## RECENTLY PATENTED INVENTIONS. Pertaining to Apparel.

GARMENT-FORM .- ANNA L. TRAVISS, Virginia, Minn. This apparel apparatus comprises a garment form for use in dressmaking establishments, stores, homes, and other places, and is arranged to display a garment to the fullest advantage, to preserve its shape, and to permit of conveniently folding the garment form into comparatively little space when not in use.

## Electrical Devices.

ELECTRICAL CUT-OUT .- P. T. McNally, tended for turning on and off any one or mere the power house, or install a separate alterna-lits use. tor for operating the arc lamps and incandesnot in use, thus preventing loss of power in idle transformers, or for any other analogous

# Of Interest to Farmers.

FEED-TROUGH .- G. D. KOEHLER, Macedonia, Iowa. The invention comprises a trough proper which forms the base of the feeder as a whole, and a part which is hinged cost. thereto and consists of a hopper, for receiving the feed and a series of transverse partitions arranged on the sides of the hopper and dividing the feeding space of the trough so as to form a series of what may be called "stalls," each adapted to accommodate the head of a also at the same time to extinguish fire which invention are to provide means whereby an single animal. The trough may be constructed, can be in or near its location at the time the adhesive can be applied to cans or other artisingle and easily and quickly cleaned.

GATE .- J. M. HIGBE, Manson, Iowa. The object of this invention is to produce a gate which can be formed of wire or similar light material, and to provide a construction which will prevent the gate from sagging without for a simple, durable, economic, and easily plied. necessitating a construction involving the use operated post-hole digger, one wherein the of a heavy frame for the gate. It relates to blade-carrying portion or body is constructed gates such as used in the fencing of farms and

GATE .- E. J. A. RICE, Harvard, Neb. One of the several objects of this invention is to class of gates adapted to be opened by a perafter having passed through the gate, no matter whether such person is on foot, mounted, or seated in a vehicle.

COMBINED COTTON CHOPPER AND CUL-TIVATOR.—R. H. PURNELL, Rosedalc, Miss. prone to drop from other causes. The invention is a machine for chopping, or cutting out, cotton rows at regular intervals, BEER. E. A. APPELL, New York, N. Y. The and also for throwing dirt up to the plants object of the invention is to provide an apwhich remain standing. The runners will al- paratus for use in breweries and other estabways rest and travel upon the ground, and if lishments, and designed for cooling beer and the team be large, or tall, the front end of the liquids in a very simple and rapid man-frame will be held higher. This insures the ner, or for heating fluids by the use of steam chopper striking the row of plants squarely, or like heating medium. at right angles thereto.

# Of General Interest.

POWDER-COMPACTING DEVICE FOR DRUGGISTS .-- O. WARE, Muskogee, Ind. Ter. This invention pertains to a device for faciliportions to be put up in papers or capsules when not in which the device is inoperative according to the requirements of the prescription being filled by the druggist, and has for its object to compact the powder into a regular sized body whereby the druggist may more easily estimate the proportional parts and may subdivide the powder into any number of parts of equal size.

BAGASSE-FURNACE.-F. F. WILLEMS, Delanggoe, Soerakarta, Java. The invention relates to improvements in furnaces, and more particularly to furnaces adapted for the burning of bagasse, the fiber refuse of sugar cane discharged from the juice-extracting machinery. The bagasse may be dried before reaching the grate bars, and may thus be utilized more economically as a fuel.

CONCRETE STEEL SUSPENSION-ARCH.-E. J. SCHAUWECKER, Clay City, Ind. The a helical nut. When the nut is threaded upon object of the inventor is to provide means adapted to enable concrete arches to be considered to enable concrete practical at the present time, with less concrete and with a smaller rise. By means of the construction the arch may be made with a

ticularly adapted for use in connection with buoyant vessels to effect a landing at a given point quickly and accurately, and to so construct the anchor that when it has entered the ground claws will be forced out into the ground when the anchor is subjected to upward strain, preventing the anchor from being withdrawn or dislodged until the means are operated for permitting the claws to be drawn out.

