

**SHELF-SUPPORT.**—J. McDowell, Sr., New York, N. Y. In this patent the invention pertains to improvements in shelf supports, and more particularly to means adapted to be readily secured to any bookcase or cabinet and provide a firm support for the shelf, the support being capable of adjustment to hold the shelf at any suitable elevation.

**THIMBLE.**—GRACE F. HOLDEN, New York, N. Y. The object of the improvement is to produce a thimble which is adapted to fold into a compact form so that it may be readily carried in a lady's purse or card-case. Further, to produce a construction which will enable the thimble to be readily opened out for use, by a simple movement of its parts.

#### Machines and Mechanical Devices.

##### COIN-CONTROLLED VENDING-MACHINE.

—A. C. WAX, Perry Center, N. Y. The machine delivers towels, and is so constructed that while those delivered can be conveniently used for all legitimate purposes they can not be disconnected from the guide element forming a portion of the machine after leaving the body of the latter, but the towels after having served their purpose are automatically conducted to a locked receptacle to be removed therefrom for washing by authorized persons.

**BORING-MACHINE.**—E. J. WHEELER, Bryson City, N. C. This machine accurately centers both square and round timbers at each end and holds them against rotary movement while the boring is accomplished. It provides for boring both ends of a timber without the necessity of changing or shifting its ends in the machine, and permits centering and clamping means to move independently and transversely of the machine in order that the timber may be bored out of center when desired.

**SHIFTING MECHANISM FOR TYPE-WRITERS.**—J. B. VIDAL, Habana, Cuba. More particularly the invention relates to means for shifting the roller to bring different letters on the type levers into operative relation therewith. The object is to provide means whereby the shift key may be operated by the ball or palm of the hand, thus leaving all the fingers available for operating the type keys.

**CARRIAGE-ACTUATING MECHANISM FOR TYPE-WRITERS.**—J. B. VIDAL, Habana, Cuba. The improvement is more particularly in means employed for returning the carriage to its original position at the right-hand side of the machine after each line is written, and for rotating the roller to bring a fresh portion of the paper into operative engagement with the type. The carriage may be moved longitudinally and the roller simultaneously rotated without removing either hand from the keyboard.

**TYPE-WRITER CASE.**—J. B. VIDAL, Habana, Cuba. This improvement more particularly comprises a case designed to inclose all parts except the key board, and is so designed that the machine may be operated while inclosed within the case. It is so constructed as to deaden sound when the machine is operated, and to permit the operator to see the work as it is being done. It excludes all dust, thus it is unnecessary to inclose the machine when the latter is not in operation.

**MECHANICAL MOVEMENT.**—W. B. KIRBY, Wellington, Texas. The invention has reference to mechanical movements, the more particular object being to provide a movement for use upon mechanical motors to be employed, for instance, upon well pumps. The movement increases the power of the motor so that less energy than usual is required in operating the motor.

**WASHING-MACHINE.**—J. W. BEDINGFIELD, Florence, Ala. Steam is utilized to cleanse the clothes in this machine. The clothes are held within foraminous or woven wire receptacles within a boiler in which the water is contained, so that a circulation of steam is provided through the articles being washed. A pounder or agitator agitates or presses the clothes during the operation.

**COMPUTING DEVICE.**—F. P. GLASNER and J. J. GLASIER, Springfield, S. D. The invention relates to improvements in computing or adding and subtracting devices combined with a measuring ruler, the object being to provide a device that may be produced at a small price because of its simple construction, and that will be found very useful as an article of desk furniture.

**TREADLE ATTACHMENT FOR TOY SEWING-MACHINES.**—C. B. REPP, New York, N. Y. A purpose of this inventor is to provide an attachment for hand sewing machines, particularly adapted for use in connection with miniature or toy machines, whereby to obtain greater rapidity and steadiness of action than when such a machine is run by hand, and to render the labor of running very slight.

**CLOCK.**—A. S. PEREDO, Coatepec, Vera Cruz, Mexico. The striking attachment provided is particularly for alarm or striking clocks, and is independent of the customary alarm or striking mechanism. It provides a single stroke of a bell, gong or its equivalent at any desired interval, as for instance every five, ten, fifteen, twenty, thirty or sixty minutes, which auxiliary attachment may be silenced when desired and may be operated in conjunction with the ordinary alarm and striking mechanism of the clock without in any way interfering therewith.

