

Business and Personal.

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

Wanted—The address of parties who can make first class small iron castings and do galvanizing.

Wanted—A new or second hand Pratt & Whitney Shaping Machine, 8 in. stroke.

How to draw Gear Teeth, 50 cts. E. Lyman, C. E., New Haven, Conn.

Wanted—A full set of Pail Machinery. Address, with price, V. W. Kelly, Genoa, Ottawa Co., Ohio.

Address Gear, Boston, Mass., for Machinery Catalogue.

The discomfort caused by Rupture can be instantly relieved and soon permanently cured by wearing the newly invented Elastic Truss...

Send orders for the newly discovered Oil Stone of precisely Turkey quality...

C. R. Vincent, 812 Broadway, desires to procure instructions for decorating zinc with colors and configurations.

Boiler for Sale—Six horse, upright tubular. 30 in. diameter, 6 ft. high...

Ira Bucklin, Lebanon, N. H., wants to know what to put on bait to attract fish.

Buy Gear's New Emery Grinding Machine for Stove purposes, Boston, Mass.

Portable Steam Engines for Plantation-Mining, Mill work, &c. Circular Saw Mills complete for business.

Abbe's Bolt Heading Machines, latest and best. For cuts, prices and terms, address S. C. Forsaith & Co., Manchester, N. H.

The Ellis Vapor Engines, with late improvements, manufactured by Haskins Machine Company, Fitchburg, Mass.

For the best and cheapest small portable Engine in market, address Peter Walrath, Chittenango, N. Y.

For Circular Saw Mills, with friction feed works, and Stationary Engines, address Wm. P. Duncan, Bellefonte, Pa.

Shortt's Patent Couplings, Pulleys, Hangers and Shafting a Specialty. Orders promptly filled.

New England Band Saw Machines, cheapest and best, only \$187. For descriptive cuts, address S. C. Forsaith & Co., Manchester, N. H.

Grain, Paint, Ink, Spice and Drug Mills. Ross Bro's, 85 First Street, Williamsburgh, N. Y.

Drawings, Models, Machines—All kinds made to order. Towle & Unger Mfg Co., 30 Cortlandt St., N. Y.

Dickinson's Patent Shaped Diamond Carbon Points and Adjustable Holder for dressing emery wheels, grindstones, etc.

A Rare Opportunity is offered to Manufacturers of Agricultural Implements, to purchase the Patent and a complete Set of Patterns...

Key Seat Cutting Machine. T. R. Bailey & Vail. Cheap Wood-Working Machinery. Address M. B. Cochran & Co., Pittsburgh, Pa.

Wood workmen—Ask your Bookseller for Richards' Operator's Hand Book of Wood Machinery. 65 cts. Only \$1.50.

Agents' names wanted. Wendell & Francis, 456 Walnut Street, Philadelphia, Pa.

Shaw's Planer Bar—For Shop, County, and State Rights, apply to T. Shaw, 913 Ridge Av., Phila., Pa.

Peck's Patent Drop Press. For circulars, address Milo, Peck & Co., New Haven, Conn.

Royalty—Manufacturers and Inventors, have your Machinery, &c., made in the west for western use.

Iron Ore Crusher Jaws and Plates, Quartz Stamps, &c., cast to order by Pittsburgh Steel Casting Company.

Stave & Shingle Machinery. T. R. Bailey & Vail.

Monitor Leather Belting you can always rely on. Send for Circular. C. W. Arny, 301 Cherry St., Phila.

3 Winn's Pat. Improved Portable Steam Brick Machines. Averages 40 m per day. Fully guaranteed.

Buy First & Frybill's Bandsaw machines, which are more used than any other in the country.

Hand Fire Engines, Price \$300 to \$2,000. Also, over 800 different Style Pumps for Tanners, Paper Mills, and Fire Purposes.

The Best Smutter and Separator Combined in America. Address M. Deal & Co., Bucyrus, Ohio.

