## RECENTLY PATENTED INVENTIONS. Engineering.

COMPOUND CONDENSING ENGINE. John S. Briggs, Poland, Me. This engine has high and low pressure cylinders and a cylindrical valve having ports on one side connecting with the exhaust of the high pressure cylinder, while ports on the opposite side connect with the low pressure cylinder and the condenser. a valve reciprocating in the valve cylinder having a transverse passage connecting the exhaust from the high pressure cylinder successively with the low pressure cylinder and the condenser. The arrangement is designed to prevent back pressure in the high pressure cylinder and to supply the low pressure cylinder as well as the condenser with exhaust steam from the high pressure

AIR VALVE FOR WATER PIPE LINES. -Theren A. Neble, Seattle, Wash. For water pipe lines or other chambers containing water, the valve provided by this invention is arranged to let out air when the pipe line or chamber is being filled and let in air when the pipe breaks or is being emptied, thus preventing a collapse, the valve also opening to let out accumulated air that has collected at the summits of the pipe line, without allowing the water to escape, and preventing the hammering of the water. Within the valve casing is a chamber com municating with the atmosphere, a float carrying a valve to establish communication between the chamber and the casing, while a stem separate from the valve projects to the outside of the casing and is arranged to en-

### Electrical.

CIRCUIT CONTROLLER.— William T. Budds, Charleston, S. C. This invention relates to circuit controllers for call box systems, and provides means by which a break in the main wires may be easily located without sending a lineman to find it in the usual manner; also, so arranging the parts that, should a wire be broken, the call will still be operative. The invention provides a controller wheel having a number of peripheral projections indicating the number of the call box, in which it is arranged in the usual manner, the wheel being made by the single operation of a die, and therefore inexpensive, and there being both a metallic and ground circuit, through the latter of which the circuit may be operated should a break occur.

### Bicycles, Etc.

BICYCLE STEP.—Heinrich G. Borgfeldt, Brooklyn, N. Y. The bicycle step, according to this invention, is extended at an angle from the pedal crank at its shaft-bearing end, being so placed with relation to the pedal crank that motion will be immediately imparted to the wheel when the weight of the rider comes upon the step, making it unnecessary to take a few steps before mounting, as is ordinarily the case. The step will, in mounting, be nearer the handle har than is usual, thus rendering the act of mounting much easier.

BICYCLE BALL BEARING. - William J. Tripp, New York City. This bearing, for use on bicycles and other machines, is designed to reduce friction to a minimum, while permitting of readily adjusting the several parts and affording convenient access thereto for repairs, etc. Two collars, each having an inwardly over hanging pertien, are secured to the axle, and an additional collar is carried on each overhanging portion, the additional collars being extended inward and contracted, the pairs of collars thus forming an annular ball race, the ends of the hub being projected within the additional collars and the overhanging portions of the first named

## Mechanical,

BRACE.-John H. Morrison. Prescott, Arizona Ter. To obtain a high speed for the bit and insure an easy, steady and quick boring of the material, without necessarily increasing the speed of the crank arm to be turned by the operator, is the object of this invention. The tool is provided with a U-shaped frame having upper and lower bearings, in the lower one of which is a sleeve through which passes a vertical shaft carrying at its lower end the tool holder for a bit or other tool, the shaft being also connected by a train of gear wheels with the sleeve, whereby a higher motion may be transmitted to the shaft.

CUTTER HEAD AND CUTTER. - Frank E. Dalzell, San Francisco. Cal An improvement more especially designed to facilitate turning rosettes, corner blocks, etc., has been devised by this inventor, the cutter head being previded with jaws forming curved slets at adjacent edges for the reception of the cutters, and the cutters being made of thin steel and curved to produce a shearing cut.

SCROLL SAW. - James G. Connelly, aw and combine therewith a lathe to be operated at will is the object of this invention. The arrangement ner. is such that the saw table remains level, the saw frame being mounted in a yoke and being adjustable, so that the saw frame may reciprocate at any desired angle, while combined with the saw is a head and tail center of a lathe, the parts being so connected that the lathe or the saw may be operated independently, either one being thrown into or out of operation.

TUVERE .-- David Summe, Darwin, Ind. To facilitate increasing or diminishing the draught in blacksmiths' forges, this invention provides a novel tuyere with an arrangement for keeping a projecting part cool, with an auxiliary draught opening to keep a smeldering fire when the forge is not in use. The invention comprises upper and lower plates united by lateral flanges and having recesses forming draught passages the upper plate having perforations communicating with the draught passages, a surrounding channel being also connected with a water reservoir, while the draught passage may be connected with any style of bellows.

BOLT CUTTER. -- James R. Rambo. Pulaski, Tenn. This device comprises a hollow head with rigid handle, two slidable parallel jaws being arranged in the head, to which also a handle lever is motor, as most convenient, the action being intended to

pivoted, while a jaw lever has a head with projections engaging the jaws, its outer end having pivetal and loose connection with the handle lever. The tool is adapted for bolt cutting in general, but especially for cutting off the ends of tire bolts, which it does squarely and evenly, without leaving any bur.

APRON BOARD FOR PAPER-MAKING MACHINES. - Perry D. Tayler, Watertown, N. Y. This invention provides a board on which the apron may be quickly and conveniently adjusted for any sized sheet without detaching any part of the apron from the board or removing the attaching medium between the board and apron or between the apron and deckle frame. Bars with which are connected angular shields are held to slide in the board, while the apron is sectional, and the sections are attached to the sliding bars and connected

## Agricultural.

SCYTHE.-Gervais Nolin. Skowhegan. Me. To make a scythe of high grade and uniform quality of steel, the blade is made, according to this invention, with a ribbed back, the blade being formed of one piece and homogeneous in its composition at its edge, back and body, a heel being recessed to the blade and having a socket to receive the rib of the back. By this improved method of manufacture, the steel is heated but a few times and to a lesser degree than by methods heretofore employed.

COLTER BAND.—Thomas J. Mancill, Maben, Miss. A simple and inexpensive colter, which may be fastened to a plow beam without drilling holes in and weakening the latter, is provided by this invention. It comprises a top and bottom bar connected by diagonal side bars, the top and bottom bars having extensions with elengated epenings through which heek belts are passed, while a set screw is passed through one of the side pieces. This colter band may be readily applied to beams of different thicknesses or adjusted to the right or left or vertically, as desired.