**PACKING-MACHINE.**—R. HOYT, New York, N. Y. The invention refers to machines for

arranging packages in cases, its principal object being to provide an effective apparatus to automatically accomplish this end. When case after case is filled, it is only necessary to supply packages through a chute and place the cases with their guide-frames upon the support. When each has received its contents, the frame is withdrawn and the case is ready for closure.

**AIR-SHIP.**—L. HAINES, Colchester, Ill. This ship is intended to be of strong and light construction embodying a novel form of propelling means which when driven, act to overcome the force of gravity and simultaneously drive the ship forward. In one form the direction of travel is controlled by a rudder at the extreme rear end, and the relative vertical position of the stern is controlled by rudders arranged at each side thereof, means being provided for readily controlling the position of the rudders at a convenient part of the ship.

**FIBER-CLEANING MACHINE.**—J. F. FARIAS, Monterey, Mexico. This invention relates to improvements in machines for removing the outer covering and pulp of fibrous material such as sisal, palma, lechuguilla and analogous plants, the object being to provide a machine for this purpose, simple in construction and by means of which the work may be rapidly carried on.

**COIN-CONTROL FOR VENDING-MACHINES.**—S. C. GILBERT, Jackson, Ohio. The invention refers particularly to automatic machines of the vending class which are operated by the insertion of a coin of a certain denomination. The object is to produce a machine having means for controlling the coin, which will prevent the fraudulent operation of the machine by a spurious or counterfeit coin.

**SHOE-POLISHING MACHINE.**—P. CUMMING, Key West, Fla. The object among others of this invention is the production of a machine embodying a novel constructed brush holder in which the brushes may be readily and quickly changed to suit the different stages and kinds of shoe-shining required, also to provide a seat for the operator having suitable foot power means for driving the polishers.

**FLY-TRAP.**—W. J. D. BRANSCOM, Mobile, Ala. Devices are provided upon which flies alight, and such devices which thus constitute perches or roosts, are connected with spring actuated frames of box-like form, which are hinged together and adapted to inclose the roosts, and when released by manual operation of trip mechanism, the parts assume normal working relation. Outer sides of the frames are formed of woven wire which enables flies to be destroyed by flame or water when entrapped by closure of the frames.

**BINDING-MACHINE.**—C. F. McBEE, Athens, Ohio. In the present patent the invention is an improvement in machines for use in binding paper or other sheets, such, for instance, as way-bills, checks, and the like. It relates to that class of machines illustrated in a former patent granted to Mr. McBee. Movable side plates may be readily adjusted to any desired width of book and secured in such adjustment by tightening devices.

**GUN.**—I. A. TOMASINI, Guadalupe, Cal. The locking bolt may be released by either the rear trigger, or by a swinging lever upon the upper face of the lock frame, each acting independently of the other. When the bolt is drawn to the rear by the trigger, the slot in the upper face of the bolt permits passage of a crank arm, and when the lever is turned to rotate the pin, a curved depending arm turns upon its pivotal connection with the bolt without affecting the trigger. Manipulating the swinging plate upon the upper face of the lock frame causes the trigger to release the sears in sequence beginning with either barrel.

**FEEDING DEVICE.**—G. HALLIDAY, Superior, Wis. The invention relates to devices for feeding flour stock and other materials in a thin stream to a machine for further treatment of the material. The device is arranged to insure the formation of a thin and uniform stream of material throughout the width of the feed-box and without danger of blocking or choking up by the stock or foreign materials that may be in the stock.

**FLYING-MACHINE.**—W. H. COOK, Edmonds, Wash. In the present patent the invention has reference to flying machines, the object being to construct a flying machine having an aeroplane capable of raising and supporting a car or basket, without the agency of a gas bag or balloon. The means provided direct the course of the aeroplane so that it can make progress across the sky in a substantially horizontal direction.

#### Prime Movers and Their Accessories.

**INTERNAL-COMBUSTION ENGINE.**—E. CROWE, 25 Teresa terrace, Coatham, Redcar, Yorkshire, England. Mr. Crowe's invention has for its object the provision of an internal combustion engine wherein premature explosion is rendered impossible and wherein the maximum temperature and pressure being developed at the commencement of the working stroke, the highest possible average pressure and the maximum power are obtainable with a given capacity of cylinder.

