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USEFUL RECEIPTS.

Tests for Guano.

DRYING AND SUBSEQUENTLY WASHING WITH WATER.—If the guano, as is generally the case with those varieties that are brought from Peru and Chili, is a smooth and uniform powder, weigh out two ounces, spread it upon paper, and let it lie for two days in a moderately warm place, in summer a dry and airy situation, in winter in a warm room or chamber, in order that the air may dry it. What it may then have lost in weight must be esteemed mere surplus moisture. Many sorts of guano are so moist as to lose by this gentle drying from three to four drachms (20 to 24 per cent.) in their weight.

COMBUSTION.—Pour half an ounce of the guano to be examined into an iron spoon, and place it upon red-hot coal until a white or grayish ash is left, which must be weighed after cooling. The less ash is left behind, the better is the guano.

LIME TEST.—Pour a teaspoonful of each guano to be examined into a wine glass, and upon this a teaspoonful of slacked lime; then add a few teaspoonfuls of water and agitate the mixture briskly. Lime liberates the ammonia from the ammoniacal salts contained in the guano. The more excellent, therefore, a guano is, the stronger will be the pungent ammoniacal odor which escapes from this guano paste.

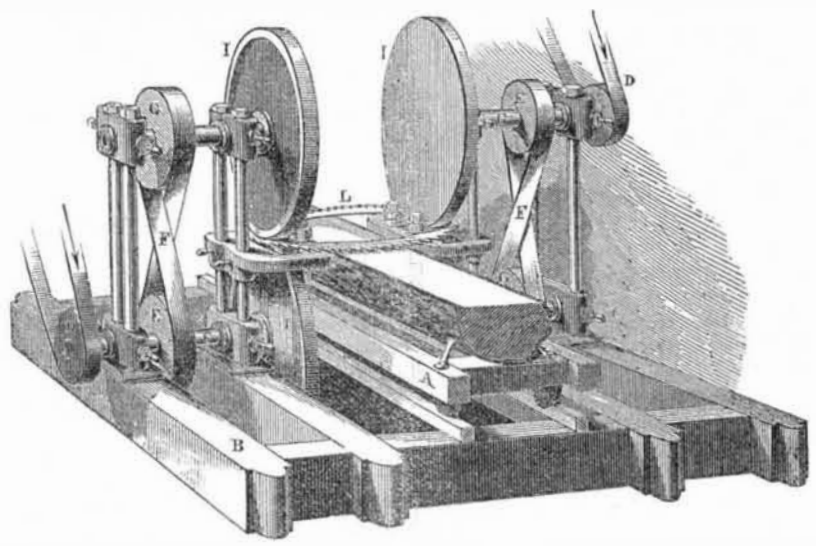
TREATMENT WITH HOT WATER.—Half an ounce of the air-dried guano is placed in a filter made of blotting-paper, folded together in the shape of a cone, and this put into a funnel or wire filter, and scalding water poured over it until the water runs without color. If the paper with the moist guano is laid, when no more liquid drops from it, in a warm place, and the residue weighed when it has become completely dry, the deficiency from its original weight will show the weight of those elements which have been dissolved by the water. As a general rule it may be held, the larger the quantity of guano that is dissolved in water, the more ammoniacal salts does it contain, and the better it is. Hence that guano must be preferred, as in the test by combustion, which, upon being so treated with water, leaves behind the smallest residue.

VINEGAR TEST.—Pour strong vinegar over the guano to be examined, or, better still, some muriatic acid; if a strong effervescence ensues, an intentional adulteration of the guano with lime may be inferred. This substance may also be recognized by the combustion test, since lime remains behind in combustion, and augments the quantity of ashes.

A Brother Mechanic to his Brethren.

We have received a letter from a correspondent and subscriber, who states, in respect to what we have said about intelligent mechanics, that speaking for himself, he believes that every subscriber might induce a friend to subscribe also. This was the way he became a subscriber, and his friend has his sincere thanks for soliciting him to become one.

PATENT CIRCULAR SAW WITHOUT A SHAFT.



The annexed engraving is a perspective view of the invention of Ammi M. George, of Nashua, N. H., for running a circular saw without an arbor, and respecting which so many paragraphs have appeared in different papers in our country. A patent was granted for the invention on the 11th of last month (Jan. 1853.) We believe we shall be able to explain the invention in a very few words.

A is the log carriage; B is the frame, and there is a log on the carriage; L is a saw without a shaft or spindle; it is of the form of a ring, and its inner edge is guided in the grooves of two friction metal rollers inside. This saw is driven by friction pulleys, I I I I, two on each side, one above and the other below, they run on the face of the ring saw, and drive it round. The saw is of such a diameter as to allow the log to pass through inside of the pulleys. The driving friction pulleys are driven from the main shaft of a water wheel, by belts, D D, which rotate the shafts, C C, on opposite sides, one above and the other below. Belts, F F, from the secondary driving pulleys, E E, drive the pulleys, G G, and the shafts of their respective friction pulleys, I I. The whole parts of this machine will, by this description, be rendered plain to any person in the least acquainted with machinery.

The object of the invention is to saw boards of a diameter nearly equal to that of a circular saw; the driving friction pulleys are therefore very narrow, so as to allow of as much space as possible between them. The inventor intends also to save something in the price of saws by having merely ring plates made, with steel teeth inserted in the edges.

More information about the sale of rights, &c., may be obtained of the inventor at Nashua, N. H., or John Mullay, of Bangor, Me., who is an assignee of one-half of the patent.

IMPROVEMENT IN BOOT TREES.

Figure 1.