PRUNING IMPLEMENT.-John L. Manning, Bartew, Fla. This invention comprises a staff or handle and two pivoted hook-shape cutters, one cutter having an extended shank or lever arm which is pivoted to the handle, the other cutter having a sliding connec tion with the handle, a pull rod being connected with the extended shank or lever arm, the arrangement being such that a pull on the lever arm operates both cutters simultaneously.

### Miscellaneous.

FIRE TRUCK.—Richard J. Voelker, St. ouis, Mo. This invention relates especially to the steering year of fire trucks, and provides a novel and simple form of latch mechanism by which the steering wheel shaft may be prevented from accidentally jumping or being jarred out of place, and by which the shafts may be removed without displacing the steering wheel.

WEATHER SIGNAL INDICATOR .- J. G. Wall, Brooklyn, N. Y. For use in public and private buildings, offices, stores, etc., this inventor has devised a weather signal indicator to display signals according to the daily reports of the Weather Bureau, comprising a bulletin board formed with means for reading the weather and storm signals, such means being printed, painted, or otherwise arranged on the board with the necessary text to be readily interpreted by the public, in connection with a changeable calendar, graduations with pointers indicating the velocity and direction of the wind, etc. Both air and sensible temperatures are given by the indicator. This inventor has also further protected his weather signal indicator by taking out a copyright thereon

DOOR SECURER. - Richard D. Williams. New York City. For the use of guests, boarders and travelers, etc., this device is more especially designed, comprising a series of telescoping tubes, the upper one having a flat forked head to engage the shank of a door knob, while the lower one has a toothed foot piece, there being means for holding the head and foot pieces in alignment, and a simple form of locking device to hold the securer extended or closed. The device may be quickly and conveniently applied to lock a door against intruders, and may be telescoped into small space to be carried in trunks and bags, being also available as a handy weapon for defense.

MACHINE FOR CUTTING DOUGH.-Herman Weichert, Jersey City, N. J. For cutting dough in pieces of suitable size for loaves, each piece or loaf having the exact weight required, this inventer has devised a machine to which the dough need only be fed, when it will be automatically expelled from the machine, cut to the required weight. In the receptacle to which the dough is fed is a screw conveyor, there being a reciprocating cutter mounted to cross the outlet of the receptacle, and means for regulating the area of the outlet. An adjustment is provided whereby the weight of dough Version, S. D. To facilitate adjusting and operating the delivered may be increased or diminished, and any other forms the subject of this invention. The clamp complastic material may be fed and cut off in a similar man

> Lock —James M. Sweeney, Somerville, Mass. This invention relates to locks in which a casing carries a sliding helt normally retained by a series of tumbiers mevable by a specially constructed key, to re lease the bolt and permit it to be shot, the improvement providing a lock in which the bolt may be operated by a key or by a latch. The upper part of the casing is recessed for any suitable form of latch, and the shape, size, and relative dimensions of the tumblers and key may be changed to produce innumerable combinations, to differ in every lock that is manufactured.

> AUTOPNEUMATIC PIANO PLAYER. Fred R. Goolman, Los Angeles, Cal. In this instrument the pneumatic action, in combination with bellows, valves and tubes, forms the principal part of them echanism, the control of the entire music, the operating of the expression pedals, and rewinding of the music on the roll after playing being effected without the assistance of the operater, and the instrument being designed to have a more perfect action and a finer and more delicate expression than bas heretofore been attained. 'The instrument may be driven by an electric or water motor, spring or weight

fit almost any piano or reed instrument, the shape of the parts being modified to suit.

Envelope.—Albert Butzer, Carlyle. Ill. The blank of which this envelope is made has at one edge a projecting keeper strip and at the opposite edge a locking tongue, cuts in line with the sides of the tongue extending into the blank, and the inner end of the tengue having a delicate connection with the blank. It is designed that the envelope shall be inexpensive to make, and that after having once been closed it may not be respened without detection.

MUCILAGE HOLDER.-Frank F. Peck, Susanville, Cal. This holder has an everbalanced scraper adapted to be pressed below the level of the mucilage by the brush and to rise above such level on removing the brush, the arrangement being such as to permit of readily scraping off surplus mucilage from the brush, automatically returning it to the chamber or well without clegging the mouth of the holder. This prevents also the loss of mucilage from its becoming hard in drying on the surfaces exposed to the air, and the mucilage in the holder retains its consistency for an additional period. not being liable to become unclean from dust and other impurities.

WRITING TABLET.-William H. Griffin, Hawthorne, N. J. A simple and inexpensive device more especially designed for use in schools, instead of slates, is provided by this invention, the [device being adapted to hold loose sheets of paper in the form of a writing tablet. Mounted on one end of a board or backing is a spring-held bar adapted to clamp the paper on one surface of the backing near the end, the bar being held in desired position by the action of the spring.

SCHOOL ROOM DIRECTORY AND BULLE-TIN.-James S. McClung, Pueble, Cel. This board has a series of clips on its front face to receive information cards bearing on one face the name, age, grade and date of entrance of pupil, with address of parent or guardian, and on the opposite face a record of physical condition, etc., a record card being removably secured on the obverse side of the board presenting a digest of the records of pupils. The improvement is designed to present a record of which all the details will be readily accessible. enabling a principal or superintendent to enter a class room and investigate the history of one or more pupils without disturbing teacher or students.

ANTI-RATTLER FOR THILL COUPLINGS. Frank P. Johnson, Danville, Pa. This invention covers an improvement on a formerly patented invention of the same inventor, and comprises a bolt for securing the thill to the axle clip, the bolt having one end ex. tended downwardly and inwardly, while a wear plate has its lower end connected with the down ward and inward extension of the bolt, a spring engaging the lower por tion of the plate and pressing forward its upper portion The device is designed to automatically take up wear and may be used on both right and left hand couplings.

