

RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

COAT-HANGER.—L. TRESTMAN, New York, N. Y. This invention relates especially to the cords or chains which are attached on the inner side of the collar to enable the same to be hung upon a hook. The purpose is to provide an anchor plate which can be readily secured to the material of the garment. There are two of these anchor plates provided and they are connected by a chain.

Electrical Devices.

IGNITER.—G. W. SAGE, EUREKA, Cal. The improvements are in igniters for use in connection with internal combustion engines, and more particularly to that type of igniter in which two electrodes are brought into contact and then separated at the instant it is desired to produce the spark. It relates to that type disclosed in the previous patent granted to Mr. Sage.

TELEPHONE-MOUTHPIECE.—G. H. REED, New York, N. Y. The invention refers more particularly to means for rendering the mouthpiece antiseptic and for increasing the volume of the sound transmitted. The diaphragm and pad may be readily removed or replaced, and the mouthpiece in presenting a large bell-shaped outer end increases the effect of the voice upon the diaphragm of the transmitter.

ROTARY CONVERTER.—J. L. MURDOCK, BOUND BROOK, N. J. Mr. Murdock's invention pertains to so-called "current shaping mechanism," his more particular object being to produce a converter, for selecting from three-phase alternating currents predetermined portions of said currents, in such manner as to accumulate the effect of the portions thus selected, and thus build up a virtually direct current which is practically constant.

Of Interest to Farmers.

GIN COTTON-SEED CLEANER.—H. A. SUGG, Kennett, Mo. This cleaner is a shaking screen for cleaning gin cotton-seed by removing therefrom hulls, loose cotton, dirt, and sand. It is adapted and used for securing cotton-seed discharged from the gins, and separates from the seed the cotton and hulls, which are conveyed to a storage bin, the cotton being subsequently returned to the gin to be re-ginned, whereby an important saving is effected.

THERMOMETER-HANGER FOR INCUBATORS.—G. H. LEE, Omaha, Neb. In this case the invention refers especially to thermometers when used in incubators or in similar situations where it is desirable to have the bulb supported adjustably so that the level of the bulb may be regulated and placed at any point desired.

PLOW.—S. A. ESTABROOK, JR., Ponchatoula, La. In the present patent the invention is in plows, and has for its purpose to provide means to vary the sweep of the plow, whereby the soil may be thrown from furrows close to growing plants at each side, and the plow thus used for different spaced rows.

Of General Interest.

CAMERA.—A. L. RICHARDSON, Melrose, New Mex. This invention has reference to improvements in photographic apparatus and is applicable chiefly to cameras used in photographic studios for the purpose of making portraits; also it may be used with other cameras such as those used for taking landscapes or for other outdoor photographs.

HIGH-SERVICE DAM.—R. GRISWOLD, Denver, Colo. The purpose here is to provide novel details of construction for a high service dam that adapt the dam for erection in a gorge or canyon near the highland, so as to arrest a portion of the water drained therethrough, and produce back water for irrigation of the soil over which the arrested water is returned.

EAVES-TROUGH.—LIZZIE H. DICKELMAN, Forest, Ohio. The aim in this instance is to provide a construction whereby to increase the strength and rigidity of the trough when the sections are coupled together and at the same time to provide a construction in which the process of manufacture is simplified and in which the sections may be more quickly and easily put together and disconnected when desired.

Hardware.

NAIL-HOLDER FOR HAMMERS OR HATCHETS.—W. E. WIELAND, Durango, Col. One purpose here is to provide details of construction for the handle of a nail driving tool, such as a hammer or hatchet, which convert the handle into a magazine, wherein nails of a selected dimension may be carried, and by a shaking movement of the handle be passed through a longitudinal slot in the hollow body thereof, and hang by their heads projected from the slot, to be manually removed as desired.

Heating and Lighting.

INCANDESCENT-LAMP SOCKET AND SWITCH.—I. L. CASH, Portland, Ore. This invention relates to incandescent lamp sockets, and the intention of the invention is to improve the construction at the socket, and particularly that of the switch, for turning the lamp on or off. Means are provided for making signs visible that indicate that the current is turned on or off.

