

trunk; from aft side of stern post to after end of center board, 13 feet 6 inches.

(16) C. E. B. asks in what connection is an air pump used with a marine engine. A. To discharge the water, air, and vapor collected in the condenser.

(17) S. S. P. will find full directions for making row boats in SUPPLEMENTS No. 25, 26, 30, 32, 37, and 39.

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

W. B.—The quartzite (No. 1) can only be worked by mechanical means. We know of no substance which will corrode or dissolve the stone in the way you suggest. No. 2 is a limestone containing iron pyrites, of no value. We have not received the other specimen.—E. R.—It is calcareous tufa or travertine, carbonate of lime deposited from calcareous waters. It often forms beds of limestone which can be used for architectural purposes. The Coliseum at Rome is built of this rock.—C. E. R.—It is a decomposed feldspathic rock, useful in the manufacture of porcelains and white ware. Value 3 or 4 dollars per ton, washed and ground.—C. T.—Hornblende slate, contains no silver.—W. I. W.—Sample (in pen box) consists of magnetite, a valuable ore of iron.

COMMUNICATIONS RECEIVED.

- A Cheap Rowing Machine. By C. W. F.
On Gun Boats, etc. By J. J. C.
On Traveling Rocks. By C. F.
On Finding the Distances of Inaccessible Points. By P. McC.
On Ice Yachts. By F. B. C.
On Horse Railroads. By S. G.
On Ice Yachts. By S. J. D.
On Edison Generator. By G. F. P.
On Ice Yachts. A. C. C.
On Mineral Discovery. W. G. C. B.
On Molecules. By J. W. C.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

[November 11, 1879,

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, or any patent issued since 1867, 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 inventions such as: Aeration of water, apparatus for showing the...; Air forcing apparatus, J. F. Barker...; Alloy for journal bearings, B. J. Downs...; Auger, C. Brinton...; Barges, boats, etc., construction of, R. G. Jones...; Basket, metallic, Clark & Wells...; Bed bottom, J. P. Mallette...; Bed spring, H. Henley...; Beehive, C. W. Sappenfeld...; Belt, electro-therapeutic, C. N. West...; Belt fastener, A. Clunan...; Billiard table corner iron, H. A. Benedict...; Boot and shoe cleaning and polishing machine, P. Hille...; Boot and shoe heel, J. E. Mitchell...; Boot and shoe sole buffing machine, Winslow & Fifield...; Boot treeding mechanism, W. S. Hall...; Bottle and stopper, H. B. Anderson...; Bottle stopper, W. Vom Hofe...; Bracelet, T. G. Brown...; Bridge, R. B. Vardell...; Broiler, W. H. Harrison...; Brush, galvanic, B. H. Bobb...; Buckle, trace, T. J. Smith...; Butter working machine, J. S. Lash...; Button, L. W. Barnes...; Button, boot and shoe, G. H. W. Curtis...; Can for hermetically sealed goods, C. C. Lane...; Can top, F. Wilcox...; Capsule filling apparatus, F. E. Davenport...; Car coupling, G. W. Bolton...; Car door, grain, Miller & Susemihl...; Car, dumping, S. D. King...; Car lighting and ventilating apparatus, W. H. Smith...; Car replacer, M. Herrens...; Car starter, T. S. Taylor...; Carriage body corner plate, P. Anderson...; Cartridge capping and crimping tool, S. V. Kennedy...; Cartridge shells, machine for capping, A. L. Howard...; Casts of the human form, etc., apparatus for taking, J. E. Johnson...; Chandelier, extension, T. D. Hotchkiss...; Chisel, turning, F. Hanson...; Cider mill, J. L. Barnes...; Clock escapement, R. S. Abernethy...; Clock lock work, A. L. Atwood...; Cloth finishing machines, etc., apparatus for guiding and delivering woven fabrics to, J. Kerr...; Clutch, friction, H. C. Crowell...; Cock key, extension water, P. H. Regan...; Cock or faucet, C. A. Blessing...; Cock or valve, C. A. Blessing...; Coffee roaster, S. M. Poff...; Colors, apparatus and process of fixing, G. H. Smith...; Cooker, steam, S. L. Farrar...; Corn sheller, Ward & Irish...; Corpse cooler, W. White...; Corset, E. K. Bullock...; Corset, E. J. Wood...; Corset clasp, A. B. Curtis...; Cotton chopper and cultivator, combined, J. P. Prairie...; Cotton cleaner, J. W. Thorn...