FIRE ESCAPE.—Joseph Hagel, Mount Sterling, Ill. A sletted tube is arranged vertically as a permanent fixture on a building, according to this invention, a block sliding in the tube being moved by a rope or cable extending from cranks and a drum at the bottom over a pulley at the top of the tube, and there being attached to the block a cage which may be thus raised or lowered, the cage being arranged to be locked at the desired height. The device may be used to permit firemen to conveniently carry and operate hose, as well as to facilitate escape from any of the floors of a build

DUMB WAITER SAFETY DOOR.-Theodore Grottke, West Hebeken, N. J. To close the doors of dumb waiter shafts at each floor of a building, to prevent fire from spreading therein, and to allow the cage to open the doors noiselessly at each ascent and descent, is the object of this invention, according to which the doors are hinged at one side of the shaft and normally supported horizontally by independent counterbalancing levers, there being sets of door openers at the top and bottom of the cage adapted to successively en gage the doors and swing them upward or downward, according to the direction of progress of the cage,

WINDOW SHADE FIXTURE AND CUR-TAIN POLE SUPPORT.-George Biehn, North Yakima, Wash. This invention relates to fixtures adapted for ready attachment upon the side or top mouldings of window casements without the use of screws or nails, affording a reliable support for the window shade at any desired point on the casement, and also providing for the ready removal of the fixtures without tools. Nevel bracket supports for the curtain pole are also provided. which are likewise arranged for attachment or removal

BED RAIL CLAMP.—Lafavette Weaver, Jr Bridgeton, N. J. An improved detachable clamp or fastening for securing together the slats that support a bed bettem or springs and the side rails of a bedstead prises a curved or bent main jaw adapted to engage the rail, two slidable auxiliary jaws to engage a slat, while a teggle lever and link are pivotally connected tegether and connect the adjacent ends of the three jaws. The pivotal connections form an arrangement on an ec centric so that the lever will he self-locking when ad-

ARTIFICIAL LEG. - Amos E. Tullis, Fargo, N. D. This leg has an external shell, preferably of raw hide, and inner inflatable air cushion with tube and nipple pretruding through the shell, a clamp of special arrangement closing the tube, the arrangement of parts being such as to prevent the air cushion getting out. of place, while it may be easily inspected or removed for repairs if necessary. This artificial leg is designed to be conveniently fitted to place and worn without injury or discomfort to the stump of the limb. on which it may be securely held

COMPOSITE FLOORING OR CEILING.-John W. Piver, Pinia, Ga. A composite board or plank adapted for use in flooring or ceiling, etc., is provided by this invention, being formed of longitudinal strips cut from a flat grain board or plank, the outside strips standing on woolen. In cold, dry weather such electrical thicker than the inside ones, and with the edge grain charges are very easily produced upon the clothing, in practically at right angles to the wearing surface, thus the hair, or rubbing paper, silk, or woolen.

producing an article which shall be more attractive or ornamental in appearance than composite boards or planks ordinarily used, and with no loss or waste of lumber.

FENCE POST.—Alfred J. Ogram, Litererry, Ill. This invention relates especially to fence post braces adapted to be buried in the ground, providing an angular underground brace and anchor whose horizental feet is belted to the base of the post, while an inclined body portion meets an extended horizontal portion and diagonal top brace, both the latter being also anchored to the post.

#### Designs.

SKIRT BAND. -Elmer W. Towne, New York City. This design presents an ornamental band for the top of a skirt, in which bars arranged in circumferential groups meet a series of transverse bars.

CARPET. - Eugene A. Crowe, Brooklyn, N. Y. Two design patents for carpets and similar fabrics have been granted this inventor, one of which has scroll stems interrupted by foliate figures, combined with diverging leaves, flowers and foliage, the background being of stipple character. In the other design a foliate figure is a prominent feature, with a compound curved stem and leaves and sprays carried by the stem with a feathery effect, the leaves and sprays appearing at the ends as well as at the sides of the stem.

Note. - Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

# Business and Personal.

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

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

Bu yers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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Minerals sent for examination should be distinctly

Winerals sent for examination should be distinctly marked or labeled.

(7348) L. H. B. savs: Can you furnish me the formula for making seal metal, such as is used for the "counters" in notarial and corporate seals? A. Use the following for the counters for seals: Lead, 3 lb.; tin, 2 lb.; bismuth, 5 lb; melt in the order

(7349) A. D. T. writes: At my home is a large leather-covered arm chair. Several evenings ago I was very much surprised when I arose from the same and touched the valve on the gas pipe to find that an electric spark emitted from my finger tips. This occurred on repeated trials. In the room there are no metallic bodies other than the gas pipe. Everything I tonch is insulated, the chair with the leather, the floor with carpet. The spark may be seen and heard in any part of the room. It is a mystery to me and to all whom I talk to of it. There are no wires of any kind in the house: neither telephone nor light. Any explanation of the above would be highly appreciated. A. You describe the usual experiment of lighting gas with your finger. Had some one turned the gas on, and had you then touched the tip, the gas would have been lighted by the spark. The electricity is due to a charge gained by yourself through friction either against the leather of the chair or the wool of the carpet, probably the latter. Such a charge can only be gained by a nonconductor or by an insulated conductor, such as is the human body when

(7350) W. B. B. asks (1) how to make or where to get the bichromate cell spoken of in the article "Howto Make a Medical Coil," by S R. Bottone, in SUPPLEMENT, No. 569. A. SCIENTIFIC AMERICAN SUP-PLEMENT, No. 792, price 10 cents, describes with full detail and drawings the bich semate cell, so that any one can make it. 2. Would any good battery do? If so, what electric motor, and if so, what size wire would it be voltage will it require? A. Any good battery will do. The bichromate cell has 18 volts. 3. Would the Mesco dry battery do? A. You will require two Mesco or other dry or Leclanche cells to equal one bichromate cell. A were excited with two Samson batteries? A. It would dry battery will not work the coil as well as a gravity or bichr<br/>•mate battery will d<br/>• it.

