

ingoes themselves were also secured. The nests collected differed from the conventional idea of a flamingo's nest in being much lower and of a greater diameter. Doubtless the height of the nest is governed by the rise of the water. Built wholly of mud, which is scooped up from about the base of the nest by the bird, it is necessary that the site chosen shall be near enough to water to insure an abundant supply of soft material. Such a site, however, brings the nest within reach of the tide, and places it in a low situation, which may be subsequently flooded by heavy rains. Consequently the birds must build their nests high enough to protect their contents from the water.

These two conditions have resulted in the production of a mud cone, which, in the colonies examined, was never more than twelve inches in height, but those as high as eighteen inches have been reported. In the slightly hollowed top of the adobe dwelling house a single white egg is laid.

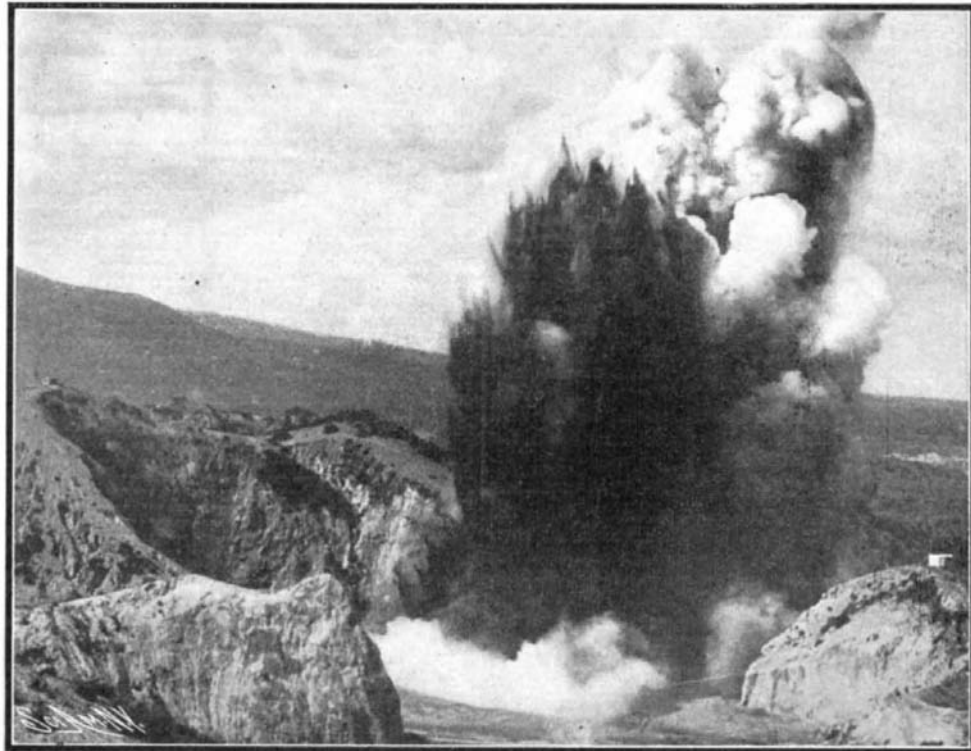
The single nest here figured, however, has been excavated to a greater depth than the original in order to lighten it for transportation purposes.

THE GREAT ROTORUA GEYSER OF NEW ZEALAND.

BY JAMES A. WARNOCK.

Yellowstone Park is reputed to have the most magnificent geysers in the world; but their reputation is based upon the statements of travelers who have never been to New Zealand, and who know nothing of its natural wonders.

Leaving Auckland by a fast express train, a journey of eight hours brings one to Rotorua, where may be seen the most splendid geyser which is probably to be found anywhere in the world. To give one some idea of the magnitude of the geyser, I need mention only the height of some of the surrounding objects. On the extreme left of the picture herewith reproduced, over the "Inferno Crater" (which contains a seething lake of water) is a small shelter shed, 450 feet above the plain. The surface of the water in the geyser basin, when at rest, is



THE GREAT ROTORUA GEYSER IN ERUPTION.

about 40 feet below this plain. From these figures it is easy to compute the height of the eruption. In the instance illustrated, that height must be about 900 feet. This is by no means exceptional. Higher "shots" have been recorded. I have myself seen a shot computed at 1,200 feet. Some months ago the area of the basin was measured in a small boat by a Mr. Buckenridge and a guide. They found that the area is about 2½ acres, from which it may be inferred that this geyser may well be called the largest in the world.

The geyser plays about twenty-two times each month, is very erratic, and gives no warning when it is about to erupt. The theory is advanced that the basin is somewhat like a funnel, and that when the water and stones are ejected, the larger stones return and jam in the neck, thereby choking the outlet, so that an enormous pressure of steam must shift them. When the pressure is sufficiently great to blow out the obstructions, it naturally would eject water to a great height. The theory, however, is at best rather fanciful.

