TO INVENTORS.

An experience of more than thurty 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 Of-fice without delay. Every application, in which the fees have been paid, is sent complete-including the model-to the Patent office the same day the papers are signed atour office. or received by mail, so there is no delay in filing the case, a complaint we often hear from other sources. Another advantage to the inventor in securing his patent through the Scientific American Patent Agency, it insures a special n_0 tice 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.

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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 imblication office as early as Thursday morning to appear in next issue.

Vertical Engines, 10 to 15 H. P., thoroughly well made. John Hartrick & Co., 47 Gold street, New York.

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Holly System of Water Supply and Fire Protection for Cities and Villages, is fully described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 140.

Valuable Patent for Shooting Target for sale. Recently patented. Address Win. Kuchn, 499 Spring St., Buffalo. N Y

For Models, parts of Models, and Experimental Ma chinery, address Michael J. Stark, Buffalo, N. Y. Scroll Saw Designs. A. W. Morton, New York.

A valuable unimproved Water Power can be obtained

at low figures. Address Geo. Stevens, Columbus, N. J. Manuel Dengo, San Jose, Costa Rica, Central America, desires catalogues and price lists of all kinds of machinery.

\$200.--4 H. P. New York Safety Engine and Boiler. Lovegrove & Co., Philadelphia, Pa

Telegraph and Electrical Material of every description. Jerome Redding & Co., 30 Hanover St., Boston, Mass. Books for Engineers and Machinists. Catalogues free. E. & F N. Spon, 446 Broome St., N. Y.

Boston B ower Co., Boston, Mass. Blowers, Exhaust Fans, 11ot Blast Apparatus. All parts interchangeable; material and workmanship warranted the best. Write for particulars.

A Manufacturing Co. will furnish on favorable terms room, power, and some capital, to good party having successful business which can be profitably extended. No experiments tried. Address Hardware, Box 3918, N. Y.

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.

Engines, 1/2 to 5 H. P. Geo. F. Shedd, Waltham, Mass. H. Prentiss & Co., 14 Dey St., N. Y., Manufs, Taps

Dies, Screw Plates, Reamers, etc. Send for list. The Lawrence Engine is the best. See ad. page 317.

For the most substantial Wood-Working Tools, address E. & F. Gleason, 52 Canal St., Philadelphia, Pa.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J. Oak Tanned Leather Belting, Rubber Belting, Cotton Belting, Round Leather Belting. Greene, Tweed & Co., 18 Park Place, New York.

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

Punching Presses, D.op Hammers and Dies for work-ing Metals, etc. The Stiles & Parker Press Co., Middle-

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

Wanted .- Articles to manuf. D.J. Miller, Mohawk, N.Y. Fine Gray Iron Castings a specialty, also Wire Workers' Pickets and Rosetts in stock. A. Winterburn's Foundry, 16 De Witt St., Albany, N. Y.

Solid Emery Vulcanite Wheels-The Solid Original Emery Wheel - other kinds imitations and inferior. -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 Pack-ing Company, 37 and 38 Park Row, N. Y.

Diamond Saws. J. Dickinson, 64 Nassau St., N. Y. Machine Cut Brass Gear Wheels for Models, etc. (new list). Models, experimental work, and machine work generally. D. Gilbert & Son, 212 Chester St., Phila., Pa. Elevators, Freight and Passenger, Shafting, Pulleys,

and Hangers. L. S. Graves & Son, Rochester, N. Y. Enery in bbls. and cans, all numbers. Polishing Suplies. Greene, Tweed & Co., 18 Park Place, New York.

Howard's Bench Vise and Schleuter's Bolt Cutters Howard Iron Works. Fine Taps and Dies for Jewelers, Dentists, and Machinists, in cases. Pratt & Whitney Co., Hartford, Conn.

Hydraulic Cylinders, Wheels, and Pinions, Machinery Castings; ail kinds; strong and durable; and easily worked. Tensile strength not less than 65,000 lbs. to square in. Pittsburgh Steel Casting Co., Pittsburgh, Pa. The Turbine Wheel made by Risdon & Co., Mt. Holly, N.J., gave the best results at Centennial test. For Shafts, Pulleys, or Hangers, call and see stock

kept at 79 Liberty St. Wm. Sellers & Co.

