No. 792,031. PATENTED JUNE 13, 1905.

C. B. HERRICK & J. W. BALDWIN.

CLAY WASHING MACHINE.

APPLICATION FILED NOV. 15, 1904.

2 SHEETS—SHEET 1.

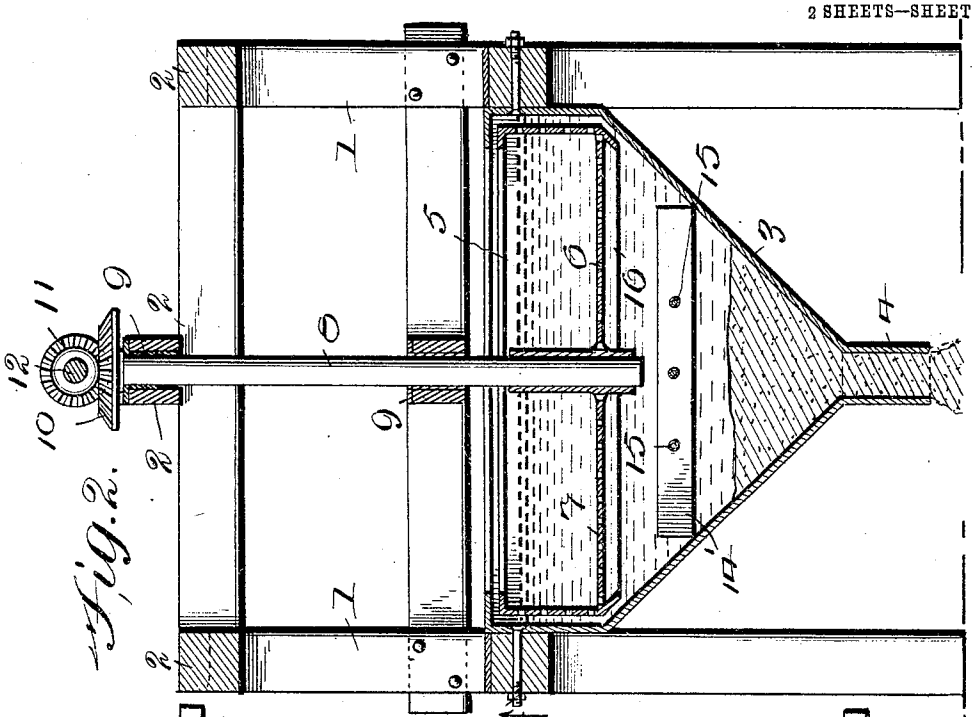


Fig. 2.

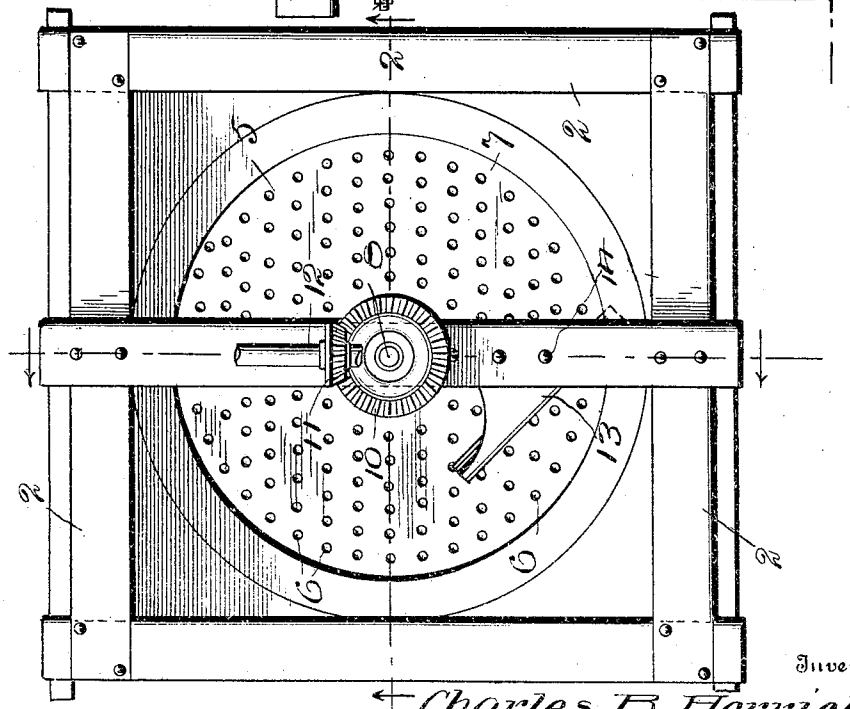


Fig. 1.