This geyser is not the only one to be seen in the vicinity. Others may be mentioned, such as the Pohutu, Wairoa, Feather, Papakura, and others, besides mud volcanoes.

A Saw-Proof Bar.

Perry D. Zeigler has invented a bar which cannot be sawed or cut through, for use in connection with prison-cells, windows or doors, and safety-vaults.

In carrying out his invention he takes a metallic bar of any suitable material, preferably iron or steel, and in the bar adjacent to its corners he provides longitudinal apertures. In the case of a round bar a number of apertures adjacent to its periphery are provided, and, if desired, as an extra precaution one or more holes may be present. The bar having been formed as described, molten glass or the like is poured into the apertures. After this has cooled, the inventor claims it would be impossible to saw through the bar, for the reason that the saw would not cut the glass, and only a partial fracture of the bar could be obtained.

Breaking of Staybolts.

Staybolts break more frequently in bad-water districts than in those districts where the water is freer from incrustating solids, says Mr. H. A. Fergusson, in a paper read before the Western Railway Club of America. This is not to be attributed to the action of the water on the bolts, but to the fact that such engines are washed out very much more frequently, with consequent vibration of the bolts each time. There is apparently no remedy for this, where water-purifying stations are absent, except a flexible staybolt, and while numbers of these have been designed and tried, there are none of them that will not become inflexible through the hard scale formations around the movable parts. The best bolt, therefore, is one which has the greatest flexibility, and which cannot be affected by scale.

RECENTLY PATENTED INVENTIONS.

Of Interest to Farmers.

PRUNING-SHEARS.—C. F. CROSBY, Burlington, Vt. The object of this invention is to provide pruning-shears of simple, light, yet strong construction, having no parts liable to get out of order, and so arranged that there will be very little friction of the movable parts and with which a clean cross-cut may be made without drawing action, which would have a tendency to break the bark.

BEE-TOPPER.—J. M. CARAWAY, Longmont, Col. A distinguishing feature of the invention is the provision of an endless horizontal traveling belt provided with a spring-coil for holding the bees while being topped, and an oscillating knife or cutter, which is adapted to make a draw cut and is operated by the same means as the belt.

BINDER ATTACHMENT.—A. M. DAVIS, Madison, Wis. The object in view of the inventor in the present improvement is to decrease the friction attending the formation of the gavel in a self-binding harvester of any sort and also to assist in separating the bundle from the unbound grain. The means adopted enable the binder to be run more readily than ordinarily.

PLANTER.—A. D. EZZELL, Clinton, N. C. By Mr. Ezzell's invention corn, cotton, peas, etc., may be conveniently planted in rows, and the quantity of seed planted is regulated by means of the slide in the charger or rocking dropper, and the distance apart of the hills planted may be regulated by the projections or pins on the wheel, as the pins may be increased or decreased in number as desired. The apparatus plants seeds forty-two, twenty-one and fourteen inches apart.

Of General Interest.

PLATEN PRINTING-PRESS.—R. R. WILLIAMS, Marshfield, Wis. To obtain a perfect impression in platen-presses, the platen often requires to be adjusted higher or lower, corresponding to slight variations in the height of the type-form. Such adjustment is usually effected by several jack-screws, which operation requires much time, and it is also difficult to secure a perfect adjustment or one in which the platen will be perfectly parallel to the type-form. The adjustment can be made quickly and easily and with perfect accuracy.

ORDER AND RECORD FILE.—H. J. REES, Iowa City, Iowa. In this patent the object of the invention is the provision of an improved means for recording and preserving orders and expense and other accounts in

order of dates of the calendar—that is, day by day and month by month, the latter being summarized at the end of the year.

SASH-LOCK.—J. NOSEWORTHY, St. Johns, Newfoundland. The object in view in this case is the provision of a construction adapted for application to the opposing faces of the meeting sash-rails, so as to be concealed when sashes are closed and locked. The sashes automatically lock when closed. The lock is provided with a detachable operating device adapted to release the lock when it is desired to open the sash, the device when detached preventing access to the lock, so that it cannot be released by evil-disposed persons.

PIPE-STAND.—B. C. NEWLOVE, Walsenburg, Col. The special purpose in this instance is to provide means for supporting the outer end of a pipe while work is being done on the inner or opposite end. Such means to be practically effective must be stable, admit of easily shifting of the pipe in longitudinal directions, and of easy adjustment with respect to height at which the pipe is held. These requirements are answered in the structure, which consists in a base, a column, the length of which may be adjusted at will, and in a head, on which the pipe is supported to move freely longitudinally, these parts having special structure.

FASTENING DEVICE.—P. MORRISON, Chattanooga, Tenn. The invention relates to knockdown furniture, and its object is to provide for fastening two parts or members of furniture, crates, packing boxes, and other articles together without the use of screws, nails, or similar fastening means, the device being serviceable as a support for shelves and the like.