Table listing inventions such as: Cotton sprinkler, J. Schler...; Door fastener, W. Williams...; Drain pipe, J. H. Blose...; Drawer lock, N. A. Hull...; Drawing or roving can, C. O. Beck...; Dredging machine, G. Uhl...; Dressing case, F. Koskul...; Drying vegetables, etc., screen to be used in, A. D. Chase...; Egg and fruit carrier, J. Merlette, Jr...; Egg holder, J. S. Birch...; Egg tester, W. S. Burnham...; Embroidering machine, J. C. Wellens...; Fare box, G. Beadle...; Feed bag for horses, E. Forbes...; Fence, flood, A. J. Heady...; Fence link, barb, C. A. Sherman...; Fence post, C. B. De Wolfe...; Filter, A. S. Cook...; Firearm, magazine, C. W. Baldwin (r)...; Firearm, ornamentation of, O. Bodenstern (r)...; Fire escape and portable water pipe, Drake & Hammett...; Fire extinguisher, automatic, J. W. Bishop...; Floor, fireproof, L. F. Beckwith...; Furnace feeder, Campbell & Hyland...; Furnace regulator, C. H. White...; Garden rakes, manufacture of, J. H. Smith...; Gas, apparatus for making coal, C. W. Isbell...; Gas, scrubber for making, C. W. Isbell...; Gate, A. O. Dean...; Gate, J. S. Henshaw...; Gate, T. F. Metcalfe...; Glass dish, Wahl & Weimann...; Gleaner and hay rake, W. A. Stark...; Goods, apparatus for facilitating payment and delivery of, J. C. White...; Grain binders, cord holder and cutter for, O. O. Storie...; Grain drill, S. B. Hart...; Grainmeter, W. & T. P. Carr...; Grain separator, G. E. Passage...; Grain separator, W. I. Silsby...; Grate bar, rocking, F. B. Stevens...; Harness, A. W. & A. L. Lawton...; Harness, device for suspending and detaching, J. O. Knapp...; Harrow and clod crusher, J. M. Murphy...; Harvester, A. R. Reese...; Hat punching machine, A. L. F. Mitchell...; Hat shearing and finishing machine, A. L. F. Mitchell...; Hats, band fastener for use in the manufacture of felt, House & Wheeler...; Hats, stretching and finishing felt, House & Wheeler...; Hay cap, F. Watkins...; Head rest, adjustable, A. B. Manwarring...; Heat transmitting apparatus, G. R. Prowse...; Hermetic closing of receptacles, T. G. F. Dolby...; Hinge for telephone boxes or cases, T. A. Watson...; Hog scalding, D. F. Coffman...; Honeycomb foundation, artificial, J. E. Hetherington (r)...; Horse power machine, J. L. Moore...; Hose reel, T. J. Cain...; Implement seat, J. Kelly...; Key ring, G. W. Jopson...; Key seats, machine for cutting, W. W. Trevor...; Knitting tubular fabrics, machine for, B. L. Stowe...; Lamp, W. H. Smith...; Lamp black, apparatus for making, P. Neff...; Lamp, car, W. H. Smith...; Lamp, marine signal, F. J. Dennis...; Lantern, L. Henkle...; Lantern, dissolving view, H. Keevil...; Lathe attachment for turning lathe centers, S. Brown...; Leather, artificial, C. H. Knelles...; Lighting device, H. Arn...; Limb, artificial, A. A. Norman...; Locomotive engine, H. F. Shaw...; Loom shuttle, H. J. Miller...; Mail bag fastening, C. Bried...; Map cabinet, G. H. Grant...; Marble and stone, making artificial, J. H. Thorp...; Matting and smelting furnace, combined, L. Stevens...; Meat preserving apparatus, W. I. Goodin...; Meats, preventing mould upon, L. Fagersten...; Metal plates, machine for fanging, J. E. Bassett...; Millstone dressing machine, W. Griscoon...; Millstone dressing machine, E. H. C. A. T. Vulpus...; Mixing, crushing, and drying granular materials, apparatus for, J. N. Fleming...; Motor, J. Romig...; Mower, lawn, A. J. Whiteomb...; Needles, machine for making, C. D. Wrightington...; Nutlock, H. C. Hill...; Odometer, A. Yount...; Oil tester, kerosene, T. D. Pinckney...; Optical illusions, apparatus for producing, Pepper & Walker...; Ordnance, breech-loading, W. Palliser...; Packing for surface condensers, tube, J. S. Wilson...; Padlock, Frederick & Trump...; Padlock, permutation, F. O. Carlson...; Paper bag machine, W. C. Cross...; Paper damping machine, R. M. Hoe...; Paper dish, corrugated, C. Ingersoll...; Paper pulp from wood, process and machinery for making, H. A. Frambach...; Pavement, stone, J. Luck...; Pianoforte harmony attachment, G. A. Radinsky...; Picture frames, manufacture of, A. Komp...; Pipe joint, H. Broome...; Pipe wrench, H. Rhyn (r)...; Pipe wrench, J. H. Vinton...; Piston for hydraulic and other cylinders, F. A. Bishop...; Plant and vine culture, C. H. Sikes...; Planter, corn, cotton, and