(7351) W. G. H. asks: 1. What is the best battery for running a miniature electric lecometive, for about an hour at a time? A. Use either a gravity or a bichremate cell. 2. For a 75 foot telephone lme de I need a battery at both ends? If so, how shall I connect them to the line? A. If you have a permanent magnet telephone, you can use it without any battery. The carben transmitter requires a cell for its primary ceil at

(7352) J. H. T. asks for information about reading telescopes such as are used with reflecting galvanemeters, etc. I would like to know lens system and details of construction. A. A reading telescope is a small astronomical or inverting telescope. Many of them are ordinary spy glasses with the erecting lenses re moved from the inner tube. Such a spy glass can be bought for a couple of dollars with an object glass about 11/4 or 11/6 inches in diameter. Mount this on a convenness of some roads in the State and the improvements ient stand and attach the scale below the telescope. The figures on the scale must be reversed so as to be turned | Jersey may well be proud of her splended network of around and stand right after they are reflected by the mirror of the galvanometer. The object glass should be tricts delightful. The pamphlet contains several studies an achromatic lens of 8 inches to 9 inches focus and the on road building which ought to prove of value to all eye piece a positive eye piece of about 2 inches focus. those who are interested in good roads.

tachment to put on a common turning lathe for turning round balls. A. As you do not state the kind of balls—wood or metal—we give the process for turn-ing wooden balls and billiard balls. First, turn by a tem-high schools and colleges. The author outlines with as plate or gage or by caliper, as nearly spherical as pos. sible. Then make a chuck of wood and fasten it to the of statement the methods and results of modern psymandrel in any way the most convenient. Turn out chology, and the reader is stimulated by means of questhe chuck hollow so that the ball will enter nearly half a tions and exercises upon the subject matter of the hemisphere. Chuck the ball at right angles to the posi-tion that it was first turned in. 'Turn off the outside or ject may be introduced either by way of a general ac prejecting part true by nearly obliterating the lines of the first turning, then rechuck and turn the other hemisphere. If great nicety is required, as in billiard balls, you will have to continue the chucking in several other positions and turn very carefully with curved tools. A little chalk in the chuck will help the ball to stick. If you have difficulty in  $\,$  holding the  $\,$  hall in, you may put a small false center against the ball, made of iron, with a thin piece of leather waxed upon it to prevent scratching. If this is done nicely, you may do the work without chucking the ball se deep.

(7354) L. H. M. writes: 1. The safety! valve of a boiler becomes coated with lime. The boiler which deprived her of her throne and answers the slurs never feams. Hew and by means of what force does it get there? A. Whenever the safety valve blows off, the water beneath is agitated and small particles are lifted book offers interesting reading. The work is an imand blown through the safety valve. A boiler always foams when it is making steam. The space just above the water line is filled with a water mist raised by the liberation of the steam below the surface, which, on passing the surface, breaks the water in a mist or small particles of water -this is called wet steam-which may be drawn from any boiler having too little steam room. 2. Stand on the opposite side of a darkened room from a lighted lamp. Take a glass mirrer and look slantingly across it, so that you can see the several (7 or 8) images produced by multiple reflection. If the brightest image is at the top and the others grow dimmer as you descend change the mirror end for end. so that you look across it in the eppesite direction to which you did at first. The brightest of the several images is now at the bottom and the others get dimmer as you ascend. Will you please explain how changing the mirror inverts the order of the strained to observe that we do not believe that fortunes images? A. Some defect in the surface of the mirror produces the change described. A perfect mirror gives this or any other book, but a diligent study of it would the same quality of image in any direction.

(7355) C. E. P. writes: 1. I have a small dyname that I would like to know what the veltage would be speeded to 2000; dimensions as follows: Field magnet 1716 inches long, 3 inches wide, 16 inch thick, 70 turns of No. 16 wire to each layer, and there are 32 layers, making 2.240 turns in all. Drum armature. The armature is 4 inches in diameter, 3 inches long, eight sec tions, wound with No. 18 wire, two layers, making in all 400 turns. A. About 30 volts, if your field is cast. If wrought iron, it would be 40 volts. 2. Would this machine make a sufficient exciter for an alternator of the fellowing dimensions for 55 or 110 volts? Ringfor fields inside 16 inches in diam ter, with 12 poles and about 4 3 What size wire for this machine to get 110 volts? A. Use No. 16 for field and No. 18 for armature.

(7356) C. A. B. asks for a description of a battery to light from one to five 16 candle power lamps A. You cannot, except at very great cost, light 15 candle power lamps by a battery. In addition to the materials, it would require one man's labor to keep the battery in proper order. Only very small lamps. 1 to 5 c. p., are ever lighted by hatteries, and these more for some especial use, such as lighting a microscopic object, than for either quantity of light or economy.

(7357) C. W. R. asks: 1. What is the difference between an induction coll and an intensity coil? A. We do not know just how the name "intensity coil " may have been used in the place where you saw it. It might be used for an induction coil in which the voltage is raised as in the Rubmkerff ceil, in distinction from one in which the voltage is lowered and current increased as in an ordinary transformer. 2 How could I wind the dyname described on page 494, "Experimental Science," for the highest possible voltage and how many velts and amperes would I get? Also, could I use the same for electroplating, introducing resistance enough? A. Wind it like the hand power dynamo, page 487,

same volume, and you will have twelve volts and perhaps
thice amperes.

You cannot then use it to advantage for
Hall the service of the servi plating; the current is very small. Still, if you put in resistance in the external circuit, it will plate slowly. wound with? A. No. There is not room for such an armature between the poles. 4. What would be the voltage and amperage of the above dynamo if the field make little differenc and there would be no use in exciting the fields by external current when the machine can excite its own fields. You can, however, do it if you wish. 5. What voltage and amperage are No. 2 Samson hatteries? also of Mesco dry batteries when new? A. All forms of Leclanche cells have about 11/2 volts. Their amperes depend on the resistance of the external circuit. On short circuit they might show six to ten amperes, but could not deliver so much beyond a few seconds. They would polarize immediately.

### NEW BOOKS, ETC.

urth Annual Report of the commissioner of Public Roads. For Missioner 31, 1897. FOURTH ANNUAL REPORT OF THE COMthe Year ending October 31, 1897. Issued under the Authority of Henry L. Budd, Commissioner of Public Roads. Trenton, N. J. 1898.

