

A HORNED COCKEREL.

BY EDWIN G. DEXTER.

Nature not infrequently makes serious mistakes in her handiwork, and although the dime museum managers and proprietors of catchpenny shows may be the greatest gainers, financially, by her misfits, a careful study of the monstrosities which occasionally appear in the animal kingdom is not without interest, even to the scientist. Although we might rightly question the value of any considerable number of such abnormalities in a synoptic collection of natural history specimens, they certainly have their legitimate place in any patho-



A HORNED COCKEREL.

logical museum, and their study throws some little light upon problems in embryology and heredity.

The monstrosities which have been observed in organic nature may, for the most part, be classified as cases of first dichotomy, second atavism, third vestigial parts. In the first class are included all cases of double or multiple parts, when a study of the ancestry of the animal shows that such supernumerary parts were never present in its phylogenetic evolution; such, for example, as two headed calves, dogs, snakes, and fish—not very uncommon monstrosities—four-legged chick-

ens and six or eight legged quadrupeds; in fact, nearly all cases in which normal appendages are reduplicated. Bandleben has, however, attempted to show that the ancestors of the modern mammals were heptadactyle, and that a single supernumerary digit should be put in our second class, but this has not been well proved.

Cases of atavism are those in which characteristics of some far-back ancestral form suddenly make their appearance. Such monstrosities are usually not so strikingly abnormal in appearance as are those of dichotomy, but are probably more common. Among them are cases of supernumerary mammae, ribs and vertebrae in the higher mammalia, one or more stripes resembling those of the zebra around the body of an ungulate, an unusual amount of hair upon any part of the human body and many secondary sexual peculiarities in the vertebrates.

As vestigial parts we must consider those peculiarities in organic structure which are being eliminated by the species in its evolution, though the structure normally pertains in a rudimentary form, usually abortive or useless, although Mr. Wallace remarks that "much that we suppose to be useless is due to our ignorance."

In this class of structures come the posterior appendages of the python, the cervical auricles of many mammalia, the vermiform appendix and muscles like the attollens aurem in man and the occasional pinnae of certain species of seal and of the whale.

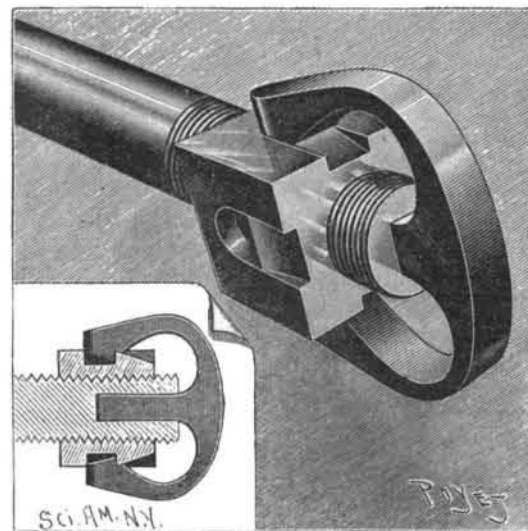
Darwin calls attention to the fact that these rudimentary structures are extremely variable and are occasionally of such size as to form a true monstrosity.

The cock shown in the accompanying picture belongs to none of these classes, for the phylogeny of the class aves shows no ancestors which ever bore spurs or horns upon the head, nor are the parts supernumerary, since there is no vestige of spurs upon the tarsi. It is a true "sport" of a most unusual character, since rarely, if ever, have there been observed animals in which a normal part was found in an abnormal position. The spurs are symmetrically placed upon the sides of the head directly above the eyes and have every appearance of horns. They are of the usual size ($\frac{1}{8}$ inch long), the right one but slightly curved, though its mate is in the form of a nearly complete circle, with its point in contact with the skin at the base of the comb. They are attached only to the skin and easily movable in all directions, though this looseness of attachment may be only accidental.

I have under observation the offspring of this peculiar cock, in the hope that the variation may, in some cases, be transmitted.

