

WOOD AND COAL BOX.—Rudolph Ferrerol, New York City. This box is preferably made of metal, and has an open-topped case in which slides a wood box, the box being mounted on rollers so that it may be easily moved about.

DETERGENT PASTE.—Joseph Judge, Pittston, Pa. This is a paste for scouring and polishing purposes. It may be used for polishing and scouring hot or cold metals without much labor, its action being very rapid upon rust, corrosion or discolorations of the surface, and it leaves a polish which will last for a considerable length of time.

HAT.—Samuel Cohen, New York City. This is a hat more especially designed for the use of hunters, etc., having a sufficiently stiff brim to afford protection against the sun and rain, while it may be readily folded up to carry in the pocket.

VAGINAL SYRINGE.—John D. Kirkwood, Pullman, Washington. This a device of novel construction, made in one piece, without joint or seam or screw thread, so that dirt or other matters cannot collect in it, while it has no weak part to break and is not liable to get out of order.

DESIGN FOR A MEDAL.—Albert O. Quinby and Thomas H. Bates, Fresno, Cal. This is a Chicago World's Fair souvenir, and has on it a representation of a spread eagle surmounting a shield-like figure bearing a bird's eye view of the exposition buildings.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

SCIENTIFIC AMERICAN BUILDING EDITION.

JULY NUMBER.—(No. 81.)

TABLE OF CONTENTS.

- 1. Handsome plate in colors of a residence recently erected at Yonkers, N. Y. Perspective views, floor plans, etc. Messrs. Rossiter & Wright, architects, New York. An excellent design.
2. Plate in colors of a residence erected at Marina Heights, Black Rock, Conn. Perspective elevations and floor plans. Cost \$7,000 complete. Henry Lambert, architect, Bridgeport, Conn.
3. Perspective view and floor plans of a brick house at Chambersburg Pa., recently designed and built at a cost of \$2,500.
4. A cottage near Orange, N. J., from plans prepared by Munn & Co., architects, New York. Cost \$7,000 complete. Perspective view and floor plans.
5. A residence at Portland, Me., erected at a cost of \$5,575 complete. Floor plans and perspective elevation.
6. A residence at Bensonhurst, Long Island. Cost \$9,800 complete. Messrs. Parfit Bros., architects, Brooklyn, N. Y. Two perspective elevations and floor plans.
7. Perspective elevations and interior views of the American Yacht Club House, at Milton Point near Rye, N. Y. A handsome building of the Queen Anne style. Messrs. E. A. Sargent & Co., architects, New York.
8. A dwelling at Upper Montclair, N. J., erected at a cost of \$7,000 complete. Messrs. Munn & Co., architects, New York. Perspective and floor plans.
9. A cottage at Babylon, Long Island, N. Y., erected at a cost of \$3,700 complete. Plans and perspective elevation.
10. Sketch of an Australian bush home. Cost from \$1,200 to \$1,500. A simple and economical design for a summer house.
11. Miscellaneous contents: Electrical cotton gin.—Aluminum.—The efflorescence on brickwork.—Leaf photography.—Car roofing.—Superior steel furnaces, illustrated.—How to stain wood yellow and gray.—Ink for writing on glass or porcelain.—An improved wood-working machine, illustrated.—An improved revolving chimney top, illustrated.—Elevators in the amphitheater of Rome.—An improved hot water heater, illustrated.—Natural wood grille and screen work, illustrated.—Galvanized eaves troughs and conductors, illustrated.—Sliding blind patents.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural publication in the world. Sold by all newsdealers.

MUNN & CO., PUBLISHERS, 361 Broadway, New York.

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 the following week's issue

Grindstone Frames—With cabinet base and all improvements. Send for circulars and prices. W. P. Davis, Rochester, N. Y.

"U. S." metal polish. Indianapolis. Samples free. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. 6 Spindle Turret Drill Presses. A. D. Quint, Hartford, Ct. G. D. Hiscox, 361 Broadway, N. Y., Consulting Engineer. Portable and Stationary Cylinder Boring machines. Pedrick & Ayer, Philadelphia, Pa.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Light and Canal Sts., New York.

Centrifugal Pumps. Capacity, 100 to 4,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y.

Crandall's patent packing for steam, water, and ammonia. See advt. next week. Crandall Packing Co., Palmyra, N. Y.

Portable engines and boilers. Yacht engines and boilers. B. W. Payne & Sons, Elmira, N. Y., and 41 Dey Street, New York.

