

Planting Time

is not far off. Planning time is here. Decide now, what you want to plant when the frost leaves. Send at once for

Vick's Garden and Floral Guide

It's more than a seed catalogue—it's an illustrated book of information, helpful to every one who plants for pleasure, essential to every one who plants for profit. Sent free to those who mention what they wish to grow.

JAMES VICK'S SONS, Box 1513, Rochester, N. Y.

McCabe's Portable Electric Conveyor

For Loading Ships from Docks and Warehouses saving over 50 per cent in time of loading. By means of this portable ship and warehouse conveyor, any sack or package cargo, that can be handled in a sling, can be put aboard ship as fast as it can be stowed and in an unbroken condition.

By means of this Electric Conveyor, flour, grain, sacked goods, etc., can be delivered at the hatch at the rate of 4000 sacks per hour; and it does away with all staking and hoisting.

Correspondence with ship, warehouse and stevedoring firms solicited, when photos and a full description of the invention will be forwarded.

Address Capt. W. L. McCABE, Stevedore, Tacoma or Seattle, Washington.



Hawkins' New Catechism of Electricity for Engineers, Electricians, Wiremen and Amateurs, 550 pages 300 illustrations, bound in leather, pocketbook form, gold titles and edges. Strictly Up-to-Date. Postpaid, \$2.75. Andel & Co., 63 Fifth Ave., N.Y.

A Cutter Milling Attachment

is indispensable for the proper execution of particular kinds of work. Our 8-inch Precision Lathe is fitted for this and Gear Cutting. No extra belts are required as the friction gear at end of feed rod takes the place of a belt and one feed and allows the feed to slip in case of work jamming. Variation of feeds allowed by use of change gears of lathe.

FANEUIL WATCH TOOL CO., Brighton, Boston, Mass.

This Little Air Pump will supply a 2-lb. blast to 4 blow-pipes, each burning 500 feet of gas in ten hours. Air nozzles to be 1-10 inch opening. A strong blast and small air jet gives economy of gas consumption. This pump is also capable of pumping a 40-gal. tank to 40-lb. pressure. Weight 30 Lbs. Price Only \$12.50 Delivered to express company in Chicago. Send for Booklet. A. S. COMSTOCK, Manufacturer 71 W. Jackson Blvd., Chicago, Ill.

WELL DRILLING Machines

Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock. Mounted on wheels or on skids. With engines or horse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog. WILLIAMS BROS., Ithaca, N. Y.

ARMSTRONG'S No. 0 THREADING MACHINE

Can be attached to bench or post. Designed for threading the smaller sizes of pipe, iron or brass, also bolts. Has two speeds, one for pipe 1/8 to 1 inch; the other for pipe 1/4 to 2 inches inclusive. Uses the regular Armstrong adjustable dies. Other attractive features. Send for particulars. The Armstrong Mfg. Co., 139 Centre Street, New York. Bridgeport, Conn.

Queen Transits and Levels

High Grade Instruments with the Latest Improvements. 160 page Engineering Catalogue on application. THE QUEEN 240 page Mathematical Catalogue on application.

ENGINEERS' AND DRAFTSMEN'S SUPPLIES. QUEEN & CO., Optical and Scientific Instrument Works, 59 Fifth Ave., New York. 1010 Chestnut St., Phila.

DEFIANCE MACHINE WORKS DEFIANCE, OHIO, U.S.A. BUILDERS OF HUB, SPOKE, WHEEL BENDING, WAGON, CARRIAGE, AND HOOP MACHINERY. SEND FOR CATALOGUE.

KRÖMSKÖP Color Photography

Nature's Reflex! "It seems almost a miracle!" To the already long list of marvelous devices which will come into common every-day use must be added this last and most pleasing gift of science. Krömsköp's Kromograms and Krömsköp's Cameras, now ready. Send stamp for booklet. IVES KRÖMSKÖP COMPANY, Incorporated, 1324 Chestnut Street, Philadelphia.

WORK SHOPS

of Wood and Metal Workers, without steam power, equipped with BARNES' FOOT POWER MACHINERY allow lower bids on jobs, and give greater profit on the work. Machines sent on trial if desired. Catalog Free. W. F. & JOHN BARNES CO. 1999 RUBY ST., ROCKFORD, ILL.

12-inch Pipe cut off and Threaded with ease by one man and a FORBES PATENT DIE STOCK. Smaller sizes proportionately easy. Send for Catalogue. THE CURTIS & CURTIS CO., 6 Garden Street, Bridgeport, Conn.

