

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.

For Sale.—State Rights of the New Patented Fur Ornamenting (Feather Pointing). L. Havasy, 246 East 55th St., N. Y.

The great remedy: German Corn Remover. 25 cents. Sold by druggists.

Important news. Van Bell's "Rye and Rock" is the only genuine. See his signature on label.

Renshaw's Ratchet for Square and Taper Shank Drills. The Pratt & Whitney Co., Hartford, Conn.

Avoid the expense and evils attending the use of compounds in your boiler. Remove the sediment contained in feed water at small cost by Hotchkiss' Mechanical Boiler Cleaner. Circulars free. 84 John St., New York.

Punching Presses & Shears for Metal-workers, Power Drill Presses \$25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N. Y.

25 cents invested in Newspaper Pins will bind a volume, 52 numbers, of the SCIENTIFIC AMERICAN. Send stamps to Newspaper Pin Co., Bridgeport, Conn.

A Business Man would like to make arrangements with Parties to sell Goods for them on Commission. Address K., Box 985, Providence, R. I.

Gold, Silver, and Nickel Plater wants Situation. Address Plater, Oakville, Conn.

For sale, at Sioux City, Iowa, large Brick Foundry and Machine Works. Splendid chance for investment. Address J. P. Dennis & Co., Sioux City, Iowa.

For 25 cents, complete cure of hard or soft corns by use of German Corn Remover. Sold by druggists.

For Sequira Water Meter, see adv. on page 316.

Books on Practical Science. Catalogues free. Pocket Book of Alphabets, 20 cts. Workshop Receipts; a reliable handbook for manufacturers. \$2, mail free. E. & F. N. Spon, 446 Broome St., N. Y.

Essay on Inventions.—What qualities will make them profitable, and how to incorporate these qualities in inventions. 25 cts. postpaid. Address N. Davenport, Valparaiso, Ind.

Improved Skinner Portable Engines. Erie, Pa.

"Rival" Steam Pumps for Hot or Cold Water; \$32 and upward. The John H. McGowan Co., Cincinnati, O.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa.

The Newell Universal Mill Co., Office 34 Cortlandt St., New York, are manufacturers of the Newell Universal Grinder for crushing ores and grinding phosphates, bone, plaster, dyewoods, and all gummy and sticky substances. Circulars and prices forwarded upon request.

Pure Oak Leather Belting. C. W. Army & Son, Manufacturers Philadelphia. Correspondence solicited.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Wood-Working Machinery of Improved Design and Workmanship. Cordeman, Egan & Co., Cincinnati, O.

The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass.

Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

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

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Long & Allstatter Co.'s Power Punch. See adv., p. 285.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 10 Cortlandt St., N. Y.

Peck's Patent Drop Press. See adv., page 300.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa.

Wren's Patent Grate Bar. See adv. page 300.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr. & Bros., 581 Jefferson St., Philadelphia, Pa.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 300.

Stave, Barrel, Keg and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 301.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

For Light Machinists' Tools, etc., see Reed's adv., p. 301.

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.

Saw Mill Machinery. Stearns Mfg. Co. See p. 300.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y.

Saunders' Pipe Cutting Threading Mach. See p. 301.

For Machinists' Tools, see Whitcomb's adv., p. 301.

Clark Rubber Wheels adv. See page 316.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 316.

Safety Boilers. See Harrison Boiler Works adv., p. 316.

The Medart Pat. Wrought Rim Pulley. See adv., p. 317.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 318.

For Thrashing Machines, Engines, and Horse Powers, see illus. adv. of G. Westinghouse & Co., page 317.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila. Pa.

Turbine Wheels; Mill Mach'y. O. J. Bollinger, York, Pa.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

Brass & Copper in sheets, wire & blanks. See on p. 332.

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.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

Cope & Maxwell M'g Co.'s Pump adv., page 332.

The Twin Rotary Pump. See adv., p. 350.

Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 61 Nassau street, New York.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Eagle Anvils, 10 cents per pound. Fully warranted.

The I. B. Davis Patent Feed Pump. See adv., p. 332.

Geiser's Patent Grain Thrasher, Peerless, Portable, and Traction Engine. Geiser M'g Co., Waynesboro. Pa.

Pat. Steam Hoisting Mach'y. See illus. adv., p. 333.

Houston's Sash Dovetailing Machine. See ad., p. 334.

Moulding Machines for Foundry Use. 33 per cent saved in labor. See adv. of Reynolds & Co., page 334.

New Economizer Portable Engine. See illus. adv. p. 333.

Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

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

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

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

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N. J.

Toope's Pat. Felt and Asbestos Non-conducting Removable Covering for Hot or Cold Surfaces; Toope's Pat. Grate Bar. C. Toope & Co., M'f'g Agt., 353 E. 78th St., N. Y.

Use Vacuum Oil Co.'s Cylinder Oil, Rochester, N. Y. Don't buy a Steam Pump until you have written Valley Machine Co., Easthampton, Mass.