A DEVICE FOR FASTENING NUTS.

In all machines submitted to vibration, the nuts have a tendency to become loose, and an endeavor has been made to remedy the trouble by means of various arrangements, the best known of which is the jam nut. But the jam nut is not always efficacious and does not give absolute security. In the device represented herewith the nut and bolt are rendered interdependent by means of a piece of steel with three branches, the central one of which engages in a polygonal cavity,



DEVICE TO PREVENT THE UNSCREWING OF NUTS.

formed in the head of the bolt, while the others engage in notches in the sides of the nut. The form of these notches is such that the lateral branches have to spread slightly in order to enter them, and the steel piece, once engaged, can free itself only by exerting a lateral thrust upon the two external branches at once.

This arrangement, devised by Mr. John Hartman, is, we think, capable of being utilized in the construction of automobile vehicles for firmly fixing the parts the eventual unscrewing of which might be attended with danger.—La Nature.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

BURGLAR PROOF EXPRESS CAR.—Orlando J. Foster, Silver Lake, Wis. A car designed to be effectually defended by a single person is provided by this invention, the construction being such that a person entering the car may be held a prisoner outside of the compartment in which the valuables are held. The car is divided into compartments by a partition in which is a revolvable door made in semi-cylindrical sections, there being means for independently operating each section, whereby the passage from one compartment to the other may be effected only at the will of the occupant of one of the compartments, and without the possibility of a second person also gaining access when following the one intentionally admitted. The improvement may also be put in use in banks and other places where valuables are kept.

HAND CAR AND MOWING MACHINE.—John L. Smith, Sumner, Neb. To facilitate cutting grass or weeds along the sides of the track rails, a hand car, according to this invention, is provided with a cutting or mowing attachment adapted to yield vertically to ride over obstructions, the attachment being readily removable from the car, enabling the latter to be used in the ordinary way. The car platform is carried by front and rear wheels, its driving mechanism comprising a gear operated by hand levers, a cutter bar shaft being located on an intermediate gear, and there being a vertically movable frame having forwardly projected teeth in which the cutter bar reciprocates.

Bicycles, Etc.

BICYCLE DRIVING GEAR.—William F. Williams, London, Eng. This invention relates to chain gear in which the ratio of the gear during the revolution is so varied by means of an elliptic sprocket wheel that the effective leverage of the pedals is decreased at the dead points and increased at the points where power may be most advantageously employed, the object being to maintain constant the tension of the chain notwithstanding the varying effective ratio of the driving and driven sprocket wheels.

BICYCLE GEAR.—Rudolph Whitman and Orris C. Abbott, Walkerville, Mont. To increase or diminish the leverage that may be exerted on a wheel, according to this invention, a gear wheel is mounted on a stub axle projected outward from the frame, and having an annular recess running around the axle, in which a wheel is revolvably mounted, there being a clutch ball interposed between the two wheels, while a guide plate is rigidly held by the bicycle frame and the stub axle, and the pedal lever has parts slidably connected with the second wheel and the guide plate.

TIRE TAPE.—Julius J. Stenger and Henry A. Rohm, Sayville, N. Y. A tape that is designed to afford good service when applied on the wheel is provided by this invention, the tape having a coating of vulcanized rubber or similar material on its outer surface, there being a layer of adhesive material on the other side. The tape is to be wound spirally about the tire in the usual manner, a vulcanized portion of the tape always overlapping a narrow unvulcanized portion.

Mechanical.

PIPE WRENCH.—Thomas Forstner, New Ulm, Minn. To facilitate conveniently adjusting the movable jaw close to the work and then locking it securely in place is the object of this invention, which consists principally of a jaw casing carrying the movable jaw, fitted to slide on the fixed jaw handle, and a dog adapted to engage the handle and carried by the casing, the dog being adapted to be locked to the handle to hold the casing in place. The construction is arranged to permit of quickly and conveniently adjusting the casing and the movable jaw close to the work and then to lock it securely in place, the wrench being of simple and durable construction.

