RECENTLY PATENTED INVENTIONS.

Electrical Apparatus.

SWITCH FOR ELECTRIC LAMPS.—CHARLES WAGNER, Manhattan, New York city. The switch is arranged to permit one conveniently to turn the current on or off. The appearance of the lamp is improved, especially when the device is applied to the candle-type of lamp. The unsightly key heretofore used in electrical switches is dispensed with, and a sleeve employed for opening and closing the switch.

ELECTRIC-CLOCK SIGNAL.—HARRY B. VAUGHAN, Little Rock, Ark. The signal-clock is of that form in which the clock-hands are made to touch contact-points on the face of the dial, and, by closing an electric circuit at any particular point or hour or number of points, to ring at that hour any particular bell or number of bells. The present invention consists in the peculiar arrangement of such devices whereby any number of guests in a hotel can be automatically called at any particular hour, and whereby all the guests of the hotel are alarmed in case of fire. An alarm-signal can be sounded in any one of the rooms, and an electric lamp lighted by one automatic mechanism.

Mechanical Devices.

PUNCHING-MACHINE.—GEORGE M. ROGERS, Manhattan, New York city. The machine is designed to indicate upon a dial the force of a blow struck upon a pad. The blow has no direct influence on the indicator-hand, but merely deflects an intermediate lever to a greater or less degree, according to the force of the blow, to which position it is held by a locking device. The lever acts as a stop-device to determine the drop of a rod which operates the indicator-hand.

SAFETY-CATCH FOR ELEVATORS.—HENRY JEWELL, Butte Mont. The safety-catch is to be applied to the lower deck of a car and to be operated from the king-bolt to which the hoisting-cable is applied. While the hoisting-cable is in good condition and supports the car, the catches are inactive. But as soon as the cable breaks, the catches are automatically forced beyond opposite sides of the car into engagement with the wall of the shaft, or with racks or their like.

LOCK.—IRA W. ABBOTT, Nevada City, Cal. The novel feature of this padlock is a slide unlocked and moved by a key and adapted to engage a spring-pressed knee-joint bolt. This bolt is pivoted and designed to engage with its free end the shackle of the bolt. The lock cannot be picked unless the person has the proper key. The lock is simple and durable and can be cheaply manufactured.

HYDRAULIC AIR-COMPRESSOR.—LEE E. MITCHELL, Boston, Mass. Mr. Mitchell has improved the air-compressor which he invented in 1900. In the power-cylinder a piston reciprocates. Valve-chests open into the cylinder at the ends and have waste-outlets. A supply connection is provided between the valve-chests. A reciprocating-valve is arranged alternately to open and close the connection to the valve-chests and alternately to close and open the discharge for the waste-outlets from the valve-chests. The piston-valve is actuated by a shaft mounted to rock and provided with a lug. On the shaft a crank-arm is mounted loosely and connected with the valve-stem of the piston-valve, the crank-arm having spaced shoulders adapted to be engaged alternately by the lug on the shaft. The shaft is rocked from the piston-rod of the power-cylinder.

Railway Appliances.

PNEUMATIC PACKAGE-HANDLER.—GEORGE H. WALL, Cadillac, Mich. This package-handler consists of an air-cylinder located at each side of the car-doorway, the pistons being attached to a section of the car-floor. The arrangement provides a platform about five feet long and having a width equal to that of the car-door. A governor maintains the level of the platform during operation. Air is drawn from the train-line into a special reservoir for the operation of the device. A forty-day test was given to the first machine to show that air from the train-line could be used for the purpose of loading and unloading baggage. The inventor is an old and experienced railroad man.

CAR-COUPLER.—MARK A. BROWN, Douglas, Ga. The coupling belongs to that class in which the drawhead is provided with a pivoted member or knuckle adapted to be locked after engagement with a similar knuckle on another car. In the present invention provision is made to allow a yielding lateral movement of the locking-pin.

Miscellaneous Inventions.

DRAPERY-HANGER.—JOSEPH LANGLOIS, Leominster, Mass. The invention is a drapery-hanger designed to be erected in houses to form an enclosure for coffins. The essential feature is a brace or truss for the side-bars of the drapery-hanger, the brace having a crotch or fork between its ends and a hook at each end. The crotch engages the side-bar and its ends with the hooks, which are adapted to pass around the bar.

WICK-TRIMMER.—ROBERT M. JOHNSON, Lancaster, Penn. This simple device serves to clamp a wick to be trimmed. By its means, the wick is compressed at its exposed or igniting surface; moreover, a straight horizontal line is established at the charred portion and a substantial surface is obtained at each side. Upon these surfaces the shears or scissors may bear, and over the surfaces the wiping material may be drawn.

RETURN-FLOW SYRINGE.—DENWOOD N. L. NEWBURY, Manhattan, New York city. The syringe consists of a tube having apertures in its sides, and a shield within which the tube is contained. This shield comprises a body section having a series of curved bars, and a front section in the form of a loop with which the outer ends of the bars are joined. The inner ends of the bars are connected with a perforated cap-plate. The outer end of the tube extends out through the loop-section; and the inner end of the tube screws into a collar connected with the apertured cap-plate. A receptacle is carried by the lower portion of the loop-section.

