

Business and Personal.

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Order pattern letters & figures from the largest variety. H. W. Knight & Son, Seneca Falls, N. Y., drawer 1115.

Stow flexible shaft. Invented and manufactured by Stow Mfg. Co., Binghamton, N. Y. See adv., page 222.

"U. S." metal polish. Indianapolis. Samples free.

Improved iron planers. W. A. Wilson, Rochester, N. Y.

For Sale—36"x24" Eng. lathe, \$450. S. M. York, Clev., O.

For mud dredging engines. J. S. Mundy, Newark, N. J.

Heading machinery. Trevor Mfg. Co., Lockport, N. Y.

Microbe Killer Water Filter, McConnell Filter Co., Buffalo, N. Y.

For Sale—Patent No. 443,561, Dec. 30, 1890. Expansion Pulley. Address John G. Avery, Spencer, Mass.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight & Canal Sts., New York.

Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y.

Partner Wanted—Armstrong's Automatic Washer. Patented Aug. 22, 1893. A. Armstrong, 817 Lucas Ave., St. Louis, Mo.

Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

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.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, N. Y.

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is cooled down to normal temperature it should be decanted, or, still better, filtered from the precipitate of sulphur, and then the acetate of lead, dissolved in about one ounce of water, is added. For use, take the following proportions: 1/4 ounce solution II. to 8 ounces solution I. The prints should be placed in this bath without previous washing and toned in about five minutes, then immersed for one or two minutes in a checking solution composed of salt 1 ounce and water 16 ounces, then washed in two changes of fresh water, and to insure fixing it is advisable to immerse the prints for about two minutes in a fixing bath of:

- Hypo 2 ounces.
Salt 1/2 ounce.
Water 32 ounces.

Then wash for one hour.

(5422) M. N. O. writes: I send you a small bug found in yellow pine logs after they have been cut for the sawmill. It is also found in the lumber after being sawed, this bug being taken out of a pine board in the yard. They ruin unknown millions of feet of No. 1 lumber every year, which has to be sold for No. 3 stock. They cut the logs and boards full of small holes, which are known in the business as "pin holes." They generally follow in the soft part of the grain. It does not disturb the pine until it is cut down. Can you tell me anything about it and suggest a remedy that would probably extinguish them? Reply by Prof. C. V. Riley.—The insect sent is Platypus quadridentatus O., belonging to the coleopterous family Scolytidae. The numerous species of this family live either under the bark of trees or enter the solid wood. The few North American species of the genus Platypus belong to the latter class and infest many species of deciduous and coniferous trees. As correctly observed by Mr. Overton, they are not known to attack healthy trees; nor do they live in perfectly dry wood, but they develop in trees that are diseased or enfeebled from one cause or another, or in freshly felled trees and in the stumps of felled trees. Here the female beetles bore long galleries through the bark into the solid wood and deposit their eggs in short secondary galleries, which branch off rectangularly from the main gallery. When the trees are sawed up into boards, a transverse section through this network of galleries shows the dreaded "pin holes." There is no direct remedy for exterminating this and other species of scolytid beetles; but much may be done on the part of our lumbermen to prevent severe and continuous injury. The trees should be felled in the fall and winter and should be sawed up, if possible, before the warmer season commences. Felled trees that are allowed to remain in the woods for weeks or months during spring or summer are sure to get thoroughly infested by the beetles. Above all, the timely burning of the stumps, branches, and other waste portions of felled trees, of trees that are blown down by storms, etc., would greatly reduce the number of the beetles.

(5423) F. H.—Reply by Professor Riley.—The insect referred to by you is one of the most striking and singular insects of our fauna. The specimen sent is a female, and the remarkable fact about it consists in its very long and excessively narrow abdomen, giving it somewhat the appearance of a very slender-bodied dragon fly, except for its short wings and general resemblance to a wasp. In point of fact, it belongs to the group of insects including the wasps, parasitic flies, etc., and the male, which has a very ovoid abdomen, closely resembles the true wasp, but is very much more rare than the females, only a few specimens having been found, whereas the female sex is comparatively abundant. This anomalous insect is quite distinct from anything else in the insect world, and for it a special genus and family have been erected. It is known as Pelecinus polyturator, Drury, is closely allied to the parasitic ichneumon flies, and is undoubtedly parasitic on some other insect, probably a wood-boring species, although its host relations are entirely unknown.

