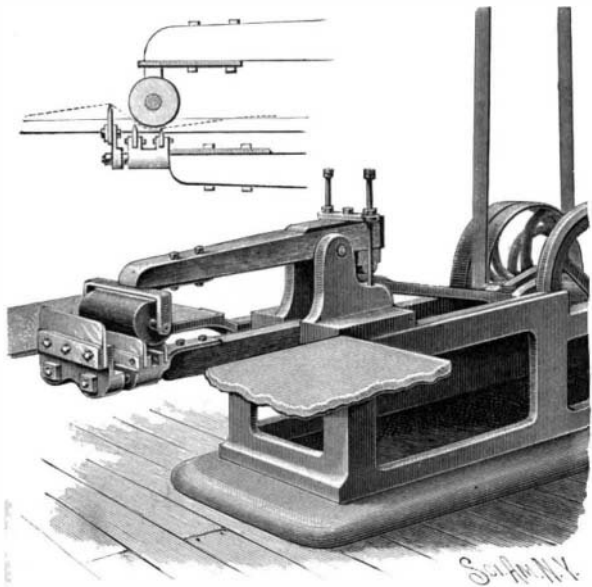


A MACHINE FOR STAKING LEATHER OR SKINS.

The illustration represents an improvement in machines employing a main and a blind blade, over which a roller is movable up and down, a supplemental blade being arranged in front of the roller to give the machine a double action, and facilitate the more thorough stretching and working of the skin. A patent has been granted for this invention to Mr. Richard Holmes, of No. 939 North Front Street, Philadelphia, Pa. The lower jaw, as in the ordinary machine, is slidable in a suitable frame, and fulcrumed on this jaw is an upper jaw, a roller at the rear end of which is engaged by a pitman, to give to the jaw, and a roller



HOLMES' LEATHER STAKING MACHINE.

carried at its forward end, an up and down movement. The lower jaw has a head which carries main and blind blades over which the roller moves, and in front of these is an extra blade, having vertical slots in its body to receive the bolts by which the blade is adjustably fastened to the head at the desired height, the skin being worked between the roller and the blades as indicated by the dotted lines in the small figure. The drawing of the skin over the extra blade is designed to give it an additional stretch, insuring additional scraping and also increasing its measurement.

The Bower Birds of New Guinea.

Every one has heard of the bower bird—Chlamydera—who constructs a playground or garden of delight, adorning it with all sorts of attractive objects, either for his own whimsical purposes or to please his mate. The bower is some little distance through, perhaps thirty inches along the ground, and is composed of short twigs and sticks so placed as to form a half-roofed tunnel. Here the bird passes much of his time, diverts his mate by adding to their resort or by showing the gay material he has picked up, and in various ways manifests his appreciation of his own ingenious devices. He is a plain fellow in his own dress, though his taste is for the gaudy and meretricious; his size too is small in proportion to the Castle of Indolence he rears, for this is no nest, this retreat of his, but a pleasure house, a place of retirement, quiet amusement, or rollicking sport. His nursery is a different thing altogether, and is placed elsewhere. In his bower he gives his fancy full swing; he brings hither to garnish it every bright article he can discover, and lays a considerable territory under tribute to minister to his beloved habit, and so prodigal is he of his acquired treasures that the approaches to his singular abode are strewn with spoils. Nothing seems to come amiss, hence he is as eager to possess himself of old bones, shells, stones, and all kinds of miscellanea, as bits of metal, flowers, leaves, dropped feathers, etc., although as a rule glittering objects prevail, obviously collected for decorative purposes. It is apparent that with so much evidence in plain sight, the little builder could not well conceal his structure, nor indeed was it the probable intention to do so; it was far easier to hide the real nest, and this has been done so effectually that the most persevering efforts toward discovery have gone unrewarded. It is not likely, however, that arbor and nest are very far apart.

The Chlamydera cerviniventris or fawn-breasted bower bird is enough like the common female robin of this country to be mistaken for her. The bird is very plain throughout, the nearest approach to brightness, and that but slight, being on the breast and abdomen, where a brownish yellow tinge occurs. The buff throat is streaked with dull yellow. The upper parts are uniformly drab or slate. It is rather longer than our robin—about twelve inches—with tail and wings extended more than strict proportions would permit. The bill is short and black, eyes are dark, legs and feet black. The male is said to sing sweetly, thus adding another accomplishment to his faculty of pleasing his mate as well as himself.

