

RECENTLY PATENTED INVENTIONS.

Engineering.

PROPELLER.—Nelson W. French, Sayre, Pa. This inventor has devised a propeller in which each paddle or blade is four feet long for one foot wide, and about a third longer than the diameter of the propeller.

STEAMBOAT JACK.—Samuel R. Judd, Little Rock, Ark. To raise boats or vessels when aground, this invention provides for a series of lifting jacks carried on the vessel, and having plungers with rolling supports at their lower ends to be lowered to the bar or reef on which the vessel lies.

COAL CHARGING HOPPER.—Donald McDonald, Louisville, Ky. To charge coal or coke into a hot gas generator, against gas pressure, or to charge limestone into a kiln, this inventor provides a rotary hopper to turn in one direction and register with an opening in the base for the discharge of its contents.

Railway Appliances.

CAR AXLE BOX LUBRICATOR.—James S. Patten, Baltimore, Md. This is an improvement on former inventions of the same inventor in lubricators which have oil take-up rollers working in contact with the axle journals, and relates chiefly to the journal cap used in connection with the lubricant receptacle.

LOCOMOTIVE TRUCK JOURNAL BOX.—Charles Linstrom, Vicksburg, Miss. This improvement provides for securely fastening the oil cellar in place on the inside of the journal box, where it will not be liable to get out of order from the jars and shocks of the truck frame.

Mechanical.

A STEAM HAMMER HAND TOOL.—Arthur C. Beckwith, Chicago, Ill. This invention provides means for actuating a chisel or other tool by steam or other motive agent, a cylinder having at one end a chisel or other tool bearing and at its other end a handle.

GLASS POLISHING WHEEL FEED.—Thomas F. Gilroy, Brooklyn, N. Y. To facilitate polishing the beveled edges of glass, this inventor has devised a machine in which the polishing material is automatically and evenly spread on the polishing wheel and is maintained in solution.

AUTOMATIC DOCTOR.—Thomas H. Latimer, Wilmington, Del. In a calendaring machine in paper making this invention provides an improved automatic doctor and feed of simple and durable construction, whereby the pressure of the doctor upon the rolls may be conveniently increased or lessened.

Miscellaneous.

GLOVE CASE.—Alfred W. Vess and Henry C. Kenney, Athens, Ga. This is a case for holding and exhibiting gloves of different kinds and prices, to prevent their being mused, wrinkled and discolored by the prospective purchaser desiring to make a selection.

NECK YOKE FASTENER.—Thomas Thompson, New London, Wis. For fastening the pole strap of a harness to the neck yoke, this invention provides a ring to slip on the end of the neck yoke, a slotted projection on one side of the ring forming a keeper to engage the yoke strap.

DESIGN FOR A RACK.—Martin V. B. Pabor, Fredericktown, Mo. This invention relates to racks for supporting hats or other apparel, or to receive cards, and the design is in the shape of a Maltese cross, with diamond shaped center panel.

PNEUMATIC MAIL COLLECTOR.—Hans Fleckl, Chicago, Ill. This is an improvement in pneumatic apparatus in which a car driven by air pressure is propelled through an underground tube and automatically gathers the mail matter deposited in boxes at various points and brings it to a central station.

walls of the tube are receiving cavities of different sizes for different stations, and the traveling pistons have supplemental pistons to fit the different cavities. When the collecting cars have been sent to all the boxes, a suction is created at the central station and the pistons and mail cars are successively drawn back.

HYDROCARBON BURNER.—Thomas J. Brough, Baltimore, Md. An air mixing oil burner is provided by this inventor for burning crude oil for heating or illuminating without a wick, producing a blue blaze of the greatest heating capacity when used for heating without smoking or depositing its carbon.

STOVE DAMPER AND GAS OFFTAKE.—James A. Carroll and William Brooks, Brooklyn, N. Y. According to this improvement, a gas off-take pipe extends through the pipe damper into the smoke pipe, the inner end of the offtake having a flaring mouth over the bed of fire.

HAND TREADLE DEVICE.—David Curtin, Indianapolis, Ind. This is a hand attachment intended especially for use with sewing machines. The hand lever is pivoted to a bracket secured on the under side of the machine bed, and the lever is connected with a pitman which at its lower end is attached to the treadle.

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.

NEW BOOKS AND PUBLICATIONS.

THE STEAM ENGINE CATECHISM. A series of direct practical answers to direct practical questions, mainly intended for young engineers and for examination questions. By Robert Grimshaw. Tenth and enlarged edition. New York: Norman W. Henley & Co. 1896. Pp. 413. Price \$2.

We have before now had occasion to commend Mr. Grimshaw's excellent method of presenting mechanical subjects. He seems to be able to give life to what would normally be a rather dry subject. The present book, in the form of questions and answers, consists of two parts, the original Steam Engine Catechism and the Supplement thereto, and in every way justifies our impressions just expressed.

