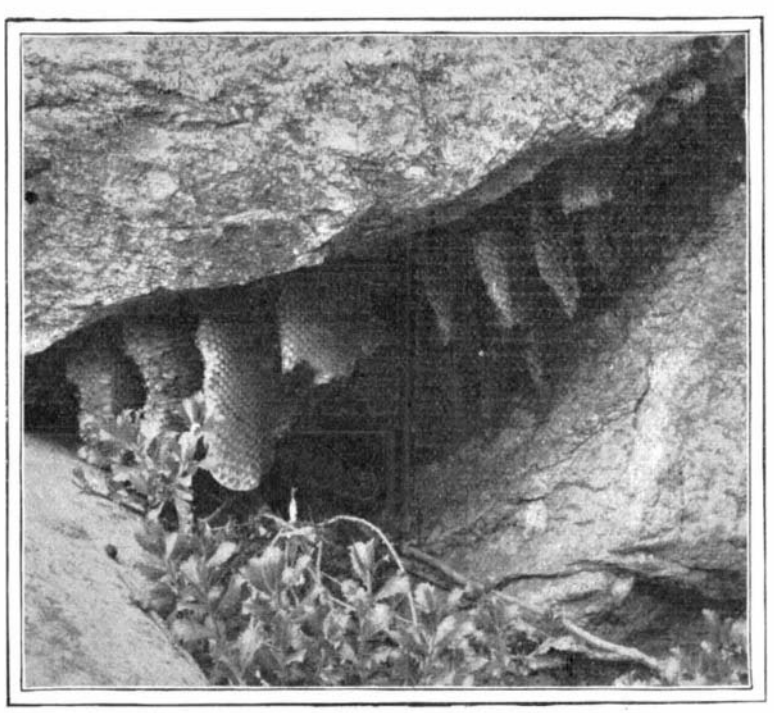
QUEER HIDING PLACE FOR BEES.

BY HELEN LUKENS JONES.

During mountain tramps it is not unusual to find bee nests in the hollow trunks of trees and in other odd places, but they are seldom discovered nesting among the rocks in the picturesque fashion illustrated by the accompanying photograph. This particular swarm was found in the Sierra Madre Mountains back of Pasadena, California, where in the seclusion of a rocky wilderness they were accumulating stores of sweets without fear of human intrusion or human theft. They had a well-stocked establishment with rock walls, rock roof, and rock foundation. It was a home impervious to rain or wind. The busy workers had certainly shown clever foresight in their selection of a home, for it was situated some distance from the beaten trail, and being surrounded by a dense copse of brush, grasses, wild sage, and yucca, was as nearly isolated as it could possibly be. White sage and black sage, the most prolific honey-producing plants in Southern California, grow luxuriantly in this locality. The bees have not far to go to the honey market for their load of sweets, and in the cañon a few rods below is a brisk mountain stream where they can drink. This bee cave extends back into the cliff about four feet. The entrance is four feet in width and eighteen inches in height. It is completely filled with combs, the bees having hung their honeyed tapestry to the very threshold. This hermit swarm was composed of fine, full-blooded Italians that had undoubtedly escaped from some mountain apiary.



REMARKABLE BEE'S NEST IN THE MOUNTAIN ROCKS.

Are the Canals of Mars Illusions?

In Knowledge, Mr. E. W. Maunder and Mons. E. M. Antoniadi both contribute illustrated articles to show that the Martian Canal system, as figured by Schiaparelli and others, is largely an illusion. Mr. Maunder has made experiments at the Royal Hospital School at Greenwich and thus describes the results: "A class of about twenty boys, from twelve to fourteen years of age, were seated in four or five rows at different distances from a carefully-lighted diagram, which they were told to copy. The diagram was reproduced from some published drawing of Mars, but in nearly every experiment the canals were omitted. The diagram was generally about six inches in diameter, and the distances of the boys from the diagram ranged from fifteen to forty feet, except in two experiments where the range extended up to sixty feet. . . . The general result was striking. In several of these experiments nearly all the boys drew "canals" on their copies, though there were none on the original from which they were copying. And these "canals" were not placed at random; they were just in the very places where canals are seen in the charts of Schiaparelli and Lowell. . . . . Whence then did the "canals" come which were drawn by the boys of the Hospital School? One cause was the prolongation of dark indentations invading the brighter regions. . . . A more fruitful source of the "canals" was the introduction of regions slightly darker or slightly brighter than their surroundings. Meroe Island figured as an example in the first category, Elysium as one in the second, in two different experiments. And no one could wish for straighter and sharper "canals" than were drawn by a good proportion of the boys to express these regions. . . . . But the cause which was the most effective within the limits of our experiments with the Hospital School boys was the way in which the eye summoned up together minute irregular markings, each too small to be separately perceived as straight streaks. . . . The general distribution of the true markings on the planet must approximate to that shown on the charts of Schiaparelli and Lowell, and the details if not straight lines in their ultimate conceivable resolution are at least straight lines to the eye. But the gain is really great. For so long as we conceive of that elaborate reticulation as being a true feature of the actual surface of the planet, we can hardly escape from Mr. Lowell's induction. Lines so straight, so formal, so uniform in width, so regular in their intersections, so symmetrical, with dark spots so inevitably marking their intersections, must be accounted, as he accounts them, artificial; the handiwork of intelligent beings. But if actual details of perfectly irregular and unsymmetrical character, details having no sign of artificiality about them, can present exactly the appearance, and make just the impression which the network of the canal system does, the argument for the existence of inhabitants on Mars has vanished. We are freed, too, from the necessity of considering such bizarre theories as would make out the planet to have been scored into its present form by grazing meteorites, or to have assumed it through crystallization. To have been set free from the grotesque in observation is to have been freed also from the grotesque in speculation. This service I think the drawings of the Hospital School boys have effectually rendered to us. They have shown that perfectly unbiased observers will see and draw the Schiaparellian canals when the actual markings presented to them are as little regular and artificial as any which our own earth might present to an outside spectator."

