

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

PULVERIZER AND HARROW.—ANDREW V. NELSON, Galesburg, Ill. This invention involves the peculiar construction of harrow teeth so arranged that they can be quickly removed or attached to a series of square-shaped revolvable horizontal bars forming the main part of the harrow which are secured and have bearings in three longitudinal bars. To convert it into a pulverizer, additional teeth are attached to the revolvable bars pointing in opposite directions. As the harrow is drawn along, they cause the bars to revolve and at the same time crush and pulverize the earth underneath. To change it to a harrow, the surplus teeth are detached, leaving the balance pointing in one direction. By a simple device the series of revolvable bars are locked to a crank-arm above the harrow attached to a hand lever. The operator, by moving the lever, can adjust the teeth to any desired angle, locking it with the usual supplemental spring-pushed pin attached to and parallel with the handle lever.

Bicycle Appliances.

BICYCLE-SADDLE.—JOHN B. McMANUS, Schenectady, N. Y. The purpose of this invention is to construct a light bicycle-saddle that will automatically adjust itself to the body of the rider, and that will be adapted for use on the saddle post without the necessity of an intermediate spring. To this end, the inventor forms the body of the saddle from a single piece of spring-metal, bent upon itself in a number of coils, the inner terminal being doubled on itself and extended longitudinally in opposite directions to reinforce the inner turns of the coil and form an attaching shank.

Electrical Inventions.

ELECTRIC FURNACE.—RICCARDO PIGNOTTI, FERDINANDO LORI, SCIPIONE REGNOLI, MARCO BESSO and MAFFEO PANTALEONI, Rome, Italy. To provide a furnace with double recovery of heat-activity for the production of carbide, these inventors have devised a furnace having a refractory and non-conducting lining. The furnace has a removable carbon bottom with an aperture therethrough containing a carbon plug mounted on a lever. A high-resistance electrode is suspended in the furnace and has a portion extended upwardly into the chamber communicating with the furnace. A receptacle is provided for the material to be treated and communicates with the furnace. A screw conveys the material from this receptacle to the furnace. In a chamber or space surrounding the receptacle, gas-burners are located, which are designed to heat the material in the receptacle before its transfer to the furnace.

ELECTRIC BATTERY.—VICTOR JEANTY, Paris, France. The main feature of this battery is that its exciting liquid, chemically considered, is kept separate from the depolarizing liquid, although electrically the electrodes are directly connected, while as regards the relative quantities of the liquids contained in the cells, constant proportions are maintained. This arrangement, therefore, affords a means for removing the inconveniences met with in the batteries now in use. Moreover, a current of great intensity and uniformity of tension is obtained at a minimum cost.

Engineering Improvements.

TRACTION-ENGINE.—ROBERT J. ZERBAN, JR., Belleville, Ill. The object of this invention is to provide a traction engine so arranged that the boiler hangs in springs, that the driving mechanism is always in mesh and that friction is reduced to a minimum. The axle-frame is U-shaped, is fulcrumed at its middle on the boiler and carries at its ends aligned spindles for the traction or rear wheels. Spring are interposed between the boiler and the frame at the spindles and take up all vertical movement of the boiler. A countershaft is carried by the pivot-portion of the axle-frame and is provided with intermeshing gears operating the wheels. No matter which way the boiler moves relative to the traction wheels, the intermeshing gear will always remain in proper position so that no binding takes place.

Mechanical Devices.

REGISTERING APPARATUS.—LEONARD D. ORR, Pegram, Ill. This apparatus consists of a shaft, a registering disk loosely mounted thereon having a concave cavity, a transmission-disk fixed to the shaft and seated in the concavity of the registering disk, and a spring-bearing between the transmission-disk and the registering disk to transmit movement from the transmission-disk to the registering-disk. A stop-plate is fixedly mounted adjacent to the registering disk and is engaged by a dog carried by the registering-disk to hold that disk until released by the action thereof.

KNITTING-MACHINE.—ISAAC W. LAMB, Perry, Mich. The object of this invention is to provide an improved machine designed more especially for knitting mittens, gloves, and similar articles and arranged so as to produce tubular fabrics or fabrics open at one end. The apparatus consists principally of two rows of needles, a reciprocating carriage, sets of cams on the carriage to operate the rows of needles, and a manually-actuated shifting device adapted to be set in two positions, one to open and close the cams alternately to actuate the rows of needles successively during a full stroke of the carriage to form a tubular fabric; and the other to open one set of cams and close the other set during a full stroke of the carriage and then to open the other set and close the first set of cams during the next full stroke of the carriage, to produce a fabric open at one end.