Steam Boiler and Pipe Covering—Economy, Safety, and Durability. Saves from ten to twenty per cent.

Damper Regulators and Gage Cocks—For the best, address Murrill & Kelzer, Baltimore, Md.

The Berryman Heater and Regulator for Steam Boilers—No one using Steam Boilers can afford to be without them.

Circular Saw Mills, with Lane's Patent Sets; more than 1200 in operation. Send for descriptive pamphlet and price list.

Tree Pruners and Saw Mill Tools, improvements. Send for circulars. G. A. Prescott, Sandy Hill, N. Y.

Brown's Coalyard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable.

Steam Fire Engines, R. J. Gould, Newark, N. J. Cabinet Makers' Machinery. T. R. Bailey & Vail.

Boring Machine for Pulleys—no limit to capacity. T. R. Bailey & Vail, Lockport, N. Y.

For Sale Cheap—Six Horse Power Portable Engine, mounted on truck, good as new; been used only two months.

Five different sizes of Gatling Guns are now manufactured at Colt's Armory, Hartford, Conn.

40 different Bandsaw machines, 60 turning and improved oval lathes, shaping, carving and moulding machinery...

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

To Let—For Manufacturing purposes—a brick building 126x50, with Water power 38 H. P.

Shafting and Pulleys a specialty. Small orders filled on as good terms as large. D. Frieble & Co., New Haven, Conn.

All Fruit-can Tools, Ferracuta, Bridgeton, N. J. The Berryman Manuf. Co. make a specialty of the economy and safety in working Steam Boilers.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement, Andrew's Patent, inside page.

Hydraulic Presses and Jacks, new and second hand. E. Lyon, 470 Grand Street, New York.

Machinists—Price List of small Tools free; Gear Wheels for Models, Price List free; Chucks and Drills, Price List free.

Gauges, for Locomotives, Steam, Vacuum, Afr, and Testing purposes—Time and Automatic Recording Gauges—Engine Counters, Rate Gauges, and Test Pumps.

The Berryman Steam Trap excels all others. The best is always the cheapest. Address I. B. Davis & Co., Hartford, Conn.

Absolutely the best protection against Fire—Babcock Extinguisher. F. W. Farwell, Secretary, 407 Broadway, New York.

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

A Superior Printing Telegraph Instrument (the Selden Patent), for private and short lines—awarded the First Premium (a Silver Medal) at Cincinnati Exposition, 1872.

Williamson's Road Steamer and Steam Plow, with rubber tires. Address D. D. Williamson, 32 Broadway, N. Y., or Box 1809.

Parties desiring Steam Machinery for quarrying stone, address Steam Stone Cutter Co., Rutland, Vt.

Notes & Queries

A. P. asks: Is there an invention for extracting watery matter from meat for the purpose of preserving the meat?

S. A. says: We have serious difficulty in drying glue in making petroleum barrels during hot southerly winds in summer.

A. E. S. says: I tried to make ink by following the recipe given in a recent number of your paper; but as soon as I put in the bichromate of potash, the water and coloring separated...

U. E. asks: What are the cause of and remedy for the cracking of taps, etc., when in process of hardening in water?

C. E. asks: Can you give me a reliable approximation of the horse power required to drive the different kinds of cotton machinery...

D. T. asks: What is the best process for imitating Russia leather?

R. C. K. desires to know the difference of strength, for farm purposes, in ashes made from white wood and from oak, maple, and birch.

J. H. P. asks for a formula for determining with accuracy the contents of a barrel or cask when only partly full.

S. A. T. asks for a recipe for a dead black for making a "black board" on white pine.

S. A. T. says: I should like a recipe for making hard soap for toilet use, say about 25 lbs. quantity, colored and perfumed.

W. H. R. asks: Can magnesium be obtained in a finely comminuted state? If so, where and at what price, and how are its characteristic qualities affected?