This is an interesting pamphlet which shows the badwhich have been effected in them. The State of New reads which renders driving and wheeling in many dis-

These require the tube to be 10 inches to 11 inches long when adjusted for focus.

A PRIMER OF PSYCHOLOGY. By Edward Broadford Titchener. New York:

Macmillan Company. 1898. 12mo, pp. 314. Price \$1.

> In the last few years psychology has come prominently little of technical detail as is compatible with accuracy count of scientific study or by the way of brain anatomy or brain physiology. The book seems to be admirably adapted for the purpose for which it is intended.

HAWAII'S STORY BY HAWAII'S QUEEN LILIU OKALANI. Illustrated. Boston: Lee & Shepard. 1898. Pp. viii, 409. Price \$2.

The present work is an autobiography of Hawaii's late queen. It is particularly timely in view of the probable annexation of Hawaii to the United States. As might be supposed, Queen Liliuokalani, in detailing the events of her life, protests against the revolution of her adversaries. She throws a new light on the manners and customs of this strange people and the pertant contribution to the history of the Hawaiian revolution and the causes which led to it, and the treaty of annexation now pending before the Umted States Senate, and ought to command considerable attention from the reading and thinking public. The book is handsomely made and is well illustrated by half-tone engravings.

THE ART OF GETTING RICH. By Henry Hardwicke. New York: The Useful Knowledge Publishing Company. Pp. 294. Price \$1.50 cloth, 50 cents paper.

The present work tells how fortunes were made in the middle ages and how they are made to-day, as well as sundry hints of how to succeed in business. We are concan be made by the instructions which can be gotten from tend to inculcate that thrift which has been the basis of nearly all of the large fortunes

THE REPORT OF THE SUPERINTENDENT OF THE UNITED STATES COAST AND GEODETIC SURVEY. Showing the progress of work during the fiscal year ending with June, 1896. Washington: Government Printing Office. 1897. Pp. 772. Quarto, 19 maps.

## TO INVENTORS.

An experience of nearly fifty years, and the prepara-tion of more than one hundred thousand applications for patents at home and abread, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for precupus patents are understand and the process some continents, and to possess unequaled facilities for precuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business, Address MUNN & CO.. office Scientific American. 361 Broadway, New York.

## INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

FEBRUARY 8, 1898,

AND EACH BEARING THAT DATE. | See note at end of list about copies of these patents. |

