

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line for each insertion. If the Notice exceeds Four Lines, One Dollar and a Half per Line will be charged.

Agricultural Implements and Industrial Machinery for Export and Domestic Use. R. H. Allen & Co., N. Y.

Pattern Makers can get Metallic Pattern Letters to letter patterns of H. W. Knight, Seneca Falls, N. Y.

Wanted—A heavy first class Tenoning Machine. Address A. W. Gray's Sons, Middletown Springs, Vt.

The world-wide reputation of Asbestos Steam Pipe and Boiler Coverings, Roofing, Roof Paint, Cement for repairing roofs, etc., has induced unscrupulous persons to sell and apply worthless articles, representing them as being made of Asbestos.

Emery Grinders, Emery Wheels, best & Cheapest. Awarded Medal and Diploma by Centennial Commission. Address American Twist Drill Co., Woonsocket, R. I.

Shingle, Heading and Stave Machine. See advertisement of Trevor & Co., Lockport, N. Y.

Chester Steel Castings Co. make castings twice as strong as malleable iron castings at about the same price. See their advertisement, page 397.

Patent Scroll and Band Saws, best and cheapest in use. Cordeman, Egan & Co., Cincinnati, Ohio.

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

The best Sewing Machine in the world—Makes the Lock Stitch, the Chain Stitch, and Embroidery Stitch from two whole Spools. Agents wanted everywhere. G. L. Du Laney & Co., 744 Broadway, New York City.

D. Frisbie & Co. manufacture the Friction Pulley—Captain—best in the World. New Haven, Conn.

Slide Rest for \$8 to fit any lathe. Goodnow & Wightman, 23 Cornhill, Boston, Mass.

Lansdell's Pat. Steam Syphons—Lansdell & Leng's Lever and Cam Valve. Leng & Ogdon, 212 Pearl St., N. Y.

Best Bolter for Sawing Handles, Furniture Stuff, Wagon Stuff, Fence Boards, &c. Send for Circulars. Richard W. Montross, Gallen, Mich.

Steel Stamps & Brass Stencils, for Marking Tools, Patents, Boxes, &c. E. H. Payne, M'r, Burlington, Vt.

For Specialties in Woolens, Seamless Roller Covers, Printers' Blankets, &c., address H. Waterbury & Co., Rensselaerville, Albany Co., N. Y.

Hyatt & Co.'s Varnishes and Japans, as to price, color, purity, and durability, are cheaper by comparison than any other extant. 246 Grand St., N. Y. Factory, Newark, N. J. Send for circular and descriptive price list.

To Lease—The largest portion of the building corner Canal, Center, and Walker Sts., now occupied as a Billiard Manufactory and Sales Room. See advertisement in another column.

Superior Lace Leather, all Sizes, Cheap. Hooks and Couplings for flat and round Belts. Send for catalogue. C. W. Army, 148 North 3d St., Philadelphia, Pa.

Magic Lanterns, Stereopticons, for Parlor Entertainments and Public Exhibitions. Pairs well on small capital. 74 Page Catalogue free. Centennial Medal and Diploma awarded. McAllister, 49 Nassau St., N. Y.

Fire Hose, Rubber Lined Linen, also Cotton, finest quality. Eureka Fire Hose Co., 13 Barclay St., New York.

The Scientific American Supplement—Any desired back number can be had for 10 cents, at this office, or almost any news store.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address B. M. Co., 80, Newmarket, N. H.

Water, Gas, and Steam Pipe, Wrought Iron. Send for prices. Bailey, Farrell & Co., Pittsburgh, Pa.

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

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, New York.

M. Shaw, Manufacturer of Insulated Wire for galvanic and telegraph purposes, &c., 259 W. 27th St., N. Y.

F. C. Beach & Co., makers of the Tom Thumb Telegraph and other electrical machines, have removed to 380 Water Street, New York.

Power & Foot Presses & all Fruit-can Tools. Ferracute Wks., Bridgeton, N. J. & C. 27, Mchly. Hall, Cent'l.

For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

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

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

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing metals. E. Lyon, 470 Grand Street, New York.

Diamond Tools—J. Dickinson, 64 Nassau St., N. Y.

large percentage of metal having a silvery appearance. How can I separate the gold from all other metals? A. Sylvanite contains 56 per cent of tellurium, 28 of gold, and 16 of silver. It frequently contains as well some antimony and lead. After complete roasting, dissolve in aqua regia; evaporate to dryness. Add a small amount of sulphuric acid, and dissolve as far as possible in water. From the concentrated solution, precipitate out the gold with a strong solution of green vitriol.