Wanted—Pattern makers accustomed to machine work at an iron works in Camden, N. J. Address Camden, care of Scientific American.

For mud dredging engines. J. S. Mundy, Newark, N. J. Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

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

Perforated Metals of all kinds and for all purposes, general or special. Address, stating requirements, The Harrington & King Perforating Co., Chicago.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.

What do you want to buy? We will send without cost to you, catalogues, price lists, and information concerning anything you wish. Paret, Willey & Co., 265 Broadway, New York.

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

Boiler, new or second-hand, 60 to 80 horse power, and Engine, 30 horse power, wanted near Louisville, Ky., or Cincinnati, O. Also good Fan Blower and Heater. State price and particulars to Steam Boiler, Box 773, New York.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(4465) A. R. S. wants to know what is the best proportion of materials to make a German silver which does not tarnish. A. Nickel 35 parts, tin 20 parts, zinc 18 parts, copper 16 parts, and white cast iron 10 parts.

(4466) M. J. S. writes: Having practiced taxidermy for many years, I naturally read with interest the article on "Dangers of Arsenical Soap," in SCIENTIFIC AMERICAN of April 23, 1892. For the last eighteen years I have used arsenical soap only, believing it to be less harmful than white arsenic. I now if (as this article asserts) arsenic is non-volatile, and "the little arsenic it would be possible to absorb would act only as a tonic," how comes it that a single grain of arsenic in a square yard of wall paper is so injurious? A. The poisonous effect of mixtures of arsenic with organic matter by formation of volatile products is still somewhat in debate. The ill effect of arsenical wall paper is still somewhat uncertain. 2. The taxidermist receives many valuable specimens in the first stages of decay. Will not the application of white arsenic to the skins of such develop ptomaine of arsenic also? A. Ptomaines may be developed in such cases. 3. If the best white toilet soap is used, can ptomaine be developed in the arsenical soap? A. Distinction in favor of olive oil or other vegetable soap might be drawn. 4. Is there any safe, reliable substitute for arsenic in the preparation of skins? A. Arsenic seems to hold its place as the favorite application.

(4467) R. G. P. says: In the manufacture of perfumery, what portion of the plant is used? A. The odors of plants reside in different parts of them, sometimes in the roots, as in the iris and vivitv; the leaves in mint, patchouly and thyme; the stem or wood in cedar and santal; the flower in the roses and violets; the seeds in the tonquin bean and caraway; the bark in cinnamon, etc. Some plants yield more than one odor, which are quite distinct and characteristic. The orange tree, for instance, gives three; from the leaves one called petit grain; from the flowers we procure neroli; and from the rind of the fruit essential oil of orange; named Portugal. The fragrance or odor of plants is owing in nearly all cases to a volatile oil, either con-

tained in small vessels or sacs within them or generated from time to time, during their life, as when in blossom. Some few exude, by incision, odoriferous gums, as benzoin, myrrh, etc.; others give, by the same act, what are called balsams, which appear to be mixtures of an odoriferous oil and an inodorous gum.

(4468) N. McH.—Commercial dextrine is obtained by heating dry potato starch to a temperature of 750° Fah., in sheet iron trays or revolving iron or copper drums, similar to those used in coffee roasting, whereby it is transformed into semi-transparent, brownish lumps, which are converted into a pale yellow powder by grinding between millstones. It is completely soluble in cold water, from which it may be precipitated by addition of excess of strong alcohol. Potato starch is generally used, but starch from other sources will answer. The best tests to ascertain its purity are to agitate briskly a few grains of the dextrine in a test tube with fifty times its weight of pure cold water, then set it aside for 10 minutes. Pure dextrine dissolves completely in cold water to a clear solution. If not all dissolved, pour off the solution, add a little water to the residue, heat to boiling, let cool, and add a few drops of iodine water; a blue color indicates starch.

(4469) W. A. B. asks: 1. I have an induction coil I made that gives a shock as strong as I can bear with a current from two cells of gravity battery. What would be the best kind of battery to use to occupy very little space and at the same time not be expensive? A. Use a plunging bichromate battery. 2. What length of focus, size of glasses, distance apart, and number of glasses should be in a microscope to magnify 350 diameters? I can make the glasses and mount them myself. If you have a SUPPLEMENT that gives information on this subject, tell me the number and I will send for it. A. The formula for a good microscope objective requires very careful calculation, and the lenses must be made of special glass and carefully corrected. We do not think you will be able to do this unless you are an expert optician. You will find information on grinding lenses in SUPPLEMENT, No. 318.

