RECENTLY PATENTED INVENTIONS.

Electrical Devices.

TELEGRAPHONE. — G. MORIN, Habana, Cuba. This invention relates to telegraphones, and more particularly to apparatus for enabling the so-called "voice-currents" to be generated in a wire or line by means of a magneto member having the form of a disk. The improvement further relates to means for enabling one or both sides of the disk to be used as desired.

Of Interest to Farmers.

COMBINED POTATO-DIGGER AND COTTON-CHOPPER.—R. KRAUSE, Swanquarter, N. C. The digging mechanism comprises a frame having the main bars turned spirally to form approximately a screw, which would if moved in the direction of its axis through a resisting medium, be caused to turn in one direction or the other, according to the spiral twist of the frame-bars. Means provide for turning the frame in a reverse direction. A hoe comprises a shank and a horizontal blade, which when the machine is used as a cotton chopper takes the place of the blades. The hoe passing into the ground cuts out the cotton-plants at predetermined intervals.

DISK-HARROW SCRAPER.—A. C. GAYLORD, Galesburg, Ill. The invention relates to certain improvements in disk-harrow scrapers in which the scraper-blades are held in contact with the disk by the pressure of springs, the object of the inventor being to relieve the pressure, and hence lessen the friction or increased draft load at the will of the operator.

FRUIT-PICKER'S BASKET.—F. CARTMEL, Jacksonville, Fla. The object of the invention is to provide a basket arranged to permit the picker to conveniently empty the basket of its contents without danger of bruising or otherwise injuring the fruit and without requiring removal of the basket from the picker, the basket being collapsible, and when collapsed is convenient for storing, handling, and shipping of empty baskets.

CULTIVATOR ATTACHMENT.—J. J. YOUNG, Denver, Col. The purpose in this invention is to provide an attachment adapted for convenient adjustment of the fenders employed on corn-cultivators and cultivators of like type to protect the young plants during cultivation, and to so construct the attachment that it may be applied to the beam of any cultivator and so that the said fenders can be expeditiously and quickly adjusted up or down on the arc of a circle as may be demanded and be held firmly in adjusted position.

COLTER-BEARING.—T. R. WALLIS, Greenville, Miss. The object of the improvement is to provide a bearing which will mount the metal hub of the colter-blade on a steel or other metal bearing and by means of which, however, the bearing is supported firmly and non-rotatively on the frame of the plow or other agricultural implement.

SHEEP-BRANDING MACHINE. — J. A. MAGELSSEN, Melville, Mont. The object in this improvement is to provide a device in which the printing or painting mechanism will be automatically supplied with liquid coloring material in such manner that a large number of sheep may be easily and quickly marked for identification by simply applying the device to the part for an instant and causing neither pain nor annoyance.

Of General Interest.

LOOSE-LEAF BINDER.—H. G. BUCHAN, Woodbridge, N. J. One purpose of the inventor is to provide a binder with a sectional segmental back of spring material so constructed that it may be employed for binding one or as many sheets as may be desired to the extent of its expansion, which is limited only by the number of sheets it will hold when opened to its fullest extent.

BOAT.—U. R. MILLER, Salem, Ohio. In this case, means are adapted to increase speed, decrease draft, and maintain stability. In operation a boat has a tendency to ride out of water when moving at high speed, thereby decreasing the draft and causing the boat to ride on the surface instead of crowding its way through the water. Although the draft is thereby decreased, the keel, together with the flat inclined planes, provide ample stability to the boat even when the planes are riding on the water.

THAWING-POINT.—F. LEWIS, Fairbanks, District of Alaska. In using the device in gold-mining operations the point is driven into the frozen earth by means of a sledge or hammer, and steam is allowed to pass into the interior of the point. This steam, which escapes at the point, thaws the frozen ground and enables the device to be driven further in. An advantageous feature is the fact that there is no necessity for welding the parts together.

PROCESS OF PURIFYING ACETYLENE GAS.—G. F. JAUBERT, 155 Boulevard Malesherbes, Paris, France. The object in this instance is to provide a process for eliminating from acetylene gas the phosphureted hydrogen, which, as is known, constitutes the impurity which is the most undesirable and at the same time the most difficult to eliminate. The gas as soon as formed is passed into washing-tanks which contain sulfuric acid concentrated at 62 deg. to 64 deg. Baumé, saturated with any appropriate arsenic derivative.

HORSESHOE.—H. DAHMS, Berlin, Germany. The object of the invention is to provide a calk form which will be secured in the horseshoe by improved means. The special object is to provide a construction which will insure that the calk will remain tight during its period of usefulness, but which will enable the calk to be readily removed when it is to be replaced by another.