Wm. Sellers & Co., Phila., have introduced a Injector, worked by a single motion of a lever.

Dead Pulleys, that stop the running of Loose Pulleys and Belts, taking the strain from Line Shaft when Machine isnot in use. Taper Sleeve Pulley Works, Erie, Pa. For Sale Cheap.-One Horizontal Engine, 18 in. x 36 in.; one plant Hoisting Engines, four drums; and two 25 H. P. Vertical Engines. Apply to Wm. Taylor & Sons, 25 Adams St., Brooklyn, N. Y.



(1) W. M. J. asks; 1. Are the white fumes scen coming from a locomotive, steam? A. Steam par tially condensed. 2. Is there any kind of steam visible? Tanns. Is there any kind of steam invisible? A. Dry steam is invisible.

(2) F. N. Y. asks: 1. Can I get sufficient depth by the bichromate and gelatin process to make a mould for making pictures similar to lamp shades made resembling porcelain? A. No. 2. Are they made of porcelain? A. Yes.

(3) J. N. B. writes : I have some small castings (iron), and there are some blowholes in them. Can you inform me how I can fill them, and what with? A. It would be best to drill out the holes and plug them with iron; however, you may plug them with a namalgam of tin, zinc, and mercury, or with fusible metal.

(4) J. P. W. asks how to make harness soap. want to use soap and put in something to make it black, and something to make it oily and good for leather. I have experimented some with black, but the lye in the soap has a bad effect on it and turns it out more of a brown color. A. Resin soap, 2 lbs.; sperm oil, 34 lb. Digest the soap with a quantity of boiling water just sufficient to thoroughly soften it, when it may be triturated with the warm oil and a sufficient quantity of fine boneblack until a uniform paste is obtained.

(5) E. V. asks: 1. Is stenography a good business for these times? A. Stenography is never a good business except to a few who are by nature specially fitted for it. 2. What is the largest number of words that has been written in a minute? A. 200 words per minute may be reported, but not fully written out. 3. At what rate does a common speaker talk? A. From 50 to 250 words.

In answer to your last query we advise you to consult a physician.

(6) P. C. M. asks how a schoolroom can be warmed comfortably. A. Cause the fresh air supply to enter under the stoves; close all openings for the escape of hot air from the upper part of the room; ventilate by means of openings in the floor, the escape pipes leading to the chimneys or through them, to secure an up draught.

(7) C. F. L. asks why the heating of an iron sphere to nearly the melting point (as noted in your paper of September 28) should change its appearance to a disk. A. It is only by the gradation of light and shade that we can tell solids from plane surfaces. The highly heated sphere shows no such gradations.

(8) J. G. S. writes : I have some wine that is too sour for wine and not sour enough for vinegar. What shall I do to it to make it sour? A. The souring of wine is due to the conversion of the alcohol into acetic acid. This is very common, and may result from too small a proportion of alcohol, too high a temperature of the cellars, or exposure to the atmosphere. The wing, if too far soured, is fit only for making vinegar; but slight cases can be remedied by an addition of sugar. To convert your wine into vinegar the wine should not contain more than 10, nor less than 3 per cent of alcohol. The temperature should not be above 36° C, nor below 10° C. A plentiful supply of air to the wine and an intimate contact between the two. The addition of a small amount of vinegar, or still better, me of the so-called vinegar lant other) M ma aceti. This method is very generally employed for tried arsenic, poke root, and borax to no effect. A. A For Solid Wrought Iron Beams, etc., see advertise- making wine vinegar. Generally a "souring" vessel or little alum or borax solution in hot water, applied with Address Union Iron Mills, Pittsburgh, Pa., for "mother" vessel, made of oak wood, is employed; this a cloth to the woodwork, and injected into the cracks boiling water, and when thereby the extractive matter of the wood is exhausted, the vessel is filled with boiling hot vinegar: when the wood is soaked with vinegar, there is poured into the vessel 20 gallons of wine, and after eight days again 2 gallons of wine are added, Bronze is an indestructible machine. See advertisement. and this operation continued weekly until the vessel is Wheel Press, Cotton Press, Pipe Line, and Test Mer- two thirds filled. About fourteen days after the last adcury Gauges. T. Shaw, 915 Ridge Avc., Philadelphia, Pa. | dition of the wine the whole of the contents will have become converted into vinegar. Half this quantity is withdrawn from the souring vessel and carried to the store; to the remainder more wine is added, and the preparation of vinegar continued uninterruptedly. (9) F. D. W. asks for a preparation that will bleach feathers and horsehair without injuring them. A. You may try exposing them to the vapor of burning sulphur in a barrel or other tight vessel.