(4470) W. T. B. writes: In Sloane's "Arithmetic of Electricity," the strength of current that a copper wire can safely carry is given as 25 amperes for a No. 18 wire, Birmingham gauge. Other authors whose works I have vary but slightly from 8 amperes for No. 18 B. and S. gauge, a smaller wire than the other gauge. Now, will you please tell me what is the safe carrying capacity of say No. 18 B. and S. gauge copper wire? A. The 25 amperes is credited to No. 18 B. and S. or American wire gauge—not Birmingham. There is no hard and fast rule. The figure given in the arithmetic is for electro-magnets and amateurs, where the wire is insulated. A bare wire would carry considerably more. 2. What is the ratio of the current capacity of wires to their diameters? A. The square of the carrying capacity varies with the cube of the diameter. See "Arithmetic of Electricity," pages 58, 59.

(4471) R. M. McG. asks for a so-called window pane barometer. A. By painting the window pane or wall paper with any one of the following solutions, different colors are exhibited upon atmospheric changes, owing to the well known properties of nickel and cobalt salts, which change color in accordance with the variation or amount of moisture in the air. No. 1. Cobalt chloride 1 part, gelatine 1 part, water 100 parts. No. 2. Copper chloride 1 part, gelatine 10 parts, water 100 parts. No. 3. Cobalt chloride 1 part, gelatine 20 parts, water 200 parts, nickel oxide 0.75 part, copper chloride 0.25 part. In damp weather all will be colorless; in clear weather No. 1 will be blue, No. 2 yellow, and No. 3 green.

TO INVENTORS.

An experience of forty years, and the preparation of more 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 unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted July 19, 1892, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

- Adding machine, W. H. Wilson..... 479,243
Agricultural implement, M. Macleod..... 479,094
Air compressor, T. F. Farrell..... 479,260
Alarm. See Burglar alarm. Electric alarm..... 479,380
Alarm, F. F. Boegner..... 479,287
Alarm lock, F. Mahannah..... 479,374
Alkali apparatus for and process of recovering, H. Blackman..... 478,981
Alkali apparatus for recovering, H. Blackman..... 478,980
Amalgamator and ore concentrator, L. C. Moreland..... 479,140
Animal shears, Ashberry & Barnes..... 479,109
Animal trap, D. Wigert..... 479,161
Annals box, A. Beyer..... 479,245
Annealing furnace, Cowley & Gilpin..... 479,307
Armature for dynamo-electric machines, M. J. Wightman..... 479,179
Armature for electric machines, E. A. Sperry..... 479,090
Auger, mortising, A. L. Newton..... 479,377
Axes, die for forming, J. P. Kelly..... 479,106
Axe, W. H. Matthews..... 479,223
Axe lubricator, J. S. Paton..... 479,077
Baling press, W. S. Livengood..... 479,287
Bearing roller, F. Van Benthuysen..... 479,268
Bed canopy, folding, A. H. Eva..... 479,063
Bed lounge, S. A. Holstein..... 479,071
Bed, time alarm, G. O. Seaman..... 479,307
Bedstead, C. McClintock..... 479,013
Bedstead, P. L. White..... 479,043
Beer apparatus, F. M. La Boiteaux..... 479,190
Beer cooler tube, C. A. Cotter..... 479,205
Belt, electric, D. P. Andrus..... 479,147
Belt box, I. J. Booth..... 479,180
Bleaching and dyeing apparatus, Young & Pearn..... 479,383
Block. See Building block.
Boat lowering apparatus, H. E. Bowring..... 479,387
Boiler. See Steam boiler.
Boiler, J. R. Lutgen..... 479,298
Boiler and making the same, G. L. McGee..... 479,531
Book and carbon sheet holder, combined, J. S. McDonald..... 479,014
Bottle filling apparatus, M. J. McHugh..... 479,298

