76

RECENTLY PATENTED INVENTIONS.

Mechanical Devices. PHOTOGRAPHIC SHUTTER.-GASSNER F FRALEY, St. Louis, Mo. In this improved device a finder is employed which shows the image as it is produced by the same lens which effects the exposure. A portion of the finder is utilized for the operation of the shutter. Simple mech anism has been devised for obtaining at will either snap-shots or time exposures.

CRUSHER.-EDWARD D. CHESTER. 120 Bishopsgate Street, London, England. In this ore-crusher a crushing-cone is carried by an upright spindle and is caused to gyrate within a conical crushing-hopper or "concave." Motion is communicated to the spindle by means of a driving-wheel mounted to rotate with the crushing-hopper and provided with an eccentric aperture through which the spindle passes freely. The spindle is held at the top in aline-ment with the crushing-hopper and with the driving-wheel, and is supported at the bottom upon a footstep bearing, affording freedom for the gyratory movement of the spindle. The features of the invention are the means fovel for adjusting the position of the crushing-cone vertically within the crushing-hopper, so that the size to which the material is crushed can be regulated, and the means for enabling the whole mechanism whereby this adjustment is effected to be readily removed for cleaning or repair.

WRENCH. -THOMAS F. MOONEY, 1305 Valley Street, Baltimore, Md. The wrench can be applied to the nut with its jaws open and can be caused to close automatically upon the nut, thus furnishing a quick-acting wrench which can be conveniently manipulated with one hand. To this end the jaws are supported so that they can move toward and from each other. Cams or inclines are used for engagement by the jaws and means for moving the jaws and cams or inclines relatively, so that the cams or inclines will cause the adjustment of the jaws toward or from each other.

WRENCH .- DANTON O. BRUNNER, Somerset, Ohio. The wrench is to be used either as a pipe or nut wrench. The principal novel feature of the invention is the employment of corrugated or toothed roller bearings in the jaws, so placed that when the wrench is in action the bearings will have a gripping engagement with opposite sides of the nut or pipe.

WRENCH.-REGINALD MEEKS, Manhattan, New York city. The shank of the wrench car ries a pinion for engagement with a rack at tached to the handle and with a rack carried by the movable jaw. By simply moving the handle longitudinally with relation to the fixed jaw, the wrench is quickly adjusted to suit the size of the nut. No screw-threads, adjusting-nuts, or swinging levers are employed.

Engineering Improvements.

ELECTRIC IGNITER FOR EXPLOSION-MOTORS .- CHARLES E. LUFBERY, Chauny (Aisne), France. This electric igniting device for explosion-engines includes an interrupter, having two wires, one of great resistance and the other of low resistance. The wire with great resistance is always connected with the source of electricity. A circuit-breaker controlled by the engine is connected with the low-resistance wire. An induction-coin and its primary coils connect it with the circuitbreaker and the wire of high resistance; the secondary coils are connected with the ignit-The source of electricity is a dynamo er. which is employed in connection with an accumulator. By means of a switch either the dynamo or the accumulator can be shunted in or out or the accumulated charge from the dynamo to furnish the current for ignition. The igniter, it is claimed, is almost infallible in its operation.

VALVE MECHANISM.-ISAAC L. FITZ HUGH, Picolata, Fla. This rotary main valve has annularly arranged inlet-ports and an exhaust-recess. An eccentric moves the main valve on its seat. A cut-off valve over the main valve regulates the admission of steam from the steam-chest to the inlet-ports. The cut-off valve is mounted on an eccentric, which cut-off valve eccentric is under the control of the operator to shift the cut-off valve over the face of the main valve to the desired point of the cut-off.

mounted to swing on the yokes, which mirror is designed to reflect the water-glass, so that the level of the water may be observed by the engineer at any desired point.

Miscellaneous Inventions.

DOOR-STOP. - DURWARD B. HAMPTON. Napa, Cal. The improved door-stop consists essentially of a baseboard member and a door member. The baseboard member is hollow and is provided with a rubber socket having a conical head through which the button-head on the door must pass. When the door is open and the button has engaged the socket, the stopper acts as a cushion for the door, so that the engagement of the two members is rendered noiseless and the two securely locked together.

MAIL-POUCH.-JASPER N. TABLER, ROYSE City, Texas. The inventor has devised an extension-top for mail-pouches, and a simple, quickly-operated, and secure fastening device for the mouth of the extension-top. He has, furthermore, so applied the extension-top to the body of the pouch, that when the mouth is locked, the extension-top and its fastening device will drop within the body of the bag, the top portion of which body may be held closed by auxiliary devices. The locking de-vice is protected; the bag is easily handled; and the fastening device enables the bag to be quickly locked or unlocked. An ample opening is provided by the extension-top for the reception of mail matter.

ALARM FOR REFRIGERATING-PANS.-GEORGE N. ENNERS, Brooklyn, New York city. The purpose of this invention is to provide a simple alarm for the drip-pans of refrigerators, which alarm is so constructed that when the water in the pan reaches a certain level, an alarm will be actuated. The device by which this purpose is attained consists essentially of a float having guided movement in the pan, which float is made to engage the push-button of an electrical alarm when the water reaches a predetermined height.

