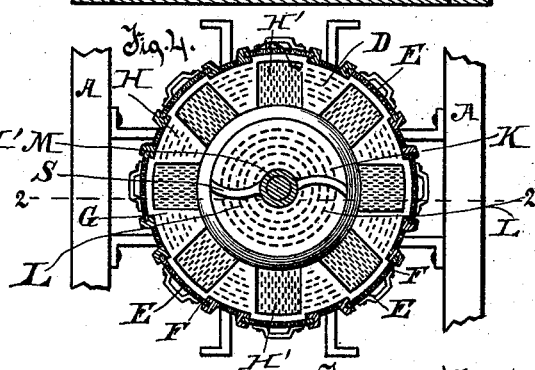
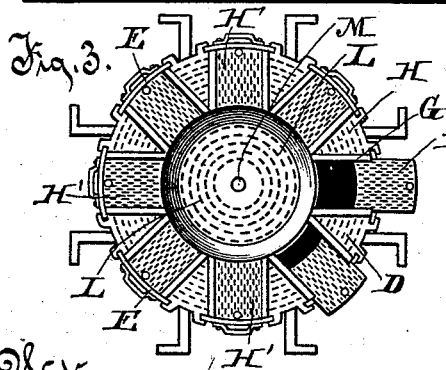
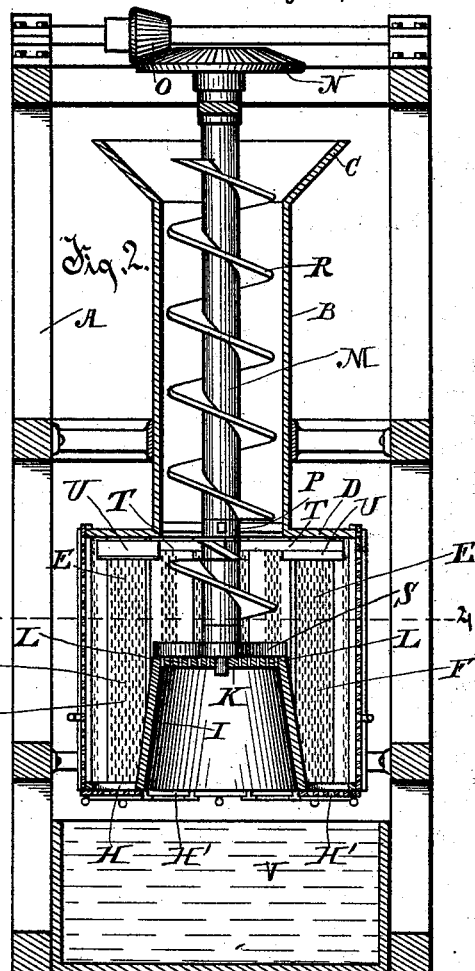
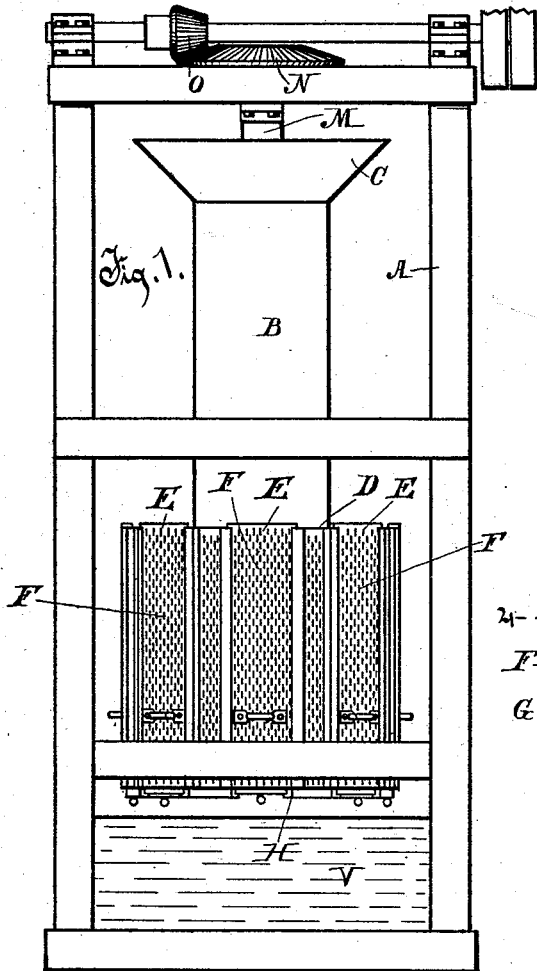


(No Model.)