Weighing and conveying machine, grain, M. Stone, 664,443 Wind-motor, J. F. Barkstrom, 664,374 Windmill-regulator, F. Rice, 664,780 Winding-machine, J. E. Gordon, 664,474 Wire-stretcher, F. J. Olmsted, 664,671 Wood, machine for making dishes or trays from veneer, C. Engberg, 664,540 Work-holder, M. M. Wallin, 664,597 Wrench, L. Granstrom and R. B. McDonald, 664,634

DESIGNS.

Ash-pan front, J. R. Carter and J. E. Hausfeld, 33,795 Belt, L. M. Rosenberg, 33,810 Boiler section, steam, F. B. Howell, 33,784 to 33,786 Box-blank, H. B. Smith, 33,774 Box lock and hinge fastener, G. B. Schmidt, 33,781 Bracket, window-shelf, J. E. Powers, 33,781 Caddy, J. B. Long, 33,803 Coaster-brake brake-ring, G. Ziegler, 33,780 Crayen-holder, F. D. Jones, 33,770 Display-stand, I. Steinau, 33,802 Doily, R. Gair, 33,809 Drum, heating, E. H. Huenefeld, 33,800 Fish-hook, W. C. Bewer, 33,773 Furnace-front, T. R. Kennedy and E. J. King, 33,796 Gas-burner, R. H. White, 33,794 Gasket or packing for joints of pipes or other apparatus, C. H. Merwarth and F. Conlin, 33,782 Gem-setting, G. G. M. F. Hartmann, 33,768 Horseshoe rubber cushion, M. Logan, 33,790 Horseshoes, metallic plate for elastic-tread, J. B. Gravis, 33,791 Leather fabric, C. D. Williams, 33,808 Legs, ankle member for artificial, G. W. Farrier, 33,773 Nail-set, J. Adkins, 33,792 Oven, warming, J. R. Carter and J. E. Hausfeld, 33,799 Padlock, S. R. Slaymaker, 33,778 Post-base, R. T. Wood, 33,783 Register deflector, floor, J. S. Lowry, 33,795 Sabretash, R. W. Owen, 33,807 Shade-roller bracket, W. R. Madden and E. H. Higbee, Jr., 33,779 Shears member, D. C. Wheeler, 33,776 Shee quarter, W. W. Glanville, 33,806 Stay, C. T. McCue, 33,793 Stevedeer, J. R. Carter and J. E. Hausfeld, 33,797 Stove, lamp, G. Ebel, 33,801 Stud or button for garment-supporters, D. H. Warner, 33,771, 33,772 Telephone-receiver supporting-bracket, E. C. Pinnett, 33,780 Tombstone, C. A. Morgan, 33,812 Tug-fastener, S. A. Morgan, 33,789 Undergarment, G. O. Cook, 33,811 Valve box, stop, A. H. Meiners, 33,787 Washboard, S. R. Sargent, 33,805

TRADE MARKS.

