and, if desired, a hand rest may be employed below the shoe to hold it steady in turning the tool, a lamp or gas flame being placed adjacent to the tool not in use for alternately heating the tools.

Agricultural.

ANIMAL CLEANING DEVICE.—Orson P. Fretwell, Cedar City, Utah. This device comprises a rotary brush mounted in a framework in which is also mounted a gear wheel and connections, with a rubber or similarly covered tire on one or more operating wheels, the rotary brush being operated by pushing the device along in contact with the animal's body. Different forms of brushes and cleaners may be used, to be operated by the gear connections, for doing rapid and effective work in cleaning horses and other animals.

CANE PLANTER.—Jacob C. D'Azevedo, Brooklyn, N. Y. This invention relates to machines in which the operations of making a furrow, planting the cane, and covering the furrow are accomplished in successive and closely following steps, the machine facilitating the planting of cane of any desired length, planting the cane in multiple in the same furrow, and dropping the various pieces simultaneously. When the ground is covered with pea or other vines, the machine provides means for cutting the vines in advance of the plow, so that they will not interfere with the planting, and the machine is also provided with a marker not liable to be rendered inoperative by contact with an obstruction.

CONNECTING ROD FOR REAPERS, MOWERS, ETC.—Daniel J. Crosby, Kadina, South Australia. This rod is designed to facilitate actuating the knives of reapers and mowers, etc., in such a manner that, when obstructions are met with, the connecting rod, which converts the rotary into reciprocal motion, shall lengthen or shorten, and thus avoid breaking of the knife or other part of the machine. The rod has a spindle longitudinally movable through two bearings of a frame, a spring being located between the bearings, while two pins slidable in the spindle confine the spring, the pins being capable of engaging the bearings as the spindle reciprocates in the frame

BAND CUTTER AND SELF-FEEDER.—Henry J. Fourtner, Hazelton, Iowa. This machine is separate and distinct from a thrashing machine, with which it is connected only when it is desired to automatically feed the grain to the feeder of the thrasher. It is a simple and durable machine, readily applied to any thrashing machine and arranged to feed the grain in regular quantities corresponding to the capacity of the thrasher, to prevent over-feeding and consequent inferior thrashing. The operator, by throwing off the driving belt, may stop the band cutter and self-feeder at any time, to feed the grain by hand.

Miscellaneous.

PHOTOGRAPHIC CAMERA.—Daniel P. O'Leary and Samuel B. Kull, New York City. This invention covers an improvement upon a formerly patented invention of the same inventors, in which the movement of the film is automatically controlled by a shutter mechanism. The camera has a partition forming a guide for the portion of the film to be exposed, a casing for the film at the rear of the partition, a guide board secured to the rear of the partition near one side, the rear face of the guide board at the top and bottom being formed with recesses, while an index roller has its ends provided with toothed wheels adapted to engage the film at the recesses.

TRANSFERRING DESIGNS.—William R. Fish, Brooklyn, N. Y. To facilitate taking prints from lithographic stones or metal, etc., and converting them into sensitive transfer sheets, regardless of the age of the print or the number of times it has been used, this invention provides for first treating the sheet or film containing the drawing or design with a mixture of water and albumen, gelatine or one of the mucilaginous gums, then washing in water, then treating it with a greasy or printing ink, and then transferring to a stone, plate or printing surface.

GAS GENERATING MACHINE.—Frank A. Hutter, New Haven, Conn. This machine is designed to make gas for illuminating or heating purposes, and has a cylindrical generator, with perforated partitions, and packed with an absorbent material, the generator being mounted to be partially rotated occasionally, to facilitate the complete combustion of heavy oil An uninterrupted flow of air is secured by means of two pumps with flexible plungers, the air being forced from an air pressure cylinder through the generator, from which the gas formed is forced out through service pipes, and the motor being automatically stopped or retarded when the air pressure becomes too great, there being no danger of bursting.

SPRAYER.—Jules Bengue, Paris, France. This invention relates to devices for spraying ethyl chloride and other volatile liquids, employing therefor a capillary discharge opening with a protecting filter, but instead of the ordinary closing valve having a movable plug, a washer is used of suitable soft material, inclosed in a metallic cap. The washer is pressed against the orifice of the capillary opening by a spring and intermediary mechanism, such as levers, the apparatus being readily manipulated, while it may be tightly closed.

MOVEMENT OF FLUID IN PIPES, ETC.—Orville Carpenter, Pawtucket, R. I. This invention relates to fire sprinklers and other apparatus containing a fluid normally dormant, but adapted to flow when a valve or other device is opened, and to apparatus containing a fluid normally in motion and liable to have its flow interrupted. A new and improved method and means are provided by the invention for indicating the movement and cessation of movement of a fluid in a pipe, boiler or other apparatus, whereby an alarm is automatically given when the fluid is flowing or its movement ceases.