W. F. H. asks for the best method of cleaning empty cider barrels so that they will be sweet when wanted for use in the next fall.

J. H. W. asks: 1. If 100 gallons of proof spirit are mixed with 100 gallons of water, what will be the degree below proof and what the gravity?

B. L. B. asks: Is the temper of steel knives impaired by cutting apples or other fruit? If so, why?

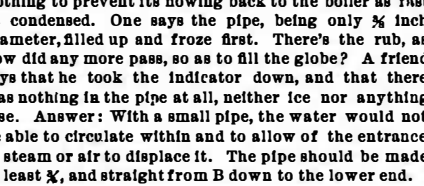
B. L. B. says: I have noticed that my varnish (gum shellac and alcohol), after standing a while in tin cups, becomes of a dark muddy color.

J. W. K. asks: Would there be any advantage in using dry sponge as a filling for waterproof life preservers, rafts, etc.?

ANSWERS TO CORRESPONDENTS

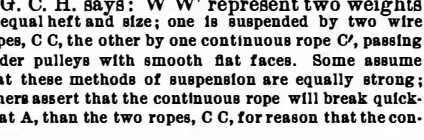
J. B. asks how to prevent food, put in a cupboard newly painted inside and grained outside, from tasting of paint.

E. J. M. says: Near here was a high pressure steam boiler, with a low water indicator attached, as represented below.



J. B. D. says: 1. I heard some gentlemen have an argument about the rainbow. P. K. D. says the bow is in the clouds because God put it there...

G. C. H. says: W W represent two weights of equal heft and size; one is suspended by two wire ropes, C C, the other by one continuous rope, C', passing under pulleys with smooth flat faces...



J. B. P. says: A circular sawing machine, run by one or two men with cranks, has two light balance wheels, 20 inches in diameter.

R. & S. say: We are running an engine 7 inches x 12, cutting off steam at half stroke, and running 175 revolutions per minute; we use a 20 horse power boiler, and carry 70 lbs. of steam.

E. says: One of our workmen from England gave us the following recipe for removing scale from boilers. Is there anything injurious to the iron or objectionable otherwise?

F. O. C. says: 1. I claim that in order to get perfect combustion, you must not admit any more air under or through the fire than it will consume, for if you do, it will tend to deaden the fire...

E. W. G. says: 1. I have two engines running a circular saw mill. They have cylinders 8x22, set about 5 feet apart and connected by a crank on each end of shaft.

L. P. C. says: I would like to know how large a round chimney would be required for a boiler with 33 three inch tubes.

H. B. B. says: I have a saw mill with 54 inch saw; the engine is of 11 inches bore x 4 feet stroke. There is a drum of wood 12 feet in diameter, connecting with countershaft...

S. B. E. asks: What injury, if any, would there be in oiling locomotives and other machinery with hot oil, say at boiling point?

A. V. K. asks: How can the horse power of a boiler of given dimensions be ascertained? Answer: Already answered in earlier numbers.

F. F. M. asks: 1. What diameter of cylinder and what length stroke must I give the engine for a horizontal boiler 12 x 30, of 1/2 inch iron, with no flues? The engine is to run 100 to 150 per minute.

H. C. J. asks: 1. Will a boiler, under which there may be the usual amount of fire, make or lose steam if the blow off or safety valve is suddenly opened wide, or the engine started in the same way?

J. T. says: I cannot understand the answer to the crank question: 1. What do you mean by a line perpendicular to both the lines of the shaft and of the crank? 2. Have I found the proper thickness of cylinders in the two following cases, according to Van Buren's formula, t = 0.8 sqrt(DP)?

J. G. H. says: I am using 3 plain cylinder boilers for grinding purposes, with a plain slide valve engine which works very well. The objection is that we use too much wood.

H. T. L. asks: How can I estimate centrifugal force? For instance, what will be the centrifugal force of a one pound weight, revolving at 100 revolutions per minute in a 4 foot circle around a perpendicular shaft, and what is the rule by which I can get at the force of any weight at any speed in any circle?