**VACUUM-CONTROL VALVE.**—E. L. CRIDGE, Passaic, N. J. The improved apparatus is intended to operate to quickly break or destroy the vacuum, by the admission of atmospheric air, so that the motor which extracts air from

the condenser will be stopped more quickly than would be otherwise practicable, and also the danger of water being drawn into the cylinder of the engine will be avoided.

**ROTARY ENGINE.**—A. W. COTTELL, Arizona Territory. The cylinder rotates around a stationary shaft, and may be utilized as a pulley for transmitting power, the steam or other driving fluid being introduced through one end of the shaft and exhausted through the other. The cylinder or rotary casing carries pistons which pass swinging abutments set in a hub which also contains the inlet and exhaust ports controlled by the abutments. Automatic cut-off valves in the inlet ports are controlled by centrifugal governors. The cut-off valves are rotary valves, and give quick and effective action with small movement.

**MUFFLER.**—W. H. SMITH, Wichita, Kan. The object of the invention is to provide a new and improved muffler, more especially designed for use on gasoline and like explosive engines, and arranged to deaden the exhaust at the same time allowing comparatively free escape of the exhaust gases without producing undue back pressure.

#### Railways and Their Accessories.

**AUTOMATIC SAFETY-SWITCH.**—G. E. RYAN, New York, N. Y. The object in this case is to provide an arrangement which will prevent accidents from trains running into open switches. The invention contemplates the use of a track device which is disposed in the track near the switch and which is controlled by the position of the switch. The locomotive or some part of the train is provided with a trip device adapted to be struck by the train device so as to cut off the power.

**END-DUMP CAR.**—H. S. POTTER, Jersey City, N. J. The purpose of the inventor is to provide a railroad car adapted for construction usages, of large capacity, and which dispenses with trestle work, and wherein the body of the car will dump at the end of the bed or platform instead of at the sides, enabling the material carried by the body to be readily shoveled to either side of the track or deposited directly upon the road-bed, thus greatly facilitating the building up of the latter.

**LOG-UNLOADER.**—A. G. HARBAUGH and C. W. DETERING, Seattle, Wash. The intention of the inventor is to provide a new and improved log unloader, which is simple and durable in construction and arranged to form a permanent fixture of the log-carrying car, and to allow convenient and quick rolling or pushing of the log from the car without danger to the operator.

**STATION-INDICATOR.**—H. A. HILL, Delafield, Wis. The invention refers to improvements in station indicators for railway cars and street indicators for street railway cars, the object being to provide an indicator with the parts so arranged as to automatically and positively indicate the various places, thus not only adding to the general comfort of the traveling public but to relieve the attendants from calling out the stations.

**ROLLER-BEARING.**—E. J. EDWARDS, Los Angeles, Cal. The invention relates to improvements in roller bearings, and more particularly to means for spacing and guiding the rollers and carrying the end thrust. By supporting the rollers at both ends, they are always kept in alignment and in their proper place, and it is impossible for one end of any roller to get ahead of the other.

**AUTOMATIC LUBRICATING APPARATUS.**—T. YAHIRO, 80 Shiba-Kurumachō, Shiba-Ku, Tokyo, Japan. This invention is an improvement in automatic lubricating apparatus. In assembling the device, the oil leading means is first placed in position, after which the front and rear walls of the reservoir are riveted together, and the reservoir is placed in proper position on the wheel and secured thereto. A ring which also acts as dust protector is then placed in position, after which the journal of the axle is inserted in the journal box and the parts secured together.

#### Pertaining to Vehicles.

**SPEED-RECORDER.**—G. LENNOX, Hasbrouck Heights, N. J., and R. S. STOTT, New York, N. Y. The invention relates to speed recorders and counters, such as carried by vehicles for recording the speed thereof or the distance traveled. While the invention may be used as an attachment for any moving vehicle, it is especially useful to the users of automobiles.

**TRACE-HOLDER.**—T. THOMPSON, New London, Wis. This device is applied to the end of the swingletree for securing the trace and for clamping the free end of the trace, so that said end will not hang over the thill in contact with the wheel of the vehicle. The holder is bent out of a single piece of wire and pivoted on one side of the swingletree so as to swing into and out of operative position. The outer end passes through a hole in the tree outside of the trace and at the inner end a loop is formed on the holder for retaining the extreme end of the trace.

