

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

MOWER-GUARD.—JOHN C. PROUT, JR., Ogden, Utah. This invention provides a cap for mower-guards which can be used to restore a broken guard to its original shape, and which is so constructed that it can be sprung upon the guard and carried thereby without interfering with the action of the cutter-bar. The cap consists essentially of a body-portion conforming with the shape of the guard-finger, and a table projecting rearwardly from the body-portion, which is adapted to fill the position of a broken guard-section.

Mechanical Devices.

KNITTING-MACHINE.—GEORGE W. RUTH, Norristown, Penn. The inventor has devised a stripping and splicing attachment for circular-ribbed-knitting machines, whereby an extra thickness of fabric is secured at any desired point, as, for example, half way around the knee of a stocking or around the heel. The attachment provided for this purpose breaks the splicing-yarn at the proper time, the break occurring near the hole through which the main yarn is fed, so that the end of the splicing-yarn may be readily taken up.

Railway Appliances.

VALVE FOR AIR-BRAKE SYSTEMS.—WILLIAM PALMER, JR., Rincon, Territory of New Mexico. It is the purpose of this invention to provide means whereby the auxiliary reservoir can be recharged without the release of the brakes when descending heavy grades. These means consist of a retaining valve, which coacts with the chamber of an air-holder, which automatically closes by reduction of pressure in the train-pipe, and which opens only when the pressure is restored to the same degree as in the chamber. By placing the engineer's brake-valve in release position and admitting the excess pressure to the train-pipe, the air-holder chamber will be charged to a higher pressure than that normally carried in the train-pipe when the brake-valve is in running position; and the auxiliary reservoir can be recharged without releasing the brakes, merely by placing the brake-valve in running position.

Miscellaneous Inventions.

STOCK-RACK FOR PLATFORM-SCALES.—SAMUEL J. RICE, Scotch Grove, Iowa. The platform-scales are provided with a stock-rack, the sides of which are adapted to be connected by a cross-bar hinged to one side and hooked to the other. On the sides of the rack, end gates are hung adapted to swing inwardly and fold on the corresponding side. Each of the posts of the rack is pivoted at its lower end so as to permit the sides to be swung outwardly when especially large loads are to be weighed.

CARBON-BRUSH HOLDER.—RENWICK E. CROCKETT, Michigan City, Ind. The object of the invention is to construct the carbon-brush holder so that the brush can be entirely removed for inspection or raised from the surface of the commutator without altering the tension upon the brush. Within the body of the holder, a brush-casing is arranged to slide. A tension device is connected with the brush-casing and acts in the direction in which the casing is adapted to slide. The tension device is mounted to hold the brush-casing elevated or away from the surface adapted for engagement with the brush.

FOLDING SUPPORT OR HOLDER FOR ARTISTS' TABLETS.—WILLIAM C. SHIMONECK, Washington, D. C. This device is adapted for use in the field or where a table or desk is not available. The body of the tablet-holder is composed of leather, canvas, or other pliable material, held stretched by means of a collapsible frame formed of light metal bars which are detachable from one another in such a manner that the body of the tablet may be left free to be folded or rolled into compact form so that, together with the detachable frame-portion, it may be packed in a case for convenience of handling or of transportation.

ELEVATOR-DREDGE.—WILLIAM S. RUSSELL, Toledo, Ohio. This invention is concerned chiefly with the upper tumbler and chain of buckets used to raise the material from below the dredge and discharge it into a hopper. The tumbler has flat polygonal faces, with flat projecting blocks on the faces, and curved seats at the angles between the faces. Detachable wearing-plates are provided, having flat faces fitting the flat faces of the tumbler-blocks, and curved overlapping ends fitting into and locking against the curved seats of the tumbler, and adapted to receive the recesses and hubs of the buckets and links.

THILL-COUPLING.—EDWARD F. COLVIN, Milton, Penn. Secured to the thill-iron is a pivot-bolt having a polygonal head. A clip having jaws provided with internal sockets is adapted to receive the ends of the bolt. One of these sockets has a rearward extension to receive the bolt-head and prevent accidental detachment thereof. A spring is arranged in the rear of the sockets. A cam or curved projection on the thill-iron head works in contact with the spring when the thill-iron is elevated and is free from or out of contact therewith when the thill-iron is lowered.