W. W. says: 1. My employers and I appeal to you to decide a question about the horse power of a first class horizontal steam engine, cutting off steam at a point that will give it the most power.

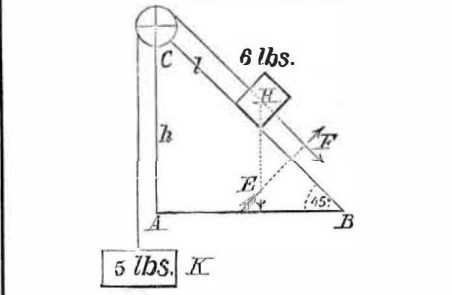
C. S. C. says: I have a small English toy locomotive, and I cannot make it go. It is eighteen inches in length, and runs on eight wheels; two of them are the drivers. The cylinders are about two inches, and oscillate from the end.

D. K. asks for an explanation of the phenomena of polar attraction and magnetic variation. In this latitude, 40° N., variation west has increased 1° in fourteen years.

J. R. L. says: We have a gin connected with our mill. Is it possible to extinguish fire in a lint room with steam? If so, how should it be applied, with stationary rype entering at bottom or top of room, or with hose?

H. S. M. wishes to know where an indicator can be purchased, what it will probably cost, how it should be applied, and what the result will be. Answer: A treatise upon the construction, method of application, and the interpretation of the diagrams obtained by the steam engine indicator, would occupy far too much space for our columns.

C. B. N. sends the following solution of the problem proposed by E. C. M., who said: "A body weighing 5 lbs. descends vertically and draws a weight of 6 lbs. up a plane whose inclination is 45°."



plane, and H and K the weights, joined by a cord which works over a pulley at C. Let l=length of the plane, h=height of the plane. From H, draw a line H E, perpendicular to A B and let it represent the pressure of the weight at H. Then resolve H E into components, H F and F E, parallel and perpendicular to B C.

laws of falling bodies that the space through which the body falls is equal to the acceleration multiplied by the square of the time and divided by two, or s = 1/2 at^2.

MINERALS.—Specimens have been received from the following correspondents, and examined with the results stated: H. W.—Bothare crystalline hornblende, of no value.

T. F. A.—Iron pyrites, of no value.

COMMUNICATIONS RECEIVED.

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

- On Fast Side Wheel Steamers. By M. N. L.
On the Million Dollar Telescope. By O. M. and by F. C. V.
On a Vacuum Balloon. By F.
On Deep Sea Soundings. By H. N. C.
On Increasing the Crops. By A. W.
On Diving Bells. By Q.
On the Wheel Question. By H. S.
On the Aurora Borealis. By A. C. C.
On Air and Gas Engines. By F. G. W.
On Sugar Boiling Apparatus. By A. W. J. M.
On Plows. By L. L. B.
On the Sea Urchin. By P. S.
On Tannate of Soda. By N. S. T.
On a Boiler Explosion. By W. J. S.
On Deep Sea Soundings. By A. R.
On Science and Revelation. By J. W.

Also enquiries from the following: E. J. M.—S. W. J.—E. W.—G. W. T.—H. N. J.—A. R.—D. J. R.—L. P. A.—C. F. S.—G. F. M.—C. M. B.—M. K.—C. K. C.—B. H. G.

[OFFICIAL]

Index of Inventions

FOR WHICH Letters Patent of the United States WERE GRANTED FOR THE WEEK ENDING

April 22, 1873, AND EACH BEARING THAT DATE.

