RECENTLY PATENTED INVENTIONS.

Engineering.

OIL BURNING FURNACE. — Frank B. Meyers, Fort Plain, N. Y. This is a simple and durable hydrocarbon burner, designed to completely atomize the oil and permit of directing the flame from the center to one side, to distribute the heat uniformly within the furnace. A pipe is held centrally in a casing connected with an air supply, an oil pipe discharging into the central pipe, on the inner end of which is held an atomizing disk, while a valve formed of two plates having semicircular openings at their inner edges is fitted to slide transversely to regulate the admission of air to the casing without shutting off the air supply to the central pipe.

Mechanical Appliances.

BOLT GRIP. — Thomas Spriggs, Little River, Kansas. A pair of spring-pressed jaws pivoted in a frame have converging points with inwardly extending thumb screws in their upper ends, a wedge-shaped chisel sliding in the frame between the thumb screws, a yoke being fixed to the chisel and extending beyond the frame, while a screw mounted in the yoke and frame has a suitable handle. The device is designed to be very useful in removing carriage bolts and tire bolts from wheels, or where a nut has become rusted upon a bolt, and it also may be used instead of pinchers for pulling nails, etc., and for clipping bolts and rivets and holding gas pipe.

PUMP.—Charles J. McKenzie and David M. Mikesell, Wauseon, Ohio. This is a double-acting force and lift pump of simple and durable construction, not liable to get out of order. The pump has a cylindrical barrel with no projections whatever on its outside, permitting of its being placed in a fixed pipe such as are usually employed in drill wells, and it pumps a continuous stream of water on the up and down stroke of the plunger, the water being lifted or forced to any desired height.

COOLER FOR CALCINED MATERIAL.—Amable B. Bonneville, Allentown, Pa. This is a cooling apparatus more especially designed for use in manufacturing Portland cement, where the stone is subjected to a high heat to combine the lime, silicate, and alumina, excluding air as much as possible while the material is highly heated. The material after burning is discharged by a conveyer into a receptacle in the shape of clinkers, the receptacle having at its inside a series of hoppers forming air spaces connected by openings in the wall with the outside, whereby the calcined substances are cooled without undue exposure to the atmosphere. It is designed to take about three days to draw the material from the top to the bottom, thereby insuring a slow and gradual curing and cooling of the clinkers.

ASBESTOS SEPARATOR. — Henry Powers, Cranbourne, Canada. Rock containing short fiber, usually considered worthless, may, by this improved apparatus, be manipulated in a simple manner to extract the fiber contained as a clean and marketable article. The method consists in simultaneously pulverizing the rock and crushing the asbestos in it, causing the disintegration of the asbestos in an agitated body of water having an upward current to float off the fibers, the pulverized rock sinking in the water.

ORE WASHER. — James O. Campbell, Colton, Utah. This device is designed more especially for washing gold sand, to obtain all the precious metal it contains without a great expenditure of water or labor. It is designed to be simple and durable in construction and very effective in operation, consisting of an inclined frame mounted to slide laterally and supporting a series of buckets arranged one in front of the other and one above the other, the higher one discharging into the next lower one.

CLEARING AND EVAPORATING SACCHARINE JUICES.—Ramon F. Cordero, Rubio, Venezuela. There are cleaning pans directly over the furnace of this apparatus, and on the furnace flue rests an evaporating pan having a longitudinal partition forming a return channel, one of the cleaning receptacles discharging into this passage at its end over the furnace outlet. The apparatus has other novel features, and is designed to be economical in fuel, for which only cane refuse is used, while presenting extensive evaporating surface, the juices being successively cleaned in the several pans and the scum removed before passing to the evaporating pan.

ELECTRIC APPARATUS FOR DEFECATING SACCHARINE JUICES. — Elias Maigrot and Jose Sabates, Havana, Cuba. Combined with troughs having longitudinal porous partitions, with pipes connecting the two sets of compartments in two separate series, one series for the circulation of water and the other for the circulation of saccharine juices, are electrodes suspended in the compartments and connected with an electric generator. The apparatus is designed to give an increased yield of prismatic sugar by subjecting the juices to the action of electric currents, to decompose, alter, transfer and remove from the juices alkaline salts, acids, albuminous and other deleterious substances.

Agricultural.

CULTIVATOR. — Edward W. Freiburghouse, Sabetha, Kansas. In this implement a number of disk cutters are employed, held in adjustable hangers, forming a cultivator capable of effective work on level ground, on a hillside, or for cultivating side ridges, as in listed corn. The cultivator blades are designed to be conveniently and expeditiously adjusted laterally to throw the dirt away from or toward the plants and adjusted vertically to stand at any desired angle to the ground.

Miscellaneous.