BOX-FASTENER.-SOFUS RAAEN, Aalborg, Denmark. This fastening device for two parts of cases and other articles, comprises a link pivoted to one of the parts, and a locking-bolt mounted to slide on the other part trans versely of the link and adapted to engage the latter. A stop-lug prevents the sliding movement of the lug. By means of this device a cover or lid can be firmly secured without the use of nails, screws, or any special lock.

BUCKLE .- GEORGE W. POTTER, JR., Fayette, Mo. This buckle for use on harness is in the nature of a tug-buckle and trace-carrier combined. The buckle is suitably secured to the strap leading back from the hames, supported by the back strap of the hames, and is composed of top and base plates. The tug is inserted between the top and base plates; and the tongue of the top plate is inserted in the proper hole of the tug. The buckle cannot jar loose or the tongue become otherwise accidentally released from the buckle.

FLOAT-VALVE FOR WATER-TANKS. The im-JOHN MORRISON, Dubuque, Iowa. proved valve is designed for automatically controlling the flow of water in reservoirs, tanks, cisterns, and the like. The valve is oper ated by a lever or two levers, as the case may be, and is connected with a rocking or rotatable disk, having a stop to limit its move ment. The valve engages a hooked post fixed on the valve-seat and is guided in its movement without appreciable friction.

ADJUSTABLE SCHOOL-CHAIR.-EXPERI-ENCE L. SAUDER, Philadelphia, Pa. The object of the invention is to provide an improved adjustable chair for use in connection with school-desks. The chair is distinguished by its simplicity, cheapness, and strength. A hollow pedestal has interior ribs or projections, one of which is located near the top

and the other diagonally opposite. A clamp screw is arranged directly below the upper rib and at a lower point on the second rib, whereby the post is held by friction and pres sure at three points. FOLDING TABLE.—SIMON M. SNOOK,

Scranton, I'a. The folding table comprises a pair of crossed legs connected by a reach. This reach consists of parts pivotally joined and adapted to fold one into the other. The upper ends of the reach parts are pivoted to the upper cross bars of the legs. Braces are pivoted to the reach parts and are adapted to lock on the lower cross bars of the legs. A catch on one of the reach-parts locks the other reach-part in position when folded. The table-top is supported on the legs by means of hooks engaging staples on the cross-bars. PROCESS OF PAINTING DESIGNS ON SURFACES .- EDWARD S. MARTIN, Media, Pa This process of producing ornamented suron glass, wood, and other materials faces consists in spraving, by means of heated compressed air, varnish, alcohol, and ether upon

vlded for the bell. An air-pipe leads into the bell; and a gas-distributing pipe leads from the tank. In this carbureter the bell is practically at all times kept at the same level in the oil as the oil sinks in the tank. Therefore, the point of saturation remains the same until all the oil has been used. A nure clear gas is generated, which is ignited without heating the burners by means of alcohol.

TEMPORARY BINDER. - CHARLES V HENKEL, Manhattan, New York city. The purpose of this invention is to provide a temporary binder which may be readily adjusted to suit the thickness of the papers, thus rendering the capacity of the binder variable according to the number of papers it is desired to The binder has a filing-post made up file. of stationary end sections, and removable intermediate sections. The intermediate sections comprise each a tubular part and a reduced part at the other end. These tubular parts have projections formed on their inner faces; and the reduced parts have groeves which coact with the projections to lock the sections together.

HOLDER FOR WAX, PARAFFIN, STEARIN, ETC.-GUIDO HECKER, Manhattan, New York city. This novel holder is designed for use in laundries, and in bicycle or machine shops for the application of polishing material to flat irons or of lubricants to leather and woods. The holder employed comprises a hollow body portion, having a closure at one end, provided with a central opening. plunger moves in the body portion. stem extends from the plunger through the opening. For one end of the body an openmesh cover is employed, the cover having its edge fixed to the outer surface of the body and covered with a label.

EARTH-AUGER .- NILS H. HANSEN, West port. Wash. The earth-auger has a hollow body forming a bucket, which body has an exterior spiral thread, at the upper extremity of which is a recess. A shoulder is located at one side of the recess to deflect the earth sidewise through the recess into the body. The auger is adapted for use as a prospecting instrument as well as for piercing soft earth and quicksand.

SHUTTER ATTACHMENT. - GEORGE J. EPPRIGHT, Manor, Tex. To provide means for holding the slats of a window-shutter open, a spacer is employed which is so mounted as engage the side faces of two or more slats. The invention is applicable to the ordinary shutters which have horizontal slats pivoted and connected with a bar by which the slats are opened and closed.

PAPER BOX .--- CARL ENGBERG, St. Joseph, Mich. The inventor has provided a new and improved paper box made from a single blank. The blank is so cut that the sides of the finished box are but slightly inclined upwardly and outwardly, while the ends are inclined upwardly and outwardly to a greater extent than the sides, thereby giving the box a very neat appearance. The ends and edges are reinforced so that great strength is imparted to the box.