CONDENSING SYSTEM.—S. WOOLF and C. W. RAFFERTY, Lynch, Neb. An object of the invention is to provide means for disposing of the exhaust steam by condensing the same, thereby providing means for overcoming back pressure. Means also provide for removing impurities carried along with the steam thereby leaving the feed water in a pure condition for immediate re-entrance into the boiler.

Household Utilities.

SAD-IRON.—G. P. CLEMENTS, New Milford, Pa. The iron has an adjustable extension adapted for opening and pressing seams, ruffles, tucks, etc. In retracted position the extension conforms to the outward contour of the iron. It retains heat much longer than small irons, yet is capable of ironing small and complicated work even more thoroughly than small irons, besides avoiding the necessity of having several sizes of irons.

BED ATTACHMENT.—H. L. APPLETON, Shelby, Ala. In this patent the intention of the improvement is the provision of an attachment for hospital beds or the like, easily removed or replaced, for containing sponges and instruments, and so arranged as not to interfere with the use of the Kelly pad or similar drainage devices.

CURTAIN-FIXTURE.—J. DARLING, Chicora, Pa. The improvement here is particularly in that class illustrated in Mr. Darling's former patent. The construction permits the convenient utilization of the ordinary curtain rollers on the market and provides for securing the same in the hook bracket in such manner as to prevent any accidental displacement of the shade when applied for use.

CLOTHES-DRYING DEVICE.—J. M. TEACH, Santa Monica, Cal. The aim here is to provide a drier, erected in the open air, which affords a device that is very convenient in use and well adapted for the reception of a considerable number of pieces of clothing or other fabric that are to be exposed to the sun and air.

Machines and Mechanical Devices.

CUTTER-HEAD.—J. F. STEDMAN, Newburg, Ore. Mr. Stedman's invention has for its more particular purpose the provision of an improved mounting for securing the cutters upon the cutter head in such a manner that the cutters may be readily attached and detached at will, and may also be adjusted as desired, without removing them from the cutter head.

WAVE-MOTOR.—C. W. HICKS, Los Angeles, Cal. A purpose of this inventor is to construct a motor particularly automatic in action, wherein a pier is built out into the ocean or equivalent body of water, a desirable distance, in connection with which tracks are employed, having an inclination upward in direction of the shore, upon which tracks a motor carriage is adapted to travel.

WIND-MOTOR.—C. DAUB, New York, N. Y. The more particular purpose of this invention is to provide a type of wind motor in which there are two sets of wind wheels turning in planes which cross each other, the combined effect of all of the wind wheels being transmitted ultimately to a shaft or other driven member common to all of the wind wheels.

FILLING DEVICE.—E. N. GAUDRON, Hasbrouck Heights, N. J. The object here is to provide a device, more especially designed for filling bottles and other receptacles with liquids contained in kegs, barrels, vats, tanks and other storage vessels, and arranged to automatically stop the filling at the time the bottle is filled, to prevent the return flow into the storage vessels and thus avoid displacement of sediment.

REDUCING-VALVE.—T. P. FORD, New York, N. Y. The valve is more especially designed for high-pressure fire systems and the like, and arranged to permit variable pressures from a common supply, such as a hydrant, to allow, for instance, use of several hose of low and higher pressure for outside work. Use is made of a valve casing having a connection with the hydrant or other water supply, and provided with a plurality of outlets for connection with separate fire hose, and main piston valves arranged within the said valve casing for controlling the flow of water to said outlets.

Prime Movers and Their Accessories.

FLUE-CLEANER.—J. WIEHMANN, Albany, N. Y. This cleaner thoroughly cuts the scale from the inside of the flue or tube by the use of a cutter head rotating with the turbine wheel, and provided with a cutter wheel mounted to rotate loosely on the end of a centrifugal swing arm, so that the center pin of the turbine wheel is relieved of undue strain and a proper cutting of the cutter wheel is insured, without danger of breaking the latter or causing it to stick in the scale.

Designs.

DESIGN FOR A PICTURE-FRAME. A. KAISERMAN, Rochelle, Ill. This neat ornamental design for a picture frame comprises a frame of an inverted kite shape, the frame standing by a prop support on a flat surface. A cord and tassel hangs from the top point, and a tube shaped projection extends from the center of the article.

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.



Kindly write queries on separate sheets when writing about other matters, such as patents, subscriptions, books, etc. This will facilitate answering your questions. Be sure and give full name and address on every sheet.