GRAIN-BAGGING MACHINE.—JAMES W. HENRY and ALEXANDER GUNN, Wallace, Idaho. To provide an apparatus properly arranged to support and hold open a sack while filling, to sew up the open end of the bag after it has been filled, and, finally, to discharge the filled and closed bag from the machine, is the purpose of this invention. The machine has a frame in which is mounted a revolvable bag-carrier comprising a table and a top sustained adjustably above the table. On the bag-carrier a dumping-board is mounted between the top and the table, which board ejects the bag from the table. A stationary jaw is formed adjacent to the dumping board,

Mounted next to the stationary jaw and coacting therewith is a movable jaw to which a rod is connected carried by the bag-carrier. The movable jaw serves to hold the bag in open and closed positions. When the jaw is in closed position, the bag is sewed.

POWER-WHEEL.—ALMER N. BLAZER, Mesalero, New Mexico. According to this invention, two angularly-disposed shafts are horizontally carried by a hollow shaft. To each shaft two blades are pivoted, adjacent to which are arms fixed to the shafts and serving to limit the movement of the blades. An arm is carried by each blade. On each of the angularly disposed shafts a finger slides which may be moved in and out of engagement with its respective arm to release or lock that arm.

MARINE PROPULSION.—EDWARD W. MITCHELL, Oberlin, O. This invention provides one or more reciprocating propellers, which slide back and forth along the hull of the boat. Each propeller consists of a carriage to which a blade is pivoted. In the carriage a support provided with a rack slides and extends on oppositesides of the blade. Braces connect the support with the blade. To the carriage a drum is journaled having a pinion meshing with the rack of the support. A cable is wound at its ends on the drum. An adjusting means is provided whereby one of these ends may be wound on and the other correspondingly wound off the drum to effect an adjustment of the blade whereby the direction of motion may be changed.

Miscellaneous Inventions.

SHIP'S BANDAGE.—CARL F. SULTEMEYER, Chicago, Ill. A flexible cloth structure is provided by this inventor to blanket or bandage a leak in the hull of a vessel so as to exclude the water. The bandage on one side has overlapping flaps, which, when the bandage is rolled, project out tangentially from the roll, so that the pressure of the incoming water, acting on the flaps, will unwind the roll and spread the bandage over the surface of the vessel. The action of the intruding water acting on the unfolded bandage presses the material tightly into the leak and thus excludes the water.

SPRING-HUB FOR VEHICLE-WHEELS.—CONSTANT CASIMIR BALLIN, Paris, France. The device forming the subject of the present invention provides a flexible hub applicable to all kinds of wheels. A wheel fitted with this elastic device possesses great strength. The elasticity is better distributed at the spring-hub than over the circumference, all shocks or thrusts being relieved by an India-rubber cushion interposed between the wheel and the axle-journal. The latter consequently cannot readily be broken.

CANDLE-BURNING LANTERN FOR VEHICLES.—ALEXANDER BOCK, Copenhagen, Denmark. The present invention is an improvement in the construction of candle-burning lanterns for vehicles. The purpose of the inventor has been to keep the "candle-cup" dry, and thus avoid the drawbacks hitherto experienced with candle-lanterns. The lantern consists of two main parts—the lantern-space and the candle-holder. These two parts are connected by a piece made of cork, wood, or the like. The heat of the lantern-space is thereby prevented from penetrating the walls of the lantern-space and reaching the candle-holder.

METHOD OF FORMING TOBACCO INTO WRAPPERS.—PATRICK DILLON, Milford, Mass. By means of this method, sheet-wrappers for cigars can be made from refuse tobacco, such as stems, scraps, and siftings. In carrying out the process, the stems or stalks are first beaten into a pulp and immersed in a solution of tobacco juice. The scraps are then taken to another beating-engine containing steam. The pulp is then rolled out. Manila and Egyptian hemp are added to make a suitable binding fiber. The whites of eggs are used to give the finished sheet a glossy appearance. A solution of tea-leaves may also be employed to flavor the wrapper.

BRUSH.—DRYDEN B. FORWARD, Alturas, Cal. The brush provided by this invention is formed of wire and is produced by twisting together a number of strands so that they shall be given a crimped form, and by untwisting the strands partly so as to make the individual bristles of a brush.

