble dust, as free as possible from magnesia carbonate.

(20) F. C. says: I have a pump in my well with lead pipe 16 feet long. Sometimes the water has a sweet metallic taste. How can I test the water in the well as to whether the lead is poisoning it? Will eastern water drawn through lead pipe be affected by the pipe? A. The water is very probably contaminated. To test this pass sulphuretted hydrogen gas through a sample of the recently drawn water for some time, and observe if a black precipitate is formed; if so, lead is present, and the water should not be used for drinking or cooking purposes. To make the sulphuretted hydrogen, place in a large bottle a few small pieces of proto-sulphide of iron, and cover them with sulphuric acid previously diluted with two parts of water. Perforate the stopper with a bent glass tube to conduct the gas as it is formed. Lead pipe is not suitable for the conduits of well or cistern water—tubes of wood or enameled iron pipes may be used instead.

(21) W. B. S. asks how to clean iron rust off window glass? A. Mix muriatic acid with an equal quantity of water, and apply this with a small cloth cushion to the spots.

(22) C. F. P. asks how to make and apply a black japan to small iron castings that will dry soon and become very hard and durable at a small cost? A. Apply a ground of asphaltum, 3 ozs.; boiled oil, 4 quarts; burnt umber, 3 ozs. Mix by heat and when cooling thin with turpentine. Lay on three coats, and between each dry the article in an oven heated from 250° to 300°. Lay on several coats of varnish, drying in an oven between each, then polish with powdered pumice and rub with oil.

How many and what numbers of SCIENTIFIC AMERICAN SUPPLEMENT contain the lessons on mechanical drawing? A. Professor MacCord's lessons on mechanical drawing are now published in collected book form. Price \$2.50 in paper covers. Sent postpaid by Munn & Co.

(23) H. K. O. asks: What is the varnish composed of which is used upon brasswork to prevent

its tarnishing? A. Mix equal quantities of Canada balsam with very clear spirits of turpentine until the whole is of the consistence of ordinary varnish. Apply in the usual way.

(24) W. G. asks for (1) a recipe for gilding brass by dipping in acids? A. The gold bath is composed of distilled water, 17 pints; pyrophosphate of soda, 28 ozs.; hydrocyanic acid of 1/4 prussic acid, 1/2 of an oz.; crystallized perchloride of gold, 3 oz. The pyrophosphate is dissolved in 16 pints of water, heated, filtered, and cooled. The filtered solution of the gold chloride is added, and then the hydrocyanic acid, when the whole is raised nearly to the boiling point for use. Before entering the bath the articles should be passed through a solution of water 2 1/2 gallons; nitrate of binoxide of mercury, 1/2 oz.; sulphuric acid, 3 oz. 2. And for the best lye in which to soak brass articles before dipping? A. Caustic potash dissolved in 10 times its weight of water.

(25) M. V. asks for a process of nickel plating without a battery? A. Into the plating vessel place a concentrated solution of zinc chloride. Dilute it with from 1 to 2 volumes of water and heat to boiling. Redissolve any precipitate with a few drops of hydrochloric acid. As much powdered zinc as can be taken on the point of a knife is then thrown in. Add nickel salt (chloride or sulphate) until the liquid is distinctly green. Then put in the articles previously well cleaned with some zinc fragments. Boil for 15 minutes when the nickel coating is finished.

(26) J. B. U. asks for a rule for calculating the number of bricks that it will take to construct a wall? A. Allow 7 1/4 bricks per square foot to every 4 inches of thickness of wall. Thus a 14 inch thick wall will require 26 1/4 bricks per square foot.

(27) P. S. asks for the proper composition of fusible plugs, attached to crown sheets of steam boilers. Working pressure 70 lbs. per square inch. A. Equal parts of antimony, tin, and bismuth, melted and well mixed, make a very good safety plug. The melting point of this proportion is about 380° Fah., and this is about the temperature of steam at 70 lbs. per square inch. If you wish to carry a higher pressure, increase the proportion of tin.

(28) J. T. asks for a durable black ink to be made with nutgalls and copperas? A. Bruise 12 lbs. Aleppo nutgalls, boil in 6 gallons of soft water for 1 hour, adding water to replace that evaporated. Strain and boil the galls again in 4 gallons of water for 1/2 hour; strain and boil with 2 1/2 gallons more water. Strain and mix the liquors. Add 4 1/2 lbs. coarsely powdered copperas and 4 lbs. gum arabic in small pieces. Agitate until dissolved and filter through hair sieve. This will give about 12 gallons of fine durable ink.