Air brake, F. W. Olin	598,64
Air brake coupling, J. T. Perkins.	598.88
Air disk brake, compressed, M. E. Campany	598.76
Alarm. See Fire alarm.	
Alarm for water containing vessels, O'Connor &	
Turner	598.57
Album support, G. Schwab	598,81
Arm rest, desk, C. H. Reynolds	598,61
Auger, earth, Carter & Richmond	598,85
Axle, J. F. Sosnowski	598,71
Axle, ball bearing, C. E. Roberts	598,5
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ľ	Axle, vehicle, J. Walker.  Bag, W. T. Lane  Bake pan, C. G. Sargent.  Baking pan, Henis & Jamison  Barber's chair, A. J. Rollert.  Battery cell, primary, F. H. Brewn.  Bed, folding, R. T. Barten.  Bedstead, f. Schweizer  Bedstead, metal, T. Colleran.  Bedstead, metallic, F. G. Gale.  Belt tightener, J. H. Gilman.  Berth guard rail, J. Megins.  Bicycle, B. Hempstead.  Bicycle brake, F. Murgatroyd.  Bicycle brake, F. Murgatroyd.  Bicycle prake, F. Murgatroyd.  Bicycle plandle shade, R. A. Wade.  Bicycle pacel carrier, G. H. Henkel.  Bicycle pedal, L. Kerner, Jr.  Bicycle pedal, L. Kerner, Jr.  Bicycle pedal, L. Kerner, Jr.  Bicycle stand, W. E. Leavitt.  Bicycle stand, W. E. Leavitt.  Bicycle wheel, J. D. Bewley  Blind slat operating and locking device, G. H.  Hamalian.  Hack. See Pulley block.	598,586 598, <b>6</b> 11	Gas burning apparatus, T. E. &. P. F. McCaffrey.	598,7 <i>3</i> 7 598,737
1 ;	Bake pan, C. G. Sargent. Baking pan, Henis & Jamison. Barber's chair. A. J. Rollert.	598,888 598,512 598,877	Gas engine, L. F. Burger Gas generator, acctylene, Hardwick & Manville Gasti oscope, bent retatable, G. E. Kelling.	598,496 598,8 <b>6</b> 8 598,787
•	Battery cell, primary, F. H. Brown. Bed, folding, R. T. Barten. Restricted B. Schweigen.	598,55 <b>6</b> 598,841	Gate. See Head gate. Railway gate. Gate, H. Stonge.	
•   	Bedstead, metal, T. Colleran Bedstead, metallic, F. G. Gale	598,594 598,564	Gate, H. Stonge. Gear, variable speed, H. Behrens. Gearing, variable, Evans & Huggins Generator. See Gas generator.	598.863
1	Bett tightener, J. H. Gilman. Berth guard rail, J. Megins	598,658 598,735 598,511	Generator. See Gas generator. Gleve, G. B. Korney. Gluing machine, W. Munch. Grain washing apparatus A. Bergmuller. Graphite, manufacturing, H. H. Wing.	598,774 598,616 598,495
i i '	Bicycle brake, F. Hammend. Bicycle brake, F. Murgatreyd.	598,866   598.530	Graphite, manufacturing, H. H. Wing	598,549 598,843
-	Bicycle, folding, W. H. Percival.  Bicycle handle shade, R. A. Wade  Bicycle parcel carrier, G. H. Henkel	598,811   598,54 <b>6</b> 598,513	Graphite, manufacturing, H. H. Wing. Grinding apparatus sickle, Beaudette & Miller. Grinding machine, automatic ball, F. W. Rodd. Grinding machine, ball, G. H. Hathern. Gun, gas operated, W. E. Simpson. Harvester, M. Boice Harvester and thrasher, combined, D. G. Ceyner. Harvester reel adjusting mechanism, J. F. Appleby. Hay tedder, H. F. Bond. Head gate, I. D. O'Donnell.	598.536 598.510 598,822
e f	Bicycle pedal, C. Kerner, Jr. Bicycle pedal, Lleyd & Priest.	598,788 598,675	Harrow, combination, C. S. Sharp. Harvester, M. Boice	598,820 598,848
5	Bicycle running gear, S. G. Livingston.  Bicycle stand, W. E. Leavitt  Bicycle stand, folding, H. L. White	598,791 598,547	harvester and thrasher, combined, J. G. Coyner Harvester reel adjusting mechanism, J. F. Ap-	598,558
é	Bicycle wheel, J. D. Bewley	598,850	pleby. Hay tedder, H. F. Bond.	598,652 598,623
e	Hamalian.  Block. See Pulley block.  Board. See Ironing board.	598,600	Head gate, I. D. O'Dennell.  Heater. See Electric heater.  Heel, W. B. Arneld.  Heel plate for boots or shoes, cushioned, R. Mc-	598,838
a :	Beard. See Irening beard. Beiler, W. W. J. Teussaint. Aone casing tape, E. Markie.  Beak account Brown & Kittnedge	598,686 598,734	Heel plate for boots or shoes, cushioned, R. Mc- Kay	598,714 50 <b>8</b> 647
-	Rone casing tape, E. Markie.  Book, account, Brown & Kittredge.  Bookbinder, D. C. McCalib.  Bottle, mucilage, C. M. Pratt.  Bottle, may refilly by E. Hill.	598,738 598,575	Kay.  Hinge, self locking, G. Schade.  Hoe, sulky horse, C. H. Malkerus.  Hollow bodies, blank for manufacturing, C.	598,663
ļ	Bottle protector, J. L. Elsass. Bouque t holder, H. W. Harris.	598,596 598,780	Hook. See Garment or other hook.	390,000
٠,	bex Metch hex	l	Hose coupling, air, J. S. Arkins.  Husking pin, H. H. Perkins.  Indicator. See Office indicator.	
.	Bex cover, R. M. Spencer	598,581	Insect trap and vase, combined, G. L. Karr Ironing board, N. J. Beckett	598,521 598,761
•	brake. Brick machine, H. C. Barker	598,724	Jack. See Lifting Jack. Jeweler's clamp, F. J. Thomas. Justifying mechanism, B. F. Bellows. Kettle rack, W. C. Domca	598,825 598,622
	Bricks, tiles, etc., machine for making, A. Berg Building material, decorative, J. Brower Building material, decorative, D. H. Ferguson	598,624 : 598,883 :	Kitchen tool combination A Lohmann	508 799
- 8	Building material, composite, J. Brower. Building material, decerative, D. H. Ferguson Bung, S. Salomon Butter mould, W. C. Freeman.	598,665 598,775	Kite, C. J. Greiner Lace fastener, since, F. E. H. Goodenow Ladder, extension, F. S. Miley.	598,777 598,704
v	Butter, etc., process of and apparatus for steriliz- ing. A. Dubuisson.  Button, cuff. G. L. Rawdon.	598,561 598,643		
-	Buttons, machine for assembling cloth covered, F. W. Ludington.	598,711	Lamp and making same incandescent electric, J. C. Fish Lamp burner, F. T. Williams Lamp chimics heating attachment, R. Von	598,72 <b>6</b> 598,688
8 ' N !	mg. A. Dubuisson. Button, cuff. G. L. Rawdon. Buttons, machine for assembling cloth covered, F. W. Ludington. Cabinet, druggist's label, E. F. Stephens. Cable grip, Norton & Rusaing. Call box system, electric, W. T. Budds. Camera, Buttographic, H. & C. Gannwell, 588 701.	598,741 598,853	Erichsen.  Lamp, electric arc, S. I. Crain.	598,5 <b>6</b> 2 598, <b>6</b> 97