COMBINATION TOOL.—Morrill H. Poor, San Antonio, Texas. A clamp, vise, brace, drill stock or wrench may be made of the tool provided by this invention, which is of simple and inexpensive construction and readily adaptable to the various uses contemplated. It has a body arm to which is pivoted a body bar having at one side a point and at the opposite side a vise jaw, while a second arm is adjustable to and from the first arm and is likewise adjustable on the body bar, the second arm being provided with a split jaw at one side and a vise jaw at the opposite side. As a brace or drill stock, the tool may be brought into use in places where the ordinary brace or drill stock could not be used.

ATTACHMENT FOR SQUARES.—George M. Elliott, Winnipeg, Canada. A bar formed with a slot for the passage of the square, according to this invention, is adapted to be clamped to the arms of the square, each clamp having a clamping screw engaging a transverse slot formed longitudinally in the bar, whereby the operator is enabled to conveniently and rapidly draw square, bevel and oblique lines in any conceivable position, the attachment being simple, durable and readily applied to the square. The device is designed to be especially serviceable to carpenters, bridge builders and other mechanics.

Agricultural.

CULTIVATOR AND HARROW.—Nathan P. Cook and William A. Whitfield, Monroe, La. This invention provides a harrow or cultivator frame which may be readily converted from a V or an A harrow or cultivator to a side cultivator or harrow frame, either right or left hand. The body portion of the frame consists practically of but two parts, means being provided for the attachment thereto of a clevis and the handles, and means for connecting the blades, teeth or shovels. The change from one form of harrow or cultivator to another may be readily made by the farmer, and the frame held as securely in one position as the other, all the binding and connecting devices being applied in the same manner in different forms of the machine.

CHURN.—Robert F. Yancey, Akard, Mo. This invention is for a churn in which the dasher may be revolved in opposite directions, and the dashers and shafts on which they are mounted may be conveniently and quickly cleaned. A frame sidable in up-rights carries a hanger in which is journaled a shaft with beveled pinion, a tubular shaft turning around the

first shaft carrying also a beveled pinion, and both pinions engaging a driving gear, while a dasher is attached to each shaft, the opposing ends of the blades or paddles of the dashers being beveled, and the ends of the upper dasher blades being inclined to pass close to the upper surfaces of the lower dasher blades.

LAWN MOWER.—Perry G. White, Cedar Rapids, Ia. This mower is especially adapted to facilitate the adjustment of the cutters to cut grass at various lengths, the adjustment being made from the handle of the mower, and the mower being so placed that it will be flexible, adapting itself to the surface of a terrace or embankment, and cutting the grass thereon as evenly as on a level surface. Connected gear casings are rigidly mounted on the ends of the axle of the ground wheels, the casings carrying the cutting mechanism, while a spring-pressed bolt carried by the handle engages a rack on the axle, forming a flexible connection between the body of the lawn mower and its handle.

CROSS CLEVIS.—John L. Thomas, Osceola, Mo. This is a device arranged for convenient attachment to the clevis jaws of a plow beam, and adapted to be readily adjusted to any kind of a plow. It consists principally of a clevis body in which the clevis pin is removably held, while an arm adjustable on the clevis body is formed with a fork for receiving the clevis pin and one of the jaws of the plow beam.

Miscellaneous.

APPARATUS FOR TREATING GARBAGE.—Charles Edgerton, Philadelphia, Pa. This apparatus comprises a series of digesters having valved outlets, an endless metal slatted belt with rigid transverse pieces for receiving the cooked garbage, horizontal guides supporting the edges of the belt, and a series of pressing rollers continuously separating the solid from the liquid matters, the material being first cooked by steam and then subjected to pressure to separate the oils, etc., the oils to be used for soap making and other purposes and the solid matter or tankage for fertilizers. In combination with the digesters and their discharging devices is a continuous roller press whereby the operation is rendered cleanly, rapid and sanitary.

