

## RECENTLY PATENTED INVENTIONS.

## Agricultural Implements.

**COTTON-PICKING MACHINE.**—WILLIAM L. BELT, 122 O Street, Washington, N. W., D. C. By this machine the cotton is extracted from the bolls by air-suction applied through the media of flexible tubes and fans. The invention is the result of long experience with pneumatic picking apparatus. When cotton ripens the bolls open first on the lower branches of the plants. The cotton nearest the ground is most exposed to dust and grit. It is, therefore, desirable to gather such cotton and deposit it in a receptacle separate from the other and cleaner portion. To this end the inventor has devised special air-suction and blast apparatus to operate on the lower bolls and other separate apparatus to act on the middle and topmost bolls.

**BEEF-PLOW.**—WILLIAM F. SCHMIDT, Blanco, Cal. The object of the invention is to improve a similar plow patented by the same inventor. The improvements consist in simplifying the construction of the standards carrying the points and lifters, in providing for lateral and vertical adjustment of the standards relatively to the main frame, in rendering the standards reversible, in furnishing braces for the standards at their upper ends, and in so constructing the points that they can be turned end for end and laterally adjusted, and extended for a greater or less distance in advance of the standards.

**CORN-SHELLING MACHINE.**—CHARLIE D. PRINDLE, Newkirk, Oklahoma Territory. The inventor has devised a corn-sheller embodying novel features of construction that adapt it to shell corn from the cob in a rapid and perfect manner, screen and clean the shelled corn, remove the cobs from the machine, and likewise convey the shelled and cleaned corn outside of the machine. The portability of the entire apparatus attained by placing it completely upon a wheeled frame is of great advantage and enables the owner to shell the corn, clean it, and put the cleaned grain in bags out in the field during favorable weather, and thus avoid unnecessary handling of the fodder and husked corn.

**HARROW.**—WILLIAM M. BAKER, Fortville, Ind. This invention provides a simple and effective pivotal device for two harrow or toothed frames in a main frame and also a clamping device for the teeth which will not weaken the teeth-carrying bars, and while holding the teeth securely in place, will permit them to be vertically adjusted upon the bars. By means of a shifting device, the harrow or toothed frames can be independently adjusted up or down; and the teeth in the frames can be given any desired angle.

**PLOW-FENDER.**—NICHOLAS STEFFES, Darlington, Wis. The plow-fender is essentially a weed-turner and is located at the land side of a plowshare. The fender is so constructed that it will prevent straw, manure, or weeds from being drawn forward with the plow. By preventing the rolling or dragging action of the straw, manure, and the like, such obstacles are covered better than heretofore and left evenly distributed, either in the furrow or at the edge of the next furrow. Thus the plow runs more lightly because it is always clean and free from rubbish.

**BAND-CUTTER AND FEEDER.**—PETER N. PETERSEN, Herman, Neb. The invention provides a very simple form of band-cutter and feeder which will spread every bundle the full width of the cylinder without tangling or feeding crosswise. By employing independent feed-chains there are no slats to work loose and break and less chance for loose grain to be carried back under the feeder to be wasted. When the cylinder draws the grain from the feeder, as it will when the grain is a little damp, that part of the grain between the chains will be drawn first by reason of the chains' firm hold upon the straw above them. Concave circular cutters are used, the front edges of which are brought parallel to one another, thus effecting an easy entrance through the grain.

## Bicycle-Appliances.

**BICYCLE-PATH SWEEPER.**—ALBIN VOGEL, S. W. cor. 55th Street and Park Avenue, Manhattan, New York city. Under the number 644,380 a patent has been granted to this inventor for an ingenious attachment to the front fork of a bicycle, which attachment prevents glass, tacks, and the like from puncturing the tires. During inclement weather the attachment clears the path directly in front of the wheels, thereby preventing the wheels from throwing mud upon the rider. The attachment can be controlled from the handle-bar of the bicycle, so that it can be lowered or raised at will while the rider is in motion. The device is light and can be easily applied to any fork.

## Mechanical Devices.

**HOIST.**—ROBERT RUTTER, South Butte, Mont. The hoist is especially adapted to be used for mining purposes and to be driven by horse-power. The novelty of the invention lies in peculiar clutch and pawl devices. The drum, mounted upon the frame, is moved by a clutch. A lever carried by the frame actuates the clutch. A ratchet is attached to the drum; and a pawl works with the ratchet to prevent the back movement of the drum when the clutch is in gear. The pawl is connected with the clutch-lever so as to disengage the pawl from the ratchet simultaneously with the disengagement of the clutch.