SPRINKLER. — Alpheus J. Bartlett, Pomona, Cal. Combined with a tubular body having a branch and a packing located at the top of the body is a T-shaped sprinkling tube, whose vertical member extends through the packing into the body, and has an exterior collar of less diameter than the body, adapted to turn upon a water cushion or bearing. The device forms an improved rotary lawn sprinkler, whose rotary section revolves upon a water bearing, thus reducing the friction to a minimum.

VEHICLE STEP. — Milton Frost, New Bedford, Mass. This step consists of a wheel mounted to turn on a sleeve secured to the shank supporting the step, the wheel having an open web, and a scraper in the form of a rubber ring being arranged concentric with the rim of the wheel and held in the open web. The construction is simple and durable, and insures safety by preventing the foot from slipping off the step.

TOY MORTAR.— Edward P. Eastwick, Jr., New York City. This mortar has an annular rounding shoulder or swell within its bore in rear of the muzzle, forming a cup-shaped or flaring seat for the ball, while a firecracker opening leads through the upper side of the barrel at the breech, it being designed to fire a ball by the explosion of the ordinary firecracker, without incurring the danger common to toy fire arms charged with cartridges.

CHIROPODIST'S FILE. — Charles S. Levy, New York City. The body plate of this file is essentially triangular in cross section, while it has an upper semicircular file surface and a lower flat file surface, a recessed core being secured within the body, which consists of a strip of metal bent upon itself to the desired shape. It is a simple and compact implement, capable of convenient manipulation for removing callous surfaces, protuberances upon the skin, etc.

COOLER AND FREEZER. — Paul L. Dermigny, New York City. This invention is an improvement on a former patented invention of the same inventor, and provides a simple and durable apparatus, especially intended for family use, to cool or freeze water and other liquids, or to make ice cream, etc. It has an outer and an inner receptacle, with a chamber between them for the reception of the water or other liquid to be cooled or frozen, while the freezing mixture is contained in the inner receptacle, which has two sets of beaters or stirrers that are revolved in opposite directions by the turning of a crank arm.

FILTERING APPARATUS.—William E. Hershberger, Neosho, Mo. Combined with a vessel having a series of apertures in its bottom, is used a filtering block of porous material, preferably tripoli stone, in cylindrical form, the block having a recess in its lower face forming a flange resting on the bottom beyond its openings, while a series of passages lead up into the block from the recess. The block is fastened in place by a bolt, so it can be readily removed for cleaning, and has a sufficient number of passages to adapt it for filtering a large quantity of water for drinking or other purposes.

LIFTING JACK. — Joseph S. Locke, Bartonia, Ind. This invention is more particularly designed for wagon or carriage jacks, when the lifting bar is of stepped construction on its upper end, to adapt it to varied heights of the axles from the ground. The invention covers a novel construction of parts and pivoted connection of two levers with the lifting bar and standard of the jack, whereby the lifting bar and standard are hinged together, and kept from shackling, increasing the durability of the jack, while a more perfect lock is secured, the lock being the tighter as greater weight is thrown on the jack.

STOVE. — William Forbes, Plainwell, Mich. This invention relates to heating stoves in which either coal, coke, or wood are used as fuel, the construction providing a large area of heating surface that has direct contact with the burning fuel and the air surrounding the stove. The fire pot of this stove is revoluble, and is composed of hollow bars or tubes that have communication with the air outside of the stove, and it can be readily removed from the walls of the stove for repairs.

REVOLVING DOOR.— Charles F. Chew, Philadelphia, Pa. Combined with two oppositely curved casement walls, a rounded cap plate and a circular floor, is a main door pivoted at its center in the cap plate and floor, curved wing walls being hinged and braced to the door, forming an improved revolving storm door. The device permits the free ingress and egress of one or more persons at a time, and seals the outer opening simultaneously with the opening of the inner one, thus affording a vestibule for the protection of an exposed entrance to a building, while providing a wide and unobstructed passage.

HANDLE. — George H. Bradshaw, Knoxville, Tenn. This invention provides a simple and convenient handle designed to be readily attached to or removed from chests, trunks, refrigerators, etc., and which when not in use will drop out of the way, so as not to be easily broken. The device consists of a plate to be secured to the article, and having projecting shoulders near a side and bottom edge, and a handle pivoted on the plate to swing laterally between the shoulders.

FOLDING POULTRY CRATE.—Harry B. Cornish, Hampton, Iowa. This is designed to be a very simple and durable crate, which can be expeditiously set up to receive poultry, and readily folded for return transportation. It has an apertured and ribbed top plate and a solid flanged bottom plate, apertured side pieces hinged to the top plate engaging the bottom flanges, and other apertured side pieces hinged to the top plate being connected by strap hinges to the bottom plate.