HAT-BOX.—BENJAMIN F. PORTER, Manhattan, New York city. The hat-box is so constructed that the hat can be raised at the bottom of the box, lifted to the top, and held in its raised position without injury. Thus the hat can be brought into position for inspection or for careful removal.

PIANOFORTE.—HERBERT S., PERCY A., and OWEN E. READING, 18 Albion Road, Tunbridge Wells, England. The invention relates to improvements in pianofortes in which a sound-board formed of a rolled or cast-plate or sheet of aluminium or aluminium alloy is employed, in order that the instrument may withstand the effects of a hot, damp climate so prejudicial to the ordinary wooden sound-board. Moreover, the resonance is increased; a longer sustaining power is obtained; and the quality of the tone is improved.

JEWEL-HOLDER AND FASTENING DEVICE FOR CORD COLLARS.—SHERWOOD B. ROBERTSON, Brooklyn, New York city. The device is intended to be used with cord collars worn by Masonic fraternities. The invention provides a neat and efficient means of holding the ends of a collar, at the same time allowing the ready attachment of ornaments or jewels and presenting an outer surface suitable for the production of emblems or other ornaments.

SAW-GAGE.—DANIEL C. STEELE, Village Mills, Texas. Mr. Steele has devised an improved saw-gage more especially designed for use on saws having cleaner-teeth and arranged to permit accurate filing of the cleaner-teeth without leaving an undesirable burr and without danger of filing the teeth too short for proper working in a cut.

WELL-DRILLING APPARATUS.—MILTON LATTA, Burwell, Neb. The apparatus is light and readily portable. It can be operated by hand, thus avoiding the necessity of horse-power. The pump-valve is not subjected to the action of the mud, dirt and gravel drawn up through the well-tube. The receiving chamber is closed by a construction which can be readily removed for the purpose of cleaning it out. The current through the drill is fast and strong enough to draw up gravel. All work is performed on the ground surface. The strain or suction is always inward, so that in case of breakage or a leak at any point the mud, water, and the like will not be thrown outward upon the operator.

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

NEW BOOKS, ETC.

NEW LANDS. Their Resources and Prospective Advantages. By Hugh Robert Mill. London: Charles Griffin & Company, Limited. Philadelphia: J. B. Lippincott Company. 1900. With ten maps. Pp. 280.

The present volume deals with a subject which is of great interest, in view of the present tendency for persons to leave the old countries and emigrate to new lands. The book presents, in a simple and practical manner, the conditions of life in those parts of the world where there is still an opening for the energies of the English-speaking people desiring to make their home or invest their capital in a new country. Little more than the countries of the temperate zone are considered. The author has done his work thoroughly, and it is a book which cannot but prove of value to the audience to which it is addressed.

WATER POWER. An Outline of the Development and Application of the Energy of Flowing Water. By Joseph P. Frizell. First edition, first thousand. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1901. Pp. 563. Price, $5.

Water power is becoming more and more prominent every day. Recent remarkable developments in electricity and other modes of transmitting mechanical energy have recalled water power to something like its former position in the industrial economy of the world. The changed conditions have given a new interest to this source of power, and directed the attention of investors to sources which formerly appeared entirely outside the range of practical consideration. They have also led to some noteworthy improvements in the utilization, development and transmission of power. The author has done a real service to civil and hydraulic engineering by writing an admirable book outlining the latest practice. The book has many illustrations, and is well printed and bound.

THE PRINCIPLES, CONSTRUCTION, AND APPLICATION OF PUMPING MACHINERY. By Henry Davey. London: Charles Griffin & Company, Limited. Philadelphia: J. B. Lippincott Company. 1900. With frontispiece, five plates and over 250 illustrations. Pp. 295. Price, $6.

The purpose of this book is to present the information in such a form as will make it most useful to the practical engineer engaged in the application of pumping machinery in mines or elsewhere, or in circumstances under which large quantities of water have to be dealt with. A large number of illustrations are given, showing the typical installations, and there are several full page and folding plates. The practice appears to be largely English practice, but it is certainly of very late types. It is a book which will be indispensable to the hydraulic engineer.

SUR LES NERFS CEPHALIQUES, LES CORPORA ALLATA ET LE TENTORIUM DE LA FOURMI. Par Charles Janet.

ESSAI SUR LA CONSTITUTION MORPHOLOGIQUE DE LA TETE DE L'INSECTE. Par Charles Janet. Paris: Georges Carré et G. Naud. 1899. Pp. 74.

L'ESTHETIQUE DANS LES SCIENCES DE LA NATURE. Par Charles Janet. Extrait du Bulletin de la Société Zoologique de France Reconnue d'Utilité Publique, Année 1900. Paris: Au Siège de la Société Zoologique de France. 1900. Pp. 8.