RESERVOIR PEN.—Carl J. Renz, New York City. This pen has a tapering tubular shank open at its inner end and provided with barriers, and an integral tongue extending beyond an opening at the branching of the nibs, it being designed to so construct an ordinary writing pen that, at one dipping of ink, it will take up and retain sufficient of the fluid to accomplish the writing of one or more letters of medium length without the necessity of a second supply. The pen, therefore, becomes practically a fountain pen without the aid of the extended reservoir and other accessories of an ordinary fountain pen.

CASH RECEPTACLE.—Alpheus C. Sine, Stanford, Ky. At the foot of the main casing of this receptacle is a drawer, over which is a casing supporting a shell which holds a rotary coin carrier, where coins may be placed or from which they may be removed at will, the upper casing holding gearing by which the coin carrier is operated, and the base casing carrying a receptacle for notes and also an alarm mechanism by which notice is given when the apparatus is operated.

AXLE BOX.—Franz A. Surth, Dortmund, Germany. This invention provides novel forms of plates and ring to constitute a closure for the space between axles and the walls of the openings in axle boxes, through which openings the axles pass, the closures serving to prevent the passage of dust in such spaces and also preventing the escape of the lubricant from the axle box. The construction allows free movement of the axle box and axle.

KITCHEN TABLE.—Rudolph J. Hentze, Jersey City, N. J. This table is provided with a bin for holding flour, etc, protecting the contents from insects and dust, the bin being also so placed in the table as not to interfere with the ordinary use of the table. In the body of the table is also concealed a pastry board, which may be drawn entirely out and placed on top of the table. The table is also provided with drawers.

SHOESTRING HOLDER.—Henderson T. Small, Chanute, Kansas. This is a simple device, composed of a bracket having at one end a screw shank, the bracket being provided with a contact surface and with an elastic band sprung into seats thereon. The device is adapted to be readily applied to a cabinet or other support to hold a number of strings in such manner as to permit the ready removal of any one of the strings without displacing or disarranging the others.

FENCE WIRE STRETCHER.—John W. Schaal, Logan, O. The wire clutch mechanism embraced in this invention comprises a bar to which a series of clutches is attached, a tension bar and arms being attached to the bar and pivotally connected to the clutches, the apparatus being adapted to stretch one wire or to stretch several wires simultaneously. It is adapted for application at any point in a section of fence, whether the ground be flat or undulating, and releases the tension automatically as the pickets are inserted, or as the wires are depressed or raised for attachment to the posts.

FLUTE.—Carlo T. Giorgi, New York City. This flute has a mouthpiece curved in direction of the length of the flute, with a mouth hole on its top and a resounding chamber extending below the line of communication between the mouthpiece and the body of the flute. It has all the eleven holes necessary to the chromatic scale, each hole being adapted to be closed independently without cross fingering, and keys are not necessary. The mouthpiece is at the upper end of the pipe, along which the air is blown straight, the notes being of perfect intonation and equality of sound from the lowest to the highest.

LOCK FOR FLUSHING VALVES.—Charles H. Shepherd, New York City. Combined with the flushing valve lever, according to this invention, is a lock which engages the lever when it is raised and holds it in elevated position until released by the descent of the float ball of the supply pipe, the design being to accomplish thorough flushing when the valve is raised by a quick pull of the handle and the ordinary quick closing of the valve. This lock is of simple construction, and can be readily attached to many forms of tank and valve mechanism without making any change in the existing construction.

FIREPROOF FLOOR CONSTRUCTION.—Francis Omeis, Moultrieville, S. C. As an improvement in steel frame buildings, this invention provides for hangers suspended from the floor beams, auxiliary beams whose ends enter the hangers and are supported thereby between adjacent beams, the auxiliary beams having holes through which pass wires or rods connected to the main floor beams, while the auxiliary beams and wires are surrounded by concrete or similar material. The auxiliary beams are of novel form and may be cheaply constructed of flat plate material.

BIN.—Walter Thomas, Palatka, Fla. This invention provides an improved bin for granular foods, the bin having a novel arrangement of a number of compartments in one entire and inseparable structure, the elements of which are very closely combined, and each of which has an essential structure and relative position. The several compartments may be readily washed and cleaned.

LEMON SQUEEZER.—William H. Cox and Charles Hughes, Red Bluff, Cal. This is a simple and inexpensive device with which, by a single movement, the operator may cut a lime or lemon and extract the juice. It is so made that the lime or lemon may be cut from its bottom nearly to the top without severing the upper portion, thus preventing any upward escape of juices during the operation of compressing, and compelling all of the juices to pass out through the exit provided therefor.

MERRY-GO-ROUND.—Thomas T. Templin, Paris, Ky. This is a circular swing of simple and cheap construction, to be operated by one of the riders, and consists of two seats suspended from the ends of a pivoted beam, there being means by which one of the riders may be shifted in relation to the central post, to maintain an even balance between the two occupants, and the rotation being effected by a rope from one of the seats connected with a pulley on the central standard.

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.