flavor it? A. Molasses, licorice paste, glycerin, salt, and anise are frequently employed.

What sized cylinder and what sized boiler would be required to drive a screw 16 inches diameter, with a pressure of steam at 100 lbs. to the square inch, and the speed she would be likely to run at? A. Cylinder 21/2 x 4, boiler 20 inches diameter, 3 feet high, revolutions 300 to 400.

(11) Constant Reader: What is the most suitable metal for working upon a foot lathe by hand? I wish something which can be turned and bored with ease. Can you tell me of an alloy which will meltata moderately low temperature, butwould be tough enough to be turned down without clogging on a small foot lathe? Would this alloy be hard enough to be used for making the cylinder and side valves of a small engine, the cylinder being about 2x 4 inches. If not, for what parts could it be used? Could you give me the composition of several alloys of different degrees of hardness? What should be the size of boiler, and what pressure should be used to obtain 1/4 horse power, with an engine the cylinder of which is of the size above named? What is the pitch of a propeller? In what proportion is it to the diameter? Is there any rule by which to calculate the diameter and width of blades, etc., of a propeller, the length, width, and draught of the boat being known? Is there any by which the proper depth of a small steam launch can be calculated, the length and width being given? A.Brass would be the best alloy for the purpose. You can make a boiler 10 in. in diameter and 15 in. high, and carry a steam pressure of 30 lbs. per square inch. The pitch of propeller can be from 11/4 to 11/2 times the diameter. The other rules you desire could not be given in this limited space, but you can proportion small screws and hulls from samples of larger ones, many of which have been described in our col-

(12) N. E. S.—The washing compound consists chiefly of sal soda, lime, and resin soap.

(13) J. B. F. writes: At our factory we are using soft iron for all the castings we make, but find we will have to use some very much harder than we have been able to produce by adding a small quantity to what is in the furnace after ordinary work is poured. I have thought we might accomplish what we wish by hardening the iron in the ladle. Is there any way in which this can be done? A. We know of nothing that will produce the desired result in the manner suggested.

(14) W. P. K. asks: 1. Is spun glass flexble? A. Yes. 2. How fine can it be made? A. The threads are often drawn as fineas a single hair. 3. What are its constituents? A. Of a soft glass variously col-ored by metallic oxides. The glass without the coloring matter usually has the composition: Silica 75, potash 5, soda 10, lime 10.

(15) D. M. P. asks if there are not fire engines in New York propelled hy steam which visit fires without the aid of horses? If so, who was the inventor thereof, and when did they first come in vogue; moreover, are they in use at the present time? A. There are, we believe, at present four self-propelling steam fire engines in use in this city. They were built by the Amoskcag Manufacturing Company, but the principal details of the self-propelling apparatus have long been used in connection with traction engines.

(16) R. W. S. asks: 1. Has frost any effect upon spiral springs that are in constant use out of doors? A. They sometimes become more brittle. 2. What is the best material for springs for hard usage? A. Steel. 3. Which is the best spring to use where the diameter is small, and the power required is great, a single spring of large wire wound small or a double spring of smaller wire, and which is apt to set the most? A. There is not a great deal of difference if proper proportions are observed in the two cases.

(17) V. E. C. writes: Can you tell me what metal and at what heat it will melt that will allow me to handle it in the melted state? A. The experiment is often performed with mercury, and with Rose's fusible metal-lead 3 parts, tin 2 parts, bismuth 5 parts -melts at 196° Fah.