(29) J. R. M., Jr., asks how gold and silver bronze powders are made? A. Gold bronze powder is made by melting together in a crucible over a clear fire equal parts of sulphur and white oxide of tin. Stir until they become a yellow flaky powder. Silver bronze powder is made by melting together 2 lbs. each of tin and bismuth, add 1 lb. of quicksilver. Pound all together into a powder.

(30) C. W. P. asks how to granulate copper in fine grain? A. Ladle the refined copper from the furnace into cold water.

(31) M. G. L. asks: How can I harden a wooden pulley? A. Boil for about 8 minutes in olive oil and allow it to dry.

(32) E. G. asks (1) for a silver bronze powder? A. Melt together 1 oz. each of bismuth and tin, then add 1 oz. quicksilver, cool and powder. 2. How can I make blue bronze on copper? A. Clean the metal, polish, and cover the surface with a fluid obtained by dissolving vermilion in a warm solution of soda, to which some caustic potash has been added.

(33) F. T. C. asks: What is the so-called "flash" used for coloring spirits? A. It consists of burnt sugar caramel, to which is added enough capsicum extract or essence of cayenne to give the liquor a fiery taste. It is commonly used in flavoring vile whiskey.

(34) M. T. L. asks for a recipe for liquid glue? A. Dissolve (with heat) 2 lbs. of glue in 1 quart of water, add 7 ozs. of nitric acid, and when cold, bottle. This is an excellent preparation to sell.

(35) E. P. asks for a varnish to smooth moulding patterns? A. Alcohol, 1 gallon; shellac, 1 lb., lamp or ivory black sufficient to color it.

(36) F. G. inquires how to make japanner's gold size? A. Melt 1 lb. of gum ammoniac, add 8 ozs. of boiled oil, and then 12 ozs. spirits of turpentine.

(37) P. T. asks for a good sizing for linen? A. Crystallized carbonate of soda, 1 part; white wax, 4 to 6 parts; stearine, 4 to 6 parts; pure white soap, 4 to 6 parts; Paris white, 20 parts; potato starch, 40 parts; wheat starch, 160 parts. Boil with sufficient water to form 1,600 parts altogether, adding if desired some ultramarine to counteract the yellow tint of the linen.

(38) J. A. B. asks: 1. What kind of a preparation do watch repairers use to give that fine polished appearance to the brass movements of a watch? A. For brass, Spanish whiting is mixed with clear rain water in the proportion of 2 lbs. to the gallon. Stir and let stand for a few minutes to allow the gritty portion to settle; decant off the water into another vessel and again allow it to stand. The settlings in the second vessel are mixed with jeweller's rouge and used for polishing. 2. What kind to the steel portions? A. Take a flat burnishing file, warm it and coat it lightly with beeswax. When cold wipe off as much of the wax as can readily be removed, and with the file polish the metal. This is said to be equal to the finest buff polish.

(39) C. J. A. asks for a recipe for a lacquer for polished or burnished copper, that will prevent it from tarnishing when handled? A. 1 gallon methylated spirits of wine, 5 ozs. of shellac, 4 ozs. of gum sandarac, and 1 oz. of gum elemi. Mix in a tin flask and expose to a gentle heat for a day or two, then strain off

and add 1/4 gallon of the spirit to the sediment and treat as before.

(40) J. S. M. says: I wish to paint on porcelain or earthenware. Shall I use water colors or oil? Also by what method is the finish obtained that causes it to withstand washing, etc.?

(41) J. H. M. asks how to make a gold solution for battery gilding, such as is used by carriage platers? A. You had better gild in the hot bath.

(42) S. B. H. asks. 1. Are north, south, east, and west relative or absolute terms? A. Relative.

(43) J. E. S. asks how bright crimson writing fluid is made? A. Powdered cochineal, 1 oz.; hot water, 1/2 pint.

(44) G. M. W. asks how to make a good article of yellow soap? A. Tallow and sal soda of each 1 1/2 lbs.; resin, 56 lbs.; stone lime, 28 lbs.; palm oil, 8 ozs.; soft water, 28 gallons.

(45) K. H. R. asks what laundrymen use use besides starch to give a smooth glossy appearance to starched goods?

(46) C. S. R. says: 1. If I bore a piece of 2 inch round bar iron 7 inches long, lengthways through the center, with 3/4 inch drill, and previously plug the ends of bore, what internal pressure will the tube resist?

(47) C. B. L. says: I have two flywheels, each 1,000 lbs., running at the rate of 50 revolutions per minute; one is 10 feet in diameter and the other is 20 feet in diameter.