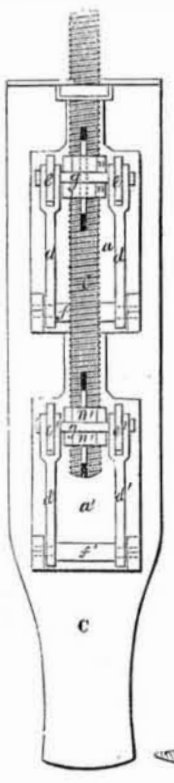
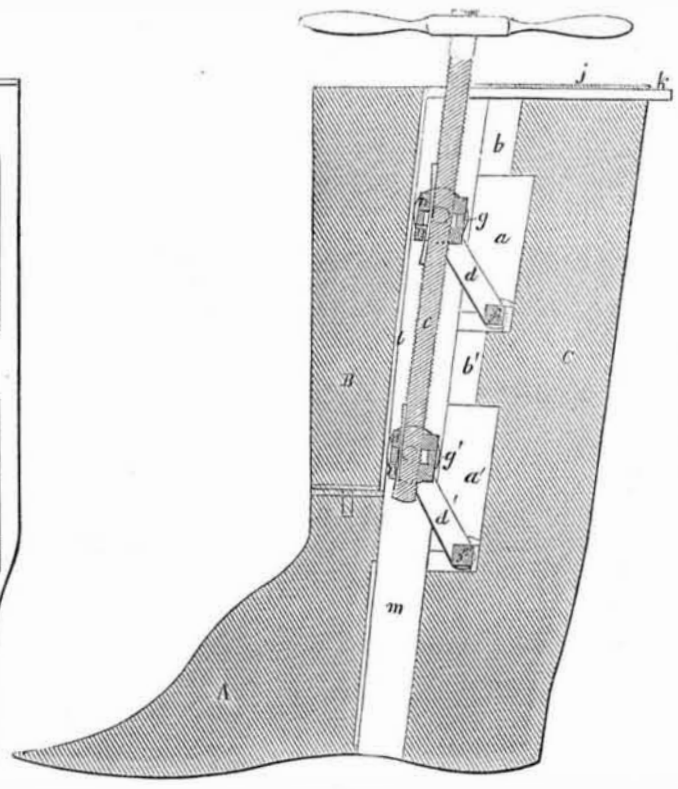


Figure 2.



The annexed engravings are views of an improvement in Boot Trees, invented by David Sadlier, of McWilliamstown, Pa., and for which a patent was granted on the 23rd of last November, (1852.)

Figure 1 is an inner face view of the hind part of the boot-tree; and figure 2 is a vertical section showing the levers partly depressed, and the tree extended. The same letters refer to like parts.

The nature of the invention consists in forming cavities in the hind part of the boot tree, and inserting therein a series of levers and friction rollers, which being operated by a screw are made to expand the tree whilst in the boot, by bearing against the shin piece.

A is the boot; B is the shin, and C the back part forming the tree, all of which are of the ordinary external form. In the inner side of the back part is the cavity, *a*; the vertical groove, *b*, crosses the cavities and admits the screw, *c*, levers, *d*, and friction rollers, *e*, all folding within the hind part, C. These levers have their fulcra in the lower end of the two cavities at *f*, two levers in each, one on either side of the screw, *c*. The upper ends of the levers are attached to said screw by swivel collars, *g*, with a gudgeon on either side which serve as connections for the levers and axes for the friction rollers, *e*. Said swivels are secured at any desired point on the screw by set nut, *n*, above and below each, which, when set, are keyed on the screw to prevent them from turning across the upper end of the back part, C. The groove in the back part is covered with a plate, *j*, and there is a slide, *k*, fitted in a groove on the top of the tree. This slide has a graduated edge, and a left-handed nut on its inner end, through which the screw, *c*, works. The shin part, B, has a metal plate fitted on its inner side, for the friction rollers, *e*, to work against, also a metal shield, *m*, from the top to bottom on each side, to give a bearing to the leather between the shin and back when extended by the levers. The foot, A, is connected with the shin, B, in the usual manner.

The several parts of this boot-tree being placed in their respective positions, the tree is held in the left hand on the top of the parts, B and C, the thumb tightly bearing against the outer end of the slide, *k*. The screw, *c*, is then turned down by the lever, *i*, on its upper end, which extends the levers, *d*, their friction wheels bearing against the shin part, force it and the hinder part asunder and thus stretch the leg of the boot to any desired size. If it is desired to stretch the lower part of the leg more than the upper part, it can be done by moving the upper nut, *n*, higher on screw, *c*, and keying it in that position, which makes the levers, *d'*, act against the shin part sooner than the upper levers are run up on the screw; this makes the upper levers, *d*, press against the shin part first. By this arrangement the centre wedge in the common boot trees is dispensed with, and the leg can be stretched at the upper and lower parts as desired, which cannot be done with the wedge without danger of bursting. The leather of the leg is also prevented from wrinkling down, as is commonly the case with pressing the wedge; it is also a tree to suit the largest and smallest sized boots, by the greater or less extension of the levers, *d d*.

More information may be obtained by letter addressed to the inventor.

Plastic Materials for Forming Various Objects.

Five parts of sifted whiting are mixed with a solution of one part of glue. When the whiting is worked up into a paste with the glue, a proportionate quantity of Venetian turpentine is added to it, by which the brittleness of the paste is destroyed. In order to prevent its clinging to the hands while the Venetian turpentine is being worked into the paste, a small quantity of Linseed oil is added from time to time. The mass may also be colored by kneading in any color that may be desired. It may be pressed into shapes, and used for the productions of bas-reliefs and other figures such as animals, &c. It may also be worked by hand into models, during which operation the hands must be rubbed with linseed oil; the mass must also be kept warm during the process. When it cools and dries, which takes place in a few hours, it becomes hard, and may then be employed for the multiplication of these forms.