HORN-SUPPORT. V. H. RAPKE, New York, N. Y. One object in this case is to provide in the construction of a supporting device particularly for phonograph horns, a novel and The object is to provide a device for closing TRIPLE-EXPANSION ENGINE.—W. S. LYsimple clamping device that may be readily an electric circuit and ringing a bell or operatengaged with a molding of the machine casing, and to provide a supporting rod so constructed that the horn may be supported verti-

N. Y. A purpose of the invention is to furmany. In accordance with the present invenish a friction lock or latch for purse frames, tion, the two admission devices for gas and Col. lock or latch is intended to be more simple, are arranged behind the admission aperture durable, and economic to manufacture than any common to them both, in such a manner that of its class now in use.

SYRINGE-NOZZLE .- H. F. Ong, Portland, Ore. The aim of the inventor is to provide a nozzle for fountain syringes or douches, in of advantages. which a tube having a catheter pointed ex- HEATER.—H. F. LANGENHOF, New York, tremity is provided with an attached bulb, N. Y. The object in this instance is to probut is not in communication therewith, the vide a stove or heater arranged to utilize heat Mandan, N. D. This device is especially in tube being adapted to enter the cavity of arising from the burning fuel in the fire-box organs, permitting the inflowing liquid to leave to the fullest advantage, to heat a room by of a system of arc lamps, operated by a single the nozzle at an angle with sufficient current radiation of heat from the stove or heater, and alternating current dynamo, where it is not and force to be highly serviceable in agitating to heat water, air, or both and conduct it to profitable to make a separate line circuit from any and all fluid in the cavity at any time in radiators or registers for heating other rooms

MEANS FOR RECOVERING SUBMARINE cent lamps. It shuts off transformers when BOATS .- E. OSWALD, United States Navy. The invention is an improved means for the recovery of lost submarine boats, designed to the use of divers. It can be installed on boats already built or now building at a small

> DEVICE FOR PROTECTING SAFE-VAULTS .- E. V. LORIG and U. G. GRAHAM, South Omaha, Neb. An object of the invention among others is not only to provide a means to act with certainty in giving alarms, but generation and distribution of noxious gases, drive away burglars or other unauthorized persons.

> POST-HOLE DIGGER.—R. T. JENNEY, De Pere, Wis. There is provision in this invention in but two parts, and wherein further the entire structure may be made exceedingly light without sacrificing strength.

SUSTAINING DEVICE FOR AERIAL VESprovide a construction of farm gate, or that SELS .- I. GRUBER, New York, N. Y. It is sought by this inventor to provide a penumatic son approaching it and closed by a person device capable of operation from within a basket or car of a balloon to direct the balloon in one or the other direction or to prevent a too rapid descent of the balloon in the event of a leakage of gas, or should the balloon be

APPARATUS FOR COOLING OR HEATING

# Hardware.

DOOR-FASTENER .- M. D. MERRING, East Stroudsburg, Pa. The object of the inventor is to provide means effective in operation and durable in use, adapted to securely fasten a door so as to prevent it from being opened when not in use by folding the lower section against the upper, and as a spring passes over the hinge joint it is stretched and again contracts, thereby pulling the brace sections firmly together.

WRENCH .-- F. C. MAGENHEIMER, Evansville, Ind. In the operation of this monkey-wrench the shaft may be partially rotated by its handle which projects from it a point midway between the upper and lower loop frames, and as it is turned it will operate upon blocks in such manner as to draw the serrations, and to free said serrations from engage ment as may be desired.

NUT-LOCK .-- C. C. HALGREN, New York, improvements in nut locks relating to that type of nut lock embodying in its construction with the threads of the bolt and thus securely lock them together.

particularly adapted for use in gaging saws and the like.

# Heating and Lighting.

SAFETY DEVICE FOR GAS-BURNERS.-A. A. CHURCHILL, Portland, Ore. The improvehaving been blown out after being lighted, tor, or shutting down of the engine. escapes from the gas jet.

APPARATUS FOR PRODUCING MIX-

BAG-LOCK.-L. B. PRAHAR, New York, KARGER, 26 Frankfurter Allee, Berlin, Gerduring the admission to the suction chamber displacement of the tie in the roadbed. the gas and air mutually penetrate each other. Novel arrangement of valves secures a number

> and to assist in heating the room in which the heater is located.