ENGINEERING CHEMISTRY. A Manual of Quantitative Chemical Analysis for the Use of Students, Chemists, and Engineers. Second Edition. By Thomas B. Stillman, M.Sc., Ph.D. Easton, Pa.: The Chemical Publishing Company. 1900. Pp. 503. With 132 illustrations.

This book was written especially as a manual of quantitative chemical analysis for the use of students, chemists, and engineers. It treats especially of the determination of impurities in the various metals, water for all uses, and various other commercial substances such as paper, lubricating and illuminating oils, paint, cement, and the like. There are also chapters on liquid fuel, petroleum, and asphalt. A classification of the different grades of steel and their uses forms one of the most valuable chapters of the book. There is also an interesting chapter on pyrometry. The book concludes with chapters on the electrical units and energy equivalents, which are especially useful for ready reference. Numerous tables of pressures, temperatures, percentages, etc., are also appended.

NEW IDEAS. Quarterly Publication of the Romanes Society. Published by Witherby & Company, Office of Knowledge, 326 High Holborn, London.

We have received the January and March numbers of this pamphlet, which contain Essays Toward a Mechanical Theory of Vital Processes. The Romanes Society was founded at Christchurch, Oxford, in 1897, for the purpose of stimulating and promulgating original thought and research in science; and in New Ideas are printed original articles of merit on scientific subjects.

THE CHEMICAL ANALYSIS OF IRON. By Andrew A. Blair. Philadelphia and London: J. B. Lippincott Company. 1901. 320 pp., 105 figures. Price $4.

This work is intended as a guide for the student of iron chemistry. In it are described many special apparatus for the performance of analytical work which otherwise only the possessor of a complete chemical library would have at his command. The book has just entered its fourth edition, and has been entirely rewritten and brought up to date. Besides apparatus for analyzing iron and steel, the author treats of the analysis of slag, clay, sand, coal, coke, and furnace and producer gases also. The book will be found of great value to chemists engaged in this special line of work.

WATERWORKS DISTRIBUTION. By J. A. McPherson, A.M., C.E. New York: The D. Van Nostrand Company. 1901. 154 pp., 19 full-page diagrams and 103 other illustrations. Price $2.50.

This book is intended as a short, practical guide to the laying out of systems of distributing mains for the supply of water to towns and cities. It is by a practical engineer who has had twenty-four years' experience; and contains much valuable data, together with numerous illustrations of the various valves and other apparatus employed in an up-to-date supply system. A large chart of an example district, showing distribution, is added to the other diagrams.

We acknowledge the receipt from the Director of the Sydney Observatory of New South Wales, Australia, of a report on the Results of Meteorological Operations in New South Wales during 1898, which is used in the Department of Public Instruction on Meteorology of New South Wales. It is very complete in its arrangement of items of special interest.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**
MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 904.—For manufacturers of spring motor fans.

TURBINES.—Leffel & Co. Springfield, Ohio, U. S. A.

Inquiry No. 905.—For parties to manufacture a money bag of canvas and brass.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 906.—For the manufacturers of the James Sash Lock.

WATER WHEELS. Alcott & Co., Mt. Holly, N. J.

Inquiry No. 907.—For manufacturers of water wheels or any form of hydraulic power.

Yankee Notions. Waterbury Button Co., Waterb'y, Ct.

Inquiry No. 908.—For parties engaged in cutting out sheet metal letters in tin or brass.

For bridge erecting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 909.—For manufacturers of small spur gear wheels and sprocket wheels.

Machine chain of all kinds. A. H. Bliss & Co. North Attleboro, Mass.

Inquiry No. 910.—For the address of the toy gas engines "Paradon" and "Weedens."

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 911.—For parties to manufacture an article composed of small glass tubing and of special dimensions.

Sheet Metal Stamping: difficult forms a specialty. The Crosby Company, Buffalo, N. Y.

Inquiry No. 912.—For manufacturers of miner's novelties, also for the address of a newsdealer to supply quantities of newspapers, magazines, etc.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 913.—For manufacturers of air blowers or injectors, fuel oil injectors, air and oil injectors, operated by steam or compressed air.

For Sheet Brass Stamping and small Castings, write Badger Brass Mfg. Co., Kenosha, Wis.

Inquiry No. 914.—For manufacturers of drill presses, electrical tools, boilers, engines, dynamos, motors, laundry machinery, etc.

Rigs that Run. Hydrocarbon system. Write St. Louis Motor Carriage Co., St. Louis, Mo.

Inquiry No. 915.—For manufacturers of automatic piano-playing devices.

Ten days' trial given on Daus' Tip Top Duplicator. Felix Daus Duplicator Co., 5 Hanover St., N. Y. city.

Inquiry No. 916.—For manufacturers of wheels for wheel barrows.

SAWMILLS.—With variable friction feed. Send for Catalogue B. Geo. S. Comstock, Mechanicsburg, Pa.

Inquiry No. 917.—For parties to furnish oval rosewood handles by the gross, for harness makers' round knives.

Wanted—Punch and Die Work, Press Work and light Manuf'g. Daugherty Novelty Works, Kittanning, Pa.