(48) E. C. H. says: 1. Of two engines less than 2 horse power, running at 300 revolutions, and steam pressure 80 lbs., one engine having stroke the same as diameter of cylinder, and the other having a stroke twice the diameter of cylinder, which uses steam most economically, both engines cutting off at 1/4 stroke?

(49) J. D. W. asks: What is the heating surface of a boiler 28 feet long, 42 inches in diameter, with five 8 inch flues?

(50) I. L. L. asks: What sized boat would be required for an engine 2 inch bore, 6 inch stroke, with an upright boiler 4 feet high and 2 feet in diameter and what sized screw?

(51) E. A. B. asks: 1. What are ocean steam boilers made of? A. Wrought iron.

(52) F. H. R. asks: Is the pressure of a steam gauge diminished if it be located 20 feet from the boiler, the boiler being three horse capacity?

(53) F. H. says: 1. Can you give me a rule to find out how much packing is necessary to cover a pipe 105 feet long, diameter of pipe 3 inches, with a covering 3 inches thick; the material weighing 4 lbs. to the square foot?

What is meant by cold short iron? A. Iron that is brittle when cold.

(54) H. A. P. asks: 1. How can I ascertain the horse power of a punching machine, to which steam cannot be applied for the purpose?

ings? A. Cast iron toughened by the admixture of wrought iron scrap.

(55) J. C. wants to know how to drive several tilt hammers off the same driving shafts at varying speeds? Each hammer must be independent of the others, and the speed easily and immediately alterable to suit the heat being worked.

(56) W. T. B. asks: Are there any schools teaching mechanical engineering, and if so, where is the best one, considering expenses?

(57) N. W. H. asks: Which of the two engines below noted will develop the greatest power? One is 8 inch cylinder, 12 inch stroke, 100 revolutions with 30 lbs. boiler pressure.

(58) A. C. asks: What power can be got from a current wheel? The channel is 50 feet wide and 24 inches deep, with a fall of 24 inches in forty rods.

(59) W. F. S. asks if moonshine has the same effect on fish to spoil them as sunshine? A. The influence of the moon is restricted to lovers, dogs, and the tides.

In our last week's issue the answer to No. 22 of the inquiry column, 3,300 should be 33,000.

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

M. S.—It is zinc blende, and of good quality. Judging from the sample, this ore should yield 40 per cent of zinc. It contains cadmium.—E. A. S.—The substance cannot economically be purified as suggested.

COMMUNICATIONS RECEIVED.

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

- On the Tides. By U. H.
On Petroleum. By W. S. R.
On a New Galvanic Battery. By E. G. A.
On Matter. By W. B.
On Mica Bronze. By R. S. V.

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.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

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

WANTS AND BUSINESS INQUIRIES.

Almost any desired information, and that of a business nature especially, can be expeditiously obtained by advertising in the column of "Business and Personal," which is set apart for that purpose subject to the charge mentioned at its head.

We have received this week the following inquiries, particulars, etc., regarding which can probably be elicited from the writers by the insertion of a small advertisement in the column specified, by parties able to supply the wants:

- Who makes Hyatt's patent sidewalk tiling?
Who sells grape sugar?
Who makes tile machinery?

OFFICIAL.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending October 30, 1877, AND EACH BEARING 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, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Advertising device, A. H. Dean 196,639
Animal trap, J. C. Ambrose 196,649
Annunciator, automatic time table, L. Dart 196,637
Arithmetic, teaching, R. W. Kavanaugh 196,583