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Notes & Queries

HINTS TO CORRESPONDENTS.

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(7272) G. B. C. asks: 1. Can the 3 or 6 inch call bell be worked by the incandescent light wires (current about 104 volts), or should the magnets be wound especially for that purpose? A. The magnets of call bells should be wound to a very high resistance, if they are to be connected directly to a lighting circuit. 2. Should there be lamps in series with the bell, and how many? A. A bell with a lower resistance may be used in series with an incandescent lamp. 3. There are bells made especially for light current; where can they be got, and who are manufacturers of German silver wire, the size used in electric car heaters? A. Any dealer in electric supplies can furnish both bells and German silver wire. 4. Can the 3 inch diameter carbons that are used in the aluminum furnace be used for call bell batteries? A. It will work as a negative plate, but is needlessly heavy. A thin plate, ¼ inch thick, is quite sufficient.

(7273) J. L. T. says: Can a meerschaum pipe be cleaned so that it will color again by boiling in milk, or otherwise, and what is the process? A. When once burnt the pipe cannot be satisfactorily colored unless the burnt portion is removed and the surface again treated by the process by which the meerschaum was prepared. We are not familiar with the process of boiling in milk. The bowls of the pipes are prepared by soaking them first in tallow, then in wax (beeswax) and finally polishing with shore grass or silk. The pipe is preferably boiled in the wax. The oil from the tobacco is retained under the wax and gives the color. It is said that the color can be developed by careful heating, which drives the oil toward the surface. A new pipe should never be smoked out of doors in cold weather.

(7274) F. H. asks: 1. How many bichromate of potash batteries will it take to magnetize the field of the little alternating current dynamo of SCIENTIFIC AMERICAN, September 11, to light two or three 16 candle power 110 volt lamps? A. Five bichromate of potash cells will be required in series. Wind 120 turns of No. 18 magnet wire on each spool. About 35 feet. Approximately, 350 feet for the ten poles. 2. How many amperes will this little dynamo give? A. Two amperes, approximately.

(7275) O. J. asks how to make a good strong battery to use with a gas engine and to run small motors, and if there is any advantage in using copper in the place of carbon. A. The bichromate plunge battery described in SUPPLEMENT, No. 792, is a very powerful battery, one of the most powerful. It can be easily made and recharged. You cannot use copper in place of the carbon in this battery.

(7276) L. S. asks for a formula or formulas for flash light powder, for use in photography, which can be set off with fuse, and work with a minimum of smoke and noise? A. Valuable formulas for flash light powders are given in SUPPLEMENT, Nos. 1062, 1088, 1115 and 1116; price 10 cents each by mail.

(7277) C. W., writing about the small alternator recently published in the SCIENTIFIC AMERICAN, asks (1) whether the ring and armature core can be cast with as good results? If so, can they be cast with the same kind of iron as sash weights are made of, that is scrap tin and pig iron? A. No. You must use the best soft iron to be had for field and armature cores of a dynamo. Sash weights are made of the poorest quality of iron. 2. About how much wire would it take for the whole machine? A. The field spools will require about 4 pounds of wire No. 20 double cotton covered in 12 layers, 120 feet for each spool. Armature teeth must be wound with four even layers of No. 22 double cotton covered magnet wire, about 2 pounds in all, approximately 80 feet on each prong. 3. Could it be charged with four cells of the primary battery? A. No. Four cells of battery are not enough to charge the field. When wound as above it should be charged from an incandescent lighting circuit.

NEW BOOKS, ETC.

THE AMERICAN ANNUAL OF PHOTOGRAPHY AND PHOTOGRAPHIC TIMES ALMANAC FOR 1898. Edited by Walter E. Woodbury. New York: Scovill & Adams Company. 1898. Pp. 370. 8vo, 300 illustrations. Price 75 cents.

This annual, now the twelfth of the series published, appears this season embellished with a beautiful collection of the latest and best examples of process work, and is typical of the progress that has been made in this line. The book is replete with many useful articles and hints representing the experience of well known writers on photography, particularly as regards its relation to the amateur worker. Details regarding process work are fully explained, while such topics as printing, development, enlarging, lantern slide making, camera making, astronomical photography and other subjects are well treated in a practical way easily understood. Printing in colors (the tricolor process) is also described and examples shown. There is the usual collection of the best and latest formulas conveniently arranged for use. The book is in fact a necessary adjunct to the library of every photographer. The editor is to be congratulated on the improvement shown over previous issues.

CENTRIFUGAL ANALYSIS. A manual for the use of the centrifuge in everyday work. Illustrated. Rochester, N. Y.: Bausch & Lomb Optical Company. Pp. 36. This neat pamphlet is supplied gratis to persons interested in the centrifugal analyses of water, milk, urine, blood and other liquids or semi-liquids. It describes the apparatus and methods of arriving at results. The book is readable and instructive.

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DECEMBER 7, 1897,

AND EACH BEARING THAT DATE.

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