**RAZOR-GRINDING MACHINE.**—JOSEPH NORTH, Harrison, N. J. It is the purpose of this invention to produce a small, cheap machine which can be used for hollow-grinding razors and similar tools. The machine comprises two opposed grinding-wheels adapted to engage opposite sides of the razor. The razor-holder slides between and beneath the wheels. A nut upon the razor-holder is adapted to engage a threaded shaft journaled beneath the razor-holder and having rotative connection with the grinding wheels. As the grinding wheels are turned, the razor is automatically fed by the threaded shaft.

**STENCIL-CUTTING MACHINE.**—STUART B. MOORE, Brooklyn, New York city. This invention is an improvement in stencil-cutting machines of the kind used in making paper-stencils. The machine is designed to be used for cutting letters of more than one size. With this object in view, the disks which carry the punches and dies are provided with two circular rows of

punches; and the punch-operating mechanism is adjustable so that it can be made to engage with the punches of either row.

**FRICITION WARP-RACK FOR LOOMS.**—WILLIAM J. IRWIN, Manhattan, New York city. The device is arranged to enable a weaver conveniently to regulate the tension of the warp, to dispense with the cumbersome weights heretofore employed, and to protect the warp as much as possible from dirt and dust by reducing the distance the warp has to travel from the rack to the lay, so that the fabric will not become streaky.

## Miscellaneous Inventions.

**FURNACE FOR DESULFURIZING ORES.**—HENRY GUYER, Casapalca, Peru. The furnace as constructed is intended to take the place of heap or stall roasting of lump ores of a size passing through a two-and-a-half-inch ring down to a three-quarter-inch mesh screen. A furnace, twenty-four feet in length, is capable of quickly desulfurizing from seven to ten tons of ore in about twenty-four hours, the ores containing over fifteen per cent. sulfur. Ores can be discharged in about two days, enabling the ore to be drawn from the bottom completely burned out and cold.

**DEVICE FOR PREVENTING SHIPS FROM SINKING.**—FRANCISCO L. DE VILLA, 7a A. S. No. 1, Guatemala, Guatemala. The invention consists of a series of cubical rubber compartments distributed throughout the vessel, the accordion-like structure of which permits their folding up. When brought into action they are distended with air kept compressed in suitable metal receptacles. When not in use they are closely folded against the under surface of the decks, and held in this position partly by atmospheric pressure and by electro-mechanical means, the sudden removal of which insures their instantaneous release. The moment a dangerous leak is sprung the stop-cock guarding the compressed-air receptacle is opened and the required amount of air is allowed to rush in and distend the compartments. When fully distended, the compartments buoy up the vessel.

**REIN-HOLDER.**—FRANKLIN A. RIDOUT, Cynthiana, Ky. The rein-holder has clamping members pivoted together for clamping the reins between them, and a locking device locks the clamping members in an open position for the insertion of the reins. The locking device is arranged on the clamping members between their connecting pivot and their free ends, being thus adapted to be actuated by the operator's dressing the reins against it to unlock the clamping members for the latter to close and then automatically to clamp the reins. The rein-holder can be readily applied to the dashboard or other part of a vehicle.

**GUN-SIGHT.**—PETER LAWRENCE, Ouray, Colo. The sight can be readily elevated and centered and can be accurately guided in its movement. The vertically-adjustable sight-arm has a horizontal member split at one end; a sight is adjustably mounted transversely on the horizontal member, and an expanding-screw is arranged in the slit of the sight-arm.

**COMPOUND LIP-VALVE.**—BENEDICT HÜBBE, Hamburg, Germany. The valve is compounded of several concentric elastic rings bent at the one border upward and fastened to seats arranged in a horizontal face; and the invention consists in arranging the concentric elastic rings one above the other, so that the whole valve is somewhat conical in shape. The object of the invention is to attain a larger area or sum of openings for the liquid to pass through than is obtainable with other valves having elastic rings in a horizontal face, and to strengthen the elastic rings in certain cases so that they will sustain a much larger pressure or head of liquid.

**APPARATUS FOR CASTING METAL.**—JOSEPH W. HARRISON, Converse, Ind. A great problem for years in the steel-founding has been that of successfully making small castings from soft steel. The expense of conveying tons of molten metal from open-hearth furnaces in large ladles to small molds has been tedious and costly. The opening up of a large stream of metal into small molds soon clogs up the gate. When flasks are used it is necessary in shaking out to use small sledges and bars, and by continual pounding and digging the sand falls out. The present invention employs an apparatus by which a great number of castings can be made by one pouring of metal, and in which no flasks are used. The molten metal is caused to fill the molds completely.

**NECK-YOKE AND TONGUE CONNECTION.**—ARTHUR L. GRUGGEN, Moosomin, Assiniboia, Canada. This invention provides a simple neck-yoke and tongue connection which is adapted to swivel in all directions and to prevent accident in case of the breaking of other draft appliances. If the traces of either or both horses break, the neck-yoke connection can be relied upon to hold the pole or tongue and the neck-yoke swivel connected in a secure manner. As the ends of the neck-yoke are properly secured upon the harnesses, the team will remain attached to the tongue, and the vehicle will be drawn from the neck-yoke, if it be necessary for the safety of the occupants.