Lightning Screw Plates and Labor-saving Tools. p. 333.

Use the Vacuum Oils. The best car, lubricating, engine, and cylinder oils made. Address Vacuum Oil Co., No. 3 Rochester Savings Bank, Rochester, N. Y.

Skinner's Chuck. Universal, and Eccentric. See p. 333.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless 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 SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) W. R. S. asks: 1. How can I successfully weld cast and spring steel? Please give fluxes best adapted for each. A. You will find directions in "Spons' Workshop Receipts," page 361. 2. What is the best flux for welding iron? A. Silix is most commonly used, also borax, and sometimes a mixture of the two. 3. Can cast iron be welded? A. No, but they can be united by burning. 4. What is the best method of tempering taps and dies? Is there any brand of American steel as well adapted for these as the English steel? A. Each maker has his own especial process. Sometimes the heating is regulated by heating in a composition having a determined temperature and then cooled in water. Others heat in a clear fire and cool in a special fluid.

(2) F. G. writes: To settle a dispute among foundry men please state the height which the tapers should be from the base in a cupola 22 inches diameter in the clear? A. From 14 to 16 inches.

(3) H. C. asks: Has a boiler, 44 inches diameter and 26 feet long, showing 100 lb. steam, more power than a boiler 36 inches diameter and 26 feet long with the same pressure? A. The pressure of steam determines the power. The form of boiler does not influence the question.

(4) J. A. G. asks: Can you tell me of any good method of bleaching woolen blankets, etc., without the use of sulphur? We have always used sulphur, but it gives a very unpleasant smell to the goods. A. We know of no way of bleaching such goods that will compare favorably with the sulphur method. If properly washed after bleaching no unpleasant smell will remain.

(5) J. L. L. asks (1) for the best way to frost machine work. A. Use fine emery cloth or paper on a small revolving disk. 2. Is there a better way of finishing up work than by the use of emery cloth? A. For plain surfaces use French emery paper, for irregular surfaces use emery cloth.

(6) W. B. P. asks how to ascertain the height of a steeple, using as the surveying instrument a pocket rule bent so as to form a right angle. A. Open your rule so as to form a right angle, place one arm of the rule on a level surface in the same plane with the base of the steeple, allowing the other arm to stand vertically; place a straight edge against the side of the rule so as to touch both arms and look along the straight edge, moving it until it is exactly in range with the top of the steeple. Now by noting on the rule the perpendicular height and base of the triangle, of which the

straight edge is the hypotenuse, you have the proportions of a triangle of which the distance between your point of observation and the center of the base of the steeple forms the base; a, being the base of your triangle; b, its perpendicular height; c, the distance from observer to center of base of steeple; and d, the height of the steeple, your formula would be, c:b::c:d.

(7) M. L. asks: 1. How many cells on each end of the Watson battery will it require for a telegraph line three miles in length? A. Use about eight cells at one end only. We cannot give definite information in regard to this without knowing the resistance of the line. 2. Does it need more battery for a ground connection than a continuous wire? If so, how much? A. No, providing the ground connections are good. 3. Which is the best way to make ground connections? A. Connect with gas or water pipes if you have them; otherwise, bury a sheet of copper 2 feet by 6 or eight feet in ground that is always moist, and fasten your ground wire to it by soldering. 4. Will sounders, with relays of twenty ohms, work successfully on the above line? A. Yes. 5. What distance is considered one ohm resistance? A. 330 feet of No 9 B. wire gauge iron wire has a resistance of one ohm—a trifle over sixteen ohms to the mile; No. 10, about nineteen and a half ohms to the mile; No. 12 about thirty ohms to the mile.

(8) H. B. C. asks why an injector or inspirator will not do its work so perfectly when fed direct from water mains as from a tank. I have found that such is the case, and a number of theories have been advanced; but I apply to you for information. A. Probably because the current or agitation of the water in the main affects the regularity of the jet through the injector. This has been found to be the effect in other cases.

(9) J. L. asks: 1. If to an engine, 7 inches by 10 inches, running with 100 lb. pressure, cutting off at 1/2 stroke, another cylinder 12 inches by 10 inches be added, into which the first is to exhaust, and thence into the atmosphere: what will be the gain? A. From 30 to 35 per cent. 2. Will the area of ports in large cylinders have to be proportionate to its piston area, or will the area of ports of small cylinder do? A. Ports should be in proportion to area of piston. 3. Will the arrangement be of practical value? A. Yes, but it is very old.

(10) A. J. T. asks: Are the bulbs of spirit levels made curved for any particular purpose? If so, for what purpose? A. The glass is curved so that the bubble of air will rise readily to the central point of the glass.