Acetylene, chemical compound for purifying, Deutsche Gold and Silber Scheide-Anstalt, 35,667 Ale, Springfield Breweries Company, 35,644 Bakery products and confectionery, certain name, National Biscuit Company, 35,645 Beer, George Gunther, Jr., Brewing Company, 35,635 Blood-purifier, M. J. Pfunder, 35,635 Boots and shoes, E. W. Burt & Company, 35,633 Butterin or oleomargarin, Wm. J. Moxley, 35,656 Cement, Portland, Hammer Society, 35,670 Chemical, pharmaceutical and surgical products and preparations, certain names, J. A. Sander, 35,639 Clippers, belt, H. K. Porter, 35,672 Cocktails, T. H. Handy & Company, 35,649 Egg substitute, Ovine Company, 35,658 Eggs, desiccated and granulated, S. T. G. Smith, 35,659 Flavoring extracts, W. McMurray & Company, 35,650 Flour, J. Boyd, Jr., & Company, 35,664 Fruits, dried, Hartwig & Bennett, 35,655 Gluten, cereal foods and starch, ground, A. S. Hoyt, 35,663 Gum, spruce, A. A. Low, 35,651 Gutta-percha, caoutchouc and rubber goods made thereof, Nederlandsche Gutta Percha, Maatschappij, 35,632 Hair-weavers, S. Beaumont & Fils, 35,671 Hardware, certain names, Onida Community Lined goods, J. A. Sparrow & Company, 35,631 Liniments, horse, L. Medicis, veuve Tricard, 35,641 Macaroni, spaghetti, mezzani, vermicelli and noodles, Chas. Maull Macaroni Company, 35,661 Macaroni, spaghetti, vermicelli and noodles, Chas. Maull Macaroni Company, 35,660 Medicinal preparations for certain named diseases, Van Vleet-Mansfield Drug Company, 35,638 Medicines, certain named proprietary, S. B. Leonard & Company, 35,637 Mineral water, J. C. Wilkinson, 35,643 Oils, lubricating, W. P. Fuller & Company, 35,668 Oleomargarin and butterin, Oakdale Manufacturing Company, 35,657 Paints, metallic, Winter's Metallic Paint Company, 35,669 Photographic plates, dry glass, Kirk, Geary & Company, 35,629 Polish, furniture, Sez Supply Company, 35,666 Remedies, chemical and pharmaceutical, C. W. Schroeder, 35,640 Remedies for certain named diseases, internal, Scott & Starling, 35,636 Remedies for diseases of stomach and intestines, R. Saly & Carles, 35,634 Steves, ranges, furnaces, stoves and heating stoves, E. H. Huenefeld, 35,673 Sugar and syrup, maple, A. A. Low, 35,652 to Vehicles, automatically-propelled wheeled, "Locomobile" Company of America, 35,677 Vehicles, certain named wheeled, Southern Reek Island Plow Company, 35,670 Washing compound, W. H. Rager, 35,665 Watches, watchcases, and watch-movements, Keystone Watch Case Company, 35,630 Whisky, J. W. McCulloch, 35,647 Whisky, Roskam, Gerstley & Company, 35,648 Wine, brandy and cordials, Carmel Wine Company, 35,646

LABELS.

"Cyclo," for an extract, Vail Bros., 8,008 "Domine Bourbon Whisky," for whisky, Los Angeles Company, 8,004 "F. Garcia & Bros.," for cigars, F. Garcia & Bros., 8,002 "Good Luck," for flavoring extracts, C. F. Sauer Company, 8,000 "National Uniform Cap Co.," for caps, I. W. W. W. W., 7,999 "Old Dominion," for flavoring extracts, C. F. Sauer Company, 8,001 "Perlux," for a lotion for the complexion, B. Levy & Company, 8,005 "Robbin's Fat Consumer," for a medicine, F. Robbin, 8,007 "Slusser's Gall Cure," for a gall cure, A. A. Slusser, 8,006 "The 20th Century Cigar," for a cigar, Geiger & Klein, 8,003

PRINTS.

"Royal Seal," for cigars, W. E. Pfening, 285 A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York. Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of \$45 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.

ESTERBROOK'S STEEL PENS 150 Varieties. For Sale by all Stationers. Works, Camden, N. J. THE ESTERBROOK STEEL PEN CO. 26 John St., New York.

ICE MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILBER MFG. CO., 836 Clinton Street, Milwaukee, Wis.

Expert Model Making. Established 1867. Wm. Trautman, Proprietor Chicago Model Works, Chicago, Ill. 179 E. Madison St. Write for catalogue of Model Supplies.

NOVELTIES & PATENTED ARTICLES Manufactured by Contract. Punching Dies, Special Machinery. E. Konigsrow & Bro., 181 Seneca St., Cleveland, O.

Experimental & Model Work Cir. & advice free. Wm. Gardam & Son, 45-51 Rose St. N.Y.

GRINDING MILLS FOR ALL PURPOSES. Bogardus Patent Universal Eccentric Mill. Address: J. S. & G. F. SIMPSON, 28 Rodney Street, Brooklyn, N. Y.

Magical Apparatus. Grand End of Century Catalogue, just out, over one hundred, 25c. Parlor Tricks Catalogue, free. MARTINKA & CO. Mfrs., 493 Sixth Ave., New York.

VOLNEY W. MASON & CO., Friction Pulleys, Clutches & Elevators PROVIDENCE, R. I.

LEARN TO WRITE ADVERTISEMENTS 20 MINUTES a day in the study of advertising will fit you for \$25 to \$50 per week position. Employed graduates prove it. We teach every practical feature by mail. Write for evidence, free. PAGE-DAVIS CO. Suite 20, 167 Adams St. Chicago.

MODEL, experimental, fine tool, or any class of work wanted by fully equipped factory, centrally located in New York City, expert mechanics, estimates given, correspondence solicited. MODELS, Box 773, New York.

AUTOMOBILE TRANSMISSION. Best variable speed device. Write for catalogue EMPIRE MOTOR WORKS, 508 Washington St., Buffalo, N. Y.