CHAIN LINK.—William H. Griffith, New York City. Two patents have been granted this inventor for bent wire links, in which the greatest possible strength is combined with the most secure and unobtrusive manner of knotting or securing the ends, the invention thus securing strength and durability with compactness and symmetry. These links are of the pattern known as the "Figure 8" link, the opposite sides and ends of which are alike. The links are each made of a single piece of wire, whose ends are sunken into recesses formed by the various folds at the middle, the links being thus compactly knotted and not liable to catch into or wear anything with which the chain comes in contact.

BURGLAR ALARM.—Frank Fenley, New Orleans, La. This is a portable device, for use by travelers, etc., adapted to be secured in a crevice between a door, transom or window and the casing, in such

manner as to cause an explosion when the door or window is opened. It comprises a body having a cap-holding socket and a spring clamp, there being a spring-actuated exploding hammer pivotally held in the body and formed with a locking lip, one of the members of the spring clamp engaging the locking lip to hold the hammer raised. The device is readily carried in the pocket and easily applied to a door or window, etc.

CHECK PUNCH.—George O. Brosnahan, Jr., Pensacola, Fla. For conveniently punching the amount of a check, both in letters and numerals, to prevent fraudulently raising the amount, this punch is made with a sliding carriage carrying a set of perforating letter dies and a set of perforating numeral dies, there being means for shifting the carriage and a slidable anvil adapted to engage the corresponding dies of either set of dies, the anvil being shiftable from one set of dies to the other.

TICKET COLLECTING APPARATUS.—Joseph Antomarchi, Gloster, Miss. To facilitate the collection of tickets from persons entering a hall, theater, etc., or boarding a railway train, this invention provides a rotary gate with ratchet wheel engaged by a pawl, with which is connected a lever operated by a cam plate, in connection with a sliding plate, while a second sliding plate may be connected with the first sliding plate by a ticket, the connection between the plates and the retraction of the pawl, whereby only one may be allowed to enter, being impossible to effect only by the use of a ticket.

CANDELABRUM.—Herman F. Nehr, Brooklyn, N. Y. To so construct a candelabrum that it will be light, durable and inexpensive, and so that the arms may be adjusted vertically or laterally at various points in their length, are among the principal objects of this invention, enabling the arms to be given a great variety of shapes. Means are provided whereby each arm may be independently adjusted, and whereby also the arms may be made up of a series of sections, each section being capable of independent adjustment.

SASH ROLLER.—George E. Schmitt, Wellsburg, West Va. This invention provides a compact structure of roller and casing, whereby a set of rollers may be readily attached to a window sash to prevent rattling or the window getting tight, while it will always be dustproof and waterproof, as the sash is held closely against the outer strip at all times. The attachment is substantial, practical and durable, and is designed to work equally well under any slight expansion or contraction of the casing of the window frame. It is designed to be readily placed on old as well as new windows, and permits of the convenient removal of the sash when the windows are to be cleaned.

ORGAN ACTION.—Joseph Skawik, Bloomfield, N. J. To insure a positive and quick closing and opening of the valve for the sounding device is the object of this invention, an exhaust controlled by the key being connected with one side of the valve and a wind chest connected with the other side, so that on pressing a key the air is exhausted from one side of the valve, and the preponderance of pressure on the other side from the wind chest causes the valve to open to allow the air to pass to the sounding device, there being

an adjustable stop to limit the movement of the diaphragm valve.

SASH HOLDER.—Lewis H. Bowman, Walla Walla, Wash. To hold a window sash, without rattling, at any height desired, and to prevent the ingress of air or dust when the sash is closed, are the main objects of this invention...

WAGON AXLE BEARING.—Henry M. Cromer, Anderson, S. C. This invention is designed to facilitate the utilization of old thimble skeins, making them fit closely upon the axle, as well as provide a new construction, which consists of a conical sleeve attached to each end of the spindle bearing and adjustable in either direction...

