RECENTLY PATENTED INVENTIONS.

Of Interest to Farmers.

HOE OR RAKE HANDLE CONNECTION.—C. B. BENDLAGE, Marshalltown, Iowa. The object of the inventor is to provide an interchangeable handle which may be applied to the heads of hoes, rakes, etc. A further object is to provide a handle to which the head of the desired implement may be applied in various positions, according to the nature of the work to be done. The handle is adapted to be quickly attached or detached from the implement head.

GRIT FOOD FOR FOWLS.—E. J. FUCHS, Scranton, Pa. The product contains valuable nutritive elements suitable for fowls, and also elements necessary for the sustenance of hens engaged in laying eggs. It is largely insoluble in water, but under the action of the powerful digestive fluids, it is assimilated to considerable extent, and the part not thus assimilated remains hard and glassy. That portion which does not serve as a food and egg builder, serves as a grit, so necessary for the welfare of fowls.

Of General Interest.

METHOD OF UTILIZING HILLSIDES AND MOUNTAINS.—M. RICHTER, Williamstown, W. Va. The invention consists in forming the hillside into a succession of series of shallow basins adapted to hold and retain the precipitation of water and planting in each basin a growing tree, the growth being greatly promoted by the retained volume of water held in the basin, each descending series of trees having its individual basins alternating with basins of the series above, or being staggered or placed so that the lines of quickest descent do not coincide in the adjacent series.

SPONGE-HOLDER.—U. L. RIFE, Sound Beach, Conn. The device is for use in holding sponges, cloths, or other articles, with which it is desired to wash or wipe windows or other objects not readily reached by the hand, and the object of the inventor is to provide a device easy to manipulate and capable of gripping articles as tightly as desired, and from which they may be instantly removed when desired.

Machines and Mechanical Devices.

BISCUIT-CUTTER.—L. A. ROCKWELL, New York, N. Y. The invention relates to improvements in devices for cutting or forming biscuits from sheets of dough, the object being to provide a cutter and die by means of which the dough may be evenly cut with a clear and smooth figure impressed thereon; and further to provide means for ejecting the formed biscuits from the cutters.

GAGE.—J. J. ROBINSON, Bloomsburg, Pa. The gage is for use in connection with saws and other woodworking machinery. The invention provides an accurate and readily manipulated gage apparatus. A carrier-screw serves to determine the position of the gage members, since a movement over any number of threads will effect a known advance. Furthermore, by the use of a threaded carrier, ease of rotation of the gage members is secured, while they are at the same time retained against longitudinal movement upon the carrier.

SCREW-THREADING MACHINE.—F. H. MCLAIN, Stratton, Me. The objects of the invention are to construct a practical machine which shall be automatic in its action of feeding wooden boxes and covers or other blanks, from a receptacle chucking them between the jaws of a suitable chuck, cutting the thread thereon and ejecting them from the chuck with no other labor required than simply placing the boxes in the receptacle.

CALCULATOR.—E. LEDER, Rixdorf, near Berlin, Germany. The operation is simple. It comprises a keyboard for one figure or quantity, a slide keyboard for another figure or quantity, a plurality of slides movable between the keyboard and the slide keyboard and each provided with a pair of rollers having various series of teeth on their peripheries, a carriage movable over the slides and containing an operameter adapted to be operated by the roller teeth, a mechanism controlled from the keyboard for adjusting the slides, and a hand-crank with mechanism for adjusting dials in the operameter.

CLUTCH-OPERATING MECHANISM.—J. P. KARR and J. D. RAUCH, Logansport, Ind. A mechanism is produced in which the construction is simplified, friction in adjusting the movable clutch members is reduced, and the separation of the clutch members may be effected instantly under all conditions. The invention also provides for varying the throw and rotation of the twin screws as may be required to take up wear.

PROPELLER.—A. H. FRIEDEL, Cleveland, Ohio. Certain improvements are made by this invention in propellers adapted for use in connection with water or aerial navigation, and the invention relates more particularly to means for supporting the blades and varying the angles thereof in respect to the propeller shaft, whereby the speed of the vessel may be readily controlled or direction reversed without the necessity of speed-changing reversing gears.

CARVING-MACHINE.—M. A. CUMING, New York, N. Y. Among the objects of the invention are: To provide a machine with upper and lower decks, the former being for supporting the block to be shaped, the model block being separated upon the lower deck. To place the decks in such position as to occupy comparatively small floor space. It relates more particularly to a machine of a type particularly suitable for duplicating blocks, brims, or curls upon which hats are formed and finished.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

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.

(10628) N. W. asks how to color copper chocolate by oxidation. A. Take about a tablespoonful of crystallized verdigris and dissolve it in ¼ liter of boiling water. Take also a piece of sal-ammoniac about the size of a nut and dissolve it likewise in ¼ liter of water. Now pour the two solutions together and add ¼ liter of wine vinegar. Boil well together and filter. Of the filtrate now take about a wineglassful and just before using it add to it a teaspoonful of ammonium sulphide. The copper object to be colored must be perfectly clean and polished. The solution may be applied with a hair brush and dried in a warm oven. To assure the sticking of the oxidizing fluid, a sort of binder must be added, and for this purpose a little rouge will do. The liquid should be very evenly applied and dried slowly. After each application of the liquid it must be seen to that the old coat, which has dried in, is completely dissolved in the new, otherwise spots will arise. Six or even ten coats being thus applied, the pot may be washed in warm water and dried. Heat the article now slowly, whereupon it becomes considerably darker. If the required color has not yet been reached, the painting process must be repeated and the object again heated until the tint is reached.