STRAIN-EQUALIZER.—J. W. WASH, Lawrenceburg, Ky. The device is characterized by the fact that the pull on various numbers of wires or cables, as in stringing fence, telephone, or telegraph wires may be equalized. This is done by an endless rope bent over a series of pulleys on a draft-bar, forming loops each of which is provided with a block, and when less than the full number of wires are connected the idle blocks will pull up the bar, leaving the other under equal strain.

BEER-TAPPER.—R. B. SPIKES, Bisbee, Ariz. Ter. In this instance the invention has reference to devices known as beer-tappers, which are in the nature of appliances for opening and dispensing beer from the keg or barrel. Such devices have hitherto been employed which simultaneously opened an outlet for beer and an inlet for air.

KILN.—J. A. SHUMAKER, Hyndman, Pa. The object of the inventor is to provide improvements, specially in connection with the fire-box, whereby one part of the fire only may be maintained, while the other portion of the fire-box may be cleaned. By this construction a great saving in the volume of heat for the kiln is accomplished at all times, as well as the stopping of the volume of cold air entering the kiln which latter is very detrimental to the hot brick.

TELESCOPE FOR SUBMARINE BOATS.—F. REHM, Lichtenfels, and K. WINDSTOSSER, Nuremberg, Germany. In this patent the invention has reference to a telescope for submarine boats by means of which the several fields of view representing several parts of the horizon or sea are obtained within one and the same circle, the several fields of view being preferably so arranged that the field of view of the fore part of the horizon or sea is made the chief field and larger than the other fields of view.

CANT-HOOK OR PEAVEY.—P. PRICE, Panther, W. Va. This hook or peavey is such as is used in logging camps for moving or guidings logs from place to place. The object of the invention is to produce a hook of a construction which operates to increase the strength of the stock or handle and which will prevent dislocation of the point or socket of the hook.

METHOD OF RAISING LIQUIDS FROM WELLS.—F. J. MOSER, Kane, Pa. This invention pertains to a method of raising liquids from wells, and admits of general use, but is of peculiar service in connection with the raising of liquids from oil-wells. The invention may be considered in connection with Patents Nos. 721594 and 751323. The present invention undertakes to improve upon the methods disclosed in the patents above mentioned.

APPARATUS FOR SHARPENING LAWN-MOWERS.—E. C. SPRINGER, Mason City, Iowa. The principal purpose of the invention is to improve upon the device designed for the same purpose for which Letters Patent of the United States were formerly granted to Mr. Springer, to the extent that the device is rendered more simple and it is not needful to remove the wheels or change the gearing before placing a mower upon the device, it being necessary only to turn the mower upside down and clamp it in position upon the device, whereupon the wheels may be revolved through the medium of a clamp-handle especially adapted for the purpose.

CHALK-LINE HOLDER.—M. A. REARE, Los Angeles, Cal. This invention pertains to cord-holders such as used in holding marking-cords, such as chalk-lines. One object is to produce a device of this kind which will operate normally to maintain the cord wound within the device, but which will enable the cord to be drawn out when it is to be used.

Hardware.

SOD OR WALK TRIMMER.—D. L. ROSE, Mankato, Minn. This trimmer is designed especially for trimming sod from along a sidewalk, such as cement sidewalks, but which can also be used to advantage in trimming sod along flower-beds and the like. The tool when moved along the sidewalk will trim the sod and by the inner inclined face of the guide-gage throw all dirt and the like beyond the excavation formed by the cutters.

HAMMER.—H. LEWIS, New York, N. Y. This invention has reference to improvements in hammers chiefly applicable to silversmiths' work; and its primary object is to provide a hammer that will to a greater degree be accessible to obstructed parts. In this instance the head of the hammer is pivotally mounted near its rear end to the handle and can be adjusted to any angle with respect to the handle as may be most convenient by turning a thumb-piece located at the free end of the handle.

DOOR STOP AND LOCK.—C. J. TATUM, Port Arthur, Texas. A plate on the spindle when released operates as a guide for the upper end of the rod as the latter is raised by the key and also serves to maintain the upper end of the rod in convenient position for the engagement of its abutment by the key when inserted through the hole. As knobs are usually spring-actuated by means of the ordinary devices connected therewith, it will be understood that such knob-springs will aid the spring in pressing the cushion-block into engagement with the floor-surface.

Household Utilities.

CASTER.—W. IMBT, East Stroudsburg, Pa. The invention is an improvement in casters as used in supporting furniture to enable it to be easily rolled about. The object of the inventor is to provide a form of caster which shall be strong and durable, not likely to get out of order, and one which shall be absolutely noiseless and of free working.