THE ENGINE RUNNER'S CATECHISM. Telling how to erect, adjust, and run the principal steam engines in use in the United States, being a sequel to the author's Steam Engine Catechism. Profusely illustrated. By Robert Grimshaw. Second edition. New York: Norman W. Henley & Co. 1896. Pp. 366. Price \$2.

Mr. Grimshaw in this book, which is really, as has been said, a species of supplement to his Steam Engine Catechism, takes up the different makes of engines now on the American market and, one by one, describes their peculiarities and how they should be manipulated. It is evident that this is precisely the information an engineer needs.

A CHORD FROM A VIOLIN. By Winifred Agnes Haldane. Chicago: Laird & Lee. Pp. 164. Price 50 cents.

THE MAINTENANCE OF MACADAMIZED ROADS BY THE AID OF MACHINERY. By Thomas Aitken, Assoc. M. Inst. C. E., M. C. E., Mem. San. Inst. Being selected paper No. 2894, from the Minutes of Proceedings of the Institution of Civil Engineers. (By permission of the Council.) Cupar-Fife: Printed at the Fife Herald and Journal Office, Burnside. 1895. Pp. 28.

ELECTRIC WIRING FOR THE USE OF ARCHITECTS, UNDERWRITERS, AND THE OWNERS OF BUILDINGS. By Russell Robb. New York and London: Macmillan & Company. 1896. Pp. 183. Price \$2.50.

This book is a republication of a series of articles which, during the last two years, have appeared in the American Architect and Building News. Of the 175 pages of text, over 100 are devoted to an elucidation of the national code of rules for electric wiring as adopted by the National Board of Fire Underwriters and amended at New York in 1895.

A FEW REASONS WHY THE STORAGE BATTERY TRACTION SYSTEM IS SUPERIOR TO ANY OF THE PRESENT KNOWN METHODS OF PROPULSION FOR STREET RAILWAYS. Philadelphia: Stern & Silverman. Pp. 79.

Business and Personal.

The charge for insertion under this heading 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.

Marine Iron Works. Chicago. Catalogue free.

For logging engines. J. S. Mundy, Newark, N. J.

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

Mariner & Hostins, Assayers, 81 Clark St., Chicago.

W. Hoskins & Co., Assay Furnaces, 81 Clark St., Chicago.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Handle & Spoke Mch'y. Ober Lathe Co., Chagrin Falls, O.

Well Drill Prospecting Mach'y, Loomis Co., Tiffin, O.

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

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

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

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.

Stay with your job, and with your wages pay installments for a profitable olive orchard. Booklet free. Whiting's Olive Colony, Byrne Building, Los Angeles, Cal.

General Contractors—Make more money. Investigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 622 Boylston Bldg., Chicago.

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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(6849) V. R. L. asks: Can a Bell telephone receiver be made to work all right on a line a mile long, with microphone transmitters, if a piece of soft iron an inch or so long is used for the magnet, so as to make the instrument very compact? Can above line be worked with one Leclanche or Law battery at each end? Would induction coils be necessary on above line with batteries, line being made of No. 12 iron wire, ends grounded, no adjacent lines to cause induction? Could a call be worked on above line with above batteries by using a relay to make a contact, and having the bells in a local circuit? What would be best to use—carbon dust or Blake transmitters? A. You need no induction coils, and can make the small telephone, of course, but at a possible sacrifice of sound-producing qualities.

(6850) A. M. H. says: Will you please inform me through the columns of your paper of a simple process by which a fine white straw hat, which has become tanned from the sun, may be bleached? A. On a small scale, with such an article as a straw hat, a bonnet, a basket, etc., the following method may be followed: The straw, having been well washed with weak soda lye, is rinsed in plenty of clean water, lightly shaken, etc.; remove superfluous moisture, and place, supported on a stick, under a large glazed earthenware pan turned upside down. A very small pipkin, capable of holding about 1/2 pint, is now placed on the fire, and about 1/2 ounce of roll brimstone placed in it. When the brimstone is all melted, a light is applied to it, so as to cause it to catch fire. The pipkin, with the inflamed sulphur, is now placed under the glazed pan in such a position as not to scorch the article to be bleached. The spaces between the pan and the table or floor on which it rests must be carefully closed with damp cloths placed around to prevent the escape of the sulphurous acid gas produced by the combustion of the sulphur. In about two hours the pan may be removed, when the straw will be found nicely bleached.

(6851) C. E. C. asks: 1. To what extent does the smallness of a dynamo interfere with its starting or building up? A. No direct answer can be given to this query. A large dynamo would be apt, owing to its large mass of core metal, to retain residual magnetism better proportionately than would a small one. 2. Is there any difference in voltage between a dynamo with electro field magnets and the same with permanent field magnets? A. Only that due to higher intensity of magnetic field. In the electromagnet higher intensity is produced. This can be compensated for by using larger permanent magnets, so that the voltage can be brought up to any desired point. 3. Will touching a steel horseshoe magnet to one pole of a dynamo or motor be sufficient to magnetize it? A. No. Pass a strong electric current through the winding.