Witnesses

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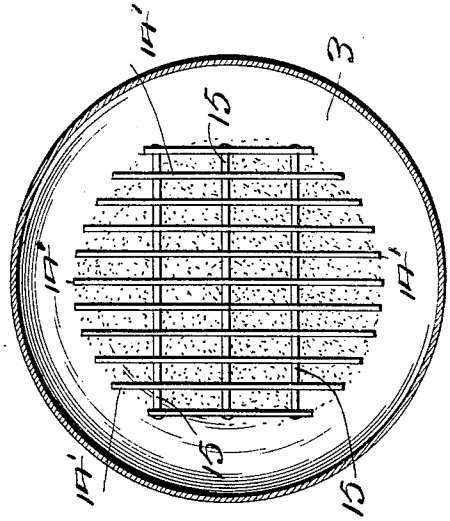


Fig. 4.

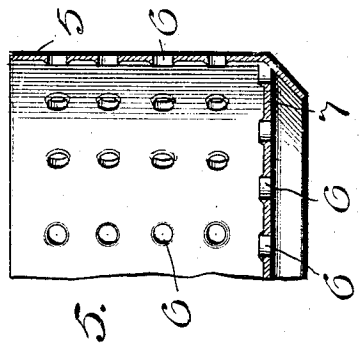


Fig. 5.

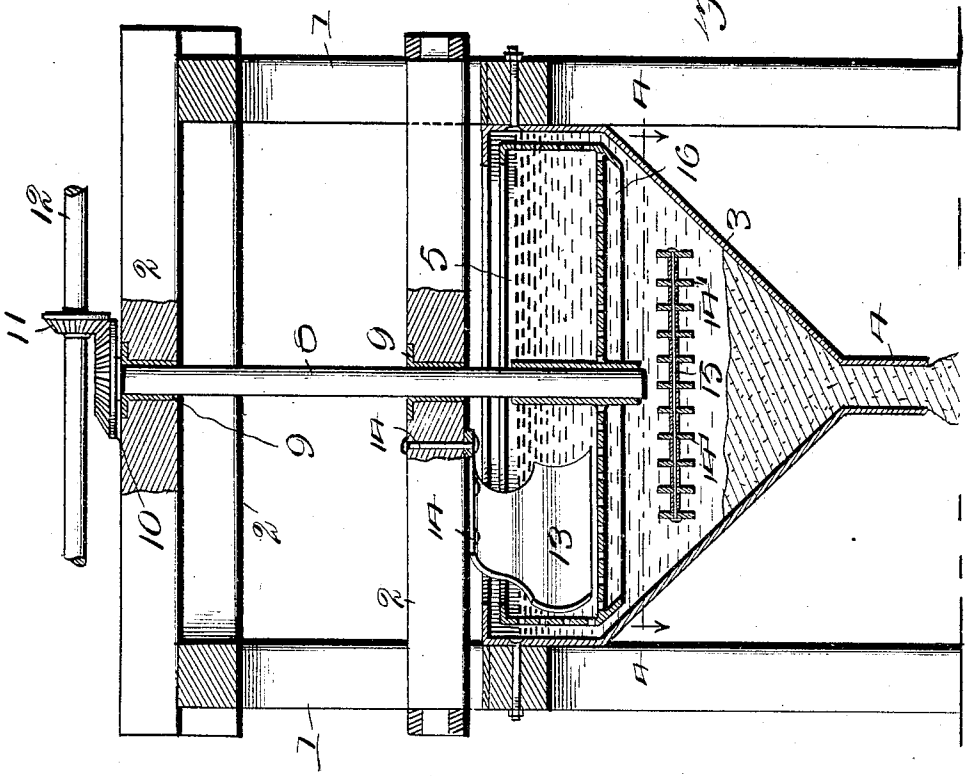


Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES B. HERRICK AND JAMES W. BALDWIN, OF OTTAWA, ILLINOIS.