### Household Utilities.

CUSPIDOR-CLEANER .-- O. KEROUSE, San place the location of the submarine with cer-Francisco, Cal. This inventor's improvement formable object. Objects may be produced upon tainty in both day and night, permitting comiss a contractible and expansible device adapted metallic manufactured in the contraction of the submarine with cer-Francisco, Cal. This inventor's improvement sheets of paper, pasteboard, metallic manufactured in the contraction of the submarine with cer-Francisco, Cal. This inventor's improvement sheets of paper, pasteboard, metallic manufactured in the contraction of the submarine with cer-Francisco, Cal. This inventor's improvement sheets of paper, pasteboard, metallic manufactured in the contraction of the submarine with cer-Francisco, Cal. This inventor's improvement sheets of paper, pasteboard, metallic manufactured in the contraction of the contraction o munication with those imprisoned therein and for cleaning cuspidors and other receptacles or material, manufactured, issued, or published obtaining a hawser attached to the boat without tubular bodies, especially those whose mouths less diameter than the body portion. fective manner.

# Machines and Mechanical Devices.

LABELING-MACHINE.-F. X. MALOCSAY, New York, N. Y. The principal objects of the

object of the invention is to simplify and improve the machine, and the finished bricks removed by a single operation of one lever.

Wash. This improvement relates to elevators object is to provide means adapted to be designed to be used for stacking lumber, and readily attached to or removed from vehicle has for its object to provide means simple in wheels of ordinary construction, and when ap-construction, effective in operation and durable in use, adapted to be moved about in a yard and to elevate and deposit lumber at any of the tire. desired height to form a stack.

The invention is an improvement in collars as used on the shafting of machinery, especially shafting likely to come in contact with the clothing of workmen and others. object is the production of a means to be placed over the ordinary collar as now in use for covering the set-screw head which is the source of much danger and many accidents.

PLUNGER FOR BOTTLE-MACHINES.—R. JOHNS, Fairmount, W. Va. The purpose of the invention is to provide an improved construction of plunger whereby to preserve a struction of plunger whereby to preserve a proper and uniform degree of temperature necessary to the successful operation of such plungers as are commonly used as a part of machines and presses employed in the manufacture of bottles, jars, and other tubular glass ware.

POWER-SHOVEL. — R. Belden, Spanish Ranch Cal Mr. Relden's invention has reference.

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

References to former articles or answers should give date of paper and page or number of question. Information and not fer publication.

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Ranch, Cal. Mr. Belden's invention has reference to improvements in power shovels for digging railroad beds, ores, ditches, and the like,

the object being to provide a power-shovel of comparatively simple construction by means of which the work may be rapidly carried on.

RATCHET-POWER.—J. H. HARDEN, Anniston, Ala. The invention refers to means, manual or mechanical, whereby to convert applied reciprocal motion into rotary motion, and plied reciprocal motion into rotary motion, and has for its object peculiar, novel, and improved N. Y. The direction of this invention is to means for the purpose stated, involving rotations to that able shafts operatively connected by suitable gearing, and a novel form of ratchet power

# Prime Movers and Their Accessories.

GAGE. — G. W. McLaughlin, Hoquiam, FOR LUBRICATORS.—J. C. Hubbard, George- 30 feet, what horse-power will it make with a the construction the arch may be made with a span of any desired length.

ANCHOR FOR AIR-SHIPS.—D. Thomas, the cutting edges of saws, and it is an object ventor is to provide an automatic anchor particularly adapted for use in gaging saws.

GAGE. —G. W. McLaughlin, Hoquiam, town, S. C. The invention relates to an improvement in lubricators for steam engines in twrbine wheel, and what size wheel will it take town, S. C. The invention relates to an improvement in lubricators for steam engines in twrbine wheel, and what size wheel will it take town with the cutting edges of saws, and it is an object to run a flouring mill, or will it do it at all? Our town has a population of 600, and could steam pipe for a regulated feed. As lubrications for the inventor to provide a gage which is particularly adapted for use in gaging saws town, S. C. The invention relates to an improvement in lubricators for steam engines in the cutting edges of saws, and it is an object to run a flouring mill, or will it do it at all? Our town has a population of 600, and could steam pipe for a regulated feed. As lubrications for the inventor to provide a gage which is particularly adapted for use in gaging saws. particularly adapted for use in gaging saws with curved cutting edges, such as cross-saws happens that the engineer forgets to open the descent lights for stores and dwellings. A. and the like night, with the result that the lubricators a pressure equal to a head of 30 fect would bility. Mr. Hubbard has also received a patent the head and divided by 5,500 will give you on an invention designed to provide an auto- the theoretical power. If this flow of water ment pertains to a device designed for the matic drainage attachment for each lubricator, could be constantly relied on, from 75 to 80 prevention of accidents resulting from the acci- which is entirely independent of any separate dental escape of gas due to a failure to light connection with the boiler and comes into acsame when it is turned on, or due to the gas tion by the mere act of disuse of the lubrica-