Technical Schools in Germany.

Of the total of 3,610 students in the German technical schools for the year 1902 no less than 1,359, or 37.6 per cent, were foreigners. This is a very heavy percentage of foreigners, and surpasses the percentage at the technical universities, which generally ranges from 10 to 30 per cent. At the Mining High School at Freiberg, the number of foreigners is still greater; in 1901 there were 280 foreigners to 186 Germans.

RECENTLY PATENTED INVENTIONS.

Heating Appliances.

MUFFLE.—J. CARTER and A. G. CARTER, Malden, Mass. Fires being lighted in the fire-holes by means of fuel resting upon the grate-bars, the smoke and gases of combustion pass upwardly through all of certain passages to a chamber and downward through a central flue. Arriving at the bottom the smoke and gases radiate, then pass upwardly through passages, deflect through arches, pass through more passages into a stack and escape. Upward drafts are arranged alternately with other upward drafts. Air is drawn inward and divided and distributed to flames at points above the bars. The device acts somewhat in a smoke-consumer capacity, causing combution, saving fuel, and distributing heat.

ASH-DOOR.—E. C. COLE, Chicago, Ill. The object of this invention is the provision of a novel construction of connection between the stove-section and the cover-section of such door, whereby the cover-section can be conveniently applied to and removed from the stove-section and will be properly hinged in connection therewith when applied, and to so construct the parts that the fitting or bearing surfaces between the two sections can be conveniently ground on emery or other grinding wheels to a true surface.

Machines and Mechanical Devices.

MEANS FOR ARRESTING ELEVATOR CARS.—P. F. HALLOCK, Detroit, Mich. In the present instance the invention has reference to means for arresting the cage or hoist of an elevator in case of accident, and the object that Mr. Hallock has in view is the provision of simple devices adapted to be easily and cheaply supplied to existing or newly-installed elevators, and capable of service in a way to check and arrest a swiftly falling loaded car without injury to the apparatus and its load.

MOLDING-MACHINE.—J. J. TURNER and J. A. DOWLER, Labarpe, Kan. This improvement has reference to machines for forming vessels of plastic material, such as condensers made of clay and used in retorts employed in zinc smelters. The object is to provide a molding-machine which is simple in construction, easily manipulated, and arranged to allow of forming the vessels of uniform size and shape without requiring the employment of skilled labor.

GLASS BLOWING AND FINISHING MACHINE.—J. SCHIES, Anderson, Ind. In this patent the invention is a combined blowing and finishing machine designed to take the bottle as it is delivered from the press-molds of an ordinary glass-machine to finish the mouth thereof and to produce an internal groove within the neck of the bottle at one operation.

TAPPET FOR STAMP-MILLS.—E. I. MOREY, Telluride, Col. In this case the invention's object is to provide a tappet so constructed as to be readily adjusted lengthwise of the stem and also to be adjusted to the possible reduction of circumference due to the wear of the stem in moving in its guides, and, further, to so construct a tappet that it will be practically impossible to displace it when locked in place.

LUBRICATOR FOR YARNS OR THREADS.—C. J. LEHMAN, dec'd, New York, N. Y.; PAULINE LEHMAN, administratrix. It is necessary to apply a lubricant to yarn or thread while it remains in winding machinery—as, for example, when it passes from a reel to a spool—and to accomplish this end the inventor has devised a device employing a lubricant in a solid form as distinguished from a bath of liquid lubricant, thereby securing economy in the quantity used in treatment of the threads, these being of any weight and color and of any material such as wool or cotton.

STITCH-FORMING MECHANISM.—E. C. HENDERSON, Pictou, Nova Scotia, Canada. To the end that a lock-stitch may be formed without the use of a shuttle and its appurtenant parts, this mechanism comprises a needle carrying the needle-thread as usual, a guide adapted to carry a second thread to complete the formation of the lock-stitch, and a hook or other means for drawing the thread from the guide, these elements being constructed and arranged in a certain novel manner.