(11) J. R. G. asks (1) how to make a paste to put fancy cards in an album, something that will not draw the paper and hold the cards perfectly tight. Have tried a prepared paper, but it does not answer my purpose. A. Thick starch paste mixed with a few drops of clove oil answers very well. It is better to strain the paste while hot through a coarse linen cloth to remove lumps. Use a rather stiff brush. 2. Will not an ordinary red paper do for making a lantern? A. No. 3. Tell me how to make a cheap drying box for drying the plates? A. Make a frame of three-eighths inch smooth pine, of a width and depth to suit the plates and long enough to hold two dozen plates one-eighth of an inch apart. Nail across this lengthwise at the top, close to the sides, two half inch pine strips notched at the face so as to loosely grip and hold the plates one-eighth of an inch apart. Similar notched strips are tacked inside at the bottom so as to support the plates and hold them apart. 4. Tell me how to make sensitive paper to use on these plates? A. Nitrate of silver, 5 drachms; distilled water, 5 oz.; nitric acid, 2 drops; purified kaolin, 1 oz. Add the latter after the silver is dissolved, shake, and let settle. Pour off the clear solution into a clean shallow porcelain dish. Having cut good albumenized paper to the proper size, place it gently, albumen side down, upon the surface of the bath, lifting each corner in turn and letting it down slowly to exclude air bubbles. Remove from the bath in about two minutes, and hang it up by the corner to dry in the dark. When required for use expose it for about ten minutes to the fumes of aqua-ammonia in a tight box. 5. Will gelatine that you buy in grocery stores answer as well as Nelson's No. 1 gelatine? A. No, not very well.

(12) P. M. asks how to reclaim silver accidentally dropped in some diluted nitric acid. A. Dilute the acid solution with an equal volume of water and add muriatic acid until no further precipitate forms. Let settle, pour off the liquid, cover with clear water slightly acidified with muriatic acid, and add a few fragments of clean zinc, and let the action proceed until the white chloride is reduced to spongy metallic silver. What remains of the zinc may then be picked out, the liquid poured off, and the silver washed with boiling water to remove all zinc chloride and cause the fine metal to dry quickly when placed to drain on filter paper. Mixed with a little borax and heated to bright redness in a small clay or blacklead crucible, the dry, spongy metal will melt and afford, on cooling, a button of compact and pure silver.

(13) F. W. writes: I am building a steam buggy, two engines, cylinders 2x4, with 50 lb. of steam what power will I get? Will boiler 15x30, with 30 one-inch tubes, 18 inches long, be enough to run them? A. With your boiler about 1 1/2 horse power, your boiler is but about half large enough for your engines.

(14) J. M. J. writes: We have sunk a wood curb well, 12 feet square, 25 feet deep, near the bank of the Missouri river, from which we can take clear water, it soaking through the earth from the river; friction on the sides of the curbs prevented us from sinking further; also, in drawing water therefrom and taking out the sand when sinking, the quicksand would flow in about as fast as we could take it out, thereby causing the earth surrounding the curb to cave in and endanger the foundations of the buildings near the well. Now, in driving 2 1/2 inch well points, from which we are satisfied we can get the same clear water, would they have a tendency to cause the quicksand to run in the same proportion as it did with the large well, and which make of well points in your opinion would be most suitable for the purpose? A. If there is underlying quicksand, the 2 1/2 inch wells will draw it off and in

time produce the same evil result as the large well. There are two modes you can pursue: either drive your 2 1/2 inch well through the quicksand, so as to draw the water from lower strata, or select a location where you will avoid the quicksand, which you can do by boring.

(15) W. B. asks: 1. What could I put on an iron cider screw to keep the cider from eating it? It makes our vinegar dark colored. A. Clean the screw occasionally and keep every part of it well oiled. 2. Which would have the most force at the bottom: a tube one inch in diameter and ten feet high, filled with water, or a funnel-shaped vessel with an opening at the bottom the same as the tube, ten feet high, five feet in diameter at top, filled with water? Both vessels are to be kept full of water. A. The pressure per square inch at the bottom would be the same in both.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week Ending

April 26, 1881,

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.

Table listing various inventions and their patent numbers, including Agricultural implement, Aluminous cake, Amalgamator, Animal trap, Announcer, Axle box, Baker, Baling press, Bed bottom, Bed lounge, Bedstead, Biscuit machine, Book, Book holder, Boot and shoe, Bottle stopper, Brick, Bucket, Building block, Bullets, Button, Buttoneer, Cans, Can dog, Cant dog, Car brake, Car coupling, Car sleeping, Car spring, Car stock, Card frame, Carding machine, Carding machines, Carpet sweeper, Cartridge machine, Cartridge shells, Cement pipes, Chains, Chair seat, Chuck, Churn, Cigar cutter, Cigar wrappers, Cigarette machine, Clock, Clothes wringer, Coast defense, Cold by chloride of ethyl, Converter, Core bar, Corn sheller, Cot. folding, Cotton chopper, Cotton gin, Cotton gin attachment, Cotton to be ginned, Dextrine maltose, Dish water.