D. WHITTAKER & L. H. HAMILTON.
STONE SEPARATOR.

No. 455,375.

Patented July 7, 1891.



Witnesses:
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UNITED STATES PATENT OFFICE.

DAVID WHITTAKER AND LOUIS H. HAMILTON, OF MILWAUKEE, WISCONSIN,
ASSIGNORS TO THE WHITTAKER STONE SEPARATOR COMPANY, OF SAME
PLACE.

STONE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 455,375, dated July 7, 1891.

Application filed April 22, 1890. Serial No. 348,963. (No model.)

To all whom it may concern:

Be it known that we, DAVID WHITTAKER and LOUIS H. HAMILTON, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Stone-Separators; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

In the preparation of clay as taken from its bed in the earth for manufacturing brick, tile, or other articles it is necessary to separate and remove therefrom the pebbles or stone, if any therein; and our invention relates to a machine constructed and adapted for separating and removing such pebbles or stones, or irreducible lumpy material therefrom.

The machine is adapted for working the clay and removing the pebbles or stones therefrom, ordinarily, in the condition in which it is when taken from the ground; but if too hard for easy working then with the addition of such water as may be required to reduce the clay to a plastic consistency.

The invention consists of mechanism for forcing the material through the machine, a means for automatically separating the pebbles or stones from the clay, a pocket or auxiliary receptacle in which the pebbles or stones are accumulated, and means for removing them from the machine.

In the drawings, Figure 1 is an elevation of our complete machine. Fig. 2 is a central vertical section of the same machine. Fig. 3 is a bottom view of the separator. Fig. 4 is a transverse section of the separator on line 4 4 of Fig. 2, looking downwardly.

A is a frame on which the operative mechanism is supported. A case B, advisably in cylindrical form and having a funnel-shaped top C, is supported on the frame A, preferably vertically, and at its lower end opens into an auxiliary receptacle D, also preferably made in the cylindrical form. The receptacle D is provided with sliding doors E E and with a large number of apertures F F, preferably elongated slots, formed in the

sides of the receptacle, advisably in the walls of the receptacle, and also in the doors E E. The central part of the bottom of the receptacle D is thrown upwardly a distance conveniently in frusto-conical form, forming a chamber G in the receptacle D at the side of and below the top of the re-entering part of the bottom of the receptacle. The bottom of the receptacle consists of the outer bottom part H, of the inner upwardly-extending circular wall I, and the top K. The part H of the bottom is provided with gates or slides H'. The top K of the re-entering part of the bottom of the receptacle is provided with a large number of apertures L L, preferably constructed as elongated slots and advisably arranged in circles therein, whereby this portion of the bottom is adapted for and becomes a screen. The bottom H and the gates H' therein are also slotted or perforated. The top or screen of the re-entering part of the bottom is of about the same diameter horizontally as the diameter of the case B.

A revoluble shaft M is located centrally of the case B and has a journal-bearing in the top K and another journal-bearing in the frame A. This shaft is provided with a beveled wheel N, meshing with a pinion O on a driving-shaft. An intermediate journal-bearing P is preferably provided in the lower part of the case for the shaft M to still further steady and support the shaft. The shaft is also provided with a screw R, which may be either in continuous form or in a series of screw-blades, extending without intermission or with but small separations from the funnel down nearly to its lower extremity. This screw is adapted as the shaft is rotated to force the contents of the case downwardly therein, and partly into the receptacle D and partly out through the apertures.

A scraper S, consisting of two laterally-extending arms advisably reversely curved outwardly, rearwardly with reference to their line of rotary motion, is fixed on the lower end of the shaft M just above the screen K. We also preferably provide radial arms T T, fixed in the shaft M near the top of the receptacle D, which arms carry rigid thereon the downwardly-projecting blades U U, inclined rear-

wardly to their line of rotary motion. These blades U U are located outside the circle described by the screw R and above the annular chamber G. These arms T T, with their 5 blades U U, are not necessary to the complete and successful working of the machine, and their omission does not with most qualities of material detract from or reduce the efficiency of the machine. A tank V is located below 10 the receptacle D to receive the clay discharged therefrom.