CAN, Marshall, Ill. In the present patent the ing any other indicator when unburned gas object of the invention is the provision of a new and improved triple expansion engine, which is arranged to utilize the motive agent cally or horizontally, or, in other words, a TURES OF GASES OR OF GAS AND AIR to the fullest advantage and without back press- (10568) C. H. M. says: What is the universal or interchangeable supporting rod. FOR ILLUMINATING PURPOSES.—H. L. ure during the third expansion of the steam. formula for finding the horse-power required

## Railways and Their Accessories.

RAILWAY-TIE.-H. E. MATTHEWS, Salida, The invention pertains to railway ties, being particularly adapted to the frames of air respectively which are dependent upon the and the object is to produce a metal tie of what is known as hand or wrist bags, which operation of the suction and forcing appliances, simple construction having a special form which facilitates the fastening of the rails thereto, and which tends to prevent a lateral

## Pertaining to Recreation.

SNAPPING DEVICE FOR MARBLES .- W. L. HOFFMAN, Jersey City, N. J. The device is grasped in the hand, and by pressure of the latter the marble may be projected as when snapped from the fingers. The inventor's object is to produce a device adapted to be used in playing marbles, and enables the marbles to be snapped with greater force and accuracy than in the ordinary way.

TRANSFORMABLE TOY .- MARY A. GLIEN. Elizabeth, N. J. The toy is primarily in sheet form and adapted to be cut out, folded, glued, and the parts connected to produce a transformable object. Objects may be produced upon or entrant portions are contracted or made of and printed, drawn, stamped, or painted in The rubbing and cleaning is done in a rapid and efcreatures, or the like, which, after being made up, when turned inside out or about, will show different figures of persons, animals, creatures, or objects.

## Pertaining to Vehicles.

VEHICLE-WHEEL.-J. B. HUNTER, Pittsalarm is sounded, and at the same time by the cles, to provide for thereafter feeding and ap burg, Pa. The object of the invention is to plying labels to the cans successively onto the provide a construction of wheel in which the portion supplied with the adhesive, and to rim is cushioned with respect to the hub, provide means for manipulating the several special features being an octagonal metal hub, essential parts of the machine and feeding the an outer rim, an inner ring, spokes between cans, both before and after the labels are ap- the rim and ring, and radial spiral springs between the hab and ring allowing free vibra-BRICKMAKING-MACHINE -E. L. MARTIN, tions in all directions radial to the hub, four Woodburn, Iowa. The invention has reference annular metal plates being fitted between the to machines for making bricks, and is espe- hub and the ring and lapped and bolted tocially adapted to be operated by hand. The gether so as to brace the wheel in all direc-

> AUXILIARY FELLY AND TIRE,-C. BUCK-LAND, Habana, Cuba. The invention relates ELEVATOR .- C. A. LINDSTROM, Seattle, to wheels having inflated pneumatic tires. The injury without interfering with the resiliency

> esired height to form a stack.
>
> NOTE.—Copies of any of these patents will
>
> COLLAR.—D. J. Kelly, Aberdeen, Wash. be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.



HINTS TO CORRESPONDENTS.

Buyers wishing to purchase any article not adver-tised in our columns will be furnished with addresses of houses manufacturing or carrying

(10567) W. W. R. writes: We have an artesian well here about 1,000 feet deep that is throwing out salt and white sulphur water at the rate of 400 gallons per second. This is correct. I tested it three different times, and made it that or a little over. I am satisfied it will rise in a 6-inch pipe 30 to 50 AUTOMATIC DRAINAGE ATTACHMENT feet, and probably higher. With say a rise of freeze and burst, thereby entailing expense of develop 180 horse-power. The number of new ones. The invention prevents this possiper cent of the above horse-power could be generated by a turbine wheel, which would be sufficient to light your town, with considerable margin to spare. It is very doubtful if your well will continue its present output at the of time. We would advise you, therefore, to get an expert's opinion on this point before making any large investment.