BROILER.—J. W. ROSS, Chillicothe, Mo. This broiler is adapted for broiling meat, fish, game, etc. In operation the broiler can be placed on any fire-box or surface and, if desired, can be used under any suitable form of hood and can be used on the top of a range or other heated surface and be made of any size and thickness to suit particular purposes.

Machines and Mechanical Devices.

MACHINE FOR CUTTING MEAT.—I. B. VAN SISE, Oyster Bay, N. Y. One purpose in this improvement is to provide a machine for cutting meat, especially sausage-meat, and to so construct the machine that the feed will be intermittent, supplying the cutter at each movement of the feed with just sufficient material for the knives to properly handle.

SHOE-SEWING MACHINE.—J. A. RHOULT, Haverhill, Mass. The present invention simplifies and improves the means for carrying the thread. It improves the stitch-forming devices and provides means for firmly holding the sole during stitching operation and for releasing the sole during feeding movement. It simplifies and renders more certain of operation the devices for threading the thread-carrier and stitch-forming elements; and adapts the machine to sewing felt or other fabric uppers to the soles by providing means for gripping and feeding the felt upper, as well as the sole.

ATTACHMENT FOR TURNING-LATHES.—J. MORGAN, Hughesville, Pa. The invention refers to lathes for metal or wood work, and is especially useful in boring and centering or as a center rest. The object is to provide a durable lathe, steady-rest or chuck which is easily operated manually, which may be attached without difficulty to lathes of the usual construction and which will afford means for holding or steadying the material or work.

DITCHING-PLOW.—C. T. HOWELL, Kirkman, Iowa. One purpose of the invention is to provide a construction of plow for digging tiling-sewer ditches or draining-ditches and which is light of draft and capable of effective service in any character of soil. Another is to construct a plow with an inclined conductor from the gutter to wings that move over the surface of the ground and remove excavated material from the edges of the ditch. It is adapted to be drawn by a traction-engine.

STEAM-SAWYER.—S. V. ABREGO, Lake Charles, La. In this patent the invention pertains to improvements in devices for controlling the valves of a steam-feed for sawmill-carriages, the object being to provide a steam-actuating mechanism for shifting the valves, thus relieving an attendant or sawyer from a greater part of the work now required to shift the valves manually.

CALCINING-FURNACE.—T. MCNEAL, Kansas City, Mo. The general construction of this furnace is similar to that shown in the patent formerly granted to Mr. McNeal. The improvement is particularly in scrapers or agitators used in apparatus for calcining plaster and like material, an object being to so construct the scraper that it will engage closely with all parts of the convex bottom of the calcining vessel, thus thoroughly stirring the material.

Prime Movers and Their Accessories.

ROTARY ENGINE.—P. O. POULSON, Brigham, Utah. The invention relates to improvements in rotary engines adapted for use in connection with any suitable motive fluid—as, for instance, steam, compressed air, water, and the like. The object is to provide means for moving the abutments from the chamber as the piston passes and also certain improvements in means for suppyling the motive fluid adjacent said abutments for operating the device.

Railways and Their Accessories.

SWITCH.—J. T. SALVO, Charleston, S. C. The object of this invention is the provision of means simple and inexpensive in construction, durable in operation, and effective in use, adapted to be readily operated by a passing car and so constructed as to be operative in any locality with little or no liability to become inoperative from any cause.

CAR JOURNAL-BOX.—A. V. PEPPARD, San Luis Potosi, Mexico. An object of this inventor is to so construct the keeper-bolts that when the pressure of the car is downward and forward on the box the tendency of the liner and shoe or wedge will be to draw the bolts down and at the same time the liner will lock the bolts in lower position, and also to provide a construction of spring for each of the bolts, which springs act, first, to hold the bolts in lower or positive position, and, second, to sustain the bolts in their upper or inactive position. It is an improvement upon the box for which Letters Patent were formerly granted to Mr. Peppard.

DUST-GUARD.—H. BENSCH, Davenport, Iowa. By this invention Mr. Bensch seeks to provide a guard which can be readily inserted in any of the ordinary journal-boxes now in general use and which will comprise a series of radially movable packing-blocks with the spring embracing the series and adapted to exert an inward tension on the several blocks, the blocks being movably held in suitable guides on a carrier-plate.

Pertaining to Vehicles.

AXLE.—G. A. WEAVER, Newport, R. I. While this invention is capable of use with all vehicles, it is especially useful in automobile construction. The object is to provide an arrangement for mounting the wheels upon the frame, which will enable the direction of the wheels to be easily controlled. A further object is to provide a strong axle construction which will dispense with the usual steering-knuckle and its accessories.