DOOR-HANGER. - RICHARD B. BROWNE, Brooklyn, New York city. The door is suspended by a number of pulley-brackets upon a track-rail, so that it may be moved with ease along the track-rail. The invention is an improvement on a door-hanger for which Mr. Browne has already received a patent. By reason of these improvements the door-hanging device operates more efficiently without ma terially increasing the cost of production.

BEAM .- HERBERT J. ARMSTRONG, Markdale, Ont., Canada. The patent describes a beam for use as a joist, girder, or the like. The beam has a web provided with a truss which may be either formed integrally therewith or fastened thereto, and which lies wholly within the area of the web so as to form a component part thereof. By reason of this construction lateral strength is imparted to the beam and buckling is prevented.

PAD-CLIP.-PAUL W. BEECH, Memphis, Attached to a base are a gripping Tenn. member having teeth, and a rail extending at right angles to the fixed gripping member. On this rail a second gripping member is mounted to slide, which is held in proper position by a clamping device. The pad-clip transforms in its character the current which can be so adjusted as to hold various sizes

FEBRUARY 2, 1901.

Business and Personal.

Marine Iron Works. Chicago. Catalogue free. U. S." Metal Polish. Indianapolis. Samples free. WATER WHEELS. Alcott & Co., Mt. Holly, N. J. Yankee Notions. Waterbury Button Co., Waterb'y, Ct. Hook and Eye Patent for Sale. F. J. Rappold, Erie, Pa. Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

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

Machine Work of every description. Jobbing and renairing. The Garvin Machine Co., 141 Varick St., N. Y. Oil Engines, the Design and Construction of, By Goldingham. Just out. By mail, \$2. Spon and Chamberlain, 12 Cortlandt Street, New York, U. S. A.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Ma-chine Company. Foot of East 138th Street, New York. The best book for electricians and beginners in elec-

tricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y. Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.



HINTS TO CORRESPONDENTS.

- 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 timeshould 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.
 Bu yers wishing to purchaseany 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 renuneration.
 Books referred to promptly supplied on receipt of price.

price. **Minerals** sent for examination should be distinctly marked or labeled.

(8033) J.E.P. asks: What is the length of life of a storage battery for lighting, if charged each day? A. There is no such thing as "length of life" of a storage battery. Theoretically, it should last forever; practically, it may break down to-morrow. Much depends on the rate of discharge. Too rapid a discharge injures the plates. See Tredwell's "Storage Battery," price \$1.75, by mail, or Salomon's "Accumulators." price \$1.50 by mail.

(8034) J. G. asks: What is the electro-chemical equivalent of zinc? A. The electro-chemical equivalent of zinc is 0.00033698 in grammes per coulomb. See Thompson's "Ele-mentary Lessons," price \$1.40 by mail. 2. Can commercial zinc be deposited chemically pure by the electric current? A. Yes. A plate of commercial zinc is made the anode, and the zinc is deposited pure upon the cathode. :. What is the best depositing solution; how concentrated should it be; how many amperes should flow per unit area? A. A good plating solution is sulphate of zinc, 2.8 ounces; water, 1 quart ; ammonium sulphate, 134 ounces ; sal ammoniac, 1% ounces. The salts are dissolved in the water heated. The bath is used at 68 deg. F. The current from two or three Daniells' cells will be sufficient.

(8035) H. L. C. writes: 1. Please tell me how to proceed with experiments in electroplating with battery. I have some of the twocell kind. A. If you wish to electro-plate as an experiment in electricity, almost any textbook in physics will show you how to proceed. If, however, you wish to plate for use, you would better buy Watts' "Electro-Plating," price \$1 by mail, a book which describes the work and processes with various metals. How many I find the strength of such batteries? A. The voltage of batteries is measured by a voltmeter, and the amperes by an ammeter. Simple forms of these instruments are described in the SUPPLEMENT No. 1215, price 10 cents. 3. Would an induction coil add more current? A. No. An induction coil does not generate or produce any electricity. It only passes into it. It may be so arranged 9S 10

Railway Appliances.

CATCHING AND DELIVERING MAIL -FRANCIS C. KILBY, Richmond, Mo FRAME.-This invention is a device for catching mailbags at a station from a passing train and for delivering mail-bags to a passing train. At a station a crane is mounted, the arm of which is provided with divergent bars. Carried by the mail-(ar is an angle-arm designed to pass between these divergent bars. A ring is attached to the mail-bag, which ring, and consequently the bag is caught by the crane-arm as the car rushes by.

WATER-GLASS SHIELD. - EDWARD REED. Port Jervis, N. Y. The shield is de signed to be used in connection with the gageglasses of locomotive-engines for the purpose of preventing the engineer from coming in contact with the glass and to protect him from flying pieces of glass and from steam or hot water, should the gage break. The watershield engaging the gasket-nuts. Clamping-

the surface to be ornamented, and at the same time subjecting the article and the varnish to heat so as to produce a uniform deposit of the matter on the surface to be ornamented.

CARBURETER .- EDWARD J. KERN, Jack son, Mo .- This invention provides a carbureter for generating gas from hydrocarbon oils On an oil-tank a dome is mounted; and in the glass is partially surrounded by a water-glass tank a bell is movable, having perforations near its lower end, held below the level of the

of pads firmly, and yet so that several leaves may be torn off or removed without interfering with the adjustment.