- Bottle stopper, G. F. Atwood..... 479,045
Bottle wiring machine, Wile & La Casse..... 479,342
Brace. See Spinal brace.
Brake. See Car brake. Car coupling brake.
Brick cutting machine, E. Stearns..... 479,021
Bridge, suspension truss, G. A. Stephenson..... 479,081
Brush, S. P. Storrs..... 479,082
Brush, electric, R. E. Williams..... 479,321
Buckle, S. T. Halsey..... 479,003
Buckle, suspender, H. Lieberthal..... 479,074
Building block, G. E. Briggs..... 479,054
Burglar alarm, F. G. Troite..... 479,320
Burner. See Gas burner. Vapor burner.
Butter package, F. M. Peck..... 479,095
Button, F. H. Larter..... 479,191
Cab, D. J. O'Donnell..... 479,300
Calk sharpener, J. H. E. Clark..... 479,204
Can. See Tin can.
Can heading machine, L. E. Curtis..... 479,135
Can opener, S. Eheneger..... 479,256
Can opener, C. Morgan..... 479,011
Can stand, E. Thomas..... 479,089
Candlestick, H. Hamrick..... 479,323
Car, air duct, C. H. Dow..... 479,253
Car brake, C. H. Allen..... 479,236
Car, combined freight and passenger, J. Halsey..... 479,083
Car coupling, J. C. Devlin..... 479,393
Car coupling, J. Faubion, Sr..... 479,262
Car coupling, E. Kling..... 479,108
Car coupling, C. H. Lewis..... 479,337
Car coupling, R. S. Robertson..... 479,079
Car coupling brake, J. P. Seawell..... 479,024
Car door, A. B. Taylor..... 479,143
Car door, grain, E. A. Hill..... 479,114
Car draw bar, J. L. Blessing..... 479,048
Car, parlor sleeping, D. C. Broese..... 479,240
Car, railway, J. M. Burton (r)..... 11,254
Car starter, Warner & Allen..... 479,127
Car top buffer, freight, H. H. Sessions..... 479,026
Car wheel, A. Hymas..... 479,366
Cars, conduit trolley for street, A. H. Hicoutman..... 479,527
Cars, street pipe coupling for railway, T. Carley..... 479,361
Card or picture setting, M. Wirths..... 479,129
Carpet sweeper, T. H. Bedell..... 479,200
Carrier. See Cash carrier. Trace carrier. Velo-lopede package carrier.
Cartridge reloader, F. B. Chesbrough..... 479,245
Cartridge shells, tool for trimming heads of, G. R. Richards..... 479,125
Carving machine, M. Hertel..... 479,364
Case. See Exhibiting case.
Cash carrier, F. O. Farwell..... 479,261
Cash register, J. J. Range..... 479,354
Cash register, H. Saunders et al..... 479,337
Cash register and indicator, M. Heintz..... 479,215
Cash registering and check making machine, Webster & Saunders..... 479,341
Cash registering and indicating machine, Foote & Range..... 479,357
Certificate repeating value, W. W. C. Spencer..... 479,038
Chair. See Folding chair.
Chopper. See Cotton chopper.
Cistern or well cleaner, J. Shilling, Jr..... 479,228
Clamp. See Electric conductor clamp.
Clay with glass and in articles made accordingly, Clay ping, H. Harrison & Haines..... 479,365
Cleaner. See Cistern or well cleaner.
Clevis, J. M. Enschede..... 479,208
Clothes line holder, M. R. Ethridge..... 479,136
Cook for pneumatic tools, graduated, D. Drawbaugh..... 479,061
Comb handle, H. Williams..... 479,014
Compasses, A. Kolesch..... 479,329
Condenser, steam, C. Grohman..... 479,271
Conductors, cast joint for armored, F. M. Bennett..... 479,386
Copying device, J. C. Ingram..... 479,250
Corn shucker, F. H. Mason..... 479,044
Corset, M. W. Sherman..... 479,312
Cotton chopper and cultivator, combined, L. H. Abernathy..... 479,083
Cotton pickers, etc., trunk for use with, R. L. Cumcock..... 479,990
Coupling. See Car coupling. Thill coupling.
Cover and adjustable ink well, R. L. Boyd..... 479,132
Crayon moulding machine, A. A. Fuchs..... 479,212
Crusher. See Ore and coal crusher.
Cultivator, Johnson & Olson..... 479,281
Cup. See Oil cup.
Current motor, alternating, T. H. Hicks..... 479,187
Cutter. See Dovetail cutter.
Cutting and scouring device, combined, E. K. Paton..... 479,332
Cutting right-angled structural shapes, machine for, R. W. Grace..... 479,066
Dental engine, F. H. Damon..... 479,127
Die, H. C. Dickinson..... 479,354
Dividers, W. A. Bergard..... 479,112