**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.

(10596) C. H. C. says: I am desirous of constructing a large spark coil. Will you please inform me as to where I could secure the most reliable authority on the building of induction coils, such as relates to the proper dimension of core and size of wire to obtain the best results? A. SCIENTIFIC AMERICAN SUPPLEMENT 1402, price 10 cents, gives full information for coils up to 12-inch spark. For an excellent work on induction coils we recommend and can supply "Induction Coils. How to Make, Use, and Repair Them," by Norrie, price \$1 by mail.

(10597) V. L. B. says: Please answer the following questions in your columns of Notes and Queries: Has charcoal been reduced to the liquid state, and if so, is it of any scientific use in that form? A. We have no knowledge of charcoal being liquefied. The utility of such a process would depend on the chemical and physical properties of the product. We are inclined to think that use could be found for it. 2. Will ice melt in a vacuum, or simply vaporize? A. A substance cannot be melted if the pressure upon it is less than its vapor pressure at its melting point. The pressure of aqueous vapor at the freezing point of water is 4.6 mm. Hence in a vacuum of less than 4.6 mm. of mercury ice cannot be melted.

(10598) C. N. M. says: I wish to learn how much horse power a wheel will produce in a stream running 4 miles per hour, 4 feet deep, 24 feet wide. What is the best system for a wheel, etc.? A. A stream running 4 miles per hour, 4 feet deep, and 24 feet wide, would develop, if it were possible to utilize all of the energy in the water, 0.6 horse power. With a paddle-wheel covering the full cross-section of the stream, it would be impossible to utilize more than one-third of the above amount, or 0.2 horse power. The scheme, therefore, as you suggest it, seems hardly feasible. If, however, it were possible to obtain a fall of even a few feet, there is sufficient water here to give a valuable water power. With a fall of 10 feet, very nearly 10 horse power could be developed.

(10599) G. R. B. says: Will you kindly oblige me by answering the following question in your Notes and Queries of the SCIENTIFIC AMERICAN? What is the specific heat at about 250 deg. F. of syrup of such a consistency, that is, containing such an amount of water that when cooled to about 100 deg. F. it will become a thick pasty mass which will just be able to flow? I have consulted various works as have been at my disposal, and am unable to find any reference to the specific heat of sugar or syrup at any stage of its manufacture. A. We would say that we do not know of any exact data giving the specific heat of sugar syrup at different temperatures and different densities. We doubt if such data exist. This specific heat probably does not differ very greatly from that of water. It is a simple matter, however, for you to determine this for yourself by mixing a known weight of syrup at a known temperature with a known weight of water at a lower temperature, stirring the mixture and carefully noting the temperature of the same. It will be necessary for you to allow for the heat given to the vessel containing the water. It would be well for you to use a thin copper vessel for this purpose, because then the heat which it would absorb could be accurately calculated. The formula to use is as follows: (Weight of cool water × weight of copper vessel × .0933) × increase in temperature = specific heat of syrup × weight of syrup × decrease in temperature in syrup. This is a very simple experiment, and if carefully performed, with an accurate thermometer, will give you just what you want.

(10600) W. M. R. says: Can you give me the name of a substance, not a metal, that is cool, elastic, and tough? Something better than rubber or cork, if you know of such a substance. Will you kindly give me the pull in pounds necessary to straighten a hook made of steel 1/2 inch broad, 1-16 inch thick and bent to form a loop 5-16 inch in diameter, pull to be exerted by a ring working in the loop? A. It is difficult to answer your question in regard to a substance not a metal, which is

cool, elastic, and tough, without knowing the purpose for which you wish to use it. Porcelain is such a substance. Celluloid is another. But possibly neither of these will meet your requirements. The force necessary to straighten out a hook 1/2 inch wide, 1-16 of an inch thick, bent in the form of a loop 5-16 of an inch in diameter, will be about 180 pounds. This will vary somewhat with the character of the steel. We have figured on an open-hearth steel, with a tensile strength of about 70,000 pounds per square inch. If tool steel were used, the force required would be about twice as great. A factor of safety should be allowed if this is to be used in construction, which would reduce this figure to about 1/4 or 1-6 of the amount given above.

NEW BOOKS, ETC.

LE COÛT DE LA FORCE MOTRICE, LE LABOURAGE ELECTRIQUE. Par Emile Guarini, Professeur à l'Ecole d'Arts et Métiers de Lima. Paris: H. Dunod et E. Pinat. 8vo., 28 pages, 22 illustrations. Price, 50 cents.