(5424) D. L. R. writes: Please answer in SCIENTIFIC AMERICAN the following questions: 1. How many storage cells would it take to run a one-half horse power motor six hours a day? A. By taking a little over the standard current, four cells would answer. It would be better to use six cells. 2. How many gravity cells will it take to charge storage cell for the said six hours? A. Allow two and one-half gravity cells for each storage cell. For rapid charging, ten or twelve gravity cells for one storage cell. 3. Would the same cell give me twelve hours' run on Monday if I did not use it on Sunday? A. Rest over Sunday of a charged cell properly cared for would not perceptibly affect it. 4. How to temper small coil springs made out of No. 24 steel wire. A. Harden by heating on a piece of wire gauze held over a Bunsen burner. Draw temper with linseed oil at about 500° F. 5. How to get a copy of the Patent Office Gazette. A. Subscribe at Patent Office, Washington, D. C. It costs \$5 per annum.

(5425) W. W., England, asks: 1. What is the quickest way to drill or pierce the stones used for watch jewels, what kind of drill, what made of, and what lubricant used for same? A. A revolving steel wire charged with diamond dust and oil is used for drilling watch jewels. 2. What is the best metal or material to use for frictional gearing? Which will give the best results for the above? The edge of small or driven disk to run against the face of large or driver disks with slow speed, reverse action, for very small tapping machine, to thread holes for watch screws. A. For a disk driver and small drill pulley, use leather glued to the face of the disk and pulley. Turn off the leather faces truly for the light work of making watch screws.

(5426) G. A. L., South Dakota, says: I have been told that ice frozen from artesian well water will not keep as long as other ice. Is this a fact, and why? A. There is probably only a very small margin of difference in the time of melting of artificial ice from artesian well water and ice frozen in the natural way, the difference being due to the method of freezing. This statement applies to any artificial ice made from hard water as against natural ice. The method of freezing artificial ice incloses all impurities and salts of lime within the mass, which may act to hasten its melting, whereas the freezing in the natural way discharges the salty impurities. This is why artificial ice manufacturers use distilled water for making ice. Such ice is not only clear, but will last fully as long as natural ice under like conditions.

NEW BOOKS AND PUBLICATIONS.

RESISTANCE OF SHIPS AND SCREW PROPELLSION. By D. W. Taylor. New York and London: Macmillan & Co. 1893. All rights reserved. Pp. ix, 234. Price \$3.75.

The science of ship building has at last, after many centuries, passed out of the empiric region to one of exactness. In the present work we find the modern calculation applied to the most recent examples. The value of the work is increased by very full tables, and diagrams are given wherever required. The absence of an index is compensated for to some extent by a very full table of contents, the work possibly being of too mathematical a character to lend itself to indexing.

DECIMAL CALCULATION. By Louis Neuschafer. Oshkosh, Wis.

THE FIRST FOUR VOYAGES OF AMERIGO VESPUCCI. Reproduced in facsimile, with translation, introduction. A map, and a facsimile of a drawing by Stradanus. London: Bernard Quaritch. 1893. Pp. x, 45. Price 75 cents.

This work in facsimile reproduces the text in Italian of the original account of the voyages of the famous navigator from whom America is supposed to have been named, and in addition thereto, the English translation of the letter is given. The work is a very interesting and attractive contribution to the Columbus year and is illustrated by a map and other facsimile woodcuts.

HARIOT'S NARRATIVE OF THE FIRST PLANTATION OF VIRGINIA IN 1585, PRINTED IN 1588 AND 1590.

This very curious publication, with facsimile illustrations of the inhabitants of Virginia as found there by the English, is a companion piece to the work just noted, and will be found an exceedingly interesting contribution to the literature alluded to. It should be stated that these two works form two out of a series of four works of the character published by the celebrated Quaritch.

THE SPANISH LETTER OF COLUMBUS. WRITTEN BY HIM ON FEBRUARY 15, 1493, TO ANNOUNCE THE DISCOVERY OF AMERICA.

This is one of the series of Columbian literature alluded to above. A translation into English follows the facsimile Spanish text.

REPORT ON THE EUROPEAN METHODS OF OYSTER CULTURE. By Bashford Dean. Washington: Government Printing Office. 1893.

This excellent work covers a field too little understood in this country. It describes the rational cultivation of oysters as carried on in different countries of Europe. It is made more interesting by the production of numerous illustrations showing the plant and appliances adopted abroad for the cultivation of the mollusks. At the present time, when American oysters seem really to be feeling the effects of the great draught made upon them by unscientific harvesting, this work has a peculiar value.