TRANSMISSION MECHANISM.—G. A. WEAVER, Newport, R. I. This mechanism is especially adapted for application to automobiles. The inventor provides means whereby two engines can be coupled up, so as to simultaneously transmit power at varying rates of speed to a driven shaft; provides for driving a shaft and the other engine or motor by one of the engines or motors in case of breakage, and also provides an efficient means for transmitting the power when the speed is to be varied.

VEHICLE-FRAME.—O. STOLP, New York, N. Y. In this patent the invention is an improvement in frames for vehicles, especially of the automobile type, and has among other objects the production of a spring arrangement in the frame whereby little shock or vibration is experienced in passing over rough roads and other uneven surfaces.

MOTOR-VEHICLE.—M. H. MAGIE and C. N. WINTERS, Bakersfield, Cal. The underlying purpose here is to provide a vehicle in which the motive power, braking force, and steering action may be applied to all of the four road-wheels of the vehicle. This construction gives greater power of traction, prevents skidding, and enables the vehicle to be completely controlled.

REIN-GUARD.—W. P. FELL, Huron, S. D. The design in this case is to prevent the reins from becoming caught or entangled with the wagon-pole. The object of the invention is to provide a device of this character at a very small cost which will be simple and durable and which may be quickly and easily applied to various sizes and types of wagons.

Designs.

DESIGN FOR A WALL-COVERING.—L. PRONBERGER, Berlin, Germany. Mr. Pronberger has secured patents on seven separate designs of wall-covering. They are numbered from 38,517 to 38,523 inclusive. Ornamental value of a wide and varied artistic range marks the designs. Only one of the number departs from the perpendicular band style of running the patterns. All bear the characteristic of ornate invention within lines of refinement and are calculated to attract by their distinct originality.

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.

(10511) C. C. W. asks how to amalgamate zincs. A. This is accomplished in several ways. 1. By dipping the zinc in dilute sulphuric acid and then dipping the end of it into a small quantity of mercury, after rubbing the surface with a brush. 2. Dissolve 1 pound of mercury in 5 pounds nitro-muriatic acid (nitric acid 1 part, muriatic acid 3 parts), heat the solution gently to hasten the action. When a complete solution of the mercury is effected, add 5 pounds more of nitro-muriatic acid. The solution should be applied with a brush, as immersing the zinc in it is wasteful. 3. To the bichromate solution commonly used

in batteries, add to every pint of solution 1 drachm of bisulphate of mercury or a similar amount of nitrate of mercury (mercury dissolved in nitric acid). By employing this method, the amalgamation of the zincs is maintained continuously after the first amalgamation, which must be accomplished by method 1 or 2. 4. In the Bunsen, Grove, or Fuller battery the amalgamation may be accomplished by placing a small quantity of mercury in the cells containing the zincs. 5. Place a little mercury in a saucer with some dilute sulphuric acid. Dip the zincs into dilute acid. Then with a little strip of zinc or galvanized iron touch the mercury under the acid and rub it on the zinc. This will transfer a little to the surface, and a few minutes' rubbing will make the zincs as bright as silver. A very small globule of mercury is enough for a single plate.

(10512) N. P. E. asks for information concerning vellum. A. A fine kind of parchment prepared from the skins of calves, kids, and lambs. The skins are limed, shaved, washed, and stretched in hoops or other frames, where they are scraped and trimmed with the currier's fleshing knife, and next carefully rubbed down with pumice stone; they are lastly polished with finely powdered chalk or fresh slaked lime, and then dried. A green color is given with a solution of crystallized verdigris to which a little cream of tartar and nitric acid have been added, and a blue color with a solution of indigo. The surface is often finished with white of egg, and subsequent friction. The skins of sheep are commonly used for parchment, those of goats and wolves for drum heads.

(10513) C. L. T. asks for a formula for elastic glue. A. Elastic glue which does not spoil is obtained as follows: Good common glue is dissolved in water, on the water bath, and the water evaporated down to a mass of thick consistence, to which a quantity of glycerine equal in weight with the glue is added, after which the heating is continued until all the water has been driven off, when the mass is poured out into the molds or on a marble slab. This mixture answers for stamps, printer's rolls, galvano-plastic copies, etc.

(10514) S. Y. B. asks for a cement for mica. A. A colorless cement for joining sheets of mica is prepared as follows: Clear gelatine is softened by soaking it in a little cold water, and the excess of water is pressed out by gently squeezing it in a cloth. It is then heated over a water bath until it begins to melt, and just enough hot proof spirit (not in excess) stirred in to make it fluid. To each pint of this solution is gradually added, while stirring, 1-4 ounce of gum ammoniac and 1 1-3 ounce of gum mastic previously dissolved in 4 ounces of rectified spirit. It must be warmed to liquefy it for use and kept in stoppered bottles when not required. This cement, when properly prepared, resists cold water.