(18) J. C. C. asks: Is there a process to restore the steel fire sheets of oil stills after crystallization by overheating in the presence of carbon? A. We think not.

(19) E. M. asks where he can learn the process of casting rubber type and stereotype, and if it requires much apparatus. A. See p. 1326, SCIENTIFIC AMERICAN SUPPLEMENT.

(20) C. A. P. asks: I have a meerschaum pipe, and by accident the stem broke off close to the bowl. What is the best cement to fasten it together? A. Slake pure caustic line with a little boiling water, and mix the dry powder with the white of an egg to This should be used in small quanform a thin paste. itty, immediately, as it soon sets.

(21) A. M.: What is the easiest and most Furnace, gas retort, G Siegel...... 208,106 way to destroy rouches (Blatta)? I have vat is first, when newly made, thoroughly scalded with , in the vicinity of their hiding places, is usually quite effectual

clay containing much iron sulphide. Is not necessarily ndicative of the proximity of metallic ores or coal.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects : The Consumption of Natural Gas. By T. B. McC. Jupiter. By R D. S.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were

Granted in the Week Ending

September 17, 1878.

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. Arithmetical results, obtaining, J. Sawyer 208,037

 A Tie Skein, Veinteie, F. H., Jr., & W. W. Wilson, Zon, 38

 Bag, J. Arkell.
 208,138

 Band cutter, wire, W. E. S., ediker.
 208,045

 Bed bottom, spring, M. R. Davis
 208,077

 Beiting, wire, G. A. Pickhardt
 208,060

Binder, temporary, N. S. Otis (r)..... 8,419

Bit stock () I. Crismold	208 16
Bit stock, C. L. Griswold Blacking box, Morse & Sholes	200,100
Boilers, heater and feeder for, G. W. Moore	208.001
Book support, M. L. Schech	
Boot and shoe insole, M. Mayer	
Boot and shoe laster, G. W. Copeland et al	2 8 156
Boot and shoe lasting mechanism, H.G. Thompson	
Boot and shoe soles, beater, etc., for, S. Ross (r).	
	208,070
Boring machine, T. G. Morse	
Bosom boards, M. Price	208 120
Bottle stopper, H. Bell	
Bottle stopper, F. J. Seybold	208.043
Bottle stopper fastener, T. H. Shahan 208,205.	208.206
Bottles, securing corks in, C. Michel	208,195
Bowis, etc., connection for, W. E. Sherriffs	208,044
Brake, car, W. W. Patterson	
Brake, railway, J. & J. G. Hardy	
Brake, railway car, W. R. Green	
Brake shoe clamp, C. Heinen	208.092
Brick, dovetailed grooved, W. J. Mackrell	
Badge truss, G. W. Cooley	208,155
Budge truss, G. W. Cooley Burglar alarm, J. K. Johnston	208,177
Burial casket, J. Maxwell	
Calendar dial and watch crystal, D. T. Kendrick.	
Can for liquids, G. W. Peck	
Can for oil and other liquids, G. W. Peck	
Can, tin, S. H. Bradford	208,005
Cap and stopper fastener, screw, J. K. Chase	
Car coupling, J. Forman	
Car coupling, J G Maris.	208,189
Car heater, F. E. Ensign	
Car roof, H. Aldridge	208,007
Car safety, T. Mueller	208,113
Car starter. H. Schreiner	
Carriage, child's, F. L. Hughes (r)	8,417
Carriage curtain window, F. A. Neider Cattle, gangway transferrer, E. L & E. Forman.	208,190
Chair, H. Clark	
Churn, B. Gue Churn dasher, J. W. Tatum	208,100
Clevis, C. F. Search	200,212
Clock case, J. H. Welch	206.216
Coal, treating, M. B. Eaton	208.011
Coffee pot. O. W. Noble	
Coffee roasting apparatus, A. McDonald	
Cooler, beer, A. Roos (r)	8,420
Corset, M. P. Bray	208,066
Corset, H. S. Strauss	208,049
Corsets, manufacture of, A. Fellheimer	
Cotton condenser, T. Camp	
Cradle, E. Whitehead	208,052
Crane, hydraulic, S. T. Wellman	208,051
Cultivator. F. M. Cropp	208 073
Cultivator, cotton,W. W. Harvey Curtain roller and bracket, H. L. Werne	208,088
Curtain roller and bracket, H. L. Werne	208,130
Door securer, W. A. Ingalls	208.176
Dredge bottle, W. Sellers	208,125
Electric alarms, etc. switch for, P. Ernwein	
Elevator bucket, W. J. Bennett	
Elevator, M. V. B. Wright	
	208,213
Sycleting machine, Woodward & Goodson	
Felting machine, W. Keenan	
Fence barb, wire, Baker & Bestor	
Fence, portable, W. McLaughlin	
Filter, J. & R. Bean Firearm, breech-loading, C. E. & R. Green	AUD.144
Firearm, magazine, F. W. Tiesing	
Fire extinguisher, car stove, P. P. Quackenboss.	208,200
Flat iron heater, N. Crotsenberg	
Floor cloth, manufacture of, J. Robley Food preserving compound, R. S. Dashiell	200,000
Truit picker, I. Gothard	208,167
Truit picker, G. C. Hawkins	208.144