NORTH AMERICAN FAUNA. No. 7. Published by authority of the Secretary of Agriculture. (Actual date of publication, May 31, 1893.) The Death Valley Expedition. A biological survey of parts of California, Nevada, Arizona, and Utah. Part II. Washington: Government Printing Office. 1893. Pp. 393.

THE INFRINGEMENT OF PATENTS FOR INVENTIONS, NOT DESIGNS, WITH SOLE REFERENCE TO THE OPINIONS OF THE SUPREME COURT OF THE UNITED STATES. By Thomas B. Hall. Cincinnati: Robert Clarke & Co. 1893. Pp. 275. Price \$5.

The keynote of this volume is found in a quotation from an opinion of the United States Supreme Court to the effect that no decision in patents can be considered fixed and correct until it has been passed upon by the Supreme Court. The work therefore, it is stated, is written with sole relation to the opinions of the Supreme Court of the United States, and is restricted to inventions, and not designs. The work seems excellently and systematically arranged. It gives concrete examples, and a sample of its system of treating this topic may be deduced from its treatise on the validity of the patent. Here the author gives twenty-four different heads into which the different premises which may affect the validity of a patent may be resolved. A list of the references, 673 in number, and an adequate index close the book.

SONGS IN SPRING TIME: THE PASSING OF LILITH, AND OTHER POEMS, INCLUDING INTERCEPTED LETTERS AND SAINT AUGUSTINE. By John Cameron Grant. Second edition. London: E. W. Allen. 1893. All rights reserved. Pp. xxi, 115. Price 80 cents.

THE HANDY SKETCHING BOOK FOR ENGINEERS AND DRAUGHTSMEN. RULED TO EIGHTHS OF AN INCH, WITH USEFUL TABLES. New York: Spon & Chamberlain. London: E. & F. N. Spon. 1893. Price 25 cents.

This sketch book is made up of cross-ruled paper for the entry of profiles and various diagrams in use by the engineer. It is evident that the same cross-ruled paper will admit of real estate diagrams, so that not only the architect, engineer, and draughtsman will be interested in it, but even the dealers in real estate. On the inside cover page some useful tables are given.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1889-90. Volume I. Containing Part I. Washington: Government Printing Office. 1893. Pp. xxvii, 601.

Any of the above books may be purchased through this office. Send for new book catalogue just published. MUNN & Co., 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

October 3, 1893, AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like Air brake, Airtight can, Alarm, Aluminum and aluminum alloys, Armature, Armature, electric machine, Auger, Autographic register, Axle box, Beam hangers, Bed attachment, Bedstead, Belt fastener, Bicycle, Bicycle pedal, Bicycle saddle, Binder, Bit, Blasting apparatus, Blasting compound, Boat, Boiler, Bookbinding, Book holder, Book stand, Boot or shoe smoothing device, Box, Braid frame, Brake, Brick or tile machine, Bridge gate, Brine cooler, Bucket, automatic dumping, Buckle, Buildings, construction of, Burglar alarm, Burner, Button, Buttons of mother-of-pearl, Cable grip, Calcing apparatus, Calendar, perpetual, Calendar table and calendar, Camera, Can, Can filling machine, Can labeling machine, Can testing machine, Cans, fixing device for square end, Cans, machine for fixing, Car buffer, Car coupling, Car coupling, Armour & Hancock, Car coupling, J. B. Riddle, Car coupling, J. L. Swanson, Car door, Car door fastener, Car doors, combined lock and cinder guard for, Car, hand, A. H. J. Car sanding device, railway, Car wheel and axle, Cars, controlling device for electric railway, Carding engine feeders, low stock alarm for, Carriage curtain fastener, Carriage storm apron, Case, See Display case, Cash indicator and register, Cash register, E. Krich, Cash register, W. Koch, Cash register, indicator, and check printer, Casting machine, line, Cattle guard, B. Wolhaupter, Ceiling plate, metallic, L. Sagedorph, Chair, See Photographic posing chair, Chair, T. S. King, Chair table attachment, Change deliver ng device, Channeling machine bit, Check, draft, or similar instrument, bank, Cleaner, See Cotton cleaner, Clock cases, coating, Clock mechanism, Cloth shearing machine, Clutch, friction, P. Weber, Clutch shifter, Cock ball, Young & Geysler, Cock, lock stop, Adkins & Berry, Coffe, agink, F. Minko, Collar or coupling, F. Freeman, Condensers, working, W. Stanley, Jr., Conveyer, metallic, J. B. Alifree, Cooler, See Brine cooler, Milk cooler, Cork extractor, H. S. Martin, Cotton cleaner, H. Rembert, Coiling, See Car coupling, Thill coupling, Crate, folding, S. C. Myers, Cultivator, E. B. Farnsworth, Cultivator, fruit tree, D. M. Smyth, Curb and conduit, combined, N. Sampson, Current generator, alternating, A. Schmid, Current motor, alternating, Stanley, Jr., & Kelly, Curvomb, R. W. Neuls, Cut-out, electric time, F. Beland, Cutter, See Ice cutter, Damper regulator for steam boiler furnaces, Danger signal, F. Hanson, Digger, See potato digger, Dish washing machine, Disintegrating vegetable substances, Bird & Kaffenberger, Display case, cutlery, W. L. Dempsey, Door check, J. Cabus, Door fastener, E. H. Rooney, Door hanging frame, F. Wright, Door support, sliding, J. R. Payson, Drainer for draught apparatus, H. Strater, Drawing frame stop motion, J. E. Prest, Drawing rolls, F. H. Richards, Dredger, J. Cazan, Dredger's cabinet, Almack & Ferguson, Drier, collecting, S. Fletcher, Dyeing apparatus, G. Haslam, Dynamo regulator, W. H. Elkins, Electric elevator, E. R. Esmond, Electric light, incandescent, Burnett & Doane, Electrical distribution, system of, C. F. Scott, Electrical switch, C. O. C. Billberg, Electricity, means for determining the presence and intensity of atmospheric, J. Opperman, Elevator, See Electric elevator, Elevator wells, device for operating gates to, Engine gear, portable, F. Burgror, Exhibit or file cabinet, H. W. Frenia, Extension table, J. Couch, Extraction apparatus, S. W. Cochran, Extractor, See Cork extractor, eyeglass or spectacle frame, J. H. E. De Celles, Fan, air distributing, A. M. Mitchell, Fan, exhaust, R. Leslie, Fare registers, operating device for, C. Snyder, Fence machine, Cushman & Parcell, Fence machine, wire, H. Brown, Fence machine, wire, W. D. Whitney, Fence post, H. Brown, Fence stay, wire, J. H. Brower, Fencing tool, G. W. Burns, File cutting machine, F. W. Low, File, paper, A. Dom, Filtering apparatus, S. M. Malhot, Fire alarm, A. Kratin,