OFF-BEARING MECHANISM FOR SAW-MILLS.—E. T. DAVIES, Portland, Ore. Of several objects in view in this invention Mr. Davies has particularly one in the provision of a mechanism which will engage with the stick or plank as fast as it is sawed by the sawing mechanism of the mill and will remove the plank from the main block of timber or the cant and deposit the same on the carrying or conveying device of the machine or saw-mill. It is capable of being applied to any of the well-known forms of sawing-mills now in use.

Of Interest to Farmers.

CULTIVATOR.—W. J. LUTTRELL, Honeygrove, Texas. In this invention the improvement is in that class of wheel-cultivators in which the shanks or foot-pieces carrying the shovels are attached to a saddle or cross-head on the draft-beam in such manner as to permit the said shanks or foot-pieces to be adjusted at different angles to the surface or to the line of draft. There are means for attaching the foot-piece to the cross-head, whereby it may be adjusted and clamped at any angle with great facility.

BUTTER-PRESS.—F. MURPHY, Lisbon Center, N. Y. One of the principal objects of this invention is the provision of devices or means by which a plurality of prints of butter or like substance may be molded at one and the same time, each possessing the desired shape, dimensions, and weight, as well as having thereon an impress of any suitable design.

BROODER.—S. FUSTON, Murfreesboro, Tenn. In this apparatus the object is to supply heated fresh air plentifully with a minimum expenditure of oil. The breeding casing is constructed in two compartments, one lower than the other, and with a door hinged at its lower end, so it can be turned down to form an inclined runway from the upper to the lower compartment or can be turned up to form a separating-wall between the two compartments. The great advantage secured is the thorough warming of the body of the chick while giving it comparatively cool fresh air to breathe.

Railways and Their Accessories.

DEVICE FOR RELEASING TRUCKS FROM CARS.—R. L. RILEY, Newburgh, N. Y. Trucks ordinarily are connected to a car-body through the medium of a large bolt or pin, termed a "king-pin," and in order to remove this pin and disconnect or remove the truck from beneath a car-body it is necessary to enter the car and pull the pin from its socket, and this is inconvenient when the car is heavily loaded, as the cargo adjacent to the pin-socket must be shifted to have access to the king-pin. With this invention the pin may be easily removed without entering the car and without disturbing the contents. Should the cargo consist of a granular substance small particles will not drop through the casing and interfere with the operation of the pin-releasing device.

Miscellaneous.

ICE-MAKING APPARATUS.—H. STOUT, Kingman, Kan. The principal object in this invention is to provide a water-freezing apparatus or plant for the manufacture of ice which is comparatively inexpensive to construct, which is reliable in operation, easy of access and control, and not liable to get out of order. The apparatus or plant may be constructed on a small or a large scale, and may include a single water-compartment only or a series of such compartments, and any suitable material may be employed. It may be rectangular in shape and of any desired height and other dimensions.

HORSESHOE-PAD.—J. F. ROBINSON, Rockaway, N. J. The purpose of this improvement is to provide a pad which is almost entirely constructed of comparatively soft rubber or like clinging and yielding material and to provide suitably placed and concealed metal stays, either removable from the body of the pad or immovably placed therein by reason of the body of the pad being molded or cast around the stays.

LEMON-SQUEEZER.—A. MCLAREN, Fort Worth, Texas. The squeezer cuts and squeezes a lemon with one operation. The invention consists, in peculiar means adapted to strain the juice, and, further, of peculiar devices automatically operating upon upward movement of the squeezing-lever to discharge the squeezed portions of the lemon.

MEANS FOR HOLDING PIANO TUNING-PINS.—G. RUCKSTUHL, Rutherford, N. J. Owing to successive tuning of a piano and continued strain of the strings the pins work loose and enlarge the holes in the pin-block. Mr. Ruckstuhl's object is the provision of means for protecting the pin-block and for securely holding the tuning-pins in their adjusted positions, said means dispensing with the usual dowels and holding the pins and strings in a way to avoid the production of metallic tones when the keys are struck.

POMADE-CAN.—E. L. PITTS, Jerome, Arizona Ter. Mr. Pitts' improvement is designed especially for use by barbers for holding pomade, vaseline, or the like, and has for an object the provision of a simple, novel construction whereby the user may be able to procure the desired amount of the pomade or vaseline from time to time. The device will hold various kinds of jellies, salves, etc., and will permit convenient removal thereof in any quantities, and is able to exclude all dust and dirt in a simple manner.

AMUSEMENT DEVICE.—A. G. HAMMELL, New York, N. Y. The purpose in this invention is to provide a structure upon which cars or vehicles are drawn up an inclined plane by a cable or the like and relieved from the cable when the upper portion of the incline is reached and to construct a spiralway or track leading from the upper point of the plane, where the vehicle is released, the contracted portion of the spiral being its lower portion, whereby as the vehicle descends the way the occupants will experience sensations as when drawn into a whirlpool.