Dovetail cutter, A. G. Mead..... 479,075
Draught equalizer, T. J. Fredericks..... 479,088
Draught equalizer, J. S. Thompson..... 479,084
Dredging machine, J. M. Miller..... 479,375
Dress form..... 479,332
Drill. See Rock drill.
Drilling machine, O. Sternoff-Beyer..... 479,086
Drive gate, J. M. Thomas..... 479,319
Dulcimer, I. D. Bagdasarian..... 479,323
Dust collector, Van Gelder..... 479,331
Dust from air, apparatus for separating, P. Van Gelder..... 479,267
Dynamo, compound wound alternating current, H. Lemp..... 479,170
Ear muff, H. Hadden..... 479,185
Eggs, device for separating the white and yolk of, L. F. Pettet..... 479,016
Electric alarm, R. L. Keith..... 479,282
Electric circuit connector, W. E. Gill..... 479,325
Electric circuit connector, J. F. Wolensak..... 479,322
Electric circuit safety device, M. Thum..... 479,085
Electric clamp, Ingraham & Lorang..... 479,216
Electric current meter, G. Kenney..... 479,172
Electric machine, dynamo, R. Eickemeyer..... 479,118
Electric meter, Ott & Kenney..... 479,171
Electric wire support, W. B. Bragdon..... 479,052
Electrical meter, A. E. Kenney..... 479,167
Electrical meter for three wire systems, Kenney & Ott..... 479,168
Electro-magnetic machine, Kenney & Ott..... 479,169
Elevator, M. Y. Calcutt..... 479,330
Elevator, C. A. Case..... 479,386
Elevator, F. D. Harper..... 479,399
Elevator, C. P. Stearns..... 479,316
Embroidering machine, E. & Cornely..... 479,057
End gate, wagon, P. Millet..... 479,076
Engine. See Dental engine. Oscillating engine. Rotary engine.
Envelope making machine, J. West..... 479, 42
Exhibiting case, needle, E. R. Denny..... 479, 7
Fanning mill, F. Bush..... 479,241
Fare register, Boyd & Martin..... 479,388
Faucets, soap holder attachment for water, A. R. Miranda..... 479,330
Feed water heater, locomotive, N. S. Chapman..... 479,348
Fence, A. L. Fitch..... 479,350
Fence wire, ornaments, C. W. Bridges..... 479,365
Fiber tubes, art of and apparatus for making parchmentized, R. P. Frist..... 479,263
Fiber tubes, art of and apparatus for making parchmentized, Frist & Rupert..... 479,264
Firearm, repeating, J. Laumann..... 479,254
Fire escape, C. P. Ekma..... 479,108
Fireplace back or lining, W. E. Fitch..... 479,108
Fish hook, A. G. Mack..... 479,194
Fishing through ice, apparatus for, G. H. Lane..... 479,219
Flooring, J. W. See..... 479,126
Fluid meter, W. H. Holt..... 479,377
Folding chair, R. E. Eldridge..... 479,356
Folding stand, H. A. Koeller..... 479,073
Forge, blacksmith's, Lenzer & Heckenroth..... 479,286
Form, clothing, H. H. Cummer..... 479,248
Frog, derailing, O. J. Travis..... 479,338
Furnace. See Annealing furnace. Smoke consuming furnace.
Furnace air feeding device, H. H. E. Schomburg..... 479,022
Furniture leg fastening, H. M. Hanson..... 479,363
Gauge. See Water gauge.
Game apparatus, W. F. Ud..... 479,286
Game apparatus, C. N. & N. H. Maxwell..... 479,196
Garment marking and marking machine, S. A. Cooke..... 479,988
Garment fastener, G. Bradshaw..... 479,163
Gas burner, B. C. Wilson..... 479,128
Gas machines, air supplying device for, E. B. Badlam..... 479,238
Gas, manufacture of, P. D. Moses..... 479,233
Gate. See Drive gate. End gate. Railway gate.
Gate actuating mechanism, J. F. Houston..... 479,378
Gear wheel, A. Walker..... 479,233
Gearing, differential, G. Shaw..... 479,118
Generator. See Steam generator.
Glassing bar for skylights, W. H. Heywood..... 479,275
Glove, P. B. Lee..... 479,285
Grate, fire, R. Gilchrist..... 479,089
Gypsum, hardening objects made of crude, C. Reimer..... 479,019
Handle. See Coffin handle. Saw handle. Tool handle.
Handle, J. B. Schroder..... 479,176
Hanger. See Lamp hanger.
Hanger, J. G. Duke..... 479,254
Harbor, R. H. F. & N. H. Seawall..... 479,309
Harvester, corn, J. T. Hess..... 479,105
Hate book, C. S. Gooden..... 479,068
Hay loader, Dickerman & Ellscoth..... 479,353
Hay rake, horse, E. Swift..... 479,083
Hay stacker, P. Bernard..... 479,979