COMPOSITE BOTTLE.-ALPHONS DRYFOOS, Manhattan, New York city. The bottle is composed of three sections forming together a single body. A cover incloses the sections, which cover is provided at its upper end with a neck serving as a handle for the body and as a means of preventing an upward movement of the section. The cap is provided with pasages for the escape of the contents of each of the sections.

Designs.

ELECTRIC-LIGHT FIXTURE. - WILLIAM McCONNELL, Brooklyn, New York city. The electric-light bulb is inclosed in a flower carried on the end of a stalk apparently growing from a jardinière.

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 yokes also engage the shield. A mirror is oil in the tank. A cork bottom is pro- of the invention, and date of this paper.

raise its voltage, or else to lower the voltage. If the voltage is raised, the amperes are correspondingly reduced, and vice versa. 4. How could I construct an induction coil? A. An induction coil giving a short spark is described in SUPPLEMENT No. 160, price 10 cents.

(8036) H D W asks: I have a small telephone magneto which I have wound with wire, about No. 20, and put on a commutator. The magneto gives fair power when running at about 500 revolutions, but when running faster the power diminishes. Why? What should I do in order to make the power increase as the speed ? Having a water motor and a water pressure at about 90 pounds. I think the motor would make something over 2,000 turns when running full speed. Should I put on heavier or finer wire, and how much? A. We know no electrical or magnetic reason why the current should decrease after a speed of 500 turns per minute is reached. Perhaps the contact of the brushes is not so firm at higher speeds, due to unevenness of the commutator. The size of wire you should use depends on the voltage for which you are planning. You can experiment and find what gives you the best MODERN ELECTRIC RAILWAY MOTORS. By George T. Hanchett, S.B. New York: you will get.

(8037) A. A. asks: Would one solid piece of soft iron, say Norway iron, of proper size do for field magnet core for simple elec tric motor described in SCIENTIFIC AMERICAN SUPPLEMENT No. 641, instead of the strips of Russia iron, or are the strips better? A. Yes. The strips of iron are used in the motor because the plan is made for the benefit of those who have no tools for shaping iron. If one has a shop and tools, he can do better work and build a better machine.

(8038) H. L.-A dam lower down upon a stream cannot retard the water in the tailrace of another dam higher up the stream, if the back water of the lower dam does not reach into the tailrace of the upper dam.

NEW BOOKS. ETC.

SOILING CROPS AND THE SILO. By Thomas New York: Orange Judd ny. 1900. 12mo. Pp. 366. Shaw. Company. Price \$1.50.

This new book by Prof. T. Shaw forms a companion volume to his "Forage Crops," published last year. The book is divided into two parts, the first of which treats of growing and feeding of all kinds of soiling crops. The second part discusses the silo. The subject is treated in a simple and comprehensive manner. It is a plea for the silo by a sensible discussion of the place of the silo. All progressive farmers should have a copy of this book.

MECHANICAL TRIUMPHS OF THE ANCIENT EGYPTIANS. By Commander F. M. Barber, U. S. N., late Naval Attache. London: Kegan Paul, Trench, Trub-ner & Company, Ltd. 1900. 16mo. Pp. 123.

As the result of three visits to Egypt, it has been the author's experience that, notwith-standing the interest of travelers in the manners and customs of the ancient Egyptians and the nature of their stupendous monuments. the question most frequently asked with regard to the latter is not why did they create them, but how? How did they transport these great stones, and how did they lift them to the position in which they are now found? It has been the author's object in preparing this essay to solve the problem in a more complete manner than has yet been done, and to show what is actually known, and to suggest the most plausible theories. The author has produced a most attractive and readable little book, which is [See note at end of list about copiesof these patents.] well printed and bound.

SPECIFICATIONS FOR STEEL BRIDGES TAKEN FROM DE PONTIBUS. By J. A. L. Waddell. New York: John Wiley & Sons. 1900. 16mo. Pp. 178. Price \$1.25.

There is a considerable demand by draughts men and computers for the specifications of "De Pontibus," but that book is too expensive to use for specifications only, consequently the author and publishers of the wors have concluded to print the said specifications, together with the tables and diagrams, separately from the other chapters; hence this little book, .t is hoped, will serve the purpose of engineers at a third of the cost of the original treatise. It is a most admirable engineering treatise.

THE CHEMISTRY OF MATERIALS OF EN-GINEERING. By A. H. Sexton. Man-chester, England: The Technical Publishing Company. 1900. 12mo. Pp. 33.

For several years the author has given a course of lectures to engineering students on the materials of engineering, and he has felt the need of a suitable text-book for the class. To meet this need he has prepared the present volume. It covers the ground occupied by treatises which were beyond the reach of the ordinary student. The chemistry of it on, the manufacture of iron and steel, copper, lead, zinc, alloys, wood, stone, clay, mortar, cements, fuel, water, lubricants, paints and varnishes, are some of the subjects treated.