CLINICAL THERMOMETER SHIELD.—Jennie C. Harrington, Ossian, Ia. This shield is especially designed for use on fever thermometers, to prevent patients from breaking the instrument while it is being held in the mouth. It consists of a casing, preferably of a suitable metal, such as aluminum or silver, made in two longitudinal sections hinged directly together...

APPARATUS FOR COOLING LIQUIDS.—William L. Spoon, Jr., Burlington, N. C. For cooling hot water or other liquid used in ice machines, etc., this inventor has devised an apparatus which is designed to be very effective, while permitting the use of the liquid over and over again with a minimum percentage of loss by evaporation. It comprises a perforated casing into the upper end of which a current of air is to be forced, a nozzle connected with the liquid supply spraying liquid into the casing, while the latter has a perforated zigzag supporting leg containing perforated plates. The liquid is thus atomized and sprayed in finely divided state, and at the same time subjected to a current of air of ordinary or low temperature, causing accelerated evaporation and cooling.

STERILIZING APPARATUS.—Arthur J. Vause, Sydney, New South Wales. For sterilizing milk and other liquids, and the receptacles in which the milk is placed, as well as for automatically bottling and corking the milk, this inventor has devised an apparatus in which the milk is first passed in bottles through a series of inclined ways, kept at varying and adjusted temperature, passing from thence to be received in a steam jacketed container, from which it passes through a deodorizer and thence to a filling apparatus. The apparatus is provided at various points with thermometers, according to which the temperature may be regulated as desired.

WATER COCK.—Maurice Andriveau, Paris, France. This invention relates to cocks in which automatic closing takes place, and provides a cock which will have a double closing action, and which at each operation supplies only a predetermined quantity of water. The valve casing has two apertured seats, in both of which the cutoff valve, constructed in two longitudinally adjustable sections, may seat itself, the length of the valve being changeable, there being means for changing the pressure on one side to cause the valve to move from one seat to the other. The valve will operate in any position, with the outlet facing upward, downward or laterally.

WASHING MACHINE.—Alexander E. Hoiges, Tecumseh, Oklahoma Ter. In a suitably constructed frame, according to this invention, a semi-circular receptacle is mounted to rock, there being within it a rubbing cylinder journaled in a frame with which is loosely connected an arm adapted to receive a swinging motion from the receptacle to move the rubbing cylinder in an opposite direction to the movement of the receptacle. By this means a proper rubbing and washing of the clothes is effected without danger of tearing them, the machine being easily operated and of simple and durable construction.

BOSOM PAD.—Dora Harrison, Lansing, Mich. This pad is an improvement on a formerly patented invention of the same inventor, providing an improved dress form readily applied to or removed from the pockets of corsets and other garments, and designed to insure a proper fitting of the dress. It is made in two pad sections, each having a back and front section with meeting edges having flanges lying snugly against each other, a welt surrounding and cemented to the flanges, while lace arms are secured by adjustable lacing to the welts of the pad sections.

ROLLING PIN.—Anson B. Fowler, Shelton, Wash. This device may be used as an ordinary rolling pin, in the preparation of dough for the oven, or with a flour delivery for sprinkling the dough to be rolled, to prevent it from sticking or adhering to the pin, and with this view is made with two shells, one within the other, and each having perforations, which may be brought in line with each other or not, as desired, the inner shell forming a flour receptacle. The parts are readily detachable to facilitate cleaning.

Designs.

SEPARATOR.—Frank H. Congdon, East Greenwich, R. I. This invention relates to separators used in spinning machinery, such as the Doyle separator, and embodies an improved form thereof. The blades are so curved as to present fewer chances of collecting lint and dirt, and are also lighter, giving the ring rail less weight to move.

GLASS PITCHER.—Joseph Wilson, New York City. This pitcher has panels decorated with "panties," and prismatic panels at each side of such panels, box panels crossing both the others.