(10629) S. E. asks: 1. What electrolyte is commonly used in an electrolytic rectifier employing copper and aluminium electrodes? A. Any salt may be used in an electrolytic rectifier which will readily oxidize aluminium. Sodium acid phosphate is good for the purpose. A full description of a lead-aluminium rectifier may be had from our SUPPLEMENT No. 1644, price 10 cents. By this apparatus the direct current may be drawn at 7 volts, 20 volts, or 45 volts. Another rectifier, yielding 3 to 5 amperes at 15 to 25 volts, is described in the SCIENTIFIC AMERICAN, vol. 97, No. 8. We send this for 10 cents. 2. Has this phenomenon (the covering of one electrode with a high resistance film) been observed, using other elements as electrode and correspondingly different electrolyte? A. The metal commonly employed for the electrode to be oxidized is aluminium; the other electrode is usually lead. 3. I wish to plate a small piece of platinum with aluminium; what aluminium compound is it advisable to use? A. Plating with aluminium is, we suppose, possible, but is not in commercial use, so far as we know. We have no formulas which we can say will certainly give a good result. Many formulas have been published, but we have no personal knowledge of their working qualities.

(10630) R. F. M. writes: Our 24-horsepower engine propeller jammed against a pier recently and became twisted. We are unable to restore it to the proper position to drive the boat at its former speed, and I wish you would tell me how to set or pitch the 24-inch blades to the best advantage. A. From so brief a description we are unable to judge what may be the nature of the accident to the propeller. "Twisted" may mean that the shaft is bent and the whole propeller out of its true plane, which can be most readily noticed in watching the rotation of the propeller, and easily corrected by straightening the shaft; or it may mean that one or more of the blades is distorted, in which case it should be shaped as nearly as possible to the form of the undistorted blades. To give only the formula most likely to be applicable for plotting the pitch and other curves of the various possible forms of screw would take more space than our Notes and Queries column contains, and it requires education and appliances to plot the curves from the formula or to shape the propeller to the plotted curves. We would refer you to special articles in our SUPPLEMENT Nos. 16, 93, 101, 145, 370, and 800, especially to the two latter, or to "Screw Propellers and Marine Propulsion," by I. McK. Chase ($3), which we can supply.

NEW BOOKS, ETC.

AIR CURRENTS AND THE LAWS OF VENTILATION. Lectures on the Physics of the Ventilation of Buildings Delivered in the University of Cambridge in the Lent Term. By W. N. Shaw. Cambridge: University Press, 1903. 8vo.; cloth; 94 pages; illustrated. Price, $1.25.

In the many practical attempts to solve the question of ventilation too little attention has been paid to the laws of physics. Chemists have deduced from their analyses the limits of respirable impurity in air, and much has been written upon the thermometer as an indicator of healthful conditions, but no one has yet told how a flow of air may be best made to perform the work required of it. Mr. Shaw embodies in this volume the gist of the lectures delivered by him during the year 1903, before the University of Cambridge. He regards the problems largely from the analogy of the distribution of an electrical current in a network of conductors. He lays great stress upon the physics of ventilated space. Wherever it is possible results are expressed in the form of formulæ, so as to be most readily available for practical work.

STATIONARY ENGINEERING. By Joseph G. Branch. A Reference and Textbook written expressly for Stationary Engineers and Firemen. With 300 illustrations. St. Louis: Perrin & Smith Printing Company. 12mo.; cloth; 940 pages. Price, $3.50.

Owing to the varied requirements of modern power plants, and the high boiler pressures necessary for the operation of modern expansion engines and turbines, the responsibility of the stationary engineer has been vastly increased in the last few years. When we further consider that many plants now generate their own power for the operation of their lights, motors, or elevators, and also do their own refrigerating, it can be seen that the modern stationary engineer must not only be a steam engineer, but an electrical and refrigerating engineer as well. This book presents in a compact form the principles which underlie a thorough knowledge of power and heating plants, together with such data on the subject of mechanical and electrical engineering as is deemed essential to the successful operation of power and heating plants of every description. The subjects are treated in a practical way rather than in a theoretical and mathematical manner. Before dealing with the function of any machine, the nature and use of the principal parts are described. The great number of clear designs aids materially the understanding of the text.

ALLAN ON THE DROUGHT ANTIDOTE FOR THE NORTHWEST, N. S. W. By Percy Allan. Read before the Sydney University Engineering Society, October 10, 1906.

An account of the artesian wells of New South Wales, and of the methods of using their waters for irrigation purposes. The drilling of wells and the details of procedure to insure efficient distribution are both described.

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