INORGANIC, GENERAL, MEDICAL, AND PHAR-MACEUTICAL CHEMISTRY. By Oscar Oldberg, Ph.D. Chicago: Medical Book Company. 1900. Two vols. 8vo. Pp. 522, 655. Price \$7.

Street Railway Publishing Company. 8vo. Pp. 300. Price \$2.

This volume is a discussion of the current practice in electric railway motor construction, maintenance and repair. The trolley, both over head and underground, has now displaced so thoroughly all other means of propulsion for street cars that any new and satisfactory books upon this subject are very welcome. The subject appears to be very adequately treated by the author. It is intended more particularly for those who have just entered or are about to enter active work in the electric railway field.

By almost the same mail we received copies of the January number of The Engineering Magazine and Cassier's Magazine, both of which are fine examples of modern journalism. The Engineering Magazine contains no less than 327 pages of reading matter, and in connection with the advertisements justly bears out the claims of the publishers that it is the largest single issue of any magazine. The number is what is called the "Works Management Number," and deals with such vast enterprises as the Elswick Works of Lord Armstrong, the huge enterprises built up by Andrew Carnegie, the founders of the Krupp establishments, George Westinghouse, inventor, organizer and director. Then follows a series of elaborate articles within the purview of the title.

Cassier's Magazine for January, while much smaller, is beautifully printed and illustrated. The interesting feature about it is that which is called the "library edition." That is, instead of having the usual paper covers like all other magazines, the library copy will hereafter be furnished in handsome cloth covers, printed on extra heavy paper. In this form each separate copy of Cassier's will be a substantial volume and the contents will be well preserved.