FOCUSING ATTACHMENT FOR CAMERAS.—LAIRD H. WALLACE, Ogden, Utah. It is the object of this invention to provide means whereby the devices used in focusing on the ground glass of a camera are rendered more compact. The inventor secures this compact arrangement by furnishing a lens in the sight-opening of the hood, through which the image is viewed by the photographer. This is advantageous because it permits the eye to be brought closer to the object, and so enables a hood of less length to be used than would otherwise be possible.

SIPHON-FILTER.—JOSEPH G. STETSON, Seneca, Mo. The filter consists of a filtering-block formed of porous material, preferably a natural stone, known as "Missouri tripoli." This block has intersecting passage-ways bored therein, the outer ends of the passage-ways being closed by a plug of cement, and the discharge-ends being all in communication with a specially-constructed outlet-tube tightly cemented into the block. When immersed the block becomes saturated with water by capillary absorption until the central chambers are

filled. The siphon outlet-tube then causes a continuous filtration therethrough.

SCRAPER.—CHARLES M. McMULLEN, Rock Glen, N. Y. To provide a scraper for use on the heating-pipes of brine tanks for removing salt-scale, is the object of the present invention. The scraper comprises a movable carriage which supports standards having elongated slots. Scraper-saddles are provided, shaped to fit the external surface of the pipes; and rods are connected with the saddles and loosely engage the elongated slots in the standards, whereby, when the carriage is moved, the scraper-saddles are tipped to bring the forward edges of the saddles into contact with the external surface of the pipes.

CONDUIT-THREADER.—FREDRICK A. POOLER, Los Angeles, Cal. This inventor has devised improved means for drawing wire rods, cables, and the like through a conduit. The invention embodies a novel form of creeper or threader-rod having gripper-devices for preventing back movement, and a pair of operating cords adapted, when alternately drawn backward, first to cause the crawler-block to travel toward the head of the threader-rod and then to pull the crawler-block into gripping-engagement with the conduit wall, and at the same time to shoot the threader-rod forward, such movement being continued step by step until the head of the rod projects beyond the forward end of the conduit-section with which access may be had.

THILL-COUPLING.—JOHN C. BOWERS, Brooklyn, New York city. An axle-clip having a bearing is included in the construction of this coupling, which clip holds a coupling pin. The eye of a thill-iron engages the coupling-pin, and from the ends of the coupling-pin links are hung. A spring is held by the clip and is capable of engaging the eye of the thill-iron to hold it in place. A bell crank lever is fulcrumed between the links and presses the spring to hold it in engagement with the eye of the thill-iron. While the device is in use the coupling-pin or bolt is securely locked in position, but can be readily locked or unlocked for removal when changing from a shaft to a pole.

SUSPENDER-END.—WILLIAM BLOOMBERG, Manhattan, New York city. The suspender-end is composed of buttonhole-tabs connected by a neck. Two clasp-supporting straps are formed integrally with the tabs and neck. A clasp is secured to and unites the lower ends of the straps, the two clasp-supporting straps extending from the main part at points at each side of the center of the neck and at an angle thereto. The suspender-end is simple, strong, and durable in construction.

WAISTBAND FOR TROUSERS.—MAX WALD, Manhattan, New York city. This waistband for boys' knee-breeches is formed of a single blank of cloth, folded to form a lining, the lower end of which continues to an upwardly-extending folded member, terminating in a downwardly-extending member, both members forming a fold for connecting the lower edge of the lining with the lower edge of the button-flap extending in front of the lining. Elastic pieces are stitched in alignment with some of the button-holes. When a strain is exerted on the button-flap, the elastic pieces take up the strain.

FILTER.—EDGAR L. STREAM, New Orleans, La. The filter comprises a tank, a tubular shaft mounted in the tank, and disks on the shaft. A face or periphery of perforated material is provided for the disks, and an endless apron of filter material has its edges engaging the disks. A rotary brush engages the apron within the tank. When the filtering material becomes clogged, the liquid in the tank will rise to the level of the brush; the liquid will filter through the apron and run out through the tubular shaft. The brush will clean the apron of sediment before it passes into the liquid to be filtered.