BICYCLE LUGGAGE CARRIER.—A. J. Gilliland, Smethport, Pa., and W. H. White, Nyack, N. Y. This is a bracket device to be fitted on the steering head and having arms projecting from each side adapted to conveniently carry a variety of packages.

SPOON HANDLE.—Hermin J. Klumpp, Portland, Oregon. On the obverse side this handle represents interlaced ribbons, with panels containing floral figures, while on the reverse side are scroll and shell figures and a beaded ribbon following the margin of the head.

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.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free. Emery, etc., etc. The Tanite Co., Stroudsburg, Pa. Gasoline Brazing Forge, Turner Brass Works, Chicago. Yankee Notions. Waterbury Button Co., Waterbury, Ct. Power Hammers. Jenkins & Lingle, Bellefonte, Pa. Handle & Spoke Mch. Ober Lathe Co., Chagrin Falls, O. Analyses, all kinds; water a specialty. Chemist, Ripon, Wis.

Wanted, small Metal Novelties for adv. purposes. What have you? G. Felsenthal, 215 Dearborn St., Chicago. FERRACUTE Machine Co., Bridgeton, N. J. Full line of Presses, Dies and other Sheet Metal Machinery. Improved Bicycle Machinery of every description. The Garvin Machine Co., Spring and Varick Sts., N. Y. Concrete Houses—cheaper than brick, superior to stone. "Ransome," 757 Monadnock Block, Chicago.

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

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

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.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and though we endeavor to reply to all either by letter or in this department, each must take his turn. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(7369) J. W. B. writes: About what size wire, number of sections, etc., to wind on laminated core of following size. You will help me out of a quandary:

- Length of core... 5 1/2 inches. Diameter of core... 3/4 " Number of laminations... 30 Sections... 10 Diameter between fields... 3 1/4 "

I wish to obtain an E. M. F. of 52. A. If your field is of the proper strength, wind the armature with 24 sections of 12 turns each of No. 16 wire. You can change the number of sections if you keep the total number of turns the same. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 600, for further directions for winding. You can place sixteen No. 16 wires to the inch.

(7370) J. L. B. writes: Will you kindly answer for me the following? 1. Why does not the magnetic pole coincide with the geographic pole? A. This is as yet one of the hidden secrets in the physical constitution of the earth. 2. How is artificial stone made? A. Articles in SCIENTIFIC AMERICAN SUPPLEMENTS, Nos. 183, 355 and 868, give very full accounts of the various kinds of artificial stone. 3. What is meant by a "car mile" in speaking of building railroads? A. A "car mile" is a term used in estimating the cost of running cars. It is the cost of running one car one mile. 4. How are billiard balls turned? A. For method of turning billiard balls see Notes and Queries, No. 7353, SCIENTIFIC AMERICAN, February 19, 1898. 5. In what number of SCIENTIFIC AMERICAN or SUPPLEMENT may I find an account of how artificial ice is made, for or in skating rinks? A. Skating rinks with artificial ice are illustrated and described in SCIENTIFIC AMERICAN SUPPLEMENTS, Nos. 35, 738 and 892. 10 cents each, mailed.

(7371) C. N. S. asks for formula for preparation to stick wood veneer on tin or metal of any kind. Have used glue and nitric acid, also glue and garlic, but neither works satisfactorily. The veneer will peel after a time. I want something that will adhere permanently. A. M. Eiel gives the following formula for a mixture which can be used for metal, glass or wood: Gum tragacanth, 30 grammes; acacia gum, 120 grammes; water, 500 cubic centimeters. Dissolve, filter and add 2 1/2 grammes of thymol suspended in 120 cubic centimeters of glycerine; then add enough water to make up the bulk to 1 liter. This bath will keep a long time.

TO INVENTORS. An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring 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 22, 1898, AND EACH BEARING THAT DATE.