INDEX OF INVENTIONS For which Letters Patent of the United States were Issued

for the Week Ending

JANUARY 22, 1901,

AND EACH BEARING THAT DATE

·	· · · · · · · · · · · · · · · ·	
	Acid making mieric M Nonmann	666 697
:	Adding-machine B W Canoda	666 500
1	Adding-machine, J. H. Davis	666.499
	Advertising, &c., annaratus for, H. R.	000,100
	Honewell	666 524
	Aerial navigation, machine for, J. H. Dil-	
	lon-Gregg	666,266
	Alkali, electricity, and hydrogen from al-	,
	kali-metal amalgam, apparatus for pro-	
I	ducing, J. W. Kynasten	666.387
i	Angle-bar straightener, R. A. Blair	666,619
i	Animal-trap, J. B. Tompkins	666,625
÷	Animai-trap, J. Wisecup	666,369
i	Ax-forging ule, w. R. Wood	666,585
÷	Dag-holder, R. H. Greene	666,516
÷	Bale-hand fasteners turning teal for D M	000,290
	('smobell	866 499
	Baling-press, S. J. Webb	666.293
	Bearing bexing, ball, J. W. Dickinson, Jr.	666.378
	Bearing for agricultural machinery, wheel,	,
i	L. Heath	666,420
	Bed, folding, Harris & Andrews	666,521
	Bed spring support, S. Freund	666,505
	Bell, pedal, Kuykendall & Kimball	666,386
	Bell, H. Mehl.	666,48
1	Biovolo support, S. B. Parsons	666,550
	Dicycle-Support, A. Samuelson	666,358
	ven der Hayde	666 445
	Binecular glasses. J. Aitchisan	666.611
	Beat-detaching device, life, J. Carnegie	666,600
÷	Beiler-cleaning device. W. Chesterman	666.408
ł	Boring-machine, automatic, J. W. Brown.	355,200
1	Jr	666,486
	Bottle, non-refillable, J. S. Haggerty	666,519
	Bettle, water, J. Hurley	666,313
	Brake niechanism, M. Q. Routan	666,362
ł	Brick-carrying device, F. E. Sproat	600,331
	Brush-handlo C Klanhova	666 319
	Buckle and snan-heek. combined. B. F. Van	000,010
	Camp.	666.288
	Buckle, belt, J. Ritter	666,285
	Buckle, shoe, C. Klinger	666,320
	Buey, self-announcing, W. S. Bryant	666,259
	Burglar-alarm and sash-lock, combined, J.	
	G. MOSET bob,042,	000,040
	Chissen W H McEnddon	666 299
	Camera A P Prentice	666 556
	Can-capping machine. P. Swenson	666.572
ļ	Canners cooking-crate, W. A. Robinson	666,629
3	Candying fruit, W. J. Dunnachie	666,413
	Cane mill, sugar, P. A. Cazes	666,377
	Car bolster, railway, G. I. King	666,276
1	Car-coupring, automatic, H. G. Dunston	000,410
	Car, uumpilig, R. D. Allell	666 900
;	Car heater, electric, E E Gald	666 419
1	Car-sten. W. H. Perry	666.437
i	Car, storage-battery-transfer. G. H. Condict.	666.303
	Car-window dust-guard, L. G. Clark	666,601
1	Cars, &c., safety device for tram, C. H. A.	
	Meyer.	666,539
	Carbonating apparatus, ilquid, G. D. Knine-	666 559
	Carbureter J Wilkinson	666 483
	Card-setting machines. tooth forming and	300,100
	inserting mechanism for, O. Arnold	666,370
	Cartridge loader and releader W W Moore	666.540
	Cartinge loader and releader, w. w. moore	
,	Casting apparatus, iren, R. H. Wainferd.	666,367
	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr.	$\begin{array}{c} 666, 367 \\ 666, 490 \end{array}$
'	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr Chains, machine for making ornamental, W.	666,367 666,490
	Casting apparatus, iron, R. H. Walnferd. Chain wrench, W. H. Burr. Chains, machine for making ornamental, W. I. Macomber. Chair an attachment. recking. O. Herrmann	666,367 666,490 666,634 666,310
	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine for making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chair fan attachment, rocking, O. Herrmann Chimney-ton, J. Wood.	666,367 666,490 666,634 666,310 666,299
	Casting apparatus, iron, R. H. Walnferd. Chain wrench, W. H. Burr. Chains, machine fer making ornamental, W. I. Macomber. Chair an attachment, recking, O. Herrmann Chimmey-top, J. Wood. Chuck, Z. T. Furbish.	666,367 666,490 666,634 666,310 666,299 666,507
	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine for making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chimney-top, J. Wood. Chuck, Z. T. Furbish.	666,367 666,490 666,634 666,310 666,299 666,507 666,500
•	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine fer making ornamental, W. I. Macomber Chair fan attachment, rocking, O. Herrmann Chimey-top, J. Wood. Chuck, Z. T. Furbish Chuck, supplementary, Z. T. Furbish	$\begin{array}{c} 666,367\\ 666,490\\ 666,634\\ 666,310\\ 666,299\\ 666,507\\ 666,500\\ 666,500\\ 666,511\\ \end{array}$
	Casting apparatus, iron, R. H. Walnferd. Chains, machine fer making ornamental, W. I. Macomber. Chair an attachment, rocking, O. Herrmann Chimmey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish.	666,367 666,490 666,634 666,310 666,299 666,507 666,507 666,501 666,511
•	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine fer making ornamental, W. I. Macomber. Chair fan attachment, recking, O. Herrmann Chimney-top, J. Wood. Chuck, z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cligar-box, O. Beese. Cipher-code system, C. P. Hall.	$\begin{array}{c} 666,367\\ 666,490\\ 666,634\\ 666,310\\ 666,209\\ 666,507\\ 666,507\\ 666,501\\ 666,511\\ 666,459\\ 666,520\\ \end{array}$
•	Casting apparatus, iron, R. H. Wainford. Chains, machine for making ornamental, W. L. Macomber. Chairs, machine for making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chimmey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cigar-box, O. Beere. Cipher-code system, C. P. Hall. Clamp. See Routing machine clamp. Clamp.	666,367 666,490 666,634 666,310 666,299 666,507 666,507 666,501 666,511 666,459 666,511
•	Casting apparatus, iron, R. H. Walnford. Chains, machine for making ornamental, W. L. Macomber. Chairs, machine for making ornamental, W. I. Macomber. Chair fan attachment, recking, O. Herrmann Chimmey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cluck, supplementary, Z. T. Furbish. Cluck, See Southermone clamp. Clamp. See Bouting-machine clamp. Cleth.euting. machine clamp.	666,367 666,490 666,634 666,310 666,299 666,507 666,507 666,501 666,459 666,511 666,459 666,512
-	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine fer making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chimey-top, J. Wood. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cigar-box, O. Beese. Cipher-code system, C. P. Hall. Clack, Iluminated, R. R. Gareau. Cleth.trating machine, W. Gersnert. Cleth.trating machine, W. Gersnert.	666,367 666,490 666,634 666,299 666,507 666,507 666,507 666,507 666,502 666,511 666,459 666,520 666,381 666,382
-	Casting apparatus, iron, R. H. Walnford. Chains, machine for making ornamental, W. L. Macomber. Chains, machine for making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chimmey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, zupplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cigar-box, O. Beese. Cigar-box, O. Beese. Cigar-box, O. Beese. Chuck, upplementary, Z. T. Furbish. Cigar-box, O. Beese. Chuck, upplementary, C. P. Hall. Clamp. See Routing-machine clamp. Cloth-cutting machine, M. Gerhardt. Cloth, treating machine, D. Gessner. Clutch, A. G. Sargent.	666,367 666,490 666,6310 666,209 666,507 666,507 666,507 666,511 666,459 666,512 666,513 666,513 666,382
-	Casting apparatus, iron, R. H. Walnford. Chains, machine for making ornamental, W. L Macomber. Chair an attachment, rocking, O. Herrmann Chimey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cluck, isupplementary, Z. T. Furbish. Cluck, See Southermode Charge Clamp. See Bouting-machine clamp. Clock, illuminated, R. R. Gareau. Cloth-cutting machine, W. Gerbardt. Clutch, A. G. Sargent. Clutch, A. G. Sargent.	$\begin{array}{c} 666, 367\\ 666, 490\\ 666, 634\\ 666, 299\\ 666, 507\\ 666, 507\\ 666, 507\\ 666, 502\\ 666, 503\\ 666, 513\\ 666, 520\\ 666, 513\\ 666, 513\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 563\\ 666, 548\\ 666, 563\\ 666, 566\\$
	Casting apparatus, iron, R. H. Wainford. Chain wrench, W. H. Burr. Chains, machine fer making ornamental, W. I. Macomber. Chair fan attachment, rocking, O. Herrmann Chimey-top, J. Wood. Chuck, reducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Cluck, supplementary, C. P. Hall. Clamp. See Routing-machine clamp. Clock, illuminated, R. R. Gareau. Cloth.trating machine, W. Gersner. Cluth, A. G. Sargent. Clutch, A. G. Sargent. Clutch, friction, King & Barnhart	666,367 666,490 666,209 666,209 666,209 666,507 666,507 666,511 666,459 666,513 666,513 666,313 666,313 666,313
	Casting apparatus, iron, R. H. Wainford. Chains, machine for making ornamental, W. Lains, machine for making ornamental, W. I Macomber. Chairs, machine for making ornamental, W. I Macomber. Chairs, an attachment, rocking, O. Herrmann Chimey-top, J. Wood. Chuck, Z. T. Furbish. Chuck, zeducing, Z. T. Furbish. Chuck, supplementary, Z. T. Furbish. Class. See Routing-machine clamp. Clock, illuminated, R. R. Gareau. Cloth-cuting machine, D. Gessner. Clutch, treating machine, D. Gessner. Clutch, friction, King & Barnhart. Cock for water or other fluids, self-closing, coch.	666,367 666,490 666,634 666,310 666,507 666,507 666,507 666,550 666,551 666,5520 666,513 666,513 666,513 666,513 666,513 666,548 666,566 666,5