	Came, C. C. Tracy	598,827 598,728	Latings, safety cutout for electric, A. N. Love-lace	598,733
l	Camera, photographic, J. A. Mesher	598,804 598,555	Lantern holder, H. Nocen. Last and stand, shoemaker's, H. L. Phelps. Lath, metal, E. M. Spinne. Letter box, on controlled G. L. Phelps.	598,812 598,582
, ¦	Can bedy machine. Holden & Brown. Can heading machine, E. P. Holden. Can testing machine, A Johnson	598,567 598,566 598,519	Letter box. on controlled. G. L. Phelps Lifting jack, E. & A. G. Hayford Lining for dress waists, form, L. E. Hacherelle Liquids, method of and apparatus for treating.	598,534 598,660 598,706
į	Car coupling, R. M. Chance. Car coupling, J. B. Eaves.	598,768 598,500	C. Ameve	598,722
1	Camera, photographic, H. & C. Gamwell. 598,701, Camera, photographic, J. P. Meyer. Camera, photographic, J. A. Mesher. Can bedy, Brewn & Helden	598,637 598,538 598,849	Lock. See Folding lock. Sash lock.	
s y	man	598.705	water heater for, Wallace & Kellogs.  Loom ingo, T. Haiton Loom temple, L. Painchaud. Loom temple, R. P. Pearson.	598,865 598,808
-	Carbens, manufacture of, C. L. Saunders	598,646 598,749 598,609		
e ,	Carpentry or joinery, C. C. Sexton Carpet sweeper, F. P. Keesee Cash register, J. L. Kizer. Cash register, O. B. Thompson. Caster, J. P. Henries.	598.87 <b>6</b> 598,584	forming, J. Schwarz. Lunch box, E. F. Minter. Mail pouch delivery device, B. Chamberlain (re-	598,801
<u>,</u>	Chair E Thirth	500 600	Marker, E. P. Thomas	11,649 598,666
y	Chimney cleaner, P. C. Dunn Cigar box, folding, H. Swanger. Cigar clipper, J. E. Lie Duc Cigar cutter and match igniter, W. H. Thomp-	598,672   598,542	Judge Massage, hand appliance for, A. Figge	598,520 598,773
y	Cigar cutter and match igniter, W. H. Thompson	598, <b>6</b> 34   598718	Massage, hand apphance for, A. Figge	598,884 598,645 598,544
1	Clamp. See Dask clamp. Jeweler's clamp.	598,753	Meat cutter and feeding device, J. Anderson Mechanical movement, G. I. Root Mechanical movement for windmills, etc., W. H.	598,723
:	Clay working machine, wire cut, F. L. H. Sims Cleaner. See Chimney cleaner. Cleck. S. B. Wertmaull.	. 598,539 . 598,589	Delano	598,861
	Cleaner. See Chimney cleaner. Cleck, S. B. Wortmann. Clethes line, W. W. St. Jehn. Ceffee, methed of and apparatus for reasting, J. W. Disherter.	598,878	Metal plate doubling machine, W. L. Jenkins	598,750 598,663
e e	Comb and shedrs combined Christopen & Ler	598,629	Mould. See Butter mould.  Mould forming apparatus, sand, S. J. Adams  Mould material and moulds, manufacture of. S.	598,492
٠.	Combination wrenen, O. M. Miller	598,593 598,528	Moulds, cores, etc., material suitable for, S.	598, <b>6</b> 33
n	racating R Taylar	. 598543	Jehnsten. Menkey wrench, J. L. Whitehead Meter. See Spring meter.	598,588 598,588
e e	Confectionery machine, Carlson & Baker	598,809	Meter. See Spring meter. Mus rand and rebe helder. T. A. Letz. Musi cleaf turner, Griffin & Shuicr. Napk in ring and holder. J. S. & W. W. Hoagland Nozzle, A. W. Jey. Nut leck, W. Scherer. Oar lock, Boak & Fricksen. Office indicator, Gearhart & Markle. Oil burning apparatus, W. H. Wheeler. Oil vagen tank, G. W. Geeding. Oven, baking, G. R. Meen. Overshoe, A. L. Rickman. Pan. See Bake pan. Baking pan. Paper sheets, machine for dampening, Hess & Hutchins. Pavement, R. J. Carsen. Pavement, R. J. Carsen. Pavement, R. J. Carsen.	598,794 (444,759) 564,650
e	Copy helder, E. E. Paxton. Copy helder, E. E. Paxton. Copy helder, J. C. I. Wilson. Corset buttener, M. Perez. Cot, R. F. Croeks. Coupling. See Air brake coupling. Car coupling. Hose warpling. Pipe coupling.	. 598,743 . 598,698	Nozzle, A. W. Jey.  Nut leck, W. Scherer.	598,747
n	Coupling. See Air brake coupling. Car coupling. Hose coupling. Pipe coupling.  Cradle A Weinstein	598 607	Oar lock, Boak & Erickson. Office indicator, Gearhart & Markle. Oil burning apparatus W. H. Wheeler	598,847 598,673 598,667
y s	Crate fastener, egg. G. E. Marble Cultivator, F. H. A T. C. Bornman.	. 598.796 . 598.849	Oil wagon tank, G. W. Gooding. Oven, baking, G. R. Moon	598,599 598,570
n	Cradle, A. Weinstein. Crate fastener, egg. G. E. Marble Cutivater, F. H. A. T. C. Bernman. Curtain holder, Parish & Rudolph Cutlery scenrer, J. G. Kerst. Cutter, See Cigar cutter, Meat cutter. Cutter, See Cigar cutter, Meat cutter.	598,533 598,789	Overshoe, A. L. Rickman	598,81 <b>6</b> 598,497
e	Cycle time, speed, and distance indicating me- chanism, Gayner & Washburne.	. 598,598	Paper sheets, machine for dampening, Hess & Hutchms	598,628
	Cutter. See Cigar cutter. Meat cutter. Cycle time, speed, and distance indicating mechanism, Gayner & Washburne. Desk clamp, school, A. D. Lmn. Desk, school, T. J. Therp. Display stand, necktie, A. W. Graham. Doorcheck, F. Rock. Doorchey, W. H. Daggett. Drawp th and suffer mechanism. P. Brawn.	598,674 598,685 598,507	Pavement, R. J. Carson.  Pavements, floors, etc., structure such as, V. & G. Jetlev.	598,670 598,631
l	Door check, F. Rock Doorkey, W. H. Daggett	. 598,664 . 598,560	Pavement, K.J. Carsen Pavements, fiers, etc., structure such as, V. & G. Jetley Pen, E. Kempshall Pencul sharpener. Cole & Kinsman Hane & K. S Bowen.	598,730 598,770
	Dyname, alternating current, W. B. Essen	598,657 598,836	Plane, R. S. Bowen.  Pin. See Husking pin.  Pipe. See Tebacce pipe.  Pipe coupling, W. M. Ceffee.  Placket fastener, K. W. Leaf.  Plant pretecter, B. N. Simons.  Plow, C. H. Kimmal.  Plow disk, D. T. Meneley.  Plow point, H. Matthies.  Pocket book, T. R. Weidemann.  Poisen distributer, F. L. Richter.	998,649
	Electric circuit testing apparatus, E. & F. W.	000,100	Pipe coupling, W. M. Coffee. Placket fastener, K. W. Leaf	598,857 598.61