(10515) B. N. C. asks how to deodorize alcohol. A. Add to the barrel of alcohol a gallon of water saturated with chlorine gas; agitate thoroughly, let rest for twelve hours, then saturate with chalk (which, combining with the chlorine, forms chloride of lime) and distill. Filtering through animal charcoal after precipitating the chlorine with the chalk affords a very fair substitute for the redistilled alcohol. The fusel oil can be separated from alcohol, in small quantity, by adding a few drops of olive oil and thoroughly agitating in a bottle and allowing it to settle, and then decant. The olive oil combines with and retains the fusel oil.

(10516) B. F. K. asks how to do annealing. A. For a small quantity, heat the steel to a cherry red in a charcoal fire, then bury it in sawdust, in an iron box, covering the sawdust with ashes. Let it stay until cold. For a larger quantity, and when it is required to be very soft, pack the steel with cast iron (lathe or planer) chips in an iron box as follows: Having at least half or three-quarters of an inch in depth of chips in the bottom of the box put in a layer of steel, then more chips to fill spaces between the steel and also the half or three-quarters of an inch space between the sides of the box and steel, then more steel; and lastly, at least one inch in depth of chips, well rammed down on top of the steel. Heat the whole to and keep at a red heat for from two to four hours. Do not disturb the box until cold.

(10517) N. D. R. asks: 1. If the length of the wires from the secondary terminals of an induction coil affect the shock to any extent, the size of wire being No. 18 to No. 20 copper wire. A. The length of wire from the secondary of an induction coil will have little effect upon the shock given, since the resistance of these wires will be very small compared with that of the human body. 2. Why is it that Easter comes on a different day every year? Why not permanent? A. Easter is determined by the full moon nearest to the vernal equinox; hence it cannot be fixed for the same date each year. 3. I have heard that the puffing of a locomotive is due to the exhaust steam from the cylinder. If true, what means are employed to effect the same? A. The steam when it escapes from the cylinders is directed into the smokestack of a locomotive in order to increase the draft. It is the sudden ejection of the steam and its condensation which produces the sound called the puffing of a locomotive.

NEW BOOKS, ETC.

FLÜSSIGE KRISTALLE UND DIE THEORIEN DES LEBENS. By O. Lehmann. Leipzig: Johann Ambrosius Barth. 55 pages; 16mo.; 30 illustrations; flexible cloth. Price, 50 cents.

Although, in leading up to his subject, the author makes a statement that has more foundation in popular belief than in biological experiment, the actual subject is conclusively and learnedly dealt with. The border between animate and inanimate forms of matter presents a wide and almost unexplored field of research, and work in it should be given every encouragement.

THE DESIGN OF STEEL MILL BUILDINGS. By Milo S. Ketchum, C.E. (University of Colorado). Engineering News Publishing Company, 1906. Pp. 480. Price, $4.

Mr. Ketchum's excellent work hardly needs recommendation after the success which attended the first edition. Few books on this subject are provided with illustrations and algebraic tables which so excellently supplement the text. While the book is concerned chiefly with the construction of mill buildings, nevertheless much of the matter will apply equally well to all classes of steel-frame construction.

THE COMPLETE AUTOMOBILE INSTRUCTOR. By Benjamin R. Tillson. New York: John Wiley & Sons, 1907. Pp. 213. Price, $1.50.

Mr. Tillson has succeeded most admirably in condensing the practical knowledge necessary for one to operate and care for an automobile successfully. He has divided his book into questions and their answers. These are subdivided and classified according to their respective uses.

INDUCTION COILS. HOW TO MAKE AND USE THEM. A Practical Handbook on the Construction and Use of Medical and Spark Coils. By Percival Marshall. Thoroughly revised and enlarged by Kurt Stoze. New York: Spon & Chamberlain. 12mo.; paper cover; 70 pages; illustrated. Price, 25 cents.

A most excellent set of directions for making an induction coil and its accessories. The theory of induction is explained in a lucid, simple manner.

MODERN CHEMISTRY. THEORETICAL AND SYSTEMATIC. By William Ramsay, D.Sc. New York: The Macmillan Company. 24mo.; 9 figures; cloth; 2 parts, 329 pages. Price, 70 cents net.

This book is exactly what one needs to "brush up" on when he feels rusty in his chemistry. It contains both theory and description, each complete in itself, conveniently arranged for reference. An excellent book for advanced schools and colleges.