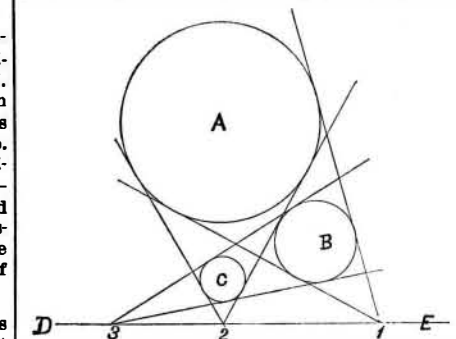
(3) A. O. W. says: I want to vulcanize rubber, and cannot get chloride of sulphur. Please give me the formula for it. A. Chloride of sulphur is obtained by passing dry chlorine gas slowly over molten sulphur, and collecting the product in a condenser. The sulphur should be heated until just at the point of volatilization, about 600° Fah. The impure chloride should be purified and freed from dissolved sulphur by redistillation. It is a reddish yellow fluid of a disagreeable odor, and boils at 280° Fah.

(4) A. C. G. asks: How can I make a composition of chalk or plaster of Paris for making molds that will not dissolve in water? And how can I take impressions or make molds in metal from natural objects? A. Molds of this character are not absolutely insoluble in water. Use 1 part of the finest chalk intimately mixed with 3 parts plaster of Paris. Place the object to be copied in a shallow tray, or other suitable vessel, cover every part of it with a thin film of olive oil, and then brush over it with a camel's hair pencil a thin crease of the finest plaster with water in order to exclude all air bubbles: when this is done, pour over it immediately, and at one motion, the proper quantity of plaster, of a somewhat thicker consistence than that first applied. Allow the plaster plenty of time to set, and, when perfectly hard, remove it carefully from the object, dry perfectly in an oven, and heat to nearly the fusing point of the metal (type metal), then pour the metal in immediately. Where the nature of the surface of the object will not allow of a direct cast being taken from the object in plaster, a thick solution of glue is sometimes employed; when cold, the glue is very elastic and flexible, and may be removed from almost any object without danger of breakage. These casts may be reversed in plaster, and the plaster, in turn, in metal.

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

N. V. W.—No. 1 is chlorite schist containing a small amount of carbonate of nickel. In large amounts it would be valuable. No. 2 is chlorite, a hydrous silicate of alumina and magnesia, containing a small percentage of oxide of iron and sometimes a small amount of oxide of chromium. No. 3 is chlorite schist.—S. D. S.—It is obsidian, or volcanic glass. The ancient inhabitants of Mexico, before their subjugation by Cortes, used it in making sacrificial knives. It is not employed at present.—A. N. T.—No. 1 is dolomite. No. 2 is calcite. No. 3 is coccolite. No. 4 is missing. No. 5 is a mixture of calcite with some siliceous rock—too indefinite to admit of separation. No. 6 is arenaceous limestone.—T. L.—The coal contains only a small percentage of sulphur, not enough to make it objectionable for the purpose you mention. It is a very compact variety of bituminous coal of excellent quality.—F. L. L.—The specimens you send us contain a considerable percentage of nickel, also chalcopryrite and iron pyrites.—H. W. S.—It is trap rock containing small specks of iron pyrites.—E. A.—The mineral found near a lead mine is iron pyrites (sulphide of iron) in indurated clay. The other piece is shale.—E. W.—It is clay containing carboniferous matter of no particular value.—E. F. T.—The shell is made artificially of plaster of Paris moistened with a strong solution of alum together with the perfume, pressed into molds, and dried. The camphor cake contains pipe clay, chalk, magnesia, and a little starch besides the camphor.—J. N. C. (Fredericktown, O.), G. H. (Windsor Locks, Conn.), C. P. (Marysville, Tenn.), S. N. (Forest Station, Shenandoah county, Va.), send us letters of inquiry as to minerals, but no specimens which we are able to identify. If correspondents will not put their names on the boxes which they send (and several such boxes come through the mail at one time) it is very difficult and in some cases impossible to identify the senders.

D. M. asks: What preparation can be used on tenor drums, which will be waterproof and at the same time stand the beating?—J. B. C. asks: Is there any demonstration to the following theorem? Draw three circles of any unequal diam-



ters, as A, B, C. Produce the tangent lines, as shown, until they meet, from A through B, from A through C, and B through C. It will be found in all cases that the meeting points are in a straight line, as 1, 2, and 3 in the straight line, D E. The same result is obtained in whatever position the circles may be placed, or under any variations of their diameters, provided they are all unequal.

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 True Science of Religion. By T. B. McC.
On Boiler Explosions. By T. J. B.
On Cutting Tools. By J. R.
On Ventilation. By G. W. W.
On the United States Patent Association. By J. A. R.
On the Expansion of Superheated Steam. By G. A. W.
On Steel. By G. W. T.
On Aeronautics. By C. E. D.
On the Mississippi Jetties. By A. S.
On Violins. By E. P. W.
On Calipers. By E. R.

Also inquiries and answers from the following: J. M. McF.—A. S.—F. O. H.—T. J. B.—F. W. N.—J. H. D.—J. G.—R. F. W.—P. Q.—N. O.—A. W. K.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries 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.

Hundreds of inquiries analogous to the following are sent: "Who sells castings for small steam engines? Who sells malleable glass lamp chimneys? Who sells foot power band saws? Who sells the flexible shafting exhibited at the Centennial? Whose is the best aneroid barometer?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH Letters Patent of the United States were Granted in the Week Ending

November 7, 1876.