seed, Culp & Montague...; Planters, check rower for corn, Rollins & Hudson...; Plow, Crook & Huffman...; Plow, reversible, O. Haskin...; Plow, sulky, A. K. Munson...; Plows, seeding and fertilizing attachment for, G. C. Beal...; Pocket knife, H. S. & R. S. Landis...; Printing machine, calico, F. Baylies et al...; Printing machine delivery apparatus, J. T. Hawkins...; Printing machine, die and plate, E. Hewitt...; Printing machine, reciprocating, J. T. Hawkins...; Printing paper bags, machine for, A. C. Getten...; Pulverizing apparatus, M. Golding...; Pump, lifting, E. Barnes...; Radiator, York & Wilson...; Radiators, blow off valve for steam, W. Burlingame...; Railway rail sprinkler, M. F. Craig...; Railway signal, J. C. West...; Railway signaling, H. W. Spang...; Railway tie, O. E. Mullarky...; Railway track, elevated street, S. Dodson...; Reducing, mixing, and sifting machine, N. Bassett...; Refrigerator, H. W. Cass...; Rein rest, driving, G. P. Williams...; Rivet, J. B. Cornell...; Rock drill, E. J. Williams...; Roller mill adjustment, Nagel & Kaemp...; Roofing, composite, P. A. Bell...; Rope reel, C. N. Cass...; Rotary engine, G. Murray, Jr...; Ruler, parallel, F. R. Honey...; Saw clamp, S. Petty...; Saw handle, crosscut, E. R. Osgood...; Saw tooth, insertible, J. Ohlen...; Scarf, H. Selvage...; Scythe sharpener, steel, W. Dow...; Seal lock, F. W. Mix...; Seeding machine, Martin & Stewart...; Seeds, machine for cleaning grass, J. L. Fisher...; Service pipe box, P. Connolly...; Sewing machine, McKay & Blake (r)...; Sewing machine for embroidering, E. Wright...; Sewing machine, straw braid, H. Bland...; Sewing machine thread controlling device, J. A. True...; Sewing machine trimming attachment, J. I. H. & J. H. Pellerin...; Sewing sweat linings into hats, machine for, T. W. Bracher...; Shafts, device for fastening wheels to, C. C. Klein...; Shawl strap, M. Rubin...; Sheet metal can, T. G. F. Dolby...; Shoe clasp, J. L. Joyce...; Shoe clasp, elastic, C. Libby...; Shoe uppers and soles, machinery for cementing, J. B. Johnson...; Shutter worker, P. S. Robinson...; Sieve, L. H. Thomas...; Skate, J. E. Parmenter...; Slag to convert the same into tiles, slabs, and blocks, treating furnace, J. Woodward...; Snath attachment, C. Sears...; Soldering machine, can, J. G. Jones...; Spark arrester, locomotive, D. Hawksworth...; Spoke setting machine, N. T. Edson...; Stamp mills, guide for the stems of, W. Raup...; Steam boiler, C. Bried...; Steam brake for locomotives, J. Hickey...; Steam engine boiler bottom, T. J. Fales...; Steam or air brake cylinder, H. I. Bearup...; Stove back, E. E. Bunker...; Stove grate, G. W. Herrick...; Stove, crock, J. S. Williams...; Stove, oil, C. M. Arthur...; Straw board, machine for lining, G. S. Byster...; Street steam mains, junctions service box for, W. W. & F. N. Trevor...; Sulky, J. V. Upton...; Surgeon's needle, J. Watson...; Surgical splint, J. E. Johnson...; Suspender ends, A. Shenfield...; Suspenders, O. Kleinberger...; Tackle blocks, axle bearing for, J. W. Norcross...; Telephone alarm system, C. E. Buell...; Telephone, carbon, J. W. Gilbert...; Telephones, apparatus for operating speaking, E. Gray...; Tether, G. C. Beal...; Tether, animal, E. Wright...; Thill coupling, B. F. Richardson...; Thrasher and separator, P. Horn...; Tongs, clothes, G. C. Davison...; Tool, combination, M. H. Sly...; Toy, C. Bopp...; Trimmings, machine for making dress, Kersten & Schaupt...; Unhairing machine, W. Gerber...; Valve gear, J. C. Dean...; Vegetable slicer, N. H. Andrews...; Vehicle dashes, fastening attachment for, B. J. Warden...; Vehicle shifting seat, Himesbach & Weninger...; Vise and anvil, combined, Davis & Grenalds...; Vise, parallel, N. P. Ringstad...; Washing machine, T. A. H. Cameron...; Washing machine, C. P. Hosmer...; Waste pipe cleaner hydraulic, E. J. Verrue...; Watch regulator, A. Platt...; Water, method and apparatus for detecting the rate of consumption of, B. S. Church...; Weather strip, P. W. Cassil...; Weather strip, J. C. Gibson...; Weather strip, S. Roebuck...; Wells, earth drilling and boring machine for artesian and other, A. V. y Castropol...; Whiffletree coupling, H. K. Porter...; Whip socket, J. M. Underwood...; Windmill, J. M. Whitney...