PHOTOGRAPHY FOR STUDENTS OF PHYSICS AND CHEMISTRY. By Louis Derr. New York: The Macmillan Company. 12mo.; cloth; 247 pages, 88 figures. Price, $1.40.

As the title indicates, this little volume goes more into the theoretical aspect of photography than the popular handbooks. It discusses lenses and their defects, diaphragms, color sensitiveness, and methods of color photography, as well as the best ways in which to develop, print, reduce, etc. Although the work is more advanced than the photographer usually considers necessary, it will be found useful by all who wish a good photographic reference book.

ENGLISH WEIGHTS. With their Equivalents in Kilogrammes. By Frederick W. A. Logan. New York: Spon & Chamberlain. Pocket size; 89 pages. Price, 50 cents.

A useful little book for those who are obliged to convert English weights to their metric equivalents. Simply arranged.

PHOTOGRAPHIC CHEMISTRY. By Paul N. Hasluck. Philadelphia: David McKay. 16mo, cloth; 160 pages, illustrated. Price, 50 cents.

Of the greatest possible service to the photographer, amateur or professional, who is not willing to work by mere "rule of thumb." For the beginner, enough elementary chemical theory is given to make the later development of the subject quite plain. Those familiar with chemistry can save time, if they wish, by skipping this portion of the work, and commencing with the photographical theory proper, which is complete in itself.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS. A Manual for the Study of Soils, Fertilizers, and Agricultural Products. Second edition, revised and enlarged. Vol. 1. Soils. By Harvey W. Wiley, A.M., Ph.D. Easton, Pa.: The Chemical Publishing Company. 12mo.; cloth; 618 pages, 92 illustrations. Price, $4.

A book which is indispensable to the agricultural chemist, and of the greatest value to the modern farmer. Written as it is by one of Dr. Wiley's experience and standing, it contains such methods only as have been carefully tested and found reliable. The section on nitrifying organisms fills a want in a department in which far too little practical work has been done on this side of the Atlantic.

AMONG THE WORLD'S PEACEMAKERS. Edited by Hayne Davis. New York: The Progressive Publishing Company, 1907. 16mo.; pp. 400. Price, cloth, $1.65 mailed; paper, $1.10 mailed.

The Arbitration Peace Congress held in New York, April 14 to 17, makes the appearance of a work of this kind valuable at the present time. The book is the epitome of the interparliamentary union, with sketches of eminent members of this international house of representatives and of progressive people who are promoting the plan for permanent peace which this union of lawmakers has espoused. We have made many provisions for mitigating the horrors of war, and are on the way to its ultimate abolition. It is only by the holding of peace congresses and the dissemination of literature like the present work that we can ever expect to mold public opinion to such a point that this relic of barbarism will be obliterated. The present work is an excellent one, filled with most interesting illustrations. The interparliamentary peace movement began October 31, 1887, when delegates from the British Parliament were presented to the President of the United States. The book is filled with very interesting data, and is one which we can commend to our readers.

DIGEST OF UNITED STATES PATENTS OF AIR, CALORIC, GAS, AND OIL ENGINES, AND OTHER INTERNAL COMBUSTION ENGINES, 1789 to 1906. Five volumes. Drawings two volumes, Claims and Briefs two volumes, Indices and List of References one volume. Price, $50 per set of five volumes.

This work is the only one ever published comprising this class of existing patents, and the material has been prepared with great care and labor. The drawings are clear and distinct, and are as readily understandable as those of the patent copies furnished by the Patent Office. It contains all of the reissues, designs, and trade-marks granted during the above period, accompanied by the claims in full, and a brief description of the invention when necessary properly to interpret the claims. The definitions of the sub-classes are also included.

Especial care has been bestowed upon the arrangement of the patents to simplify and facilitate examinations, and to this end the several thousand patents are chronologically arranged under 208 subdivisions. To enhance the value of the Digest as a work of reference, additional sub-classes have been added.

In the general alphabetical indices a complete list of references cited is given by number, name, and date, as well as the interferences, the parties thereto, and the decisions.

The work will be found exceedingly useful by inventors, manufacturers, and attorneys, and particularly by those to whom the Patent Office is not available.

A COMPARATIVE STUDY OF THE MAYAS AND THE LACANDONES. By Alfred M. Tozzer, Ph.D. Report of the Fellow in American Archæology, 1902-1905. New York: Published for the Archæological Institute of America by the Macmillan Company.

In this treatise Mr. Tozzer gives only a suggestion of the great mass of data that he collected during his five years' stay in Yucatan and Southern Mexico. In an ethnological sense the situation that he studied is of the greatest importance. The two branches of the "Maya-Quiche" stock, the "Mayas" specially so called, and the "Lacandones," were originally the same. Since conquest, however, the "Mayas" have been in intimate contact with the Spanish population, while the "Lacandones" have been free from contamination. Apart from the interest attaching to the life and customs of a pure stock, we have the splendid opportunity of comparing the effect of Christianity and its ideals upon a race, one branch of which has been allowed to develop along its own lines.