TORCH-BURNER.—WILLIAM A. NICHOLAS and GUSTAVE BUREHARDT, Chicago, Ill. The torch-burner of these inventors is of the type used for brazing bicycle-frames, and is designed to be used by jewelers and electricians as well as bicycle-manufacturers. In a casing open at both ends, an open-ended perforated nozzle is centrally situated. A perforated flange rigidly supports and centers the nozzle. A tubular interrupter or spreader is arranged in front of and in alignment with the nozzle and serves to break up the two divided currents which emerge from the perforations of the nozzle and from the nozzle itself.

DOOR-CHECK.—JOHN SPEIRS, Jersey City, N. J. The invention seeks to provide a lock for a door, so constructed that the door may be held partially open for the purpose of ventilation or for the purpose of enabling one to see a person who is demanding entrance. The lock is operated entirely from within, and when set merely to provide ventilation, it will not be possible to force the door sufficiently to effect an entrance, or to tamper with the lock from the outside.

ACETYLENE GAS GENERATOR.—JAMES W. KINRY, Beloit, Kans. This apparatus comprises a generator, a cooling chamber, and a gasometer. The gas formed in the generator passes into the cooling-chamber, and then into the gasometer. A water supply pipe connects the cooling-chamber with the generator, and is provided with a valve controlled by the rise and fall of the gasometer, so as to regulate the supply of gas automatically.

Designs.

GAME-BOARD.—PAUL R. G. SJÖSTRÖM, Westfield, N. J. The leading feature of this design consists of a base, upon which is a rectangle formed in double lines terminating in disks at the corners, and also having disks intermediate of the corners. Within the rectangle mentioned, other rectangles are variously disposed, in the lines of which, disks are arranged. Outside of the rectangles are other figures also terminating in disks. The game constitutes a kind of maze puzzle and is played by means of checkers.

TRACE-CARRIER.—FRANK G. ENGBERG, Kindred, N. D. The carrier consists of an elongated loop having at one end a neck which is forked and return-bent, so as to form double hooks.

PIPE-COUPLING.—JERE J. HANRAHAN, Brooklyn, New York city. The coupling-section is screw-threaded at both ends. At right angles to the body of the section, a cylindrical portion is secured, which is provided with a projecting perforated ear. The coupling is more compact than that ordinarily employed and consequently presents a neater appearance.

MONUMENT.—EDWIN O. TOWNSEND, Manhattan, New York city. The monument provided by this design consists of a massive base upon which there stands a polished block of stone ornamented by moldings and carvings.

CARPET.—EUGENE A. CROWE, Brooklyn, New York city. Upon the carpet there is represented a shield emblazoned with an ax and a mallet, the handles of which are crossed. Foliate sprays, a horn of plenty, a pair of scales, and a vase complete the design.

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

NEW BOOKS, ETC.

HOW TO GAIN ADMISSION TO ANNAPOLIS, WEST POINT, OR THE SCHOOLSHIP ST. MARY'S. New York: S. A. Nelson, 16 Park Place. 1898. Price 50 and 75 cents.

We have often been asked questions as to how admission may be gained to the army and navy or to the professional schools which turn out officers for the two services. The little volume before us is adapted to give precisely information of this class, and, so far as we know, the field which it covers is a new one. Of course, a candidate for admission to either school can obtain information by addressing the War and Navy Departments, but there are many things which a candidate would like to know in relation to them which cannot be readily obtained, and this volume is intended to give exactly this information. There is also a list of the leading military schools and colleges in the United States.

TEXT-BOOK OF PHYSICS. SOUND. By J. H. Poynting and J. J. Thomson. London: Charles Griffin & Company. Philadelphia: J. B. Lippincott Company. 1899. 8vo. Pp. 163. 85 figures. Price \$3.