Full hints to correspondents were printed at the head of this column in the issue of March 13th or will be sent by mail on request.

(12121) O. M. T. asks: A local steam plant has been supplying steam for some time to several power plants in this city. They have two boilers of 100 horse-power each. They have been supplying about 200 horse-power steam through a 4-inch steam line, about 500 feet long. To do this took altogether too much coal. They used about eight tons per day. They dropped off 100 horse-power of this load, and it only takes three tons or less per day, using one boiler only. What is the explanation? Would the size of steam pipe make any difference in the amount of coal used? A. The size of the steam pipe might easily affect the coal consumption per horse-power generated. Without further particulars as to the distribution we cannot say exactly, but supposing that half or more of the total horse-power is consumed by engines half or more of the total distance from the boilers, a 4-inch main is certainly small enough to cause an appreciable loss of power. It is probable, however, that the boilers are overloaded, and a reduction by half of the power consumption might well cause a greater proportionate reduction in the fuel consumption.

(12122) C. H. P. asks: We have two tanks lying horizontally. One is 6 feet 6 inches in diameter and 29 feet 6 inches long, and there is 24 1/2 inches of oil in this tank. The other is 6 feet in diameter and 25 feet 3 inches long, with 32 3/4 inches of oil (from bottom of tank to top of oil). How many gallons in each tank? Please give formula used if possible. A. Your question is not very clear, as you refer to the distance from the bottom of the tank (usually meaning the circular flat bottom) to the top of the oil; but as you refer to the tanks as lying horizontally, we presume you mean that the axis or longer dimension is horizontal, and mean by the bottom, the curved side of the cylinder lying on the ground. In this case the volume of the oil is the product of the length of the tank by the area of the segment of a circle of which the surface of the oil is the chord. The area of such a segment is calculated by the formula

$$A = \frac{4h^2}{3} \sqrt{\frac{D}{h} - 0.608}$$

in which A is the area, h the height of the segment (in your case the depth of the oil), and D the diameter of the circle of which the segment is part. The derivation of the formula is difficult, involving higher mathematics, which you presumably do not want, but its results are very closely approximate. In your first case $D = 6$ feet 6 inches = 78 inches, and $h = 24.5$ inches, so

$$A = \frac{4 \times 600.25 \sqrt{\frac{78}{24.5} - 0.608} = 830.33 \sqrt{2.576} = 800.33 \times 1.605 = 1284.5 \text{ square inches.}$$

So the volume of the oil is $1,284.5 \times 29$ feet $\frac{454,713}{231}$ 6 inches = 454,713 cubic inches =

gallons = 1,968 gallons nearly. With the above example you can easily calculate the second amount, substituting $h = 32.75$ and $D = 72$ inches, and multiplying the area found by 25 feet 3 inches.

(12123) P. O. B. 35 asks: Does a 22-horse-power automobile develop more horse-power in "low" than in "high"? I am sure it does not, but just to prove it to the fellow with whom I am betting, I am asking you. Do you answer by letter or in the next SCIENTIFIC AMERICAN following the receipt of the question? A. We make it a rule not to settle bets, but as we can only guess at the meaning of your question we do not mind stating a general principle from which you can draw your own conclusions. Supposing that your question has some reference to the change-speed gear of an automobile, no amount or kind of gearing can alter the power generated by any engine. If a man can lift 100 pounds through one foot in a second with his hands, but can raise 1,000 pounds with a fall and tackle, he must continue for ten seconds expenditure of the same amount of energy per second required to raise the smaller weight in order to raise the 1,000 pounds 1 foot, because where he gains in mechanical advantage, he loses in speed. In the same way with an engine, if a certain number of revolutions producing through gears a given torque on the wheels will drive a car 20 miles an hour along a level road, a greater torque is required to drive at even a much less speed up a steep grade. The engine speed is therefore reduced by the increased load, and, as a high speed is necessary for efficiency in gasoline engines, a change of gear is made which allows the engine to run as fast as before while the wheels turn more slowly, thus distributing the same amount of work over a longer period

and overcoming a heavier load; but the power generated is the same, power being the work done divided by the time consumed in doing it. This is not to say that the output in brake horse-power of an automobile or any other engine is always the same, but merely that it cannot be affected by the gearing.

NEW BOOKS, ETC.