PRINCIPLES AND PRACTICE OF PLUMBING. By J. J. Cosgrove. Pittsburg: Standard Sanitary Manufacturing Company. Cloth; 12mo.; 267 pp.; 169 illustrations. Price, $3.

Covering as it does almost the entire field of plumbing, technical as well as theoretical, it is a work to be highly recommended as a handbook for all who have to deal with the problems of sanitation as they occur in everyday life. Excellent tables, showing the efficiency of commonly-used materials, the solubility of various salts in water, etc., are included in the volume, giving it great practical value for the architect and builder.

A TEXT BOOK OF ELECTRO-CHEMISTRY. By Max Le Blanc. Translated from the fourth enlarged German edition by Willis R. Whitney and John W. Brown. New York: The Macmillan Company. 12mo.; cloth; 332 pages, 51 illustrations. Price, $2.60 net.

As the title indicates, a translation of the fourth German edition of the treatise by Prof. Le Blanc, with certain additions by the translators. It is composed of several more or less elementary chapters on dissociation and similar subjects, followed by a discussion of conductance, electro-motive force, electrolysis, polarization, etc. The experimental methods used are described as is the apparatus. A uniform system of notation is followed throughout the book. To be recommended as a textbook on the subject.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending April 16, 1907.

AND EACH BEARING THAT DATE

(See note at end of list about copies of these patents.)