Inquiry No. 918.—For manufacturers of small gasoline motor castings of ¼ or ½ horse power.

Manufacturers of Valves, Fittings, Brass and Iron Work. Spindler & Deringer, 18-22 Morris St., Jersey City, N. J.

Inquiry No. 919.—For manufacturers of castings for small model steam engines, also of supplies for small boilers.

Inventions developed and perfected. Designing and machine work. Garvin Machine Co., 149 Varick, cor. Spring Sts., N. Y.

Inquiry No. 920.—For manufacturers of screw wrenches, etc.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

Inquiry No. 921.—For manufacturers of pine pails and barrels for salt fish.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, $4. Munn & Co., publishers, 361 Broadway, N. Y.

Inquiry No. 922.—For manufacturers of automobiles (gasoline system) to carry 2 persons up a grade of 15 per cent over country roads. A twin cylinder machine preferred.

Will give a one-half interest in twelve inventions, or any part of number, for money to perfect patent and dispose of same. Address S. O. Stewart, E. Las Vegas, New Mexico.

Inquiry No. 923.—For a half mile of second-hand rails to hold cars loaded with five tons of lumber.

ELECTRICAL ENGINEER (Tramways).—Wanted immediately by the Council of the City of Wellington, New Zealand, a thoroughly qualified Electrical Engineer, who must have had special experience in carrying out and equipping overhead electrical tramways and power stations. Full particulars and conditions may be obtained on application to Messrs. R. W. Forbes & Son, Produce Exchange, New York, and applications must be delivered at the office of Messrs. John Duthie & Co., Ltd., Lime Street, London, E. C., England, not later than noon on the 20th July.

Inquiry No. 924.—For manufacturers of lightning rods.

IMPRESSED UPON HIS NOTICE.

The various features for which the Lackawanna Railroad has become noted are involuntarily impressed upon the notice of the passengers, who realize the luxury of hotel or club appointment in the electric lights; the smooth-running journals of the wheels; the extraordinary cleanliness made possible by the use of anthracite coal, avoiding all dust and nauseating smoke; the consciousness of being always on time—which comforts force an ease of mind and body most favorable to the enjoyment of the unsurpassed scenery through which its lines pass. It is but the natural sequence that the Lackawanna is prosperous in like degree to its excellence of service and its warm friends are equal in number to its whole list of patrons, for once to test its service means an ardent admirer and friend earned for the road.—Van Etten Breese.

Inquiry No. 925.—For parties to manufacture several thousand aluminium medals of a special character.

We do Experimental Special and Automatic Machine, Tool, Die and Model Work, also Metal Stamping. Racine Model Works, Racine, Wis.

Inquiry No. 926.—For manufacturers of stereoscopes.

Inquiry No. 927.—For the address of the manufacturer of "Smith's Perpetual Calendar."

Inquiry No. 928.—For manufacturers of long wood handles for feather dusters.

Inquiry No. 929.—For the address of the manufacturer of the Diesel motor or oil engine.

Inquiry No. 930.—For manufacturers of aluminium tubing and piping and fittings for light machinery.

Inquiry No. 931.—For manufacturers of novelties for mail order and advertising purposes.

Inquiry No. 932.—For large lathes and planers.

Inquiry No. 933.—For machinists' hand taps, stocks and dies for threading bolts and pipes.

Inquiry No. 934.—For all sizes of nuts, locks, set screws, etc.

Inquiry No. 935.—For standard taper pin reamers and steel taper pins.

Inquiry No. 936.—For manufacturers of salt machinery.

Inquiry No. 937.—For manufacturers of dynamo storage batteries and motors for running presses requiring one to two h. p.

Inquiry No. 938.—For gasoline lamps which can be lighted without first heating the burner.

Inquiry No. 939.—For a fixture of 10 lamps to supply a room with gas from one generator.

Inquiry No. 940.—For a gasoline gas machine forcing gas through a house without generating same by heat, jets to be lit with a match.

Inquiry No. 941.—For second-hand dealers in 12 to 16-inch wrought iron pipe.

Inquiry No. 942.—For parties dealing in small engine castings and blue prints from which to build engines.

Inquiry No. 943.—For an improved method of screening sand or gravel.

Inquiry No. 944.—For manufacturers of cork in sheets of 4 x 12 inches by ¼ inch in thickness.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

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

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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.

(8226) A. S. D. asks: By what method can I coat glass plates with a clear transparent coating of gelatine? I desire a transparent gelatine coating similar to the coating on the regular gelatine-coated dry plate as used by photographers, but without the photographic properties, simply a clear transparent coating of the same texture. I have used the clear gelatine with alcohol and water, but it cracks and peels up for me. A. If we wished plates coated with gelatine we should buy photographic plates and remove the silver with hyposulphite of soda. The gelatine would remain clear and transparent, and with a uniform thickness far better than we could hope to make it ourselves. We can send you descriptions of the process of coating plates in SUPPLEMENT 272, 330, 467 and 1042, price ten cents each.