THILL-COUPLING.—LOUIS E. MACOMBER, Ashland, Wis. The purpose of this invention is to provide a coupling which may be quickly manipulated and which enables a person seated in a vehicle to release an unruly horse. The thill-coupling comprises an arm adapted for attachment to the axle and has a recess adapted to form a seat for the cross-bar of the thill-iron. A transverse groove and a transverse rib are located in the recess and the attachment end or axle end of the arm. A jaw is pivoted to the free end of the arm, which jaw has a recess to fit the cross bar of the thill-iron. At its free end the jaw has a transverse rib and a transverse groove adapted to interlock with the grooves of the arm.

KNOCKDOWN STOVE.—JOHN F. PIERROU, West Point, Neb. The stove devised by this inventor may be packed in an exceedingly small space, and is hence especially adapted for use in camping out. The stove has a body in which an oven is set. On the top of the oven are sockets adjacent to which is a damper. Flue-plates are arranged to be engaged by the damper, each comprising a lower member hinged to the bottom of the oven and an angular member pivoted to the lower member and arranged to engage the sockets. A grate is also provided in which coal, green wood, or seasoned wood can be burnt.

FENCE.—MANSON STEFFEE, Akron, O. This improved fence comprises panels spaced apart, one of these panels having guideways and the other lap extensions projecting toward the first panel. Crossed stakes brace the panel provided with guideways. Stakes are crossed below one of the lap extensions of the other panel. A slide-panel has its bars arranged to slide in the guideways of one panel and is provided at its end with lap extensions corresponding with those of the panel toward which the slide-panel is movable. The fence is designed to rest entirely upon the ground and requires no anchoring whatever. From the nature of its construction, it may be built very lightly, thus enabling it to be compactly loaded.

Designs.

PARING-KNIFE.—MAURICE E. HADDEN, Savannah, N. Y. This design consists of a handle from which pro-

jects a knife-blade formed with a double curve extending through the entire length of the blade. The back is curved downwardly near its outer end to terminate in a point, the curved portion being concave. The blade of this knife is adapted to fit the shape of the fruit to be pared, thus enabling the skin to be removed without cutting away too much of the fruit.

TIE FOR BAGS.—EPHRAIM L. SCHANCK, Delaware, O. The leading feature of this design consists in a tie having a loop and arms departing from the loop in opposite directions at an angle to each other, one of the arms being returned on itself.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for 10 cents each. Please send the name of the patentee, title of the invention, and date of this paper.

NEW BOOKS, ETC.

INSPECTION OF MATERIALS AND WORKMANSHIP EMPLOYED IN CONSTRUCTION. By Austin P. Byrne. New York: J. Wiley & Sons. 1898. Pp. 539. 16mo. Price \$3.

The present work is a reference book for the use of inspectors, superintendents, and others engaged in the construction of public and private works, containing a collection of memoranda pertaining to the duties of inspectors, quality and defects of materials requisite for good construction, methods of slighting work, etc. This book will undoubtedly prove of great value to inspectors of private works and should be to inspectors of public works. If the public official whose duty it is to visit buildings in cities, while they are being erected, was master of the information contained in this book, we should hear less about faulty and scamped building construction. The selection and arrangement of material is admirable and cannot fail to be very useful for the purpose for which it is intended.

INFINITESIMAL ANALYSIS. Vol. I. Elementary: Real Variables. By W. B. Smith. New York: Macmillan Company. 1898. Pp. 352. 8vo. Price \$3.25.

The author is professor of mathematics in Tulane University, and this book is the result of ten years' experience in teaching the calculus. The aim has been, at a prescribed expense of time and energy, to penetrate as far as possible and in as many directions into the subject in hand, so that the student should attain as wide knowledge of the matter, and as full a comprehension of the methods, and as clear a consciousness of the spirit and power of this analysis, as the nature of the case will admit.

RESIDENTIAL SITES AND ENVIRONMENTS. Their Conveniences, Gardens, Parks, Painting, etc. By Joseph Forsyth Johnson. New York: A. T. De la Mare Printing and Publishing Company, Limited. 1898. Pp. 118. Price \$2.50.

The author is a consulting landscape gardener and garden architect, and the entire work shows the hand of the expert. In the beginning the residential sites are considered and various sizes and arrangements of properties are shown. Special treatment is needed for broad views, another for long views and still another for waterside property, etc.; then come examples of model grounds, parks, homes, then chapters on the beauties of plant life, planting, and introduction to undulation, transplanting trees and large plants, natural grouping, rockeries, aquatic and bog gardens, public grounds, etc. All those who have property which they think of improving should possess the present work, which is rather unique. The book is handsomely printed.

BICYCLE REPAIRING. By S. D. V. Burr. New York: David Williams & Company. 1898. Pp. 208. 8vo. Price \$1.