The present volume deals entirely with sound. The text-book is intended chiefly for the use of the students who lay most stress on the study of the experimental part of physics and who have not reached the stage at which the reading of advanced treatises on various subjects is desirable. It will serve admirably as an introduction to Helmholtz's great work entitled "The Sensation of Tone," which deals chiefly with the physiological aspect of sound, and to Lord Rayleigh's "Theory of Sound," at once the most systematic, original, and complete work on the subject. The present volume is none too free from mathematics, but at the same time can undoubtedly be mastered even by those who have little mathematical training. The authors are both well-known physicists, and anything which emanates from their pens is sure to be of value.

ENGLISH CATHEDRALS. By Francis Bond. London: George Newnes, Limited. Philadelphia: J. B. Lippincott Company. 1899. 16mo. Pp. 314. Price \$2.

There are already a number of excellent books upon cathedrals, including Mrs. Van Rensselaer's and Bell's Cathedral Series, to say nothing of the older works. There are also several volumes which bear the name of great church dignitaries, which might just as well not have been written, as they are confused and abound with errors and solecisms. The present volume is of an entirely different nature, and will be warmly welcomed by the student of cathedrals, notwithstanding the fact that the literature on the subject is already large. The volume takes up the architectural aspect particularly by what might be termed the "biographical" method, and this is what is so much needed by so many students. The text is most valuable. It is clear and scholarly, and the illustrations, while reproduced on a very small scale, still serve to elucidate the text. The book would be of great value if taken with the tourist in the cathedral towns. The author will not spare the visitor's legs, but no one can see a cathedral without considerable marching and countermarching.

THE SHIPPING WORLD YEAR BOOK. A Desk Manual of Trade, Commerce, and Navigation. Edited by Evan Rowland Jones. London: Shipping World Office. 1899. 16mo. Pp. 1140. Price \$2.

The annual year book published by The Shipping World is one of great importance to all who are in any way interested either in ocean transportation or in dispatching goods of any kind. It is filled with valuable information, such as the tariffs of all countries, a port directory giving particulars of all British and foreign ports, the rates for pilotage and towage, the dimensions of harbors, dry docks, etc. There are also many tables of distances, etc., which are very important for seamen. There is no question that this little book is at the head of its class.

COMMERCIAL MANAGEMENT OF ENGLISH WORKS. By Francis G. Burton. Manchester, England: The Mechanical Engineer. 1899. Pp. 310. 8vo. Price \$5.

The volume before us goes into the organization of commercial establishments, such as engineering works. It defines the duties of the various offices, and shows how they should be performed in an economical manner. Various methods of keeping books, stock, drawings, etc., are also entered into. There is little question that many large concerns could adopt the methods advocated by Mr. Burton with good results. Of course, the present volume is specially intended for use in Great Britain, but at the same time the methods given would prove of value in this country.

HOW TO PREPARE FOR A CIVIL SERVICE EXAMINATION. With Recent Questions and Answers. By Francis E. Leupp. New York: Hynes & Noble. 1899. 12mo. Pp. 57. Price \$2.

The government of the United States is a good employer to those who do not possess the inclination or means for entering into professional life or into inde-

pendent money-making adventures. Civil Service has been used by many young men and women as a path to a larger field of effort in private life. To those who wish to fit themselves for civil service examinations many problems are presented, and it is to aid in solving these problems that the present volume has been prepared. The examinations are eminently of a practical character, and much time and energy may be saved by a perusal of the book before us, as any candidate may learn from it just what is necessary and what is unnecessary in brushing up his studies. Advice is given as to the chances of making one's way into the civil service and of staying there. The book is admirably arranged, and cannot but prove of the greatest possible value to every candidate.

CHEMICAL AND METALLURGICAL HANDBOOK FOR THE USE OF CHEMISTS, METALLURGISTS, AND MINING ENGINEERS. Second Edition. By J. H. Cremer and G. A. Bicknell. Cleveland, O.: Published by the Author. Pocket book form, leather, gilt. Pp. 337. Price \$3.