Adjusting device, F. H. Richards..... 850,252
Agricultural implement, F. W. Miller..... 850,482
Air brake mechanism, J. J. Coit..... 850,564
Air compressor, F. J. Bring..... 850,208
Air or other gases, means for heating compressed, Lloyd & Sedeau..... 850,307
Airship, J. Shukwech 850,800
Annunciator, J. L. McQuarrie..... 850,311
Anvil for riveting machines, C. Johannsen.. 850,651
Assayer's pouring mold, J. J. Bailey..... 850,811
Auger bit, J. T. Parker..... 850,177
Auger, earth, T. F. Litaker..... 850,533
Automobile, water, W. L. Hynes..... 850,370
Automobiles, pedal foot-rest for, S. D. Waldon 850,507
Awl, G. A. Peacock..... 850,779
Axle, vehicle, E. D. Branch..... 850,728
Bag frame fastener, B. vom Eigen..... 850,631
Balls, making playing, F. H. Richards..... 850,253
Bandage, J. Walter 850,281
Bath cabinet, J. Hermann..... 850,367
Battery plate and making same, secondary, L. N. J. Roselle 850,788
Bearing, axle, B. Moore 850,774
Bearing for grinding wheel shafts, D. B. Hyde 850,650
Bed, L. H. Flanders 850,744
Bed, child's, W. H. Muir 850,845
Bed, spring, J. M. Cohron 850,522
Beehive, C. A. Olmstead 850,176
Belt, I. G. Longenecker 850,534
Belt stretcher, O. M. Wolfe..... 850,454
Belt tightener, W. A. Christensen..... 850,135
Bench. See Carpenter's bench.
Bicycle, H. Garza 850,746
Bicycle support, C. P. Ellis 850,527
Bicycles and the like, handle bar for, D. Cronsioe 850,139
Binder, loose leaf, G. Labarre 850,659
Block molding machine, J. C. Herring.... 850,368
Block molds, dividing plate for, F. A. Borst 850,206
Block system, F. B. Corey 850,733
Blowpipe, G. W. Hopkins 850,581
Boat launching and stowing apparatus, F. E. Martin 850,239
Boat, submarine, J. J. Harpain..... 850,831
Boat transporting and launching apparatus, J. J. Harpain 850,643
Boiler, W. J. & G. Lane 850,590
Boiler safety device, automatic, W. S. G. Harris 850,751
Boiler trap, C. Dennis 850,878
Boiler tube cleaner, H. F. Weinland..... 850,701
Boiler tube cleaner, S. F. Dibsdale..... 850,739
Boiler tubes, setting, W. M. Dickerson.... 850,299
Bolt locking device, W. W. Parsons..... 850,540
Book cover protector, Cummings & Jordan 850,735
Boot and shoe tread, pneumatic, I. Tauber 850,327
Bottle, J. H. Dunstan 850,741
Bottle capping machine, O. S. Beyer..... 850,288
Bottle closure, D. O. Lynch 850,437
Bottle closure, F. H. Bills..... 850,613
Bottle, non-refillable, J. C. Uhlein, 850,807, 850,808
Bottle stopper, H. Morgan..... 850,844
Bottle stopper, attachment, H. Bartow.... 850,722
Bottle washing apparatus, R. G. & K. K. Wright 850,199
Bottle wrapper machine, M. Costello..... 850,467
Bottles, support for drying medicine, C. Lehmann 850,381
Bottled goods, delivery case for, N. Breakenridge 850,561
Bowls and the like, holder for, H. Siemund. 850,499
Box fastener, C. H. Veeder 850,195
Brace for roundabouts, J. W. Armitage.... 850,411
Brace for roundabouts and analogous structures, A. Herschell 850,431
Brace for roundabouts and analogous structures, E. O. Spillman 850,449
Brake, V. Lamb 850,436
Brake and other rods, separable jaw for, J. Van Dyke 850,859
Brake beam, J. H. Baker..... 850,335
Brake slack adjuster, automatic, E. M. Swift 850,856
Brick machine, O. Kutsche 850,435
Brick machine, D. P. Sanders..... 850,676
Brick making device, ornamental, A. H. & M. N. Grant 850,427, 850,428
Broiler, J. J. Jones 850,654
Brooder, poultry, E. E. Billings..... 850,725
Broom holder, Hess & Dunn 850,576
Broom machine, C. R. Lee 850,532
Brush holder, Mallett & Brohan..... 850,237
Bucket, dumping, C. Kortvellyessy 850,587
Bucket fastener protector, J. B. Bariani.... 850,556
Buckle, W. A. Schleicher..... 850,794, 850,795
Buckle, I. Blum 850,875
Buckle, wire, W. A. Schleicher... 850,792, 850,793
Buggy tops, means for removably attaching, F. Beasley 850,461
Bundle carrier, H. M. Willis 850,705
Butter cutting machine, P. Brahm 850,464
Button and loop clasp, J. D. Conover..... 850,346
Button, cuff, E. R. Crecelius..... 850,350
Cabinet and receptacle, commodity, J. H. Boye 850,515
Cabinet bracket, clothing, H. Frankel 850,363
Cabinet for music spools, R. J. Cady..... 850,210
Call apparatus, selective, J. A. Hulit.... 850,837
Can. See Refuse can.
Can cutter and spout, E. F. Cavelier..... 850,465
Cane, repeating detonating, Delgrande & Del Grande 850,353, 850,354
Car, convertible dumping, H. L. Aulls 850,719
Car coupling, J. L. Frazier 850,219, 850,301
Car fender, I. R. Guilford 850,474
Car fender, street, M. Greenbaum..... 850,572
Car folding stake, railway, J. W. Kendrick 850,585
Car lift, automatic, G. Holmes..... 850,646
Car loader, box, B. C. Buxton..... 850,132
Car mover, R. F. Hageman 850,154
Car rail and bed, R. Jackson..... 850,759
Car ventilating apparatus, D. Hill..... 850,158
Car window, W. H. Heulings, Jr..... 850,157
Cars, adjustable wall and ventilator for stock, J. Shaw 850,678
Carbureter, W. E. Hallett..... 850,223
Carbureter for gasoline engines, F. E. Bowers 850,339
Card, adjustable tab guide, E. M. Newald 850,245
Card, mechanical, L. H. Glazier 850,150
Carpenter's bench, W. Brucker..... 850,813
Carpet cleaning machine, Heffernan & Hall 850,645
Carpet, moquette or tufted, G. W. Grosvenor 850,573
Carriage numbers, electric tower for displaying, J. H. McDaniel 850,671
Carton, H. Conover 850,345
Cash receiving and change making machine, K. Malmstrom 850,842
Casting apparatus, metal, H. Geisenhoner.. 850,829
Casting machine, H. Jones 850,653
Cement kiln, W. H. Harding..... 850,750
Cement, making hydraulic, E. Mueller..... 850,778
Centrifugal machine, H. G. Morris 850,241
Centrifugal machine, E. A. Forsberg 850,472
Centrifugal machines, shaft mounting for, M. L. Hoyt 850,477
Chafing dish, Savage & Chapman 850,401
Chain, conveyer, M. Garland 850,149
Chair roller appliance, rocking, E. W. Raymond 850,782
Check or other financial instrument blank, J. S. Metcalfe 850,388
Chimney top, P. H. Bayley 850,126
Chimney top, S. M. Kemp 850,372
Chin rest and shoulder pad support, J. J. Morrissey 850,775, 850,776
Churn, N. P. Dazey 850,525
Cigarette box, S. S. Peer 850,182
Cigarettes, machine for making conical, R. Ermeler 850,742