The author, after comparing the cost of the motive power produced by man, the horse, the ox, and the electric motor, discusses at length the use of the latter in undeveloped countries, such as Peru. Plowing is next studied, the conclusions drawn being in favor of electricity as a tractive agent. Details of electric plows, motor vehicles, etc., with explanatory drawings, complete this unique monograph in a most practical manner.

A PRACTICAL GUIDE FOR AUTHORS. By William Stone Booth. Published by Houghton, Mifflin & Co. 180 pages. Price, 50 cents.

The author of this little book has some excellent advice to young authors and much of it could be well utilized by authors of experience. While the rules forming the text seems obvious yet the patience of editors is constantly being tried by manuscripts that are not properly prepared and which had the author known, or knowing had heeded, the labors of the book-makers from editors to proof-readers would be very considerably lightened. About a third of the book is devoted to the preparation of manuscripts; offering a MS. to publishers; royalties; dealing through literary agents; copyrights; serial rights, and agreements. The necessary amount of space is given to proofreading and the signs used in proofreading, while the rest of the book contains American and English rules for spelling and pronunciation; rules for French and German spelling and the division of Latin and Greek words. Thus it will be seen that the book covers those points that many aspiring authors are in the dark about and a perusal of this volume will quickly enlighten them.

SUB UN ORGANE NON DECRIT DU THORAX DES FOURMIS AILEES. Par Charles Janet. Extrait des Comptes Rendus Hebdomadaires des Seances de l'Académie des Sciences, Paris.

A description of two diaphragms in the thorax of ants, which have never before been noted. These organs, found alike in the male and female, no doubt serve to produce a displacement of the blood during the periods of repose of the vibratory wing muscles, or after the disappearance of these muscles.

CLOVERS AND HOW TO GROW THEM. By Thomas Shaw. New York: Orange Judd Company. 12mo.; cloth; 349 pages. Price, \$1.

Clovers play a very important part in American agriculture in a number of ways. As a fodder, for pasturage, as a honey-producer for bees, and as a soil-enricher, clover, in some one of its varieties, can be called into service. Chapter I of this work is an outline of its nature, scope, and plan. Chapter II deals with the facts and principles that relate to the growing of clovers in general. Chapters III to XI inclusive treat of individual varieties, a chapter being devoted to each variety. Chapter XII is devoted to a brief discussion of miscellaneous clovers, which have been but little grown in this country or are of but local interest. The author has devoted space to each kind in relation to its importance.

COLORING MATTERS FOR DYEING TEXTILES. With numerous engravings and diagrams. By Prof. J. J. Hummel. New and revised edition. Edited by Paul N. Hasluck. Philadelphia: David McKay. 16mo.; cloth; 160 pages. Price, \$1.

The field of aniline colors is so great, that a work embodying all the knowledge possessed on the subject would be prohibitive in its size. This little handbook contains a selection of the more important colors in technical use, and a sufficient amount of the theoretical principles covering their action.

LOCOMOTIVES: SIMPLE, COMPOUND, AND ELECTRIC. By H. C. Reagan. Fifth edition, revised and enlarged. New York: John Wiley & Sons. 8vo.; cloth; 932 pages; 494 illustrations. Price, \$3.50.

This edition has been revised by the author to include the latest developments of steam and electric locomotives. The development of the steam locomotive includes the balanced four-cylinder compound and the steam superheater.

The principle of compounding has been described in full as applied to locomotives both in the United States and foreign countries, involving the use of two-, three-, and four-cylinder engines. A chapter has been devoted to foreign-built compound engines, some types being described which are not modern, because they show the efforts put forth at their respective periods to improve the compound locomotive, and they form part of the evolution of the compound engine. The rapid development of the electric locomotive, and its use on trunk-line operations, require the treatment of the construction and operation of the electric locomotive in great detail, together with the apparatus essential to the generating and transmitting of the current which operates the locomotive. The principles of the generating and translating apparatus and the method of application are explained. The systems of construction and operation of the electric locomotive are described, to wit: The single-phase system, using single-phase motors; the poly-phase system, using induction motors; the three-phase system of generation and transmission, using rotary converters, with direct-current motors on the locomotive; the three-wire, direct-current system and the simple direct-current system, using a trolley and ground return. The methods of control and the electric brake-apparatus are described.