lithograph, etc.

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

North's Lathe Dog. 347 N. 4th St., Philadelphia, Pa.

The Cameron Steam Pump mounted in Phosphor

For Telephones, Amateur Photo. Apparatus, ctc., address E. Sackmann & Co., 278 Pearl St. N. Y.

For Sale Chean -One 50 lb Hotchliss Air Spring Hammer, nearly new. D. Frisbie & Co., New Haven, Ct.

Special Planers for Jointing and Surfacing, Band and Scroll Saws, Universal Wood-workers, etc., manufacured by Bentel, Margedant & Co., Hamilton, Ohio.

We make stee) castings from 1/4 to 10,000 lbs. weight, 3 times as strong as cast iron. 12,000 Crank Shafts of this Fisch now running and proved superior to wrought iron. Circulars and price list free. Address Chester Steel Castings Co., Evelina St., Philadelphia, Pa.

bacco to make the leaves adhere together, and also to prove of some value as a fertilizer.-H. S.-Silicious 1

(22) H. S. asks: Can a body be petrified by laying the same in a solution of silicate of soda? Or can it be successfully injected into a dead body so as to entirely petrify the whole body? A. We believe experiments in this direction have not proved very successful.

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

J. B. W .- Green trap containing marcasite-iron sulphide -W. M.-An indurated clay containing much sand, iron oxide, and lime.-T. F.-It is magnetitemagnetic oxide of iron, loadstone.-W. S -Not infusorial earth. Consists of lime, carbonate silica, and (10) J. G. E. asks: What ingredients do much organic matter. The sample contains a little potthey use in pressing plugs of smoking and chewing to- ash and traces of phosphoric acid. The material may

arnace, not an, b crary (1)	0,110
Furnace, steam boiler, C. D. Smith	208,209
Gas regulator, J. Adams	208,134
Gas retorts, J. Slade (r)	8,422
Glass tempering, F. S. Shirley	208,207
Governor for engines, B. Brazelle	208,067
Governor, steam engine, B. Brazelle	208,149
Grain binder, J. F. Appleby	208,137
Grain separator, A. J. Humphreys	208,175
Grate, hot air, A. H. Buckhout	
Grate, shaking, A. McDonald	
Gun, machine, F. E. Schultze	
Gun, spring air, C. Herzfeldt, Jr	208,016
Harness breast collar, R. Pattin	208,115
Harness pad, M. V. Longsworth (r)	8,418
Harrow, E. Vandawater	208,129
Harvester guard finger, Ballew & Fuller	
Hat pouncing machine. W. Keenan	
Heater, portable water, E. Hersey	
Hinge, lock, C. B. Clark	
Hoe, J. N. Parker	
Hog trap, W. Huston	
Horse collar, A. D. Marti n	
Hose nozzle. Raymond & Perkins	
Husking and shelling implement, L. F. Johnston	
Hydrant, C. Carr	
lee, apparatus for making, J. Kyle	