(10568) C. H. M. says: What is the

The internal dimensions of the cylinder, the electricity, or chemicals, but only gravity engineering. speed, and the maximum internal pressure, or They may drive machinery also, but the weight the pressure at which the air is delivered from will have to be wound up again after it has the compressor. A. The horse-power required run down to its limit. A clock is a machine to run an air compressor, neglecting friction, so driven, and comes well within your requireequals the area of the cylinder in square inches ments. Nor is it a perpetual motion machine multiplied by the internal pressure per square inch, multiplied by the number of feet which the piston moves per minute, and the whole divided by 33,000. Taking friction into account, the power necessary would be nearly double this amount. 2. In finding the exact ure be considered? A. In determining the exact horse-power, the difference in pressure of the two sides of the piston in pounds per square inch is the figure that should be used. 3. Of what advantage is a several-staged compressor over a single-staged one? A. A several- of May 25, there is a statement that the temstaged compressor has the following advan- perature of dissociation of water is probably tages: The air is compressed less in each cyl- about 2,500 deg. C. Water decomposes at a inder, and therefore a larger amount of air temperature less than that of melting platinum. can be forced out of each cylinder per stroke. Following Holleman's "Inorganic Chemistry," The valves work more satisfactorily, and there I used a liter flask having a stopper and deis less leakage, because the difference in press-livery tube. Through the stopper extended ure on the two sides is less. Second, a small two copper wires. Connecting these just above amount of leakage does less harm. The in- the water was a coil of No. 26 platinum wire. crease in temperature due to the compression A 110-volt current was used with a rheostat in each cylinder is less, and the air may be cooled between the various stages of the compression. The work is more uniformly dismeted. With it set to deliver 12 amperes I novelties which the Italians have introduced the directions for making sensitized papers. tributed throughout the entire stroke, making was able to collect a mixture of hydrogen and into the usual ways of working. the compressor run more smoothly. 4. What oxygen, shown by its explosiveness. The curwould be the formula for finding the horse- rent actually used was not measured. power required for a two, three, or four stage water was boiling during the experiment. T he compressor? A. The horse-power of the two, melting point of platinum is usually given as three, or four stage compressor is found by 2,000 deg. C., which would make the decomposifirst finding the horse-power of each cylinder, tion temperature of water something less than by the method already explained, and adding 2,000 deg. C. A. It is quite true that water these amounts together. 5. Is there a formula begins to be dissociated at a temperature confor computing the horse-power of a steam tur- siderably below that of the melting point of bine, given the steam or air pressure and the platinum, but the process is not completed till number of cubic feet of steam or air delivered considerably above the melting point of platper minute at a given pressure? At what inum. It is commonly taken to begin at 1,200 pressure will a turbine work most economic-deg. C. and to be complete at 2,500 deg. C. with a given amount of steam as a reciprocat- gradually. The melting point of platinum is ing engine? A. There is no reliable formula given variously by different authorities. The for computing the horse-power of the steam Smithsonian tables give from 1,775 deg. to turbine. In general, steam turbines will 2,200 deg. Baker & Co., the large workers in develop about the same horse-power for a given platinum, give the lower figure. Λ mean figure amount of steam as reciprocating engines. Λ is 1,900 deg. Had the Chemical News stated small power turbine at 120 pounds steam the temperature of complete dissociation to be pressure non-condensing, will require 40 or 45 2,500 deg. it would have been more correct. pounds of steam per horse-power per minute. On the other hand, a larger turbine, designed know what liquid will expand and contract so as to get the full benefit of the expansion the most and easiest. A. Ether expands most of the steam, when working with steam at 180 pounds pressure and condensing, may be operated with about  $16 \ \mathrm{or} \ 18 \ \mathrm{pounds}$  of steam per horse-power per hour. The higher the any liquid for which we have data, and hence steam pressure, the more economical will be will expand easiest.