(Those marked (r) are reissued patents)

Table listing various inventions and their patent numbers, including items like Acid vessel cap, Baby jumper, Barrels, Bed bottom, Bed spring fastener, Bedstead, Bell door, Belt fastening, Boats, Boats, detaching, Boiler, wash, Bolt mechanism, Bolt stiffening, Book case, Book pocket, Boot, plow, Bottle, nursing, Bottle washing apparatus, Box cover, blacking, Box opener, L. Mills, Button, F. Washbourne, Bridge, draw, L. Schneider, Bridge baluster, Sellers & Manly, Brush, P. Wagner, Canal, H. Hill, Car brake, J. N. Brush, Car brake, E. Farnsworth, Car, convertible freight, T. Fogg, Car heater and ventilator, C. F. Whorf, Car wheel, H. Merrill, Card machine, postal, J. M. D. Keating, Carriage axle box, Jones & Dunkerley, Carriage door, J. Cunningham, Cart, dumping, B. Fitzhugh, Cartridges, etc., capping, J. F. Nettleton, Cement roofing, G. Howland, Chair, folding, A. C. Boyd, Chair, school, E. J. Piper, Chocolate, soluble, J. Corell, Churn, W. H. Holdam, Churn, reciprocating, M. Litt, Cigar holder, T. J. Lewis, Clothes pounder, S. Hinkel, Clothes pounder, D. W. Rawson, Clothes wringer, R. S. Cathcart, Clutch for machinery, W. B. Duckworth, Clutch, friction, J. J. Coburn, Cock, etc., blow off, E. G. Cushing, Coffin handle, C. Strong, Cooler, beer, A. F. Rick, Cooler, milk, W. Hodgdon, Corn sheller, Brown & Shangle, Coupling, universal, H. S. Leland, Cradle, automatic, I. Goldman, Cultivator, J. Helm, Curtain fixture, T. Symonds, Curtain roller holder, B. G. Fitzhugh, Cutter bars, holding, W. H. Dantels, Dentist's stool, C. P. Grout, Derrick, J. E. Walsh, Desk and seat, A. E. Roberts, Drawer, B. J. Greely, Dredger, E. B. Bishop, Drill, grain, J. King, Door lock, J. Scott.