CLAY-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 792,031, dated June 13, 1905.

Application filed November 15, 1904. Serial No. 232,843.

To all whom it may concern:

Be it known that we, CHARLES B. HERRICK and JAMES W. BALDWIN, citizens of the United States, residing at Ottawa, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Clay-Washing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to clay washing and pulverizing machines; and it consists of certain novel features of construction and combination of parts, the preferred form whereof will be hereinafter clearly set forth, and pointed out in the claims.

The prime object of our invention, among others, is to provide a machine of the character specified whereby gravel and all coarser particles may be effectually removed from the clay, leaving only the washed clay ready for being applied to the various uses for which it is found suitable.

A further object of our invention is to employ a relatively larger quantity of water for action upon the crude clay, whereby the action of the water will assist in disintegrating the coarser lumps or pieces of clay, thereby insuring that a perfect separation of the clay proper from its foreign substances or substances not suited in the manufactures wherein clay is employed will be set up.

Other objects and advantages will be hereinafter made clearly apparent, reference being had to the accompanying drawings, which are made a part of this application, and in which—

Figure 1 shows a top plan view of our invention complete ready for use. Fig. 2 is a sectional view of Fig. 1 on line 2 2 thereof. Fig. 3 is a vertical sectional view taken on a line substantially at right angles to the line of division shown in Fig. 2. Fig. 4 is a sectional view looking downward as taken on line 4 4 of Fig. 3. Fig. 5 shows a detail view of a section of the agitating-tank or rotating receptacle employed by us in holding a charge or given quantity of crude clay to be treated.

Briefly stated, our invention may be said to consist of a suitable receptacle for receiving the crude clay, said receptacle being rotatably mounted in position and provided with a plurality of perforations and also with an agitator designed to act upon the contents thereof when the receptacle is turned, it being understood that said receptacle is almost wholly immersed in water, which latter is confined around the sides of the rotating receptacle by an auxiliary tank or hopper, which is held stationary by suitable framework.

For convenience of description the various parts of our invention and coöperating accessories will be designated by numerals, the same numeral applying to a similar part throughout the several views, and, referring to the numerals on the drawings, 1 indicates uprights of any preferred character, while 2 designates the cross-beams, secured to the uprights in any suitable way, whereby a complete supporting-framework will be formed, and upon the framework thus or otherwise constructed we locate certain coöperating accessories comprising, first, a stationary tank 3, preferably having a conical or tapered bottom section and an outlet-orifice or throat 4, and within the open end of the casing or stationary hopper 3 we mount the rotating clay-receptacle 5, which is provided with a plurality of perforations 6 throughout its sides and also throughout the bottom 7 thereof. We prefer to so form said perforations 6 that they will project slightly inward, which may be readily accomplished by producing the perforations from the outside, as will be readily understood by those skilled in such work, though we reserve the right to form them in any desired manner which we may hereafter consider most effective.

It will be observed that the perforated receptacle is firmly secured to the lower end of the rotating shaft 8, which latter is suspended in its bearings 9 in the middle cross-beams 2 by means of the gear 10, which is firmly secured to the upper end thereof and is placed in mesh with the driving-gear 11 upon the shaft 12, the latter extending into engagement with any suitable source of power.