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

Table listing inventions and their patent numbers, including items like Air brake, Amusement device, Animal trap, Ash remover, Axles, Band cutter, Band slide, Battery, Bearing ball, Bedstead, Bicycle crank, Bicycle frame, Bicycle guard, Bicycle handle, Bicycle holder, Bicycle lamp, Bicycle stand, Bicycle support, Billiard cushion, Binding implement, Bit, Boiler, Boiler gage, Book rest, Boot or shoe nailing machine, Boring and turning machine, Bottle and stopper, Bottle attachment, Bottle packing case, Bottle stopper, Bowling alley, Box folding machine, Brake, Brake mechanism, Bread and pastry board, Buckle, Burner, Burning and heating appliance, Button or stud for shirt bosoms, Cabinet, Camera, Camera, photographic, Can, See Oil can, Sealing wax can, Candle holder, Candycutting machine, Car brake shoe slack adjuster, Car coupling, Car coupling, H. Laake, Car coupling, S. Reynolds, Car door, Car draw bar, Car fender, Car fender, J. W. Park, Car stopper, automatic, Car stopper, I. J. Neracher, Cars, etc., safety guard and truck for, A. M. Phelps, Card box, Carpetsweeper, Case, black packing case, Cash register, Cash register and indicator, Cash pitching apparatus, Centrifugal machine, Chair, See Opera chair, Chair iron, Chilson & Wolf, Chuck, R. H. Hurlbut, Churn, Coppock & Miller, Churn, J. R. Halley, Cleaner, See Fruit cleaner, Clothes wringer, Coffee, Coffin lowering machine, Collar fastener, Color value curtain shutter, Cooker, steam, Cooler, See Milk cooler, Corn sheller, Allen & Bearden, Corn sheller conveyor, Corner plate, Corner slaying machine, Corner strip anchor plate, Cotton cleaning mechanism, Cotton spring for, Countersinking machine, Cuff links, Cultivator, Cup, Cutter, See Soap cutter, Cyclometer, Damper, grate, Keifel & Zipp, Demolisher, automatic, Dish, crushed fruit, Door checks and closers, lever connection for, Door hanger, Doors, double sliding, Draining machine, Drawing apparatus, Dress shield extender, Drier, See Fruit drier, Steam drier, Drier, A. S. Livengood, Drill, See Rail drill, Dropper, See Medicine dropper, Drum, heating, Dye, black trisazo, Dye, blue black alizarin, Dye, derived from anthraquinone, green, Dye, derived from quinizarin, green, Egg beater, Electric battery, Electric battery, Shrewsbury & Dobell, Electric light support, incandescent, Electric meter driving gear, Electric resistance conductor, Electric resistance conductor, O'Neill & Gale, Electric wire holding appliance, Electrical primary battery, Elevator, Elevator hoist, T. Mason, Elevator hoist appliance, Engine, See Gas engine, Rotary engine, Vapor Engine, F. J. Bruguier, Engines, electric igniter for explosive, Engine, electric igniter for gas, Explosives, making, Fabric, See Knitted fabric, Feed trough, Fermenting squares and vats, construction of, Finishing roll, Fire alarm box, Firearm, box magazine, Firearm, magazine, Bennett & Mason, Fire extinguisher, Fishing tackle holder, Fish tank, Fly screen, Fly trap, automatic, Foot covering, Forging and sharpening rock drills, Forging hollow shafts, Frame, See Photographic printing frame, Sewing machine quilting frame, Fruit cleaner, Fruit drier, G. A. & B. G. Stevens