(8227) C. F. asks: 1. My son and one of his companions are making an electric motor as described in SUPPLEMENT No. 641. They follow directions as they understand them, but are not quite sure if correct. For the field magnet they used 33 feet of Russian sheet iron (of No. 24), but does not make 7-16 inch in thickness as described. It weighs 5⅛ pounds. Had they better put more iron to it so it will be 7-16 inch thick or is the 33 feet sufficient? A. The sectional area of the iron is important for the core of the magnet. Your boys had better wind on more wire to bring up the thickness to the specifications. 2. Does it make any difference if only one size of magnet wire is used to wind armature and field magnet? Have No. 18. Directions give No. 18 wire for winding the armature and No. 16 for the field. In list of dimensions of the parts the same size (No. 16) is given for both. A. The error in the size of wire is in the table of dimensions. The size of armature wire should be No. 18 as given in the description. 3. In winding the armature should the wire be wound *tight* or only moderately? So far in the winding the boys do not get as neat a job as they like to have, and suggest putting a strip of brown wrapping paper between every layer of wire: how would that do? A. The coils should be wound as tight as possible, and smooth. The high speed at which the armature turns makes it difficult to hold the coils in place unless they are well wound. It is not well to fill the space with paper, though if you get all the windings in and have space to spare, it may be done. 4. Is there any rule to calculate the area of a crescent? What is it? The water plant here has valves of different sizes (some are 4 inches in diameter) and a disk or circular plate a trifle larger is moved by means of a screw across the end of a 4-inch pipe, to open or shut off the water. Now how wide must this opening be to have the same area as 1-inch and 2-inch pipe? We can then calculate the amount of water that will flow through the other pipes. A. The simplest method for obtaining the area of any shape not easily calculated is to cut a piece of card of the exact shape and weigh it carefully on a jeweler's or druggist's balance, if an analytical balance is not to be had. Then cut a piece from the same card of a known size, four or five square inches, and weigh this, from which the weight of one square inch of the card can be found, and the weight of the irregular piece also.

(8228) W. H. K. writes: I have a solution of cyanide of silver for electro-plating in a glazed stoneware crock. The cyanide seems to go through and settle on the outside of crock in a dry, powdery form. 1. What causes this action and what will prevent it? A. The solution should not go through the glazing. It may be that the evaporation causes some of the crystals to climb over the edge of the crock, and to form down the sides of the jar. 2. Is the strength of solution correspondingly weakened, and would any of the silver go through along with the cyanide? A. The strength of the solution is not reduced if the crystals are formed in the manner we suppose. The silver is in the form of cyanide of silver, and is one substance, inseparable, not two substances as you suppose. 3. At the bottom of page 7, Watt's "Electro-Metallurgy," is described a battery; in constructing the copper cylinder should the edges be joined by soldering or lapped and hammered together, or how? A. The copper is not joined at all in the Daniell's cell. It is a sheet of copper rolled into the form of a cylinder.

(8229) G. D. Y. writes: Your favor of March 21 received; would state that it was not a hydrometer manufacturer that I was inquiring for, but for a formula to be printed in the SCIENTIFIC AMERICAN of how to convert Baume degrees into specific gravity degrees. Kindly state also on what principle is the Baume scale based, and give rule of conversion of grain degrees of vinegar into Baume degrees or specific gravity. A. The Baume hydrometer was one of the earliest forms of the instrument. It is a hydrometer of variable immersion, but of constant weight. It always displaces the same weight of liquid. Its scale is made as follows: The instrument is placed in distilled water and the point to which it sinks is marked. It is then placed in salt water and a second point noted. The distance between these two points is divided into a certain number of equal parts and the rest of the tube is graduated with the same divisions. There are two Baume scales, one for *light* and one for *heavy* liquids. For light liquids Baume took zero point at the place where the instrument stood in a solution of 10 parts salt and 90 parts water. The point to which it sank in distilled water was called 10 degrees, and the scale was graduated upward throughout its length on this basis. For heavy liquids, the zero point is found by placing the instrument in distilled water. It is then placed in a solution of 15 parts of salt and 85 parts water and the point determined is marked 15 degrees. From the distance between these points one degree is found, and the scale is graduated downward throughout its length on this basis. Both scales are scales of equal parts, and the degrees are not the same in the two scales. For a hydrometer of variable immersion the specific gravity scale is not a scale of equal parts, since the bulb at the bottom is not as large as the tube. If one were made of the same size throughout its scale would be one of equal parts. These are often used in school laboratories for purposes of instruction. From the above it should be evident that there is no formula of conversion from the Baume to the specific gravity scale. Conversion is a matter of comparison, and not one of calculation. Our correspondent should purchase two hydrometers, one for light and one for heavy liquids, upon whose stems both scales have been placed by the manufacturer. Or he should purchase a reference book containing these tables. We have not space to reprint what is in every reference book.