Chemical literature is probably the most extensive of any science, with the exception of possibly electricity, yet the number of practical works is astonishingly small, and for this reason we welcome works like the present, which give chemists and those in need of chemical information exactly what is needed without going into theory. After atomic weights the reactions of metallic salts are given in a particularly concise form; then come tables showing the molecular weight, specific gravity, melting point, boiling point, and solubility of the principal inorganic compounds. Then come the laws of chemistry, percentages of alcohol, specific gravity of sulphuric, nitric and hydrochloric acids. Then follow methods for the analysis of iron ore, pig iron, steel, coal, coke, etc. This is followed by various tables which are specially useful to the metallurgist.

SALVA-WEBSTER. An English-Spanish and Spanish-English Dictionary. Compiled by J. Gomez, Ph.D. Edited by F. M. de Rivas. Chicago: Laird & Lee. 1899. Pp. 832. 24mo. Double Index. Price 40 and 75 cents and \$1.

A small Spanish dictionary handy for the desk was never more acceptable than at the present time, now that we have extensive colonies where Spanish is spoken. The dictionary itself is a model one for its size, and it is one of the modern wonders of book-making that a double-indexed dictionary, of this size, substantially bound, can be sold for such a small sum. It is admirably adapted for the use of those who occasionally receive Spanish commercial letters.

WITH SAMPSON THROUGH THE WAR. By W. A. M. Goode. With Contributed Chapters by Rear-Admiral Sampson, U. S. N., Captain R. D. Evans, U. S. N., Commodore C. C. Todd, U. S. N. New York: Doubleday & McClure Company. 1899. Pp. 307. Illustrated. Price \$2.50.

The volume before us is an important contribution to the literature of the Spanish-American war, a literature which is already appalling in size. The book is an account of the naval operations of the North Atlantic squadron during the Spanish-American war of 1898, and was written by a correspondent of the Associated Press. The book may fairly be said to be the authoritative work of the North Atlantic squadron during the Spanish-American war, and it contains a true history of the famous Santiago fight, besides clearing up many mooted points. It is admirably written and is well calculated to give an excellent idea of the causes which led up to war and the war itself.

ROENTGEN RAYS. MEMOIRS. By Roentgen, G. G. Stokes and J. J. Thomson. Translated and edited by George H. Barker. New York: Harper Brothers. 1899. Pp. 76. 12mo.

The volume before us is one of the series which the publishers are issuing, entitled Harpers' Scientific Memoirs. We have already reviewed two previous volumes which presented classic papers; we now come to equally important papers which are of comparatively recent date. The original communication of Prof. Roentgen will probably always be one of the great classics of physics, and it is gratifying to have the papers admirably translated by a physicist of repute and published in a worthy form. In addition there is Sir G. G. Stokes' "On the Nature of Roentgen Rays" and Prof. J. J. Thomson's "A Theory of the Connection Between Cathode and Roentgen Rays."

MICHAEL FARADAY: HIS LIFE AND WORK. By Silvanus P. Thompson, D.Sc., F.R.S. New York: The Macmillan Company. 1898. Pp. 308. 12mo. Price \$1.25.

The Faraday literature is much larger than might be supposed. It is seldom that a man of science is honored by such biographies as have been penned by Dr. Bence Jones, Prof. Tyndall, Prof. Clerk Maxwell and Dr. Gladstone. Faraday is, however, worth it all, and when the final summing up of the scientific history of the century shall be made, Michael Faraday will be in the front rank among the little band of men whose pre-eminent achievements extended the boundaries of knowledge. Faraday is the beau ideal of the man of science, and for forty years he was the living and inspiring voice at the Royal Institution, and while there his researches in physics laid the foundations of electrical engineering. So much for the man and his relation to his time. At the present day probably no one is better qualified to take up the rather difficult task than Prof. Thompson, himself a brilliant physicist, and he has acquitted himself admirably; in fact, his lucid style is well adapted to portray the great discoverer and reveal him in his true light. We cannot undertake to give even a synopsis of the chapters, but recommend any one interested either in science, electricity, or even biography itself to purchase this book, whose cost is not forbidding. The excellent frontispiece portrait is marked with the initials S. P. T. If Prof. Thompson really drew the portrait, he deserves additional thanks.