PUMPS AND HYDRAULIC RAMS. Edited by Paul N. Hasluck. With numerous engravings and diagrams. Philadelphia: David McKay. 16mo.; cloth; 160 pages. Price, 50 cents.

Pumps are so much a necessity, and hydraulic rams furnish such easy means for supplying water to country houses, that a popular treatise on the subject is not without use. Although this work deals with all forms of pumps and of rams, from the simplest to the most complicated, the illustrations are so clear and the descriptions so well written that they can be understood without any difficulty.

INSTRUCTIONS FOR THE INFANTRY PRIVATE OF THE NATIONAL GUARD. By Capt. John W. Norwood, late First Lieutenant 23d United States Infantry. New York: Arms and the Man Publishing Company. 80 pages. Price, 25 cents.

The National Guard to-day is composed of men willing and anxious to become proficient in their duties, but opportunities for drill and instruction under the supervision of company officers are necessarily limited. The various textbooks and regulations require a certain amount of technical knowledge and experience for the proper understanding of them. "Instructions for the Infantry Private of the National Guard" enters into an elementary discussion of the subjects which are most important to the private. It treats of military courtesy, discipline, customs of the service, camp duty, and guard duty in an interesting and entertaining way. To the important subject of rifle practice much space is given. The appearance of the book at the present season makes it of special value for those about to go into camp. It is made up in handy book form, completely indexed for ready reference.

AMERICAN MAGAZINE OF AERONAUTICS. Published monthly at 142 West 65th Street, New York. Ernest La Rue Jones, Editor. Price, \$3 per annum.

We welcome this addition to the literature of aeronautics. The necessity of such a journal is apparent when the importance of this field is considered. Aeronautical journals are few in number the world over, and every creditable addition will be eagerly sought after. Among the articles in this initial number are: "Aeronautics at the Jamestown Exposition," by Israel Ludlow; "Conditions of Success with Flying Machines," by O. Chanute; "Theory of Balloon Leakage," by A. F. Zahm, Ph.D.; "English Aero Club Exhibition," by Wilbur R. Kimball. Among the other articles are: "First Private Aerodrome in America"; "The Aero Club of Philadelphia"; "Gordon Bennett International Aeronautic Cup Race"; "Progress in Aeronautics"; "Aero Club of America"; "Aeronautics in England," etc. Twenty-five cents will bring a sample copy, and its perusal will prove profitable.

SELF-PROPELLED VEHICLES. A Practical Treatise on the Theory, Construction, Operation, Care, and Management of all Forms of Automobiles. By James E. Homans. Sixth Edition, revised and enlarged. New York: Theodore Audel & Co. 8vo.; cloth; 598 pages; 500 illustrations. Price, \$2.

Although the automobile is an element of modern life that has too firm a hold to be easily shaken off; and although its design and construction have been brought to a very dependable degree of efficiency and simplicity, the driver of motor cars has many problems to face. To answer every question that might arise would be too vast a task; but to anticipate each question by explaining the underlying principle, though difficult, is a task that can be accomplished. The course followed is to take each part of the mechanism, to describe principles governing its operation, and then to take up in detail the leading types in use. In this manner, every phase of automobilism is dealt with, from the putting on of tires to steam gages.

CASEIN. Its Preparation and Technical Utilization. By Robert Scherer. Translated from the German by Charles Salter. London: Scott, Greenwood & Son. New York: D. Van Nostrand Company. 8vo.; cloth; 163 pages. Price, \$3.

The casein industry, though limited at present, offers dairymen a growing market for their skimmed milk, a purely waste product of the cream-separator. The uses to which casein can be put are so numerous that it must, in time, become a product of the greatest importance, replacing, perhaps, celluloid and similar compounds in their universal usefulness. Mr. Scherer, in his translation from the German of Charles Salter, takes up the subject from the beginning. He first tells of the preparation of the compound, of its origin, and of its properties, and then how it can be used. The description of its uses is a practical handbook, containing in nearly every case the full recipe and directions.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending July 23, 1907.

AND EACH BEARING THAT DATE

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

Table listing inventions with patent numbers and dates. Includes items like Abrading apparatus, Acid chamber, Adding machine, Aerial navigator, Air brake coupling, etc.

Table listing inventions with patent numbers and dates. Includes items like Caster for drying racks, Cathode, Cellulose manufacturing, Cement burning method, Centrifugal machines, etc.