(10569) W. M. says: I wish to experiment with compressed air, and desire a little information on that subject. Air compressed to a density of 50 pounds to the square inch and admitted to a cylinder 3 inches in diameter for a distance of 2 inches, how far will the piston travel before losing all its expansive force? Also, at 100 and 200 pounds to the square inch?  $\Lambda.$  When air expands, its absolute pressure decreases in the mark the passing of the "poet of uselessness," long as the temperature remains constant. in mechanical perfection. The absolute pressure is found by adding 15 BEAN CULTURE. By Glenn C. Sevey. New  $poun{\color{red} \textbf{d}} s{\color{black} --} the \quad atmospheric \quad pressure {\color{black} --} to$ pressure which is shown by the gage. Thus, if one cubic foot of air at 50 pounds pressure expands to two cubic feet, the absolute pressure after expansion will be  $50+15 \div 2=32.5$ . This equals a pressure of 32.5-15=17.5 feet, the final pressure would be  $50+15 \div 3=$ 21.6. This equals a pressure of 6.6 pounds above the atmosphere. This rule can be applied to any pressure and to any change in grower and student alike. volume, so long as the temperature remains constant. The rule  ${\color{red} \bullet} oes \ not \ exactly \ apply \ to$ compressed air in the cylinder, because the temperature of the air decreases when the air expands, and this decrease in temperature decreases the pressure somewhat by the figures given by the above rule. Where the expansion 460 + t1

formula: where the equals the tem-460 + t2

perature of the air in degrees Fahrenheit at the end of the expansion, and t2 equals the temperature of the air in degrees Fahrenheit at the beginning of the expansion.

ented (or in use) to produce power by any of except that they are "the very latest."

(10571) C. S. asks: At what pressure does acetylene gas begin to liquefy, and what chemical can be used to purify it so that a pressure of 200 pounds can be used safely? Λ. The critical pressure of acetylene is 75● pounds. The critical temperature is quite horse-power required, would the external press- high, so that it will liquefy in the tank by compression. The tanks contain asbestos disks which are saturated with acetone.

(10572) H. C. D writes: In a quotation from the Chemical News, in your issue  $\mathbf{T}$ he Does a turbine generate as much power Dissociation does not take place suddenly, but

(10573) M. S. T. asks: Kindly let me for a change of temperature of any liquid for which we have data, and acctone is next in the list. Benzene has the lowest specific heat of

# NEW BOOKS, ETC.

THE VOICE OF THE MACHINES. An Introduction to the Twentieth Century. By Gerald Stanley Lee. Northampton, Mass.: The Mount Tom Press. 12mo.; cloth; 190 pages. Price, \$1.25.

A number of more or less rhapsodical essays on the spiritual side of machinery. They same proportion that its volume increases, so and the advent of the poet who can see beauty

York: Orange Judd Co. 16mo.; cloth; 130 pages; illustrated. Price, 50 cents.

A practical treatise on the production and marketing of beans. It includes the manner pounds above the atmosphere. In the same of growth, soils and fertilizers, best varieties, way, if the volume were increased to 3 cubic seed selection and breeding, planting, harvesting, insects and fungous pests, composition and will food value; with a special chapter on markets by Albert W. Fulton. A practical book for the

> Celery Culture. By R. W. Beattie. New York: Orange Judd Co. 16mo.; cloth; 147 pages; illustrated. Price, 50 cents.

A practical guide for beginners and a standard reference of great interest to persons already engaged in celery growing. It contains is not carried too far, however, the above rule many illustrations giving a clear conception of gives results which are approximately correct. the practical side of celery culture. The Hand Drawing. By Frank Aborn. If the fall in temperature is known, the final | work is complete in every detail, from sowing pressure, as determined by the above rule, may a few seeds in a window-box in the house for be corrected by multiplying it by the following early plants, to the handling and marketing of celery in carload lots.

STEAM TRAPS. By W. H. Wakeman. Jersey City: Company. 16mo.; paper cover.

steam trap is a luxury to be included in only ing of objects which are all in one plane, the by the operators of large plants, who can (10570) W. T. H. asks: Can you tell afford to spend their money on useless con- to subjects having three dimensions. The me if there is any machine invented or pat- traptions which have nothing in their favor what are called the mechanical powers, such device that utilizes a waste-product is a as the wedge, the serew or lever, as a motor luxury, however slight the saving may be; if trouble in gaining it. solely without any other agent whatever, such the saving is great, the device becomes a necesas air, water, electricity, heat in any form or sity. The steam-trap can be placed in this chemicals; simply a mechanical motor to drive last class, for its saving-power, large as it is or operate machinery? I do not mean the under any circumstances, increases with the perpetual motion fiend business, but something cost of fuel. The Joseph Dixon Crucible Com-to push and pull with for something. A. We pany, Jersey City, N. J., publish a very inter

TOMATO CULTURE. By Will W. Tracy. New York: Orange Judd Co. 16mo.; cloth; 150 pages; illustrated. Price, 50 cents.