TOBACCO SMOKER'S DEVICE. — Valeriano Gonzalez, Durango, Mexico. This device is in the form of a cigar holder, and also applicable to the end of a pipe, and has a reservoir to collect the nicotine, back of which is a chamber with a sponge saturated with a solution of tannin, while within this chamber is also secured a medicine cup designed to be filled with a readily evaporated medicament, possessing properties beneficial in diseases of the throat and mouth, or any substance which would impart an agreeable flavor to the smoke. The object of the device is to render tobacco smoking always harmless and in some cases particularly beneficial.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

WOMAN AND HEALTH. A mother's hygienic hand book. By M. Augusta Fairchild, M.D. 1890. Published by the author. Quincy, Ill. Price $2.50.

In this volume a woman undertakes to tell women of their needs in matters relating to maternity, also including specific directions for the treatment and cure of acute and chronic ailments generally. The book is written in dialogue form, and embraces nothing beyond the comprehension of people of ordinary intelligence, dress, dietetics, hygienic cooking, sunshine, exercise, sleep, each forming the subjects of separate chapters.

Steam, its Generation and Use, with catalogue of the manufactures of the Babcock & Wilcox Co., forms a handsome volume of 150 octavo pages, containing a great variety of valuable information in addition to the details furnished relative to this well known style of boilers. The volume for 1891 is the twenty-third edition of the work, which was originally published in 1879, and has been enlarged through the successive editions since issued in deference to the high appreciation with which its facts and figures have been received, no less than the striking success which has attended the introduction and use of the Babcock & Wilcox boilers. The company now has manufactories in the United States, Scotland, France, Germany, and Austria. The book is sent free on application.

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.

Notes & Queries

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.
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.

(3166) M. L. S. asks (1) for a cement that could be used to cement glass to metal (brass and iron) and which would not be attacked by bisulphide of carbon, water, alcohol, etc. A. Dissolve gelatine in water, add a small percentage of glycerine to render it slightly elastic, also a small quantity of bichromate of potash to make it insoluble. 2. Is there an odorless bisulphide of carbon, and if so, what is its cost and index of refraction? A. Purified and deodorized bisulphide of carbon costs 70 cents per pound. Its index of refraction is the same as that of the commercial article. 3. Just what kind of a lens is a collimating lens? A. Any lens which will bring light rays into the line of vision is a collimating lens. 4. How much heat is there in crude petroleum as compared to coal, equal costs A. In England the difference between the cost of crude petroleum and coal for fuel is as 2 to 1. In this country, there is a slight difference in favor of coal. There are, however, varieties of crude petroleum which are worthless for the purposes of the refiner. As a fuel, this sort of petroleum is more economical than coal. 5. What substances are transparent to heat and how can I make a heat lens? A. Glass is transparent to heat. You can make a heat lens from glass alone, or you can make a hollow glass lens and fill it with carbon disulphide. 6. How can I detect the presence of carbonic acid gas in the atmosphere when in small quantities? A. By passing the air through clear lime water, a very small percentage of carbonic acid absorbed by the solution will produce carbonate of lime, which renders the water turbid. 7. What is the chemical nature of impure and injurious air? A. The nature of impure air varies with the locality. It will be impossible to give a general answer to this query. Ordinary air contains, besides nitrogen and oxygen, a little carbonic acid, a variable proportion of aqueous vapor, a trace of ammonia, and sometimes a little carbureted hydrogen. 8. Does throwing a picture (as in a camera) upon a plate of glass in any wise affect its transparency to other light rays while it retains the image? A. No. 9. Did Professor Herz refract induction, and where can I find the particulars of his experiments for the past two years? A. Professor Herz refracted induction by the use of an asphalt prism. 10. I understand that magnetization affects the length of an electro magnet's core. With what rapidity can this change be effected, *i. e.*, to how many magnetizations and demagnetizations will the core respond in a second of time? A. We do not know that any limit has been discovered. 11. How frequently can the power of a magnet be changed in a second? I do not mean how many times a second can it be completely magnetized and demagnetized, for I understand there is a residual magnetism, but how many times can the strength of a magnet be varied per second? A. No limit has been discovered. 12. How does the resistance of selenium vary from light to darkness? A. Exposure to diffused daylight diminishes the electric resistance of selenium to one-half of what it was before. 13. Is there any work published giving the cost of experimental materials, such as selenium, bisulphide of carbon, etc.? Catalogues of course can be had occasionally containing prices of one or two things required, but has any one ever published an extended list of approximate prices? A. All large dealers in physical apparatus supply catalogues of materials and apparatus. Write the dealers in New York, Philadelphia and Boston. 14. Is it true that light passed through a highly magnetized ring undergoes refraction as if through a lens? If so, why?