(8230) O. E. writes: I have made a Wimshurst machine according to the description in "Experimental Science," leaving off the outside plates and built the rest as it is most commonly seen, but can get only one-half inch spark. Will you please state a few things that hinder these machines from working well? Does the thickness of the glass have anything to do with it? Why would not connecting the plates together, as they are by the iron shafts, be a hindrance? Is a friction machine in any way superior to the induction? Will condensers increase the length of these sparks? Will copper sectors answer the purpose as well as tinfoil or brass? A. From your letter it is not certain that there is any trouble with your machine. It has no Leyden jars, and cannot give any but the effusive discharge, which is never long nor loud, but is a stream of sparks only. The machine is also exposed to the moisture of the air because you have not provided a case for it. This reduces its efficiency. The glass should not be unusually thick; but the most important feature of the glass is that it should not contain any lead. Ordinary window glass may be worthless for this use. The iron shaft has no effect on the spark, since the glass is an insulator and the electric charge cannot pass from the glass to the shaft. A friction machine would be far inferior to an induction machine made from the same materials. The metal of which the sectors are made is of no consequence. Any metallic foil or very thin sheet which can be attached to the glass firmly is good for the purpose.

(8231) C. G. C. asks: I wish to build the small fan motor described in the SCIENTIFIC AMERICAN, by George M. Hopkins, and would like to know whether strap iron of the same width and thickness as stovepipe iron would answer as well for the armature? A. Yes, any good quality of sheet iron will answer the purpose.

(8232) L. H. E. asks: Will you kindly tell me how to ascertain the horse power of an electric motor? A. To find the horse power of an electric motor measure the amperes it is taking and the voltage of the current. Multiply these numbers together, and divide the product by 746. That is all. It is very simple.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

June 18, 1901,

AND EACH BEARING THAT DATE.