(6852) J. J. B. says: Will you please send through the columns of SCIENTIFIC AMERICAN receipt for preparation for blackboards in school house? A. Take 1/2 pound logwood and sufficient boiling water to cover it; allow it to stand for twenty-four hours. Strain, and apply the solution, boiling, if possible, twice, allowing the board to dry in the interval. Then dissolve 1/4 pound of copperas in about 1 pint of boiling water, and apply it boiling, once or twice, according to the degree of blackness obtained. Before using it, rub it over well with rushes, straw, ferns, or shoemakers' heel ball. It may be a little difficult to rub the chalk off at first, but after a fortnight's use that will disappear. Use unprepared chalk, which writes well. 2. Place 1/4 pound of lampblack on a flat piece of tin or iron on a fire till it becomes red, take it off and leave it until sufficiently cool, when it must be crushed with the blade of a knife on a flat board quite fine; then get 1/2 pint of spirits of turpentine, mix both together and apply the mixture with a size brush. If the board is new, it would be well to give it one or two coats of lampblack—not burnt, but mixed with boiled oil—adding 1/2 pound of patent driers. After the board is thoroughly dried, apply the burnt lampblack and turpentine. The preparation must be laid on quickly.

(6853) W. E. W. asks: How many cells of dry battery would be necessary to run the motor described in SUPPLEMENT, No. 641? Would a soft iron core do for the field magnet instead of the Russia iron strips? A. Dry batteries are not adapted for running motors. Ten cells would run it, but would soon polarize. A soft iron core will answer as well or better than the barrel hoop one.

(6854) C. C. P. says: You would oblige me very much if you would answer through Notes and Queries how to caseharden iron. A. Casehardening, to be quickly performed, is done by the use of prussiate of potash. This is powdered and spread upon the surface of the piece of iron to be hardened, after the iron is heated to a bright red. It almost instantly fluxes or flows over the surface, and when the iron is cooled to a dull red it is plunged into cold water. Some prefer a mixture of prussiate of potash 3 parts, sal ammoniac 1 part; or prussiate 1 part, sal ammoniac 2 parts, and finely powdered bone dust (unburned) 2 parts. The application is the same in each case. Proper casehardening, when a deep coating of steel is desired, is done by packing the article to be hardened in an iron box with horn, hoof, bone dust, shreds of leather or rawhide, or either of these, and heating to a red heat for from one to three hours, then plunged in water.

(6855) A. B. B. asks: What size wire would be necessary to build a private telephone line about 50 miles in length out in the Rocky Mountains. Would the ordinary Bell set do? How many batteries would be necessary? How would you ring the stations? Would the magneto do it, and any other data that I have forgotten to ask for that would be necessary? A. Special telephone line wire is often used, but any telegraph wire will answer. You will require a microphone transmitter and four or five cells of battery. A good magneto would do for the ringing up. There are many details to be considered. For information on the construction of simple electric telephones, call bells, etc., see our SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 142, 162, 163, 191 and 966.

(6856) W. H. P. writes: Dealers in draughting materials are advertising a positive, black process paper, with the developer added to the sensitive coating, so that the print is developed and fixed by simply washing in water. Can you give any formulae for the preparation of paper of this kind? A. Our SUPPLEMENT, Nos. 584 and 679, contains valuable articles on process paper, to which we refer you for an answer to your queries.

(6857) J. D. says: Please give me some simple remedy in your newspaper for hair that is turning gray. Something that will stand its color for awhile. A. Where, from some personal idiosyncrasy, the color of the hair has disappeared and cannot be restored, a dye may be considered necessary, the following will be of service; but the nitrate of silver dyes should be avoided, and the use of any dye for prolonged time is detrimental to the hair.

- 1. Brown: Walnut skins beaten to a pulp..... 4 oz. Rectified spirit..... 16 "
- 2. Black: Sulphate of iron..... 10 grm. Glycerine..... 1 oz. Water..... 1 pt.
- 3. Gallic acid..... 4 grm. Tannic acid..... 4 " Water..... 1 1/2 oz.

After the first application of formula 2, the hair should be allowed to dry, and then be brushed. Subsequently, both formulae may be used once daily at an interval of an hour or so, until a black color is produced.

(6858) P. T. says: Will you please tell me in your valuable paper how to mount albumen prints on glass without the use of a paddle, not leaving air bubbles or without showing streaks of the adhesive? And what is the adhesive made of? A. First coat the glass with dammar varnish or else with Canada balsam mixed with an equal volume of oil of turpentine, and let it dry until it is very sticky, which takes half a day or more. The printed paper to be transferred should be well soaked in soft water and carefully laid upon the prepared glass, after removing surplus water with blotting paper, and pressed upon it, so that no air bubbles or drops of water are seen underneath. This should dry a whole day before it is touched; then with wetted fingers begin to rub off the paper at the back. If this be skillfully done, almost the whole of the paper can be removed, leaving simply the ink upon the varnish. When the paper has been removed, another coat of varnish will serve to make the whole more transparent.