Another bower bird of New Guinea is the gardener—Amblyornis inornatus—who builds his hut or arbor

of a triangular shape, set back against the trunk of a tree; in front he scatters the usual assortment of shining, smooth, and curious objects together with perishable substances, such as small plants, flowers, insects, fruit and fungi, removing them carefully when they become offensive or timeworn. This little virtuoso is plain in color, a yellowish red predominating, and in size and general appearance not unlike a large brown thrasher. He seems always busy and, indeed, must be, for the nature of his work requires unflinching diligence, but the time of greatest activity probably is during the pairing season.

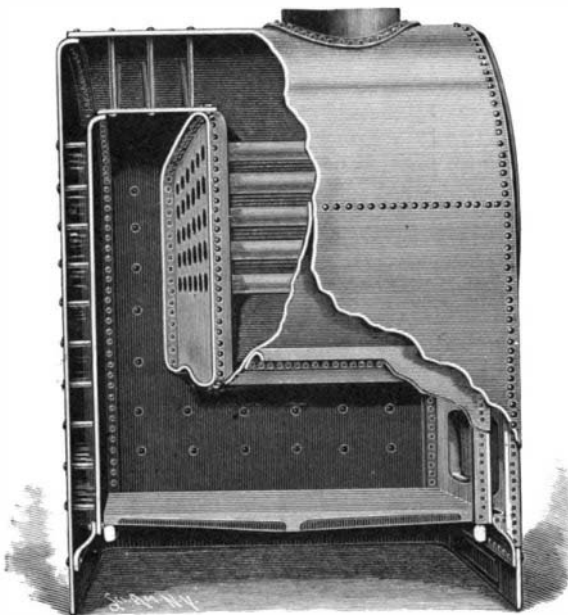
The best authorities describe the cabin of the gardener as built around the central stem of some bush, or as inclosing a cluster of shoots; in front the garden is placed, and is set out with that strangely rational though fantastic system of horticulture that has gained the bird its name. If there is no growth in the garden, we may infer that this branch of cultivation formed no part of the grand design; the results were all that was sought and these were to be always above ground. These birds have been classified by some naturalists with the Paridisea, though nothing in their appearance, habits or song (they are said to sing sweetly) seems to bear out such assignment.

This curious and fascinating bird is very local in its range, being confined so far as known to the Arfak Mountains in the northwest of New Guinea. It is only of recent years that it has been studied scientifically. Mr. Wallace knew nothing of it nor have naturalists since his visit to the great island added much to our knowledge. Dr. Beccari was the first to introduce the gardener to the world, and his graphic account of the abode of the little artificer has not been surpassed in merit nor greatly amplified in details by subsequent investigators. The Italian traveler, as in a picture, shows the hut or cabin close upon a small, flower besprinkled meadow. It is built around the stem of a little tree as thick and tall as an ordinary walking stick. The materials used are moss chiefly, and form a structure about three feet in diameter.

In shape the nest is conical, reminding one irresistibly in its whole appearance of the head covering Robinson Crusoe is usually represented as wearing. Inside is a little gallery or runway built along the walls. The garden is arranged before the hut decked out as we have seen. Amblyornis—simple in attire and coloring as his specific name indicates—is now a favorite illustration with theorists of the adaptation of animate life to its surroundings. Certainly its dun and sober clothing assimilates easily with the tones of soil and vegetation around. Its home too, with all its adornments, harmonizes with, indeed forms a part, of the gay green wood.—G. S. Mead, in the American Naturalist.

AN IMPROVED BOILER.