The author has rounded up in this book the all its phases that has ever been gotten to-It is no second-hand work of refer ence, but a complete story of the practical experiences of the best posted expert on tomatoes in the world. No gardener or farmer can afford to be without the book. Whether grown its use anyone with a knowledge of sailing for home use or commercial purposes, the should be able to master the details of the reader has here suggestions and information art, so clearly are all the operations explained. nowhere else available.

ELECTRIC BELLS, INDICATORS, AND AERIAL LINES. By Umberto Zeda. Translated from the original Italian and SIMPLE PHOTOGRAPHIC EXPERIMENTS. By revised by S. R. Bottone. Authorized edition. London: Guilbert Pitman, 16mo.; cloth; 120 pages; 109 illustrations. Price, 80 cents.

Λ knowledge of electric bells is almost a necessity to everyone, so widely are they used. photography as are of an investigative turn The work of which We are writing gives a of mind. It contains a number of simple, yet progressive account of the modern practice for most interesting, experiments with photographic

LESSONS IN LEATHER WORK. By Mar. portant part of photography within the grasp guerite Charles. New York: F. W. of the amateur.

Devoe & C. T. Raynolds Co. 16mo.;

LIGHT AND SHADE. By the Duffner & Price 35 paper cover; 56 pages. Price, 35 cents.

Although the art of leather-decorating and for several centuries following, its possi- firm by whom it is published have been debilities are scarcely realized nowadays. The veloped along harmonious lines. The text is tools required are not expensive, and the skill most instructive and readable, and the illusnecessary to achieve at least passable results trations are of a very high artistic quality. can be acquired without excessive practice. The translation of Miss Charles's pamphlet should give an impetus to leather-working that will take away the haunting memories of the "burnt-work" horrors of a year or so ago by the attractiveness of the newer products of the art.

THE EFFECT OF DIET ON ENDURANCE. Irving Fisher, Ph.D. New Haven, Conn., 1907.

Dr. Fisher's monograph is a valuable conconsumed, a large reduction of proteid element, the welfare of our forests. especially for fresh foods, a lessened exerction REMPLACEMENT DES MUSCLES VIBRATEURS of nitrogen, a slight loss of weight, a slight loss of strength, an enormous increase of physical endurance, and a slight increase in mental ability. The practical value of the experiment consists in the fact that any layman can apply it with or without knowledge of food values.

ONE YEAR'S GROWTH IN THE RAILROAD DE-PARTMENT FOR THE YEAR 1906 AND Issued by THE OUTLOOK FOR 1907. Issued by the International Committee of the Y. M. C. A., 3 West 29th Street, New York city.

To those unacquainted with the ramifical INDEX OF INVENTIONS tions of the organization, the Year Book of the Railroad Department of the Y. M. C. A. prove a revelation. With its one hun dred and sixty-two buildings, this association reaches a membership of over eighty-four thousand; for the most part men whose lives would be  $\operatorname{devoid}$  of religious influence if it were not for the opportunities of worship offered by this society. When one sees that the attendance upon religious exercises is above 80 per cent of the total number of members, one can draw some idea of the magnitude of the work

HAND DRAWING. By Frank Aborn. Cleveland, Ohio: Cleveland Publishing Company. 12mo.; paper cover; 44 papes; illustrated. Price,

A description of a method of drawing by A Joseph Dixon Crucible triangulation, which, when mastered, enables the pupil to make rapid progress in free-hand Many steam-users seem to think that the drawing. Although best adapted for the copysystem can be so modified as to be applicable author's manner of expressing his ideas is A No rather involved in parts of his work, but the benefit derived is quite worth the slight extra

HISTOLYSE, SANS PHAGOCYTOSE, DES MUS-CLES VIBRATEURS DU VOL, CHEZ LES REINES DES FOURMIS. Extrait des A Comptes rendus hebdomadaires des A Séances de l'Académie des Sciences. Paris, 1907. T. 144. Pp. 393.

to run an air compressor, given the following: question They do not use air, water, heat, neer and author of well-known books on steam lives and then only for a few hours, only to disappear completely after the nuptial flight. Janet concludes from a minute study of the degeneration of the system that these muscles in the queen ant of Lasius niger disappear absolutely without any intervention of phagocytosis.