e	Heymann Electric conductors, junction box for, T. J. Close Electric currents, coin controlled machine for	598,517; 598,498	Plant protector, J. N. Simons. Plow, C. H. Kimmal. Plow disk. D. T. Menelev.	598,874 598,799
1-	automatically distributing, J. W. Dawsen Electric heater, J. F. McElrey	598.65a	Plow point, H. Matthies Pocket book, T. R. Weidemann	598,614 598,881
s			Poison distributer, F. L. Richter. Poison on plants, apparatus for spraying, F. O. Blake. Poke, animal, V. N. Noel.	598,846
ď	Electric switch, J. M. Andersen. Electric switch, automatic, Perkins & Killip Electric time switch, G. F. Goodwyn	598,715 598,864	Post. See Felice post.	
1	Electrical switches, means for use in operating, T. H. Parker	598,679 598,829	Post and brace, combined J. B. Yohn	598,532
r	T. H. Parker. Elevater bucket. Tucker & Corwin Elevater controlling mechanism, H. B. Gale. Engine. See Explosive engine. Gas engine. Re- cuprocating engine. Retary engine. Steam	598.5●5	A Wooitord	598,721 598,772
ינ פו	engine.		Press. See Stone press. Pulley block, Gesnell & Thomas. Pump, diaphragm, N. A. Wahtola. Punches and dies, manufacture of, S. D. Hartog,	598,830
r i	Engine, W. B. Brown. 598,851, Engine muffler, gas, C. S. Bird. Envelope folding and sealing mechanism, J. A. Sherman.	598,845 598,714	dr	598,867 598,5 <b>0</b> 2
	Envelope, money, A. Hansen. Envelope safety device, A. H. Danner.	598,659 598,859	Puzzle, C. W. Carter. Puzzle, E. T. Young. Puzzle card and picture exhibitor, M. Rosenz-	598,889
•	Envelope folding and sealing mechanism, J. A. Sherman.  Envelope, money, A. Hansen.  Envelope safety device, A. H. Danner.  Excavating machine, W. Paulitschke.  Explosive and making same, E. A. G. Street.  Explosive engine, A. Winten.  Fan, educational or advertising, W. L. Hall.  Fastener, P. A. Raymond.  Faucet, G. A. Madisen.  Faucet, automatic pressure equalizing beer, b.	598.680 598.618 598.832	weig. Pyroxylin compound, R. C. Schupphaus598,648, Rack. See Kettle rack.	598,557 598,649
	Fan, educational or advertising, W. L. Hall	598,509 598,576	Radiator, electric, J. F. McElroy. Rail joint, bridge, O. T. Bedell.	598.639 598,844
8	Faucet, G. A. Macusen Faucet, automatic pressure equalizing beer, F. W. Shields et al.	598,579	Rack. See Rettie Fack.  Radiator, electric, J. F. McElroy.  Rail joint, bridge, O. T. Redell.  Railway, electric, M. T. A. Kubnerschky.  Railway gate, J. W. Parsons.  Railway switch, automatic, J. H. Garner.  Railway tie, cembination, W. F. Bond.  Railway tie, metal, P. Begler.  Rake, F. J. Aubeuf.  Rasncutting machine, J. Turner.	598,731 598,605 598. <b>626</b>
s e.	Feed box. H. L. Ferris	998,969	Railway tie, combination, W. F. Bond	598,764 598,692 598,600
ď	Feed water regulator, gas cutoff, and alarm for boilers, J. W. Dearduff.	598,499	Rasp cutting machine, J. Turner	598,585 598,609
r	Fence, W. Duncan Fence, Z. & J. C. Tayler Fance, machine, wing and nicket, H. W. Jackson	598,625 598,754 598,785	Receptacle for packing and forwarding provisions, R Amsnick.  Reciprocesting engine K. E. W. Henschel.	598,757 598,515
5, I.	Feed water regulater and low water alarm, E. P.  Lynn Feed water regulater, gas cutoff, and alarm for boilers, J. W. Dearduff. Fence, W. Duncan. Fence, Z. & J. C. Taylor. Fence machine, wire and picket, H. W. Jackson Fence stretcher, wire, E. C. Lott. Fender, See Car fender, Vehicle fender.	598,713 598,526	Rake, F. J. Aubeut. Rasp cutting machine, J. Turner. Ratchet wrench, J. Gilbertsen. Receptacle for packing and forwarding provisions, R. Amsnick. Reciprocating engine, K. F. W. Henschel. Refrigerating apparatus. H. Auman. Refrigerating machine, M. Reid. Register. See Cash register.	598,621 598,814
-	Fender. See Car fender. Vehicle fender. Filter. J. Totham Fire alarm. automatic electric, W. A. Guthrie	598.719	Regulator. See Feed water regulator.	
,	Fire escape, J. N. Uri	598,544 '	Rheestats, electric heaters, etc., manufacturing, H. W. Leenard	
	Fire extinguisher, chemical, J. B. Thomas Fire extinguishing systems, dry pipe valve for, E. F. Steck Fires, apparatus for supplying water for extin-	1	Ruig. See Asphilling. Retary engine, IV. Aab. Rotary engine, Locke & Anderson Rowlock, J. J. Connell. Rubber treating, B. G. Werk. Ruler, section, F. B. King. Sandpabering machine, C. H. Driver. Sush balance, H. A. Pischke.	598,619 598,793 598,595
	guishing, A. S. Gear	598,703	Rubber treating, B. G. Work. Ruler, section, F. B. King.	598,55 <b>0</b> 598,875
	ring, J. M. dander. Firepreof flow rule ceiling, Balph & Wright. Fluid bandling apparatus, C. Efros. Flushing apparatus, seat action, G. D. Ackley. Flushing valve for closet tanks, E. W. Anthony.	598,691 598,591 598,501	Such balance and factorer Wallace & Hilton	500 880
	Flushing apparatus, seat action, G. D. Ackley Flushing valve for closet tanks, E. W. Anthony.	598.834   598.668   598.531	Sash fustener, B. F. Cernell. Sash fastener, W. Zachringer. Sash Jeck and titter, P. Marshall. Sash, window, A. Ruman. Saw, scroll. A. Jones.	598.696 598.756
			Sash, window, A. Ruman. Saw, seroll. A. Jones.	598.644 598,729
. ! &	Fly paste, apparatus for covering strings with, R. W. C. Strong. Folding lock, E. De Colton Fold, roll reducing machine for preparing, H. D. Perky.	598,656 598,745	Seat. See Vehicle seat.	598,790
8	Perky. Furnace. See Smelting furnace. Furnace, Allen & Tibbitts. Furnace for forming cast metal, A. L. Carleton	130,140	Separator. See Steam separator.	598 806
Ġ		595,694	Shelf support, J. H. Ostertag. Ship tog dispelling apparatus, H. N. H. Lugrin	598,742
į	tin	598,798	Ship tog dispelling apparatus, H. N. H. Lugrin Shovel and sifter, L. D. McElrov	598,636 598,739
2 8 7	tin.  Game apparatus. J. A. Sutherland.	598,798 598 879	Skirts, etc., device for suspending or holding, R.	598,739
287675	tin	598,798 598,879 598,71 <b>0</b> 598,837	Shovel and sitter, L. D. McElroy	598,739 598,573 598,7 <b>09</b> 598,551