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, the blades thus having much greater superficial area than these of the common screw. The blades are fiat, and preferably arranged at angle of forty-five degrees to the shaft, being secured to oval or elliptical shaft sections arranged with their longer axes at right angles to each other, the arms being adjustably clamped along the shaft.

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. Along the sides of the hull of the vessel are stanchions forming vertical guides in which the jack frames move.

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, an opposite turning closing the base openings and refilling the hopper, which has a close fitting cover to prevent all escape side of the machine bed, and the lever is connected with of gas in both movements, while the lower face of the hopper has a clearing fiange in close engagement with the upper face of the base

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, and also to the pivoted frame carrying the oil take-up rollers as well as the spring which supports the lubricant holder in the car axle box.

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. The invention provides for one or more angularly held pins extending from the journal box into openings in the oil cellar, the pins being conveniently removable to unlock the oil cellar and allow it to be removed.

Mechanical.

A STEAM HAMMER HAND TOOL. -Arthur C. Beckwith, Chicage, 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, the cylinder having inlet and exhaust ports and a sliding and turning piston to strike the tool. The piston has channels and ports registering alternately with the inlet and exhaust, and forms its own valve for controlling the admission and exhaust of the motive agent,

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. A brush is made to move into and out of the polisbing material and have a reciprocating movement on the wheel, the operator holding the glass in proper position on the wheel as it rotates,

AUTOMATIC DOCTOR.-Thomas H. Latimer, Wilmington, Del. In a calendering machine in paper making this invention provides an improved auto-matic doctor and feed of simple and durable construction, whereby the pressure of the doctor upon the rolls may be conveniently increased or lessened, and automatic and instant relief will be afforded in case of an accumulation of paper at or on the rolls without danger of the doctor striking the nextlower roll.

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 mussed, wrinkled and discolored by the prospective purchaser desiring to make a selection. The top and front of the case are of glass, and in it are tiers of slides, the upper portion of each slide being exposed, it being intended that gloves of the same size be arranged and held on a slide by clips. The case affords a regular gradation for size and a variety of colored gloves, all removably held on the slides, and readily dis-

walls of the tube are receiving cavities of different size for different stations, and the traveling bistons havesup plemental 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. The invention covers a novel cap or deflector designed for special combination with a spiral coil of pipe, the oil beingheated and volatilized in the coils without obstruc tion to the draught.

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. The device is especially adapted for use with cylinder stoves and does not interfere with their feeding, but prevents any gas from passing into the room.

HAND TREADLE DEVICE.-David Curtin, Indianapolis, Ind. This is a hand attachment in-tended especially for use with sewing machines. The hand lever is pivoted to a bracket secured on the under a pitman which at its lower end is attached to the treadle. The construction is simple and inexpensive and the attachment is easily applied and removed.

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 edi-tion. New York : Norman W. Hen-ley & Co. 1896. Pp. 413. Price \$2. We have before now had occasion to commend Mr Grimshaw's excellent method of presenting mechanica 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 catechism form of writing seems to be peculiarly adapted to practical mechanics at least, this type of book has had a very great vogue, so

great a vogue as to warrant its continuation. It is to be noted that this is the tenth and enlarged edition of the catechism, and in its over 400 pages of text it contains a vast amount of most useful information. The next book that we notice is a species of supplement to this.

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 Cate-chism. 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 een 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. Whoever has begun with this book and studied the mechanics of the large number of typical engines it describes will be prepared to cope with any engine that should be put in his hands. But his treatment of special engines is, by no means, all the book contains. The shipping and receiving of engines, making of foundations, erecting and starting, with detailed instructions as to the adjustment of special makes, are all treated very fully, and practical usefulness is imparted by the sections devoted to special engines

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 In-

Business and Personal.

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Marine Iron Works. Chicago. Catalogue free.

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

"U.S." metal polish. Indianapolis. Samples free. Mariner & Hoshins, Assayers, 81 Clark St., Chicago.

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

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

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

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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.
In quiries 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.
Bu yers wisbing to purchase any article not advertised in our columns will be furnished with addresses of heuses 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.

(Vinerals 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. A single cell seems rather too little for its operation. The call could be worked on relay circuit. You can employ either transmitter. See our Scientific American Supplement, Nos. 142, 162, 163, 191, and 966, for information on the construction of telephone and calls.

(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 lve, is rinsed in plenty of clean water, lightly shaken, etc.; remove superfinous 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 stitution of Civil Engineers. (By per-mission of the Council.) Cupar-Fife: 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 snlphur. In about two hours the pan may be removed, when the straw will be found micely bleached. (6851) C. E. C. asks: 1. To what extent does the smallness of a dynamo interfere with its starting or bnilding 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 pro-A FEW REASONS WHY THE STORAGE duced. This can be compensated for by using larger permanent magnets, so that the voltage can be brought up PERIOR TO ANY OF THE PRESENT KNOWN METHODS OF PROPULSION FOR STREET RAILWAYS. Philadel-phia: Stern & Silverman. Pp. 79. to any desired point. 3. Will touching a steel horseshee

(6852) J. J. B. says: Will you please end through the columns of SCIENTIFIC AMERICAN FEceipt for preparation for blackboards in school house? 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 $\frac{1}{2}$ 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 1/4 pound of patent driers. After the board is thoroughlydried, 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 heop 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 plnnged 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, hone 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 teating, so that the print is developed and fixed by simply washing in water. Can you give anyformulæ 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	0 2
Rectified spirit	 	16	

The above is perfectly innocent in its character. The fellowing is original, and non-injurious :

2. Black ·	
Sulphate of iron	10 grn.
Glycerine	1 oz.
Water	1 pt.

The hair must be thoroughly washed with this, dried, and brushed once daily for three days; then the following should be applied on a small tooth comb, bnt it should not be allowed to touch the skin if the other preparation has done so, as a temporary stain would result.

Tannic seid

tinguished without handling the goods

NECK YOKE FASTIMER. - 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 slotter projection on one side of the ring forming a keeper to engage the yoke strap, and the ring having a keyway registering with a projection on the neck yoke. ring also has slots to receive a removable ring lining. The device enables the connection between the strapand the yoke to be instantly made or readily released.

DESIGN FOR A RACK.-Martin V. B. Paher, 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. Ornamental hooks are arranged on the arms of the cross and a shelf is suspended by chains along the edge of the lower arm.

PNEUMATIC MAIL COLLECTOR -Hans Fleckl. Chicage. Ill. This is an improvement in pneu matic apparatus in which a car driven by air pressure is propelled through an underground tube and automatical ly gathers the mail matter deposited in hoxes at various points and brings it to a central station. In the inner Printed at the Fife Herald and Journal Office, Burnside. 1895. Pp. 28.

ECTRIC WIRING FOR THE USE OF ARCHITECTS, UNDERWRITERS, AND THE OWNERS OF BUILDINGS. By Russell Robb. New York and Lon-don: Macmilian & 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. This gives the book a standard value for America, and goes to recommend it to the architect and builder, as well as to the electrician.

BATTERY TRACTION SYSTEM IS SU-

i unino uo-	 	 		
Water		 	1½ oz.	

After the first application of formula 2, the hair should be allowed to dry, and then be brushed. Subsequently, both formulæ 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 adbesive 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.