	77
Comminuting machine, G. D. Coleman	666,409
Compressible tube, D. Smith Conduit, underground, I. D. Smead	666,443 666,3 81
Consecutive-view apparatus, II. Casier Cooking apparatus, selam, M. J. Roach Cooking foul or selding bogs device for	666,357
M. M. Johnston Cetton-press, steam lever, S. J. Webb Coupling. See Car-coupling. Shaft-coupling.	666, 2 73 666, 2 94
Thill-coupling. Coupling, Krause & Zill	666,531
Urate, Knockdown, W. A. woolsey Cream-separator, centrifugal, J. H. Fleming Cultivator, R. L. Kerr.	666,344 666.317
Cultivator, listed-corn, Carpenter & Mc- Ilvain Curtain-pole, telescopic, J. O. Clark	666,494 666,467
Food-cutter. Paper-cutter. File-cutter. Food-cutter. Paper-cutter. Cutting apparatus, endless, J. A. Wisherd	666.298
Cycle driving mechanism, J. Parker Delinting-machine, J. Kasmeier	666, 548 666,384
Die-holder, J. Bradley Display-rack for piece goods, A. Olson	666,462 666,350
Droing can er cylinder. A. A. Hunting	666. 477
Duplicating apparatus, A. B. Dick Dye, violet anthracene, O. Bally	666,410 666,594
Dyeing with basic dyes, Becke & Bablich Electric light cord-adjuster, W. C. Tregon-	666, 2 56
Ing. Electric motors, construction of, F. A. John- son.	666.315
Electric switch and resistance, C. W. At- kinson	666,255
Electric traction, R. Brown Electrotherapeutic apparatus, J. S. Mead Embossing.dig. J. T. Close	666, 431 666,431
Engine-exhaust muffler, J. C. Gebhart Engine-indicator coupling device. H. D. Bul-	666,022
len Engine speed-regulator, explesive, De Dien	666,407
& Routon. Engines, hydrocarbon vaporizer and mixer	666,501 666 629
Engines, sparkling igniter for explosive, G. L. Reenstierna	666.439
Envelep, R. Rudkin	666,561 666,498
Farming implement. E. F. Dickey 666,469,	$666,470 \\ 666,265$
Feed-water of marine boilers, superheating apparatus for, Levi & Radenicich	666,53 7
Fence machines, clip-feeding mechanism for wire, W. E. Williams	666,40 2
Fonder. See Car-fender. Fordizer-drier, W. K. Campbell	666,301
Field-glass, &e., coin-operated, J. W. Pat- terson.	666,351
File-cabinet, C. Schreeder Filter, T. C. Hefel Fire.elerm W. I. Dertsider	666,359 666,421 666,698
Firearm, recoil-cushion, C. B. Shaw	666,564 666,476
Firearm, revolving, F. B. Pope Fire-extinguisher, automatic, M. F. Elliott.	666,555 666,604
Fish-hook, D. A. Fiege Fishing-reel, W. H. Talbot	666,309 666,398
Flover, E. Goehst	666,345 666,522
Flue-cutter, G. W. Ridler Folding bex, G. L. Jehnstene	666,284 666,274
Food-cutter, C. B. Hopkins	666,525
Freezer, C. R. Hamilton Furnaces, cinder or hot-metal car for blast.	666,269
E. A. Weimer	666,448 666,487
Garment-holder, L. M. Marble	666,608 666,339 666,286
Gas and steam engine, reversible, Strain & Nicodemus	666,364
Gas burner, hand-lighting acetylene, H. C. Thomson.	666,335
Gas generator, acetylene, T. G. Ames Gas generator, acetylene, T. G. Mes	666,591 666,353
Gas generator, acetylene, M. Wagner Gas-holder, T. A. Bryan	666,581 666,598
Gas, making illuminating, E. R. Besem- felder.	666,257
Glassware, machine for manufacturing blown, C. E. Blue	666,595
Glassware-manufacturing apparatus, A Humphrey	666,422
Gevennor, spring-metor, B. G. Royal Grain-separator, J. B. Pedrick	666,609 666,552 666,605
Grease-cup, convertible, G. Kirkland Grinding-machine, J. MacDhail	666,318 666,349
Gun-alarm, W. T. Baggett Gun-alarm, hammerless, W. T. Baggett	666,372 666,405
Hair and fabric clasp, I. G. Kraus	666,532 666,281
grain, H. J. Case	666,446 666,380
Hat, apparel, L. Naundorf	- 996,540 - 696,352 - 666,392
Hat-perforating machine, F. C. Hedshen Hat-sizing machine, F. Staev	666,523 666,363
Hay-fork trip, J. Patten, Sr High and low water alarm, C. E. Zimmer	666,551
mann Hitching and unhitching horses, apparatus for, D. C. Fulton	. 966,451 s . 666.506
Horse-detacher for hay-elevators, H Schwartz	666,287
Horseshoe, H. G. Covey	. 666,304 . 666,583
Hose-nanuaer or carrier, G. F. De Wolfe Hose-nozzle, J. P. Van Sickle	. 000,4/4 . 666,550 . 666,515
Ilydrocarbon-burner, G. A. Leeben Igniter, electrie, C. D. Wright	. 666,588 . 666,618
Index, sliding, W. F. Manry Ink-well, II. G. Squires	666,616 669,362
Insulator, 11. W. Weelbert Internal-combustion engine, H. F. Wallmann Ironing-hoard and hench combined P	. 606,5 86 n 666,3 68
Stahl	666,332