SCHOOL-LOOM.—BEATRICE E. LINDBERG, Faribault, Minn. In this case the invention relates to a device for teaching children the art of weaving and for enabling them to produce small woven articles. The improvement lies in an attachment which enables hammocks to be woven. The loom with the said attachment is particularly adapted to kindergarten purposes for weaving dolls' hammocks; but is adapted to hammocks of a large size.

SPLINE-WEIGHT.—F. K. LORD, Bayonne, N. J. The invention has reference to drawing instruments; and its object is to provide a spline-weight arranged to firmly hold the spline or batten in a curved position at any desired place on the drawing-surface to allow the draftsman to conveniently draw a line along the unobstructed front edge of the spline.

MASSAGE APPARATUS.—J. U. JONES and G. JONES, Chattanooga, Tenn. This apparatus

is in the nature of a multiple vibrator and massage machine. The inventors provide a device for use by barbers, physicians, nurses, and others who desire to secure a vibration or massage treatment, also for special use on the face, scalp or other portions of the body. In the practice it is found the machine runs smoothly and quietly, and is pleasant and beneficial in its effects upon a patient.

LUMBER-DRYING KILN.—C. H. HALL, Jacksonville, N. C. The invention has reference more especially to kilns for the drying of lumber, though well adapted to the drying of other materials. One of the principal objects thereof is to overcome numerous disadvantages and objections common to many other structures hitherto devised for similar purposes and to simplify and cheapen the cost of construction of the kiln, as well as to lessen the labor of management or control of the operations thereof.

Household Utilities.

COOKING DEVICE.—C. C. OVERTON, New York, N. Y. In this patent the invention pertains to an improved device for cooking meats, fish, and the like, in the oven of a stove, and at the same time imparting thereto the peculiarly delicate flavor of meats and fish cooked after what is commonly termed the "planking" process.

FOLDING BED.—D. F. KING, Louisville, Ky. The invention has reference to improvements in beds in which may be used a hinged box-mattress, the final objects being to secure a bed which when folded will offer to view the minimum upright surface, one in which can be used the comfortable type of mattress known as the "box-mattress," and one readily converted, when folded, into a settee, giving no hint of the concealed bed.

WINDOW-CLEANING CHAIR.—H. HARRISON, New York, N. Y. The purpose of the improvement is to provide a chair capable of being expeditiously and conveniently applied and fastened to windows of different widths and as conveniently removed. Another is to provide one which will constitute a safe and firm window-seat and which will guard the occupant at the back and sides, whether sitting or standing.

FUNNEL.—W. E. BURGESS, Dan-y-graig, Aberbeeg, England. The invention of Mr. Burgess relates to an improved funnel for filling vessels with liquid, and has for its object to provide means whereby during the filling operation the level of the liquid may be ascertained, the said level being exhibited externally of the vessel, so that the invention is of special utility in connection with the

filling of casks and other vessels constructed of opaque materials.

Machines and Mechanical Devices.

PROPELLING APPARATUS FOR AIRSHIPS.—A. V. WINEGARDEN, Leon, Kan. Broadly stated, the invention is embodied in two series of endless chains or bands that are spaced apart and travel on sprocket-wheels or pulleys arranged in a rigid frame and a series of sails or flexible sheets which are so connected with the said chains or equivalent that when traveling in one direction they are expanded and stretched, so as to act upon the air with greatest effect, and when moving in the reverse direction they collapse and practically feather, so as to offer minimum resistance to progress.

CIGAR-MAKER'S MACHINE.—E. WINTERER, New York, N. Y. It is a common practice for cigar-makers to thrust the head end of a cigar-bunch into the mouth to shape the bunch and to extract one or more pieces of tobacco filler with the teeth, and common to use gum or paste, flavored as with licorice, in order to make the "flag" of the wrapper adhere to the head in finishing the cigar. The inventor seeks to overcome unsanitary and contaminating objections by the provision of a simple machine which carries on the manufacture free from objections, lessens labor, facilitates work, and increases the output.

MACHINE FOR MAKING PIANO-HAMMERS.—E. T. WOLF, New York, N. Y. By this invention Mr. Wolf is able not only to reduce the cost of making hammers, but he produces hammers of a superior grade, the same being characterized by an improved pointed shape given to the striking-face formed by the condensed fibers of the felt covering at the end of the molding. He is also able to make all sets of hammers alike and uniform with respect to hardness and evenness of the felt by having an accurate gage of the amount of pressure applied.

Prime Movers and Their Accessories.

HYDRAULIC PRESS.—E. CROWE, Birchholm, Sheffield, England. The invention has for its object to effect economy of time and power, and so increase the speed of working and the efficiency of the press. This end is attained mainly by the provision of means whereby the idle descent of the presshead onto its work may be effected quickly and by gravity alone and whereby the power of the pumps is caused to come into action automatically immediately the tool carried by the press-head encounters the work. Mr. Crowe has invented another