**FIRE-ESCAPE.**—EDWARD M. CHRIST and WILLIAM I. HALDEMAN, Pine Grove, Penn. The invention is a friction device consisting of a tube inclosing a spiral strip, in the channels of which the rope lies. Either the rope or the tube may be attached to the building. The most effective frictional resistance is secured by the spiral strip. The rope is not injured by the spiral strip, for the channels have no sharp surfaces.

**CAP FOR CHILDREN.**—BENJAMIN VENDIG and ALEXANDER SCHIFF, Manhattan, New York city. These inventors have devised a cap or bonnet especially adapted for infants' or children's wear, so constructed that it can be laid flat, washed, and quickly restored to proper shape upon the head.

**TAG.**—SAMUEL J. SILBERMAN, Manhattan, New York city. The tag serves the purpose of identifying clothing before it passes from the manufacturer. The tag is so arranged that it can be applied to the article of clothing to expose the article fully and yet permit its easy disconnection.

**CURTAIN-POLE.**—ALMON S. VENEN, Forest Grove, Ore. The pole is formed of two hollow, semi-cylindrical sections engaging each other at one end to permit their moving toward or from each other to engage and disengage the curtain. The sections are drawn together by a

retractile spring, and are held in extended position when desired by toggle-links. The pole is a very effective and simple means for holding curtains and portières so that they will hang gracefully.

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.

## NEW BOOKS, ETC.

**PRINCIPLES OF MECHANICS PRESENTED IN A NEW FORM.** By Heinrich Hertz, with an introduction by H. von Helmholtz. Translated by D. E. James and J. T. Walley. New York: The Macmillan & Company. 1899. 8vo. Pp. 275. Price \$3.25.

The book before us is one which appeals only to those who are familiar with mathematics and who wish a thoroughly scientific discussion of the subject. The definitions, observations and corollaries are arranged in a concise form and the author shows by the lucidness of his definitions from his reasoning, the extraordinary fitness for producing a work of this nature. There are many who cannot read the monumental works of Hertz who will be greatly interested in the present book.

**MONOPOLIES AND TRUSTS.** By Richard T. Ely, Ph.D., LL.D. New York: The Macmillan Company. 1900. 16mo. Pp. 278. Price \$1.25.

At the present time when there is so much interest exhibited in combinations of capital usually termed "trusts," a really enlightening book on the subject which should treat of it in a dispassionate manner, is sure to be appreciated. The author is Professor of Political Economy and Director of the School of Economy in the University of Wisconsin, and has made a special study of the subject. He has presented an original contribution to the economic theory which will be further developed in the future by others and by himself.

**THE THEORY OF ELECTROLYTIC DISSOCIATION AND SOME OF ITS APPLICATIONS.** By Harry C. Jones. New York: The Macmillan Company. 12mo. Pp. 299. Price \$1.60.

The author who is an Associate in Physical Chemistry in the Johns Hopkins University, has taken up a difficult subject and has succeeded in his task with rare success. It has been written with a hope of supplying students with information which they would otherwise have great difficulty in obtaining, giving as it does the latest developments in the subject and he justly remarks that a student who has a fair knowledge of the origin of the theory of electrolytic dissociation, of the evidence upon which it rests, and its applications, have already acquired an elementary conception of many of the fundamental principles which underlie modern physical chemistry.

**THE GRAMMAR OF SCIENCE.** By Carl Pearson M.A.F.R.S. Second Edition. London: Adam & Charles Black. 1900. 8vo. Pp. 548. Price \$2.50.

The first edition of this work was published eight years ago and the views expounded in the former edition have met with wide acceptance. It is primarily intended as a criticism of the fundamental concepts of modern science. The author accepts, almost without reserve, the great results of modern physics; it is the language in which these results are stated that he believes needs reconsideration. We do not know of any book which will give the student in such concise form the broad facts which underlie modern science. It is a most valuable contribution to scientific literature.

**WATER SUPPLY ENGINEERING. The Designing, Construction and Maintenance of Water Supply Systems, both City and Irrigation.** By A. Prescott Folwell. New York: John Wiley & Sons. 1900. 8vo. Pp. 562. Price \$4.

The author deals with a well-worn subject and he has acquitted himself of a difficulty with success which does credit to his professional standing. We note the omission of a preface which would give some account of authorities consulted or how the data was obtained. We have no doubt however of Prof. Folwell's figures and the book will undoubtedly prove of value to all municipal and hydraulic engineers.