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.

Table listing various inventions and their patent numbers, including items like Abdominal supporter, Advertising clock, Anthracene, Bale tie, Bevel square, Bill file, Book, Books, Boot-crimping apparatus, Boot sole, Breechloading fire arms, Brick kiln, Bridge bit, Broom-winding machine, Bucket ear, Burglar alarm, Burton, Car axle box, Car brakes, Car coupling, Car coupling, Car coupling, Car coupling, Car fare register, Car starter, Carburetor, Carpet stretcher, Carpet stretcher, Carriage coupling, Cast iron, Casting printers' leads, Chainpump bucket, Cigar box, Cigarette machine, Clothesdryer, Clothesdryer, Corn planter, Cotton and hay press, Cotton gin feeder and picker, Coupling pin machine, Cultivating harrow, Cultivator, Cupola furnace, Cupboard, Curtain fixture, Damping paper, Derrick, Desiccating eggs, Desiccating eggs, Ditching machine, Door bolt, Door spring, Dredging apparatus, Dumpingcar, Ear muffler, Earth auger, Electric stop motion, Elevator, Explosive compound, Extension table, Feed trough, Feed water heater, Fence, Fence, Filtering liquids, Fire arms, Fire extinguishers, Fire place grate, Folding chair, Food cup for bird cages.

Table listing various inventions and their patent numbers, including items like Freezing machine, Fruit butter, Furnace door, Fuse, Gage cock, Galvanic battery, Gas meter, Gas meter and carburetor, Gaseller, Gate, Gate, Gold separator, Hammers, Harrow, Harrow, Hay loader, Heat regulator, Heater, Hides, Hoe, Horse collar, Horses, Horseshoe machine, Horseshoe nail plate, Hotel range, Hydrant, Hydraulic propulsion, Ice machine, Illuminating apparatus, Ironing apparatus, Ironing table, Knob roses, Lamp burner, Lamp-chimney holder, Lightning rod, Lining, refrigerator, Liquid filter, Lithographic transfer, Loom harness eye, Lumber edging machine, Mechanical movement, Mechanic's gage, Metal tubes, Milk can, Milk pan, Mill spindle, Motor for churns, Navigating torpedo boats, Nitrogenous fertilizers, Nutlock, Odorless closet, Oil and gas stove, Oil stove, Ornamental chain link, Package band, Padlock, Paper bag machine, Paper bag machine, Paper box, Paper calendering machine, Paperfish, Paper for perforating, Paper pulp process, Pattern for casting, Peanut heater, Pencil sharpener, Pencil with movable leads, Petroleum stove, Planting and sawing machine, Planing support, Plug for drain pipes, Polishing stone cylinders, Preserving meats, Preserving wood, Printing press, Pulverized fuel feeder, Pump valve, Radialdrilling machine, Railway signal, Railway switch, Railway ticket and stamp, Railway train reflector, Refrigerating building, Refrigerator car, Rein holder, Revolving churn, Revolving fire arm, Ring holder, Rock drill, Roller skate, Sash fastener, Sawmill carriage dog, Scarf, Screw propeller, Screw propeller, Screw propeller, Sewing machine, Sewing machine cabinet, Shaft coupling, Shank stiffeners, Sheetmetal cleaning, Sheet metal, Sheet metal, Shoe tip, Shoemaker's pinchers, Siding gage, Slate, Sliding rowlock, Snap hook, Sowing fertilizers, Spinning ring, Spring bed bottom, Spring hinge, Spring hoe for grain drills, Stair covering, Steam boiler blow-off, Steam trap, Step ladder, Stone pavement, Stove pipe shelf, Street sweeper, Subsoil plow, Sugar apparatus, Swage for implements, Swivel snap for harness, Table cutlery, Tanning leather, Telegraph cut-out, Ticket punch, Tire upsetter, Toolholder, Transom lifter and sash center, Traveling bag frame, Tumbler washer, Umbrella runner, Urn for growing plants, Wagon brake lever, Wagon, Wagon, Wagon, Wash tub, Washing machine.

Notes & Queries

J. N. P. will find directions for making friction matches on p. 75, vol. 29.—R. J. will find directions for nickel plating on p. 255, vol. 33.—J. N. will find the article on the friction of water in pipe on p. 48, vol. 29.—C. F. can remove moles from the skin by following the directions on p. 347, vol. 32.—C. R. S. will find on p. 120, vol. 33, directions for making muslin uninflamable.—J. F., M. M., W. G. E., B. P., M. T. B., H. A., and others who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) R. C. says: A. asserts that water has been lifted 33 feet 8 inches with a common lift pump. B. asserts that it never has been lifted higher than 32 feet. Which is right? A. Water was once raised 32 feet 11 inches by a lift pump at the Brooklyn navy yard. This is the greatest result of which we have heard.

(2) E. L. says: I have a small piece of sylvanite, said to yield \$40 gold to the lb. I suppose that it also contains tellurium and silver. I have used the blowpipe upon it and melted out a