PALMER Stationary and Marine Gasoline Engines and Launches, Motor Wagon Engines, Pumping Engines. Send for Catalog. MIANUS, CONN.

PERFORATED METALS FOR ALL USES. MADE AS REQUIRED. HARRINGTON & KING PERFORATING CO., CHICAGO.

50 YEARS' EXPERIENCE PATENTS TRADE MARKS DESIGNS COPYRIGHTS & C. Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the Scientific American. A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers. MUNN & Co. 361 Broadway, New York Branch Office, 625 F St., Washington, D. C.

WANTED.—DRAFTSMEN. AN EXAMINATION of applicants will be held at the Navy Yard, Norfolk, Va., January 8, 1901, for one first-class ship draftsman at \$5.04 per diem and two second-class ship draftsmen at \$4.00 per diem in the Department of Construction and Repair, Navy Yard, Norfolk, Va., and three second-class ship draftsmen at \$4.00 per diem in the office of the U. S. Supt. Naval Constructor, Wm. R. Trigg Co., Richmond, Va. The examination will be open to all comers who can give evidence of experience in the kind of work for which they seek employment and who are citizens of the United States. Applications should be addressed to the Commandant, Navy Yard, Norfolk, Va., and must be delivered to him on or before Monday, January 7. No application received after this date will be considered. Each applicant will state in his application his name, age, residence, present occupation, citizenship and previous occupation or work done. The applications will be accompanied by evidence of citizenship and by certificates, preferably from previous employers as to character, habits of industry and sobriety and skill and experience in work of the kind required. JOHN D. LONG, Secretary of the Navy.

MODELS & EXPERIMENTAL WORK. Inventions developed. Special Machinery. E. V. BAILLARD, Fox Bldg., Franklin Square, New York.

TYPE WHEELS, MODELS, EXPERIMENTAL WORK, SHIP CONSTRUCTION, NOVELTIES & ETC. NEW YORK STENCIL WORKS 100 NASSAU ST. N.Y.

D'AMOUR & LITTLEDALE MACHINE CO. 130 WORTH ST., NEW YORK. PATTERN AND MODEL MAKERS.

RED SEPAR AIR AND WATER TIGHT SILOS. ANY DIAMETER, ANY DEPTH. WILLIAMS MFG CO., KALAMAZOO MICH.

BACKUS GAS AND GASOLINE ENGINE Simple, Economical, Durable. Suitable for all kinds of work. Backus Water Motor, cheapest power known. Write for circular and prices. BACKUS WATER MOTOR CO., Newark, N. J., U. S. A.

The Progress of Invention in the 19th Century By EDWARD W. BYRN, A.M. Large Octavo, 480 pages, 300 illustrations. Price \$3.00. Half red morocco, gilt top, \$4.00. By mail, postpaid, to any country in the world. The new volume, which worthily celebrates the close of the century, as far as the arts and sciences are concerned, has been met with the warmest praise by both reviewers and readers. The book is scholarly and interesting, and records and describes all the more important developments of the useful arts which characterize the period. In a chronological table mention is made of practically every great event during the century. An illustrated prospectus will be sent to any address on application. The following are brief extracts from the many reviews, and give some idea of how the book has been received: "THE ENGINEER" of London, says, "In this volume, which is nicely printed and well gotten up, the author has attempted a heavy task and has carried it out in a praiseworthy fashion. There is hardly an invention or an improvement made during the century of which notice of some sort is not made." "THE BROOKLYN EAGLE" says, "Every student who desires to be well informed on the subject of invention or to be familiar with the genius that has made the nineteenth century the crown of the centuries, will be sure to want access to this volume. * * * Mr. Byrn deals with his subject in a masterly manner." "THE RAILWAY AND ENGINEERING REVIEW" says, "The book is well written and interesting, and presents in a creditable form the great scientific and engineering achievements of the century." "AMERICAN MACHINIST" says, "It gives rational descriptions of the principles of the inventions included. Many we fancy, who have been unable to keep up with the bewildering progress of science in recent years as published by the periodical press will find here just the concise résumé of many recent discoveries that they need." "THE RAILWAY AGE" says, "This review of inventions which have had their inception and development within the nineteenth century is very timely and appears to be a complete review of the subjects intended to be covered." Every reader of the SCIENTIFIC AMERICAN should possess a copy of this unique and timely publication. MUNN & CO., Publishers, Scientific American Office, 361 B'way, New York.