**VICTOR VON RICHTER'S ORGANIC CHEMISTRY OR CHEMISTRY OF CARBON COMPOUNDS.** Edited by Prof. R. Aschütz. Authorized translation by Prof. Edgar F. Smith. Vol. II. Carbocyclic and Heterocyclic. P. Blakiston's Son & Company. 1900. 12mo. Pp. 671. Price \$3.

The present volume is the second of a series and is the third edition from the eighth German edition. It is fully authorized. It is difficult to find words to praise this most admirable scientific book. It will not be of very much use to those who have not some knowledge of the subject, but to those who do it will be simply invaluable. It is a monumental work of the greatest importance and should form an addition to every chemical library.

**A SYSTEM IN INSTRUCTION IN QUALITATIVE CHEMICAL ANALYSIS.** By Arthur H. Elliott, Ph.D., and George A. Ferguson, Ph.D. New York: Published by the authors. 115 West 89th Street. 1899. 8vo. Pp. 155. Price \$1.50.

The first edition of this book was published in 1892, and the third edition has now been called for. The original methods laid down have been excellent and have been adhered to in the present book but the field has been widened and the work has been made more useful by numerous editions. The tables are excellent and students who follow the directions laid down will certainly have little difficulty in acquiring facility in qualitative analysis. The book is well printed in large type.

## Business and Personal.

Marine Iron Works. Chicago. Catalogue free.

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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.

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## Notes &amp; 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.

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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.

(7838) H. K. asks: Will you please state whether a cablegram is received by the operator, by spark or sound? A. The messages over the ocean cables are not received by either a spark, or a sound, but are written on a strip of paper in motion by a stream of ink which flows from the fine tip of a glass tube which is moved to and fro by a coil of wire in obedience to the signals. This is called a siphon recorder. Another method which was employed at first was to read the signals by the to and fro motion of a spot of light which was reflected from the mirror of a very sensitive galvanometer.

(7839) H. J. B. writes: In a 10 plate of 30 inches diameter Wimshurst machine is a brass tube of 2 inches outside diameter and  $\frac{1}{8}$  inch thick or  $1\frac{1}{4}$  inches inside diameter large enough for prime conductors and the spheres on the end of the conductors 4 inches outside diameter and  $\frac{1}{4}$  inch of metal or  $3\frac{1}{2}$  inches inside diameter with discharge rods  $\frac{1}{8}$  inch diameter and the spheres on discharge rods 1 inch or  $1\frac{1}{4}$  inches diameter. Why do they make the prime conductors of static machines so large and those of the induction so small in comparison? A. The old static machine had prime conductors of a size which are now known to have been of absurd proportions. At first a human body was supposed to be necessary for this purpose. Almost any sized rod or tube will answer, for a static machine either of the frictional or the induction type. The induction machine, either of the Holtz or the Wimshurst form, is a static machine as much as the oldest frictional machine. A static machine is one which accumulates charges of electricity. These are then used for any purpose desired, as sparks, etc. The metallic portions of all these machines need to be of no greater thickness than is necessary to give sufficient rigidity. The balls are often made of sheet metal spun up. The size of the discharging balls influences the intensity of the spark; 1 to  $1\frac{1}{4}$  inches is a good diameter.

(7840) D. R. L. asks: What is the best method for preserving caterpillars and worms for a natural history collection? A. To preserve soft specimens for collections, immerse them in a solution of formalin in water of a strength not greater than  $\frac{1}{4}$  of one per cent. This hardens the object; see SUPPLEMENT, No. 1257, 10 cents. Alcohol will also preserve such specimens, but destroys the colors of them. Caterpillars may be preserved dry and mounted as are moths and butterflies, by first emptying them of their soft matter, and then stuffing the skin with cotton. This may have arsenic mixed with it in powder to prevent insects from eating the specimen, or the mounted object may be kept in an atmosphere of potassium cyanide vapor, as is usually done.

(7841) E. W. McQ asks: Would you be kind enough to give me a description of how to make a small "gaolene" engine? I am a boy who is fond of experimenting. A. You will find descriptions of such engines in our SUPPLEMENT, No. 1024 and 1109, price ten cents each. Unless you have a good knowledge of the machinist's trade, we should advise you not to undertake to make a gasoline engine. It is a difficult machine to build, and requires good machinery to fit the parts as they should be. You would better begin upon something simpler, which will not be so dangerous to operate when you get it built.

(7842) E. W. S. asks: Can the Wimshurst machine be used to light an electric arc or an incandescent lamp? A. The Wimshurst machine cannot be used to produce light, except it be by means of the discharge through a vacuum tube. Its discharge is one of high voltage, but of very small amperage.

(7843) W. C. C. asks: Have sound waves ever been recorded magnified, so that the record could be examined with the naked eye? A. No recorder so far as we have ever known has made a record of sound waves which could be easily distinguished by the unaided eye.