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.

(5418) W. S. writes: 1. Is a motor with 3 pole armature as efficient as a Gramme ring armature, such as the motor in No. 641 SCIENTIFIC AMERICAN SUPPLEMENT? A. On general principles it is not so efficient. 2. How are three-pole armatures wound and connected? A. They are connected to a three-piece commutator, Gramme ring fashion. All poles are wound in same sense. 3. I see some electric batteries advertised to run for 24 hours before the solution is exhausted; would like to have the recipe for such a solution? A. It is not so much a question of solution as of quantity in proportion to current taken. Use a good bichromate mixture. 4. Is the electromotive force the same in two bichromate batteries, one the size of a thimble, the other the size of a barrel? A. Yes. 5. Could a 1/2 H. P. motor be run with small batteries size of a thimble, if armature was wound with No. 25 cotton-covered wire? A. If you had enough. 6. Would any ingredient be rendered insoluble if bichromate of potassium were added to it? A. Bichromate of potassium renders glue insoluble after drying and exposure to sunlight.

(5419) G. H., Jr., asks if paint can be manufactured from aluminum. If so, what color would it be. A. Yes. If oxidized, the color would be white.

(5420) A. H. R. asks: Will the electroplating dynamo described in "Experimental Science" run an 8 inch screw-cutting lathe (when the dynamo is used as a motor), with a current derived from the large plumb battery? Or would a motor with a drum or ring armature be better? Would like to make the motor myself, if you will kindly furnish the required information as to size of wire, etc., through the columns of the SCIENTIFIC AMERICAN. A. The plating dynamo to which you refer is too small to answer as a motor for driving your engine lathe. Better make the motor after the plans given in SUPPLEMENT 600 for the construction of an eight-light dynamo.

(5421) H. W. F. says: Dealers in photographers' supplies sell a solution which they call "toning solution," and which they use with a solution of bichloride gold and sodium for toning prints. Can you tell me what this solution is? A. The following bath is recommended:

- Solution I.
Water 24 ounces.
Hypo sulphite of soda 4 " troy.
Fused acetate of soda 1/2 ounce "
Powdered alum 1 " "
Acetate of lead 1/8 " "

Solution II.
Chloride of gold 15 grains.
Water 8 ounces.
Boil the water and dissolve the hypo. while hot, then add the alum and acetate of soda. When this solution