Table listing various inventions and their patent numbers, including items like Dyeing aniline black, J. Higgin, Eggbeater, N. C. Miller, Elevator, A. C. Herron, Elevator, grain, H. Merrill, Eyelet, S. W. Young, Fabric selvages, uniting, T. Beven, Faucet, self-closing, A. & E. Buckman, File, paper, R. Henning, Fire arm, Holt & Marshall, Firearm, D. Smith, Firearm, revolving, G. W. Schofield, Fire escape, G. H. Shaw, Fire extinguisher, J. D. Bresnahan, Fire place back, G. W. Cummings, Fireproof ceiling, etc., J. W. Bassett, Fireproof floor, etc., W. Neracher, Fork, horse hay, H. C. Stouffer, Fruit basket, S. B. Conover, Furnace, cupola, J. B. Pearce, Furnace, hot air, C. L. Pierce, Furnace, hot air, C. L. Pierce, Gas light indicator, etc., W. W. Goodwin, Gate, automatic, N. Long, Gate, iron fence, C. T. Bush, Generator, gas, D. H. Ireland, Generator injector, steam, S. Rue, Jr., Generator injector, steam, S. Rue, Jr., Generator, steam, R. Hooper, Grater, G. Booth, Grater, nutmeg, A. L. Platt, Grater, vegetable, G. Booth, Gun lock, C. Gordon, Hame tug clip, J. P. Welpton, Harness collar, H. B. Morrison, Harness check hook, H. A. Carlton, Harvester, S. L. McCollock, Harvester, corn, S. Patton, Harvester, cutter, C. Pomeroy, Hat ear covering, B. R. Morse, Heater, steam, E. Russell, Hedge trimmer, S. B. Turner, Hemmer, E. S. Yentzer, Hinge, gate, W. G. Franklin, Hinge, lock, M. C. Lee, Horse hoofs, paring, G. W. Schafer, Horse power, A. G. Waterhouse, Horse fly guards, suspender, G. Shelton, Hub, vehicle, A. Warner, Injector, engine, S. Rue, Jr., Injector, engine, S. Rue, Jr., Iron beam, wrought, L. Kirkup, Iron and steel, puddling, J. G. Blunt, Jack, lifting, W. M. Doty, Jack, lifting, H. H. Warren, Journal, anti-friction, M. E. Dayton, Knife, corn stalk, J. M. Brick, Knife, pocket, H. Staude, Lamp, G. Brownlee, Lamp, J. A. Pease, Latch handle, Ambrun & Olfemann, Lathe for wood, C. A. Blessing, Leather, boarding, O. Coogan, Lock for drawers, etc., E. G. Gory, Loom shuttle binder, Hammond & Tucker, Loom, lappet, F. W. Newton, Loom temple, N. Chapman, Loom for wire, S. Holdsworth, Lubricator, Lunkenheimer & Meehan, Marble, molding edges of, J. Finn, Mill hopper, grinding, G. S. Thompson, Mill picker, E. S. Forgy, Mill, rolling, J. E. Atwood, Millstone dress, J. P. Harris, Millstone spindles, oiling, J. J. Chubb, Millstones, cooling, Shanton & Shaver, Miner's bar, R. B. Platt, Mirror, signaling, M. M. Kenney, Molding machine, J. W. Gheen, Music notation, E. P. Stewart, Neck tie, R. R. Parker, Nut lock, W. B. Wait, Nut machine, J. Braun, Ordnance, C. Gordon, Ordnance, E. A. Sutcliffe, Oven, bake, J. J. Piggott, Oyster dredge, I. A. Ketcham, Paper machine suction, W. McLaughlin, Pavement, D. C. Heller, Pavement, concrete, J. W. & H. W. Krause, Jr., Photographs, cutting out, J. Schofield, Pianoforte bridge, W. C. Ellis, Piano hammers, capping, I. Bullard, Pipe tongs, A. H. Jarecki, Pipes, mold for earthen, P. McIntyre, Pipes, etc., heating, Grimm & Corvin, Planter, corn, G. O. Houck, Planter, cotton, W. Price, Planter, seed, I. T. Suggs, Plow, J. M. Cobb, Plow, J. Roop, Pools, etc., cleaning cess, W. C. McCarthy, Press, embossing, G. C. Clisbee, Press, hay and cotton, G. W. Stewart, Propeller, screw, J. Montgomery, Propeller, operating screw, A. Lee, Pump, mining, G. E. Mills, Punch, portable, J. J. Safely, Railway snow plow, O. D. Baird, Rake and tedder, R. J. Colvin, Refrigerator, D. Mulcahy, Rule, square and bevel, C. M. Heffron, Sash holder, L. A. Tuttle, Saw mill carriage, B. F. & J. B. Smith, Saw scroll, H. B. Smith, Saws, sharpening, Davidson & Wainwright, Sawing machine, band, O. Bonney, Jr., Scissors, A. Wainmore, Scow, dumping, A. T. Morris, Screw making machine, J. Braun, Scrolls, drawing, E. E. Stebbins, Scrubbing machine, S. H. Bush, Scythes, rolling, H. Waters, Seat, J. Peard, Separator, middings, A. R. Guilder, Sewing machine, M. H. Kernau, Sewing machine chair, F. Chichester, Sewing machine ruffler, D. C. Carey, Sewing machine shuttle, W. Cooney, Sewing machine thread cutter, Henry & Wood, Shaft hanger, W. Bells, Shafting bearings, casting, J. Miller, Shoe fastening, I. Banister, Shoemaker's finishing tool, Wilson & Foster, Sizing compound, T. Gorrel, Skate, roller, W. P. Gregg, Slate frames, finishing, J. H. & G. S. Coffin, Slate washer, W. Westlake, Snow shovel, H. C. Cole, Soda water cock, etc., W. Gee, Soda water fountain attachment, W. R. Cady, Soldering apparatus, J. Gulden, Spikes, pointing, Waldron & Moore.