In this boiler the crown sheet and fire box sides are united by curved riveted flanges extended from the upper portion of the sides of the fire box, a part of the crown sheet extending through the water compartment. The improvement has been patented by Mr. Richard Reeves, of Toledo, Ohio. Our illustration affords a side view of the boiler, with portions of the shell and interior broken away. The fire box terminates at its rear end in a flue chamber, and the bottom part of the invertedly curved crown sheet is connected by rivets at its rear end with a flange of the flue sheet conforming to the shape of the crown sheet. The rear ends of the flues are supported by the flue sheet, and the flue chamber has a U-shaped crown



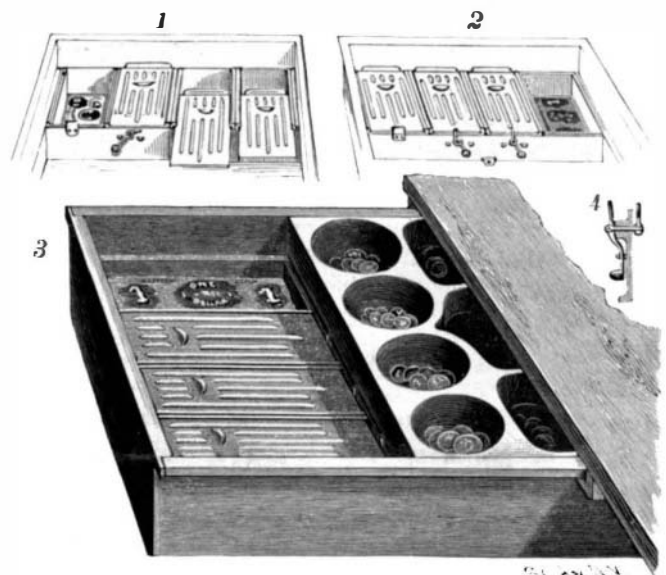
REEVES' STEAM BOILER.

sheet and a rear head, the latter being riveted at its sides and top to the crown sheet, and both the crown sheet and head being connected by stay bolts with the shell and the exterior head. The flue chamber is thus properly supported for the water to circulate around it, and the boiler affords a large heating surface in a comparatively small space.

A SAFETY MONEY DRAWER.

To prevent mistakes in making change, and to defeat any attempt on the part of a purchaser to make the tradesman believe that a bill of a larger denomination has been given him than that actually handed in, Mr. Michael R. Daley, of Fall River, Mass., has invented and patented the improvement represented in the accompanying illustration. Beneath the sliding tray containing pockets for small change, the till is divided into four front compartments for bills, the first compartment for one dollar bills, the second for twos, the third for fives, and the fourth for tens and those of higher denomination, there being at the back of the till an alarm lock of the usual construction.

Over these bill compartments are three separate movable covers, sliding in guides to one side or the other, thus always leaving one compartment open, it being the principle of the invention to leave open the compartment in which is placed the bill received, that it may be in sight until the transaction is completed, and so that this bill only will be seen when the drawer is again opened. In Figs. 2 and 3 in the illustration the \$1 compartment is represented as open, and all the other compartments are locked, except as they may



DALEY'S SAFETY MONEY DRAWER.

be opened by moving their covers toward the left, while, as shown in Fig. 1, with the \$10 compartment at the right open, any of the other compartments may be opened by sliding its cover rearwardly.

To lock the lids of compartments 2, 3, and 4, so that they will not slide backward except when they have an open compartment at the right, a simple locking device, as shown in Fig. 4, is pivoted in the rear wall of compartments 2 and 3, while at the rear of compartment 4 is a permanent stop. An arm of this locking device, in the rear of the compartment, is in vertical position when all the covers are pushed to the right, but on pushing the covers to the left, either one or all of them may be moved to the rear, the locking arms being then held down by the covers. In this way all the lids to the right of an open compartment are locked, while those to the left are free to be opened, and in making change when the drawer is operated according to this system, bills can only be taken from compartments holding lower denominations than the bill which has been taken in, which lies in the open compartment. When the drawer is pulled open there can be only a bill of one denomination in view, the bill that was taken in last.

The Screw Propeller.

It is interesting to learn from a paper read at the Institute of Civil Engineers by no less authorities than Messrs. S. W. Barnaby and Thornycroft, that in their opinion the present speed attained by the screw propeller has in the fastest craft now afloat approached the limit of efficiency. The Marine Engineer says: It will soon be a question, therefore, if this view be correct, not as to the comparative merits of twin and triple screws, but as to the screw in comparison with other methods of propulsion. Here is a vast field for experiment and research. We know neither the paddle wheel nor any modification, therefore, will help us, even if it were more efficient at high speeds, because of its vulnerability. We must have some mode of applying the power below the water line.

GERMANY is now the only country whose universities do not admit women students.