Some two years ago we noticed the first edition of this book. Since that time a large number of illustrations and much additional matter has been added, but the popular price has been maintained. There is hardly any one who has any taste for mechanics or who is fond of a bicycle who would not be interested in this book. It is filled with most practical suggestions, and we do not see how any repair man, no matter how poor his business, could afford to be without this book. It is profusely illustrated with clear and practical drawings which treat of everything from brazing to repair tags. We are pleased to note that four editions of the book have appeared.

DAS ALTER DER WELT. Auf mechanisch-astronomischer Grundlage berechnet von Sigmund Wellisch. Vienna: A. Hartleben. 1898. Pp. 80. 8vo. Price, paper, 75 cents.

Since man first awakened to a consciousness of his willing and thinking power, he has endeavored to ascertain the time when all things had their origin. From the oldest biblical traditions down to the most recent investigations in the various branches of science, traces of this effort may be found. To-day, the determination of the age of man and of the world on which he resides, has become an important scientific problem. Beginning with laws purely mechanical and astronomical in nature, the author of this little pamphlet has attempted to reckon the age of the planets, the period when the earth was formed, and the time when man first made his appearance. The author accepts the Kant-Laplace theory of the origin of celestial bodies, and with this as a starting point, he has endeavored to subject Nature's work to a searching, mathematical investigation. From the laws of the increase of density of a cosmic mass subjected to a cooling action, the time is first calculated in which a celestial body passes from an attenuated gas into a solid body. Further geological and astronomical investigations finally lead the author to the conclusion that 1,020,000 years ago man first appeared on the earth; that the pre-geological period of the earth's history extends through 7,055,300 years, and that 9,108,300 years ago our earth emerged from primeval chaos and took its place in the universe.

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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.

"Model Engineer and Amateur Electrician," a first-class paper, published every month. Annual subscription, 75c. Send 5c. for sample number. Agents wanted. Spon & Chamberlain, 12 Cortlandt St., New York, U. S. A.

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Notes & Queries

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References to former articles or answers should give date of paper and page or number of question.

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(7505) W. R. B. asks: Will you kindly inform me whether in any of our modern breech-loading cannon the rifling makes more than three-fourths of a complete turn? A. The 10-inch rifle, of 35 calibers, makes one turn in 25 calibers. The 6-inch 30-caliber gun makes one turn in 25 calibers.

(7506) F. N. B. writes: We write you in regard to making a metal polish in liquid form. We have the powder and naphtha and want something that will dissolve in naphtha and hold it together. The powder and naphtha separate too quickly. Can you help us out? A. The following is the only formula we can find in our book of receipts for a metal polish in liquid form. Dissolve 15 parts of oxalic acid in 120 parts of boiling water and add 500 parts of pulverized pumice stone, 7 parts of oil of turpentine, 60 parts of soft soap and 65 parts of any kind of fat oil. You might try using naphtha in place of oil; make up the formula, using parts by weight. You can make up a small quantity at first and see if it works in a satisfactory manner. If you will tell us what ingredients you are using, we may be able to assist you further. Give full address.

(7507) L. T. asks: Which is theoretically the higher of two notes such as G sharp and A flat? Also how do you define, say, G sharp in an untempered scale? A. In an untempered scale G sharp is lower in pitch than A flat. To find the sharp of any tone, multiply its vibration number by $\frac{9}{8}$. To find the flat of any tone, multiply its vibration number by $\frac{8}{9}$.

(7508) I. H. A. writes: In reading your paper, the SCIENTIFIC AMERICAN, I noticed you furnish information to those requesting same. Therefore, if you can, please give a receipt for making Worcestershire sauce as near Lea & Perrins as possible, and will keep in any climate, also complying with the pure food law of the State of Wisconsin. A. This is quite a complex condiment. It is made of wine vinegar, 1½ gallons; walnut catsup, 1 gallon; mushroom catsup, 1 gallon; Madeira wine, ¼ gallon; Canton soy, ¼ gallon; moist sugar, 2½ pounds; salt, 19 ounces; powdered capsaicum, 3 ounces; pimento, 1½ ounces; coriander, 1½ ounces; chetney, 1½ ounces; cloves, ¾ ounce; mace, ¾ ounce; cinnamon, ¾ ounce; asafoetida, 6½ drachms; dissolve in 1 pint brandy 20° above proof. Boil 2 pounds hog's liver for 12 hours in 1 gallon of water, add water continually so as to keep up the quantity of 1 gallon; mix the boiled liver thoroughly with the water, strain through a coarse sieve, and add this to the above mixture.

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