> most complete account of tomato culture in NAVIGATION BY COMPASS. By Clinton S. Bissell, B.A. Flushing, N. Y.: C. S. Paper cover; 32 pages. Bissell. Price, 50 cents.

> > A splendid little practical book of instruction on navigation by "Dead Reckoning." Since all the necessary tables are contained in the text, there is a saving in time in bringing up the day's work.

F. Thorne Baker. London: Percival Marshall & Co. 16mo.; paper cover; 68 pages; illustrated. Price, 25 cents.

 $\Lambda$  short treatise for such followers of and "orthochromatic plates" place a most im-

Kimberly Company, New York. 16mo.; paper cover.

A really charming little book on Period reached a very high stage in the middle ages, Decoration, showing how the products of the

> THE LONG LEAF PINE IN VIRGIN FOREST. A Silvigil Study. By G. F. Schwarz. New York: John Wiley & Sons. 16mo.; cloth; 135 pages; illustrated.

Like all nations that have had enormous natural resources at their disposal, we have been lavish of our timber supply. Our forests were so widely extended that it seemed absurd Publications of Yale University. By to think that they could ever be exhausted. Now we realize that we can hope to have a sufficient supply of lumber for our future needs Dr. Fisher's monograph is a valuable con-tribution to the very scant literature on the subject of endurance. His experiments were of the life-history of a most important forest conducted largely to verify the claims of tree, the "long leaf pine." Along almost the Horace Fletcher as to the effects upon endur-entire southern seaboard, as well as in several ance of thorough mastication combined with isolated areas, this tree is the prevailing timimplicit obedience to appetite. Dr. Fisher ber-growth; its lumber value is correspondings that Mr. Fletcher's claims, so far as ingly great. Mr. Schwarz has had admirable they relate to endurance, are justified. The opportunities to study the various conditions results observed during the experiment may be described in his book, and has produced a summarized as a slight reduction of total food work of value to all who take an interest in

> DU VOL PAR DES COLONNES D'ADIPOCYTES CHEZ LES FOURMIS, APRES LE NUPTIAL. Extract des Comptes Rendus Hebdomadaires des Seances de l'Acadèmie des Sciences. Paris.

> The wing-muscles of ants function during a period which may not be more than a few minutes in duration. The investigations of M. Janet show what becomes of these muscles, the most bulky of those which the insect possesses.

For which Letters Patent of the

United States were Issued

for the Week Ending June 11, 1967.

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.]

| Acid, manufacturing dialkyllarbituric, M.  |             |
|--|-------------|
| Conrad   | 856,622     |
| Adding and subtracting machine, J. C.  |             |
| Epeneter   | \$56,236    |
| Adding machine attachment, A. Pentecost.   | 856,905     |
| Addition, apparatus for, G. Nahlik   | 85,653,7501 |
| Adjustable stand, H. & A. J. Buckland<br>Adjusting device, H. G. Beede   | 856,679     |
| Value and addition and addition at the state of the state | 850,507     |
| Aerial vehicles and other structures, con-   |             |
| nection device for the frames of, Bell   |             |
| & McNeil   | 856,838     |
| Aerial vessel, L. D. Merrick   | 856,895     |
| Air ship, W. Hull  | 856,876     |
| Alloy, aluminium, A. Chamband  | 856,392     |
| Mleys, production of catchin, von Kugel-<br>gen & Seward   |             |
| minister wheel W (C. T.  | 856,475     |
| Ambulatory wheel, W. T. Jones  | 856,259     |
| Incher compartment, Fraser & Jackson   | 856,239     |
| Animal trap, J. M. Kellogg   | 856,883     |
| Animal trap, C. F. Lamp  | 856,889     |
| Animals from stables, means for releasing  |             |
|  | 856,727     |
|  | 856,712     |
| Ash and garbage receptacle, combined. J.   |             |
| Kolouch  | 856,264     |
| Assembling apparatus, N. Marshall  | 857,005     |
| Atomization apparatus, W. L. Root  | 856.301     |
| Antomatic switch, G. Matthews  | 856,892     |
| Automobile wheel, J. R. Barker   | 856,757     |
| Automobile driving mechanism, F. J. New-   |             |
| man  | 856,486     |
| Bait hooks, jiggers, and like augling de-  |             |
| vices, attachment for, J. W. Hay-  |             |
| ve and   | OTTO DOT    |