MODERN ACCOUNTING. By Henry Rand Hatfield. New York: D. Appleton & Co., 1909. 12mo.; 367 pp. Price, \$1.70.

This is a most valuable treatise, giving in lucid style the best principles of accounting. The essence of accounting from the author's viewpoint is the presentation first of a careful exhibit of a definite status of the concern at a given moment of time, and secondly a showing of the results obtained during a given period of time. The first is embodied in the balance sheet, the second in the income or profit and loss statement. The presentation of a correct view of a concern's financial status and of its past profits involves many points of theoretical interest and practical import. The present volume will do much to give those who are charged with the ultimate revision of figures most valuable information. The chapters relate to: Principles of Double Entry Bookkeeping, Balance Sheet, Assets and the Principles of Valuation, Valuation of Particular Assets, Mutual Assets, Depreciation, Capital Stock, Liabilities, Profits, Surplus and Reserve, Sinking Funds, Trading, Manufacturing, and Income Accounts, Cost Accounts, Partnership Accounts, Statement of Affairs and Deficiency Account, Technical Improvements in Accounting Practice. The subjects treated are very well arranged, and the book will certainly be of great value to the heads of business corporations as well as those who are charged with the actual accounting.

HANDBUCH FÜR HEER UND FLOTTE. Enzyklopädie der Kriegswissenschaften und verwandter Gebiete. Herausgegeben von Georg von Alten, Generalleutnant z. D. Vollständig in 108 Lieferungen reichillustrirten Textes mit farbigen Beilagen, Karten, Plänen, Gefechtskizzen, etc. Deutsches Verlagshaus Bong & Co. Price per part, 50 cents.

The last five installments of this admirable military and naval encyclopedia contain some excellent articles on tactics, most of them historical in treatment, and some based upon the results of the recent Russian-Japanese war. Among these may be mentioned the articles entitled "Aufklärung," "Aufmarsch," and "Ausdehnung der Gefechtsfront." Some excellent articles on historical battles and sieges, are to be found under the headings: "Aspern," "Austerlitz," "Bayaume," "Bar-sur-Aube," "Bautzen," "Ath," "Badajoz," and "Barcelona." European military geography is also discussed, particularly under the headings "Athen," "Baden," and "Bayern." Among the numerous articles of general military interest may be mentioned those entitled "Aufgebot," "Aufnehmen," and "Aushebung," while some special technical subjects will be found discussed under such titles as "Bajonettangriff," "Attacke," and "Batteriedeckungsbau," which last is most admirably illustrated. Among the naval articles of more than passing mention are those under the headings "Artilleristische Maschinen der Kriegsschiffe," "Atlantischer Ozean," "Ausstossrohr," "Azimut," "Babcock und Wilcoxkessel." Military hospitals and military sanitation are ably discussed under the titles "Arznei- und Verbandmittelversorgung," "Aerztliche Fortbildung," "Atmung," "Augenkrankheiten," "Bakteriologie," and "Baracken." A very clear presentation of military and legal relations, in other words, the subject of military jurisprudence, will be found under the titles "Ausland" and "Auswanderung." For the first time we find an exhaustive review of the historical development and the military value of expositions.

MY SYSTEM. Fifteen Minutes' Work a Day for Health's Sake. By J. P. Müller, ex-Lieut. of Engineers, Klammenborg, Denmark. With forty-four illustrations and a time-table. Translated from the fifth edition of the Danish original. New York: G. E. Stechert & Co. Price, in colored paper covers, 75 cents net; red cloth, gold lettering, \$1 net.

Müller's book "My System" has become almost a household word in Germany. Indeed, it is referred to in more than one German comic journal with humorous approval, as well as in such literary works as Andrejev's "Geschichte von den sieben Gehengten." The system described is an excellent arrangement of gymnastic exercises intended to consume not more than fifteen minutes a day and yet to develop the physique. There can be no doubt that if the suggestions of this book are carried out, a weak body can be scientifically built up.

A NEW LIGHT ON ANCIENT EGYPT. By G. Maspero. New York: D. Appleton & Co., 1909. 8vo.; 315 pp. Price, \$4 net.

Prof. Maspero is one of the most noted Egyptologists in the world, and he states in his Preface that he has been fifteen years trying to bring a science, supposed to be comprehensible only to experts, within the reach of the ordinary man, and it is gratifying to find that his time