Table listing inventions and their patent numbers, including items like Furnace blast pipe, Game apparatus, Gas compressor, Gas engine, Gas engine, W. E. White, Gas engine attachment, Gas generator, Gas generator, acetylene, Gas machine, hydraulic blower and pressure apparatus, Gate, S. E. Auker, Gate, R. Hayden, Gear, driving, Generator, Glass cutter, window, Grease trap for sinks, Gun, pneumatic, Gun turrets, apparatus for operating, Hanger, See Door hanger, Pipe hanger, Hat pin, Heater, See Water heater, Hides, skins or leather, machine for treating, Hoisting apparatus, Hoisting apparatus, W. Sauer, Horseshoe, Olcott, Hydrocarbon burner, Injector, steam, Ink well, Insect exterminator, Insulator, Jar cover fastening, Joint, See Metallic frame joint, Steam joint, Knitted fabric, Knitting machine, straight bar, Knob attachment, Lacing, machine for securing metal points to, Lamp, C. M. Lundgren, Lamp, M. P. Stevens, Lamp burner shield, Lamp, electric arc, Skinner & Bacon, Lamp radiator attachment, arc, Lantern, bicycle, Lathe attachment, Lawn rake, scraper and cutter, Starkweather, Lead from its ores, extraction of, Lemonade making device, Lifting jack, Liquids in form of a stream, implement for discharging, Liquids means for controlling flow of, Loading dirt, gravel, etc., onto wagons, device for, Loom harness leveling device, Mail marking machine, Mail or parcel elevator, Manhole frame, Manhole frame, H. W. Sanborn, Match safe, Measuring, variable angles between rotating bodies, machine for, Meat sawing machine, Medicine dropper, Metal drilling machine, Metallic, Meter, J. L. Dodge, Milk apparatus for testing amount of fat in, Milk cooler, Milk cooler, S. Snider, Mine draining siphon, Musical instrument, Necktie retainer, Nut lock, Nut lock, W. E. Taylor, Nut lock, G. H. Dye, Nut lock, S. O. Haskins, Office indicator, Oil can, Opera chair, Ordinance breech loading, Organ, reed, Ozone producing apparatus, Paper holder, roll, Paper machine, Paper shifiting gripper, Patten for brushes for waxing floors, Pavements, roadways, etc., composition of, Pen, fountain, Pencils, etc., holder for, Permutation lock, Permutation lock, C. J. Kintner, Photographic films, apparatus for manufacturing, H. M. Reichenbach, Photographic frame, Photographic shutter operating lever, Piano forte action, Picture supporter, Pin, See Hat pin, Pin lock, Pipe, See Sheet metal pipe, Pipe hanger, C. MacTaggart, Pipe or nut wrench, Pipe or tube coupling, Pipe wrench, Plecter fastener, Planing machine, Plow row gage, Pneumatic tube switch and back stop, Pockert garment, Puffer, Power transmitter, Power transmitting mechanism, Preserving alimentary substances, apparatus for, Propeller, chain, Pumping machine, Puller, See Stump puller, Pump, oil well, Puzzle, W. Bowling, Radiator, Rail drill, Railway rail fastener, Railway signal, Railway signal, mechanical, Railway signal operating system, Railway system, electric, Railway system, electric, J. D. Gibbs, Railway tie, metal, Reckström, Reckström, Reckström, Riveter, Riveting machine, Rolling balls, machine for cold, Rolling rods or wire, machine for, Rotary engine, Rotary engine, Wampler & Bloom, Rotary engine, reversible, Sampling mill, Sand distributing device, Sash balance, Sash fastener, Sash fastener, E. J. Wade, Saw, J. Guedel, Saw filing device, Scale, C. H. Mattice, Scale, air, Screen, See Wire screen, Window screen, Sealing wax can, Secondary battery, Separator, Reeves & Kailor, Sewing machine guide, Sewing machine needle holder, Sewing machine quilting frame, Shaft coupling and cycle hanger, Shears gage, Sheet metal pipe, Shell, See Corn sheller, Shirt, bathing, Sprocket wheel and chain, Stamp tapper, Steam boiler, E. Hook, Steam drier, rotary, Healy & Kraft, Steam joint for rotary cylinders, Steel and cast metal making composite article, of manganese, Stopper, See Bottle stopper, Stove, J. A. Hampton, Stove or furnace, heating, F. A. Wilkinson

(Continued on page 157)