In order to insure that the contents of the receptacle 5 will be thoroughly agitated, we secure at a convenient point upon the lower cross-beam 2 the agitator-blade 13, as by means of the bolts or pins 14 or equivalent thereof, and it is obvious that when the perforated receptacle is rotated the contents therein will be moved against the agitator-blade 13, which latter is preferably obliquely disposed, whereby the crude clay within the receptacle will be moved inwardly, insuring a perfect commingling of the clay and water, which latter rises through the perforations to a point nearly at the top of the receptacle, as shown by reference to Figs. 2 and 3. We also locate in the tapered bottom of the stationary tank or receptacle 3 a suitable diaphragm—as, for instance, a plurality of cross-bars 14' and 15, held in coöperative relationship in any preferred manner—or said diaphragm may be otherwise formed as desired, the office subserved by said diaphragm being to separate the lower and upper portions of the water in the tank 3, whereby the water below said diaphragm will be held in a quiescent condition and will not be as greatly agitated as will be the upper portion of the water incident to the rotation of the perforated receptacle and the discharge therefrom of the pulverized clay. We also prefer to provide the lower portion of the perforated receptacle with an annular inwardly-directed flange 16, which is designed to deliver the falling pulverized clay toward the center of the receptacle 3, and it is obvious that the clay thus pulverized will pass downward on the inclined walls of the stationary receptacle to and through the discharging orifice or chute 4. It is found, however, in practice that it is very desirable to leave a certain quantity of pulverized clay in the lower portion of the receptacle 3, whereby said lower portion below the diaphragm and also the discharging-chute 4 will be filled, which will prevent the escape of the water in the upper portion of the tank 3 above the diaphragm, thereby holding the water in position to immerse and act upon the clay within the rotating perforated receptacle 5, as will be obviously clear.

It is thought from the foregoing description, considered in connection with the accompanying drawings, that the construction and manner of using our invention will thus be made fully apparent, though it may be stated that the operation thereof is as follows: The perforated receptacle is filled with the clay to be treated and water introduced therein, which will cause a sufficient amount of the pulverized washed clay to pass through the perforations 6 to stop up or completely close the discharging-orifice 4, when sufficient water may be introduced into the receptacle to almost or wholly immerse the same. Power is then applied to the shaft 12, which will insure the rotation of the perforated receptacle, bringing the contents thereof against the stationary agitating-blade and causing complete disintegration of the mass of clay, when by gravity the finer portions of the clay will pass through the perforations and thence downward into the lower portion of the stationary receptacle below the diaphragm above described. After the machine has been driven a sufficient length of time to leave behind within the receptacle 5 a mass of stones and other foreign substances in the clay the machine may be stopped and the perforated receptacle manually cleansed, as by using a shovel, and when so freed of the mass of gravel, &c., left therein it is ready for a new charge of clay, it being understood that a sufficient quantity of pulverized clay shall have been left in the discharging orifice or chute 4 to retain the water in a stationary tank. We are thus enabled to use the water over and over again, requiring only small additions of water from time to time to keep the perforated tank properly immersed. As the mass of clay in the perforated receptacle is thus thoroughly agitated by the stationary blade incident to the rotation of the receptacle, a complete separation of the clay is effected.

The various parts of our invention may be cheaply and expeditiously manufactured and each readily assembled in its operative position, and while we have described the preferred combination and construction of parts, we desire to comprehend in this application all substantial equivalents and substitutes.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The herein-described clay washing and separating machine comprising a suitable frame; a stationary tank secured in position by the frame and having a discharging-orifice at its lower end and adapted to be filled with water, in combination with a perforated tank rotatably mounted in the upper end of the stationary tank; means to rotate said perforated tank; an agitator-blade coöperating with the contents of the perforated tank; a diaphragm separating the upper and lower portions of the stationary tank whereby the water below the diaphragm will be left unagitated substantially as specified and for the purpose set forth.

2. In a clay washing and separating machine, the combination with a stationary tank and a frame therefor, said tank having a discharging-orifice at its lower end, of a perforated tank rotatably mounted in the upper end of said stationary tank, means to rotate said perforated tank, an obliquely-disposed agitating-blade coöperating with the contents of the perforated tank, and means to separate the upper and lower portions of the stationary tank whereby the water below said separating means will be left unagitated.

3. In a clay washing and separating machine, a frame, a stationary tank secured to said frame, the lower end of said tank being tapered, the extreme lower end of said tapered portion converging into an outlet-orifice, a perforated tank rotatably mounted in the upper end of said stationary tank, means to rotate said perforated tank, an agitator secured to said frame and disposed in coöperation with the contents of the perforated tank, and a diaphragm separating the upper and lower portions of the stationary tank whereby the water below the diaphragm will be left unagitated, all combined substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES B. HERRICK.
JAMES W. BALDWIN.

Witnesses:
J. O. LESLIE,
THOS. O. MOORE.