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

Abrasive sleeve, C. Brown 676,487
Acid concentrating apparatus, J. Patten 676,663
Acid concentrator, J. Patten 676,664
Advertising vehicle, L. Neumayer ..... 676,821 to 676,822
Air brake mechanism, W. H. Sauvage ..... 676,850 to 676,852
Alarm. See Burglar alarm.
Album, stereoscopic view, J. C. R. Miller 676,756
Animal trap, C. P. C. Miner 676,757
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Bag holder attachment for trucks, E. K. Abbott 676,731
Baking pan, I. H. Jones 676,609
Bale making apparatus, cotton, W. E. Anderson 676,597
Baling press, J. T. Hay 676,497
Baling press, J. Pegg 676,511
Baling press, P. C. Southwick 676,777
Barrels, machine for heading up slack, E. Holmes et al 676,819
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Bed, F. Martin 676,544
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Berry box, H. C. Finley 676,653
Bevel cutting and punching machine, E. B. Stimpson 676,781
Bicycle coupling device, S. Elliott 676,535
Blast furnace, J. M. Hartman 676,692
Boat, electrically propelled, W. R. Edwards 676,738
Boiler, F. G. Rogers 676,632
Boiler furnace, G. W. Cary 676,734
Boilers, system of regulating steam, R. H. White 676,790
Book rest, H. L. Hazelwood 676,749
Book support, Parish & Land 676,443
Bottle, E. Ader 676,613
Bottle, non-refillable, F. Franz 676,715
Bracket, S. Lederer 676,563
Brake shoes, metallic insert for, W. A. Chapman 676,489
Bricks, composition of matter for, J. D. MacDonell 676,438
Briquet molding machine, R. A. Zwoyer 676,484
Broiler, B. P. Wagner 676,479
Brooch, T. J. Pollard 676,473
Brooches, pins, etc., automatic catch for, Theberath & Ubry 676,640
Broom stay and fiber support, E. C. Jones 676,540
Brush, cleaning, G. S. Leiner 676,845
Buckle, R. Scheuer 676,475
Building block, G. L. Mouchel 676,568
Building block, W. E. Shaw 676,803
Bung, J. Scior 676,701
Burglar alarm, O. J. Gatten 676,744
Bushing for casks, barrels, etc., bung, H. H. Gochnauer 676,622
Button, cuff, J. Goldsmith, Jr 676,655
Button for cushion seats, tufting, F. A. Neider 676,510
Buttoner, collar, A. S. Houston 676,556
Calcium carbid simultaneously with silicide of iron, making, W. Rathenau 676,514
Calipers, micrometer, F. Spalding 676,637
Can. See oil can.
Can opener, W. H. Plumb 676,726
Can opener, C. W. Weir 676,789
Candy and making same, J. B. Webb 676,707
Car brake, J. H. Gagnier 676,743
Car brake, wheel, C. V. Rote 676,516
Car construction, metallic, C. M. Carnahan 676,530
Car coupling, I. Bartlett 676,712
Car coupling, automatic, H. H. Ponton 676,547
Car, dump, F. Starkey 676,478
Car fender, street, G. A. Parmenter 676,768
Car mover, G. B. Sullivan 676,825
Car roof, Hutchins & Herbert 676,435
Car roof, railway, Hutchins & Herbert 676,434
Car step, automatic and adjustable, T. J. Schmidt 676,775
Carbonating apparatus, C. L. Bastian 676,407, 676,408
Carbonater, C. L. Bastian 676,406
Carbureted air and vapor burner, combined, E. P. Woillard 676,522
Carding machine feeding device, T. Kershaw 676,541
Carpet cleaner, G. A. Cowgill 676,460
Cartridge loading machines, safety appliance for, G. M. Peters 676,472
Casket lowering device, J. M. Vail 676,804
Catamenial sack, D. P. Sonnebill 676,636
Cement kiln drying device, H. Stehmann 676,638
Chair, W. C. Wallis 676,788
Chance device, O. Weston 676,807
Checking or accounting for baggage, etc., sheet for, C. W. Hall 676,648
Checkrein hook, Begole & Anderson 676,527
Chuck, Z. T. Furbish 676,742
Cigar wrapper cutter, A. Du Brul 676,677, 676,813
Cigarettes, machine for making paper mouthpieces and inserting them in tubes of, Hagelberg & Lindelof 676,538
Cinematograph apparatus for reproduction in natural colors, W. N. L. Davidson 676,532
Circuit breaker trip, A. J. Purinton 676,849
Clock, watchman's, A. Newman 676,764
Clothes drier, T. A. Johnston 676,503
Coat holder, M. Mendels 676,650
Cock for train pipes of air brakes, angle, A. M. Applegate 676,598
Coffee boiler, C. O. Nelson 676,763
Coffee package and clarifier, combined, F. Willis 676,808
Coin freed automatic machine, J. W. Pearson 676,686
Collars, etc., pasting machine for, A. D. Fenwick 676,793
Composition of matter, S. Wilbner 676,828
Concentrating table attachment, W. G. Dodd 676,427
Concrete construction mold, P. T. L. Toelpe 676,785
Conditioning or drying apparatus, C. Mallinson 676,681
Cooking utensil lid, A. H. Drake 676,603
Cooking utensils, device employed in, A. Allendy 676,671
Corset fastening, Williams & Brownell 676,572
Counterpane, coverlid, or like woven fabric, Rumpf & Witty 676,446
Crane, J. W. Seaver 676,633
Cream separator, centrifugal, H. P. D. Ohlhaver 676,631
Curtain adjuster, V. V. Yost 676,710
Curtain support, J. N. Anderson 676,651
Cutter bar, rotatable, C. H. Wack 676,669
Cutter head, M. Meehan 676,754
Cutting articles from sheet material, machine for, J. J. Breach 676,457
Cutting fabric into bias-woven lengths, apparatus for, F. Newell 676,585
Cycle, motor, M. E. Toepel et al 676,592
Cylinder mold drive, B. B. Farnham 676,492
Derrick frame, portable, G. J. Gibbens 676,430
Disintegrator, E. Geisel 676,461
Display rack for ties, etc, D. M. Jacobs 676,560
Draft equalizer, S. H. Shipman 676,589
Draft regulator, thermostatic, Carney & Henderson 676,459
Drawer, extension, F. X. Ammann 676,596
Drawer, furniture, R. G. Hargrave 676,748
Drier. See Clothes drier.
Drying cylinder, B. Ormerod 676,684
Duster and window cleaner, S. I. Depew 676,425
Dye and making same, blue triphenylmethane, A. Hausdorfer 676,555
Dye, black disazo, H. Geldermann 676,494