ICE-BOATS — THEIR CONSTRUCTION and management. With working drawings, details, and directions in full. Four engravings, showing mode of construction. Views of the two fastest ice-sailing boats used on the Hudson river in winter. By H. A. Horsfall, M. E. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1. The same number also contains the rules and regulations for the formation of ice-boat clubs, the sailing and management of ice-boats. Price 10 cents.

PLAYS! PLAYS! PLAYS! PLAYS! For Reading Clubs, for Amateur Theatricals, Temperance Plays, Drawing Room Plays, Fairy Plays, Ethiopian Plays, Guide Books, Speakers, Pantomimes, Tableaux Lights, Magnesium Lights, Colored Fire, Burnt Cork, Theatrical Face Preparations, Jarley's Wax Works, Wigs, Beards, and Moustaches at reduced prices. Costumes, Scenery, Charades. New catalogues sent free, containing full directions and prices. SAMUEL FRENCH & SONS, 38 E. 14th Street, New York.

FORTUNE QUICKLY MADE.

Money has been made more rapidly within the last few months in Wall Street than at any period since 1873. Immense profits have been realized from small investments. The following affidavit explains itself:

Personally appeared before me, George A. Payne, of 134 West 49th Street, New York city, to me known, and, on being duly sworn, says that on an investment of \$25 placed with Thatcher, Belmont & Co., bankers, and by them operated for a period of two weeks, I had returned to me by the said firm \$972.53.

(Signed) GEO. A. PAYNE. State of New York, City and County of New York, ss. Sworn before me this 22d September, 1879. J. B. NONES, Notary Public, 91 Duane Street, N. Y.