The operation of this device is as follows: A supply of plastic clay containing pebbles or stones is fed into the case B through the 15 funnel C, and as the shaft M rotates the mass of clay and contained pebbles is carried downwardly against the top K of the re-entering part of the bottom of the receptacle D, through which it mostly passes, the revolving scraper 20 S serving to constantly keep the surface of the top K comparatively clean, forcing the pebbles and stones laterally toward the sides of the receptacle, while the constantly-renewed supply of clay forced downwardly by the screw 25 M presses against and passes through the screen K, falling into the tank V. As the pebbles and stones are forced off the screen K laterally toward the side walls of the receptacle D they fall into the chamber G, and 30 as this chamber fills up with stones, pebbles, and a certain portion of the clay that is forced laterally off the screen K by the scraper S the plastic clay will, by reason of the pressure on the material in the machine, be forced out 35 through the apertures in the sides of the receptacle D and through the apertures in the bottom H and gates H'. When a considerable supply of pebbles and stones has accumulated in the auxiliary receptacle D, either in 40 the chamber G or above it, the doors E E in the sides of the receptacle of the gates H' H' in the bottom, or both, may be opened and the stones and pebbles removed from the receptacle.

45 What we claim as new, and desire to secure by Letters Patent, is—

1. In a stone-separator, the combination, with a suitable case, a feed device therein arranged to force the material through the case 50 in the direction of its length, and a screen at the discharging end of the feed device arranged at right angles to and across the direct line of movement of the material through the case, the apertures through the screen being 55 of a size to permit the passage of plastic clay and to prevent the passage of stones, of an auxiliary receptacle located at the side of and beyond the end of the feed device and of the screen, apertures in the walls of the auxiliary receptacle to permit the passage of 60 plastic clay and to prevent the passage of stones, and doors in the walls of the auxiliary

receptacle for the removal of stones, substantially as described.

2. In a stone-separator, a case having a 65 screen at its discharging end, a feed device, an automatically-operating cleaning device, and a receptacle at the discharging end of the case, adapted to receive and retain pebbles and stones and having apertures to permit 70 the passage therefrom of plastic clay, all combined substantially as described.

3. In a stone-separator, the combination, with a suitable case and a therein-revolving 75 shaft and feed device, of a receptacle at the discharging end of the case, which receptacle has a centrally re-entering bottom, the re-entering part having a screen-top, and a scraper fixed to the revolving shaft and located just 80 above the screen and adapted as the shaft revolves to clear the surface of the screen and to force pebbles and stones laterally beyond the scraper, substantially as described.

4. In a stone-separator, the combination, with a case, a therein-rotating shaft and feed 85 device, a screen at the end of the shaft across the direct line of movement of material in the case, and a scraper fixed to the shaft and adapted to automatically-clear the screen of stones and force them laterally therefrom, of 90 an auxiliary receptacle at the side of and beyond the screen, doors in the walls of the auxiliary receptacle for the removal of stones, and other unclosed apertures in the walls of the receptacle for the passage of plastic clay 95 only, substantially as described.

5. In a stone-separator having a suitable case and a revolving feed-screw therein, the combination, with an auxiliary receptacle located at the lower terminal end of the feed- 100 ing-screw, which receptacle has perforated sides and sliding doors and a re-entering central part of its bottom, of radial arms fixed in the shaft carrying inclined blades, as U U, substantially as described. 105

6. In a stone-separator, a receptacle, as D, having perforated sides and bottom and doors in the sides and bottom, the bottom having a re-entering central part, in combination with a scraper located immediately above the top of 110 the re-entering part of the bottom, radial arms, as T, carrying inclined blades, as U U, and means, substantially as described, for carrying and rotating the scraper and the arms and for receiving and feeding the mate- 115 rial into the machine.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID WHITTAKER.
LOUIS H. HAMILTON.

Witnesses:

C. T. BENEDICT,
ANNA FAUST.