Dye, blue disazo, H. Geldermann 676,495
Edged tools, making, C. D. Zeigler 676,832
Electric furnace, A. H. Cowles 676,575
Electric machine pole piece, dynamo, F. A. Merrick 676,439
Electric motor, A. P. Warner 676,520
Electrical apparatus, T. B. Kinraide 676,583
Electrically illuminated cross, H. J. Schlacks 676,853
Electrode, secondary battery, Abbey & Altmos 676,534
Elevator door and catch, I. S. McNaught 676,442
Elevator door operating device, H. Bitner 676,833
Elevator gate, F. L. Saino 676,474
Elevator safety device, H. M. Young 676,831
Embroidering machine attachment, E. & R. Cornely 676,422
Engine speed regulator, gas, B. Abel 676,811
Engine starting mechanism, explosive, J. Walrath 676,642
Engines, ignition plug for gas, N. McClintock 676,468
Envelop, A. D. Rossiter 676,515
Evaporating apparatus, T. J. Rayner 676,770
Exercising machine, R. Reach 676,771
Fan motor support, F. P. McBerty 676,441
Fan, rotary, H. M. Turner 676,786
Faucets, etc., sealing device for, I. J. French 676,580
Fence post puller, H. A. Bergom 676,599
Fillet cutting machine, Schmitt & Webster 676,728
Firearm, magazine, Young & Barton 676,809
Fire kindler or similar apparatus for mixing air and fluid, R. Ferguson 676,536
Fire resisting and ventilating floors and ceilings, method of and means for constructing, W. Seefels 676,802
Fish hook attachment spoon attachment, A. D. Weiss ..... 676,521.
Fish line attachment, McCargar & Hurlburt 676,724
Fishing rod tip, W. Friedlander 676,554
Flash light apparatus, C. Mills 676,545
Fluid package filter, C. F. Ruschaupt 676,772
Fluorin compound and making same, J. A. Reich 676,548
Folding machine, Downing & Wendt 676,533
Freezing apparatus, J. Patten 676,662
Fruit, apparatus for steaming and spicing dried, C. E. Hale 676,608
Fruit gather, T. C. Blackburn 676,411
Fumigator, formaldehyde, L. Feval 676,814
Furnace fire arch, Green & Gent 676,606
Furnace fire gate, Green & Gent 676,605
Furnace inspection door, Green & Gent 676,607
Furnaces, electrode connection for electric, A. H. Cowles 676,576
Furniture attachment, knockdown, C. S. McNown 676,509
Game, F. D. Fuller 676,581
Game apparatus, A. F. Zimmerman 676,455
Game table, C. W. Stroud 676,639
Garden tool, S. F. Burton 676,416
Garment fastener, N. J. Young 676,810
Garment press and case, G. E. & E. C. Brower 676,458
Gas, apparatus for ascertaining the density of, M. Arndt 676,858
Gas burner, C. S. Steward 676,451
Gas burner, incandescent, F. Logan 676,721
Gas engine, M. L. Wood 676,523
Gas generator, acetylene, W. J. Beaulieu, 676,615, 676,616
Gas generator, acetylene, Merrill & Hickman 676,628
Gas generator, acetylene, R. Federroll 676,691
Gas generator, acetylene, G. Seagrave 676,702
Gas generator, acetylene, A. C. Einstein 676,791
Gate. See Elevator gate.
Gate, J. F. L. Ellis 676,429
Gearing, I. H. Venn 676,641
Gearing, machine, E. Oredalen 676,610
Girdle, Warren & Sherin 676,571
Glass counter blank, J. McLoughlin 676,799
Glass, manufacture of sheet, P. T. Sievert 676,612
Glassware, apparatus for fire polishing and finishing, F. Woodruff 676,551
Glassware, apparatus for severing articles of, A. Roemisch 676,698, 676,699
Go-cart, J. J. Flannery 676,741
Gold separator, L. D. Carter 676,419
Golf ball, Knight & Peck 676,506
Governing system, speed, S. S. Ekman 676,739
Grain drill, W. A. Van Brunt 676,593
Grass hook, W. J. Henry 676,717
Grinding appliance, tool, C. V. Boys 676,413
Grinding machine, C. F. Roper 676,700
Grinding machine, ball, C. C. Hill 676,718
Guitar, W. W. Oakes 676,470
Harvester truck, J. F. Steward 676,780
Head rest, O. A. Nincehelser 676,765
Heating and lighting apparatus, oil reservoir or container for, J. R. Bouhon 676,674
Heating furnace, A. Magnuson 676,566
Hitching device, horse, I. W. & H. Casser 676,837
Hockey stick, W. Dean 676,736
Hoeing machine, G. W. Stacy 676,705
Hogshead, J. Richards 676,587
Hoisting broom, J. C. Hosbor 676,626
Holdback strap fastener, M. M. Maxam 676,683
Hook and eye package, T. D. Richardson 676,824
Hoop driving machine, barrel, B. Holmes 676,844
Hoop riveting machine, Rust & Fisher 676,588
Hose or pipe nozzle, A. Anderson 676,526
Hot air furnace, R. S. Thompson 676,784
Hub and box therefor, wheel, E. H. Wagener 676,856
Hydrocarbon burner regulator, automatic, A. C. Stewart 676,518
Ice cream bricks, water ices, or the like, receptacle for, M. L. Beaver 676,486
Ice machine, J. Patten 676,666
Ice, manufacturing, J. Patten 676,668
Injector for forcing hot air, L. O. Boeing 676,673
Inking device, W. L. Morris 676,760
Inking pad, J. B. Laughton 676,752
Internal combustion engine, gas, petroleum, or like, H. Schwartz 676,449
Jar closure, E. Schifferly 676,774
Journal box, A. C. Pessano 676,471
Keyhole guard, W. Schwartz 676,450
Knife-cleaning machine, Samuels & Williams 676,773
Lacing stud machines, raceway for, W. C. Bray 676,414
Lamp burner, alcohol, G. E. Savage 676,447
Lamp, incandescent, C. Hoelscher 676,843
Lath and straightener, door, F. R. Stahl 676,779
Latent heat engine, O. P. Ostergren 676,800
Leather working machine, J. B. Donnelly 676,428
Leg, artificial, Erickson & Nilson 676,553
Life preserver, E. P. Brown 676,836
Linens, cottons, etc., shrinking and finishing, W. Hebdon 676,462
Liquid separator, centrifugal, J. J. Berrigan 676,410
Lock, W. Schlueter 676,448
Lock, J. Paur 676,823
Locomotive, Pitkin & Sague 676,690
Locomotives, device for rotating driving-shafts of, C. S. Mills 676,440
Loom picker stick buffer, F. A. Mills 676,658
Loom shuttle checking and releasing mechanism, Fairburn & Hargreave 676,491

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