Table listing various inventions and their patent numbers, including items like Baby-walker, Bale tie, Barrel hoop, Bed bottom, Billiard bridge, Boiler tube cleaner, Boot and shoe seam, Bottle stopper, Bottlestopperfastener, Broom rack, Bunk, Guenther & Hoepfner, Bung extractor, Burglar alarm, Butter and lard packages, Butter mould, Cages, cup for animal, Canal lock gate, Cane and umbrella, Car coupling, Car coupling, C. P. Byrd, Car coupling, J. R. Mateer, Car coupling, R. G. Rankin, Cartridge-loading machine, Caster for trunks, Chair, folding, Check rower, Chimney, sectional, Cigar, Babcock & Upton, Cigar bundle, Cigar machine, Clipping device, Clock pendulum, Coffee pot, Coffee roaster, Coking coal, Combustion, promoting, Corset, T. F. Hamilton, Corset, J. M. Van Orden, Cuff, E. K. Betts, Cultivator, A. Jones, Curtain cord holder, Door sill, Drawer pull, Dredging apparatus, Dredging machine, Dredging machine, hydraulic, Dress elevator, Earth auger, Educational appliance, Evaporator, Excavating machine, Faucet, registering, Feed cooker, Fence, portable, Fence post, Chandler & Deering, Fences, iron post, Ferryboat, File, letter, Fire escape, Fire extinguisher, Fire extinguisher, J. Dillon, Fire extinguisher, J. H. Connelly, Fire-extinguishing apparatus, Fire kindler, Fish hook, Fuel, artificial, Fur, separating, Gate, F. Gordon, Gate, I. Yost, Glassware, A. Harcum, Grain binder, Grain drill, Grain tally, Grate, W. M. Shanks, Grinding machine, Gums, waterproof, Hame eye, Harness, check rein support, Harrow and cultivator, Harvester, S. & M. Dyer, Harvester, sugarcane, Hats, die for shaping, Heating furnace, Horsecollar, Horse detacher, Horseshoe, D. W. Copeland, Horseshoe, J. N. Schuldt, Horseshoe nail machine, Hydrant valve, Ice surfaces, Iron and steel, Kitchen cabinet, Ladder and step, Ladder, step, Lamp, H. L. Ives, Lamp, fishing and wharf, Lamp fount, Lantern, L. G. Huntington, Latch, gate, Lathe chuck, Lathe for turning paper mill rolls, Lathes, cutter for, Leather, sample, Lighting device, Lightning conductor, Liquor shaker and strainer, Loom, E. Oldfield, Loom heddle, Loom stop motion, Lubricator, Match safe, Mea-cutting device, Milking stool, Mosquito bar and clothes drier, Musical instrument, Napkin holder, Napkin ring and holder, Necktie retainer, Nursing apparatus, Nursing shield, Oil wells, bailer for, Oil wells, machine for drilling, Ordinance, compound, Ordinance, vent stopper, Ore washer, Overalls, D. Neustadter, Overalls and jumper, Packing for blower cylinders, Paint mixer, Paper lining and packing, Paper machine, Paper, machine for finishing printed, Paper, manufacture of thick, Paper pulp, manufacturing, Pattern chart dress, Pencil holder and sharpener, Photographic camera, Photographic chair, Piano, hammer, Planter, corn, Planter, corn, L. Deffenbaugh

Table listing various inventions and their patent numbers, including items like Planter, walking, Planters, attachment for corn, Plaster of Paris, Plow, gang, Pulverizer, soil, Pump for fire service, Pump, oscillating, Punching or shearing, Railroad frog, Railroad rail joint, Railway switch signal, Refrigerating medium, Refrigerator, Rock drill, Rudder chuck for vessels, Safe, Urban & Berkmeier, Safe, fireproof, Sash fastener, Sash fastener, A. Cummings, Sash fastener, W. E. Hammond, Sash holder, Sash lift and lock, Saw mill head block, Sawing machine, circular, Scale beam, D. L. Columbia, Scale beam, C. M. Rider, Scraping tool, Screw threads, forming female, Screw threads, cutting, Sewer trap, Sewing machine, button hole, Shafting, clutch coupling, Shoe fastener, Shutter, Shutter fastener, E. Parker, Shutter fastener and bower, Shutter, revolving, Sieve, G. W. Ketcham, Skewer puller, Skins, treating, Speculum, Speed and distance recorder, Spoon handle, Stamp, branding, Stamp, cancelling, Stamp, perforating, Stave sawing machine, Steam boiler, duplex, Steam generator, Steering apparatus, Stove and furnace, Stove, cooking, Stove leg fastening, Sucker rod adjuster, Sundial, Suspender ends, Tablet, rolling clock, Thill coupling, Thill coupling, spring for, Tobacco pouch, Toilet case, Toy bird, Toy buzz, Umbrella runner, Vehicle axle, Vehicle axles, splicing bar for, Vehicle spring brace, Ventilating passage, regulator for, Vise, Henson & Osborn, Watch case spring, Watches, dial fastening for, Water closet, Well boring apparatus, Wind wheel, Windmill, Window screen

DESIGNS PATENTED.

- 10,286 and 10,287.—CASSIMERES.—A. Carmichel, Wesley R. I.
10,288.—ORNAMENTAL SCROLL WORK FOR JEWELRY.—L. Heckmann, Plainville, Mass.
10,289.—ORNAMENTAL CHAIN LINKS.—K. F. Heckmann, Wrentham, Mass.

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