Thatcher, Belmont & Co., accept subscribers on their 1 per cent. margin or in their concentration of capital, whereby a number of small sums, from \$10 upwards, are aggregated and stocks operated. Latest Wall Street information sent free upon application by Messrs. Thatcher, Belmont & Co., Bankers, F. O. Box 1307, or 43 Broad Street, New York.

To Business Men.

The value of the SCIENTIFIC AMERICAN as an advertising medium cannot be overestimated. Its circulation is ten times greater than that of any similar journal now published. It goes into all the States and Territories, and is read in all the principal libraries and reading rooms of the world. A business man wants something more than to see his advertisement in a printed newspaper. He wants circulation. If it is worth 25 cents per line to advertise in a paper of three thousand circulation, it is worth \$4 per line to advertise in one of forty-eight thousand.

The circulation of the SCIENTIFIC AMERICAN is guaranteed to exceed FIFTY THOUSAND every week. For advertising rates see top of first column of this page, or address

MUNN & CO., Publishers, 37 Park Row, New York.



CAVEATS, COPYRIGHTS, LABEL REGISTRATION, ETC.

Messrs. Munn & Co., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents for Inventors.

In this line of business they have had OVER THIRTY YEARS' EXPERIENCE, and now have unequalled facilities for the Preparation of Patent Drawings, Specifications, and the Prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Registration of Labels, Copyrights for Books, Labels, Reissues, Assignments, and Reports on Infringements of Patents. All business intrusted to them is done with special care and promptness, on very moderate terms.

We send free of charge, on application, a pamphlet containing further information about Patents and how to procure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc.

Foreign Patents.—We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world. American inventors should bear in mind that, as a general rule, any invention that is valuable to the patentee in this country is worth equally as much in England and some other foreign countries.

Five patents embracing Canadian, English, German, French, and Belgian will secure to an inventor the exclusive monopoly to his discovery among about ONE HUNDRED AND FIFTY MILLIONS of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The expense to apply for an English patent is \$75; German, \$100; French, \$100; Belgian, \$100; Canadian, \$50.

Copies of Patents.—Persons desiring any patent issued from 1836 to November 26, 1867, can be supplied with official copies at reasonable cost, the price depending upon the extent of drawings and length of specifications.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawings and specifications, may be had by remitting to this office \$1.

A copy of the claims of any patent issued since 1836 will be furnished for \$1. When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A pamphlet, containing full directions for obtaining United States patents sent free. A handsomely bound Reference Book, gilt edges, contains 140 pages and many engravings and tables important to every patentee and mechanic, and is a useful hand book of reference for everybody. Price 25 cents, mailed free.

Address MUNN & CO., Publishers SCIENTIFIC AMERICAN, 37 Park Row, New York. BRANCH OFFICE—Corner of F and 14th Streets, Washington, D. C.

TRADE MARKS.

- Cigars, cigarettes, and manufactured tobacco, M. L. Cohn 7,776
Cotton goods, Forbes Lithographic Manufacturing Company 7,774
Linen and cotton piece goods, G. & J. Ballin 7,775
Soap, Proctor & Gamble 7,777

DESIGNS.

- Carpet, H. Christie 11,500
Carpet, E. Guiraud 11,501, 11,502
Carpet, C. Magee 11,503
Carpet, E. Pyne 11,504
Carpet, T. J. Stearns 11,505
Fan, J. Macdonough 11,507
Handles for table casters, A. Hart 11,506
Spoon and fork handles, F. Waterhouse 11,508

Advertisements.

Inside Page, each insertion --- 75 cents a line. Back Page, each insertion --- \$1.00 a line. (About eight words to a line.)

Engravings may head advertisements at the same rate per line, by measurement, a the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue.

ICE-BOAT WHIFF.—FULL WORKING drawings and description, with dimensions of the model ice-yacht Whiff, the fastest yacht in the world. Exhibited at the Centennial, by Irving Grinnell. With 14 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 63. Price 10 cents. To be had at this office and at all news stores. Any intelligent person with the aid of the drawings and directions given in the above numbers of the SUPPLEMENT may readily construct a first-class ice-boat, of any desired size, at a small cost.