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Elec

Engi

Engi

Enve

Gas

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It was the chief aim of the author in writing this book to prepare for the use of his ~ pupils a treatise on the pharmacy of inorganic chemistry, but this could not be accomplished without including in the book so much of general, theoretical and descrip ive chemistry that the inevitable outcome is instead a treatise on inorganic chemistry of pharmacy, including an adequate discussion of the funcamental principles of general theoretical chemistry. The author's chapters dealing with elementary theoretical chemistry are particularly to be commended. We have rarely seen the basic principles of chemistry so well presented. It is a most admirable section of the first volume and occupies some 314 pages. The second volume is devoted to a laboratory manual and includes probably all inorganic chemical preparations of medicinal or pharmaceutical use and nearly all of commercial importance, together with many compounds introduced solely for the purpose of instruction. The volumes are handsomely printed in large type and good paper, and are worthy of a large sale.

	Stahl	666,332
S	Joint. See Universal joint.	
	Journal-bearing, O. A. Steutermann	666.570
	Kettle or dish cleaner, &c., L. C. Farmer	666,+533
	Kite, C. H. Lamson	666,427
- A I	Label-gumming machine, S. B. Tilv	666.576
71	Labeling-machine, C. A. Burt	666.491
•	Ladder, J. J. Howard	666.526
S	Ladder, F. S. Seagrave 666.441.	666,442
	Ladder for berths, collapsible, W. C. Sher-	,
	man	666,566
ICH.	Lamp, electrical glow, A. Couch	666,602
	Latch, gate, A. S. Jones	666,425
vlieee	Leather-working machine, J. Boyle	666,461
i hed	Letter-box, street, A. M. Cushing	666,472
	Lightning-arrester, W. N. McAnge	666,545
ofina	Lightning-arrester, C. A. Rolfe	666,329
g	Linetype-machine, J. Donegan	666,412
e roor	Liquids and beverages, ameliorating and pas-	
sint.	teurizing fermented, Lavollay & Bour-	
	g•in	666,535
lls of	Lock, Burns & Mercer	666.489
de of	Locomotive, J. Player 666,393,	666. 394
phalt.	Locomotive-beiler, J. Player	666,392
lars.	Locomotive exhaust mechanism, J. Player	666,395
York.	Loom, filling-supply, O. Janelle	666,272
	Loom for weaving and cutting pile fabrics,	
,	R. L. Hattersiey et al.	666,279
	Loom weft-replenisning mechanism, J.	000 905
nes	Ketth Bib al lubel as to a	000,560
	Lubricator. See wheel-hubricator.	666 989
•	Lubricator, M. F. Cox	666 612
rsible	Mail-Dag closure, Crawlord & Bichy	666 422
irket.	Maiting or drying apparatus, r. H. C. Mey.	666 496
or its	Manure-spreader, J. S. Kemp	666 458
fd hw	Mattives, A. Battives, A. Batti	000,100
Nuc Dy	Measuring instrument, electrical, II. I.	666 454
143,	Molton colf-seting G Palazzi et al.	666.481
	Menter, Self-accing, G. Lalazzi et alteret	000,101

(Continued on page 78)