

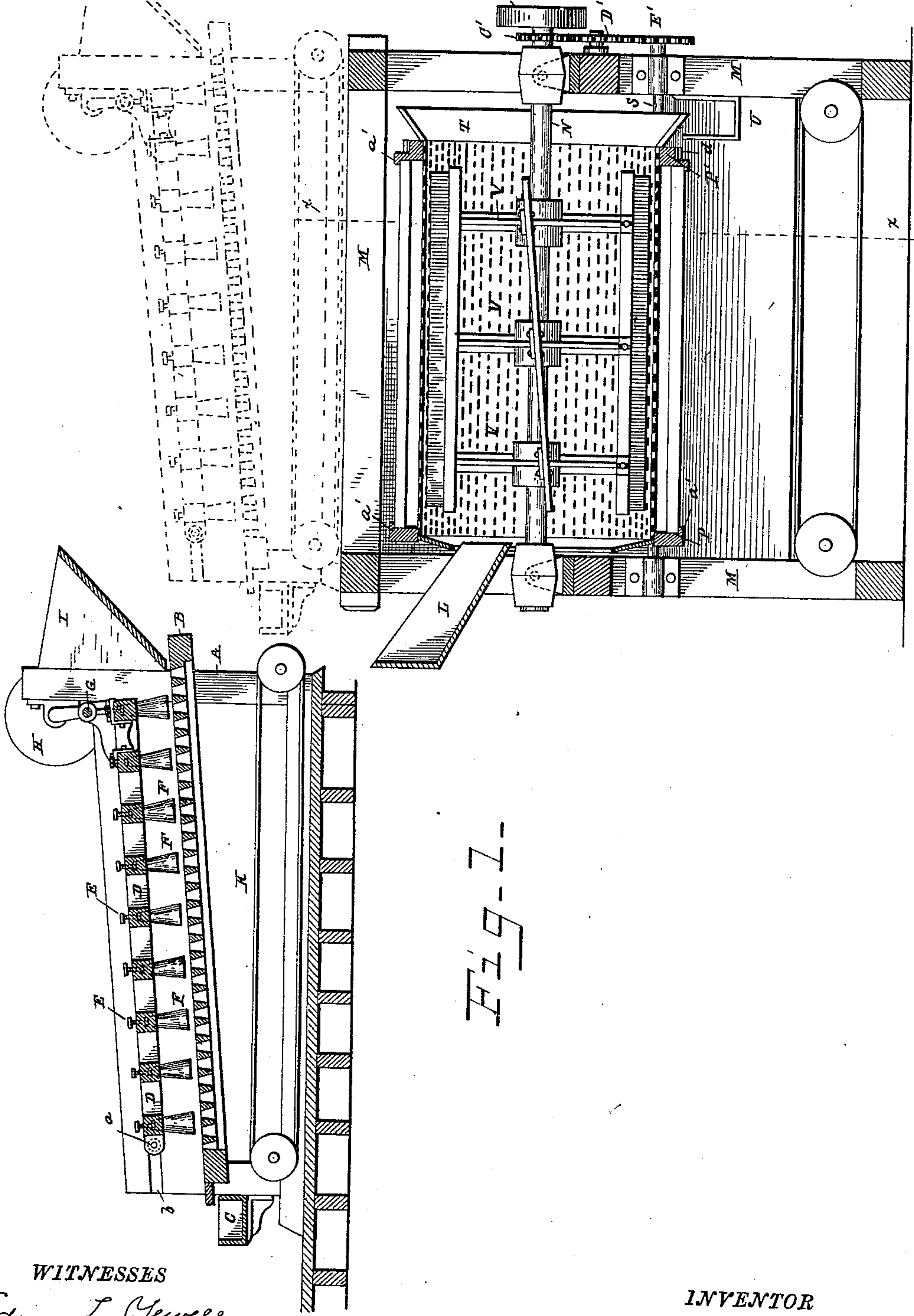
(No Model.)

2 Sheets—Sheet 1.

J. A. BOYD.
CLAY PULVERIZER.

No. 329,708.

Patented Nov. 3, 1885.



WITNESSES
Edwin L. Jewell.
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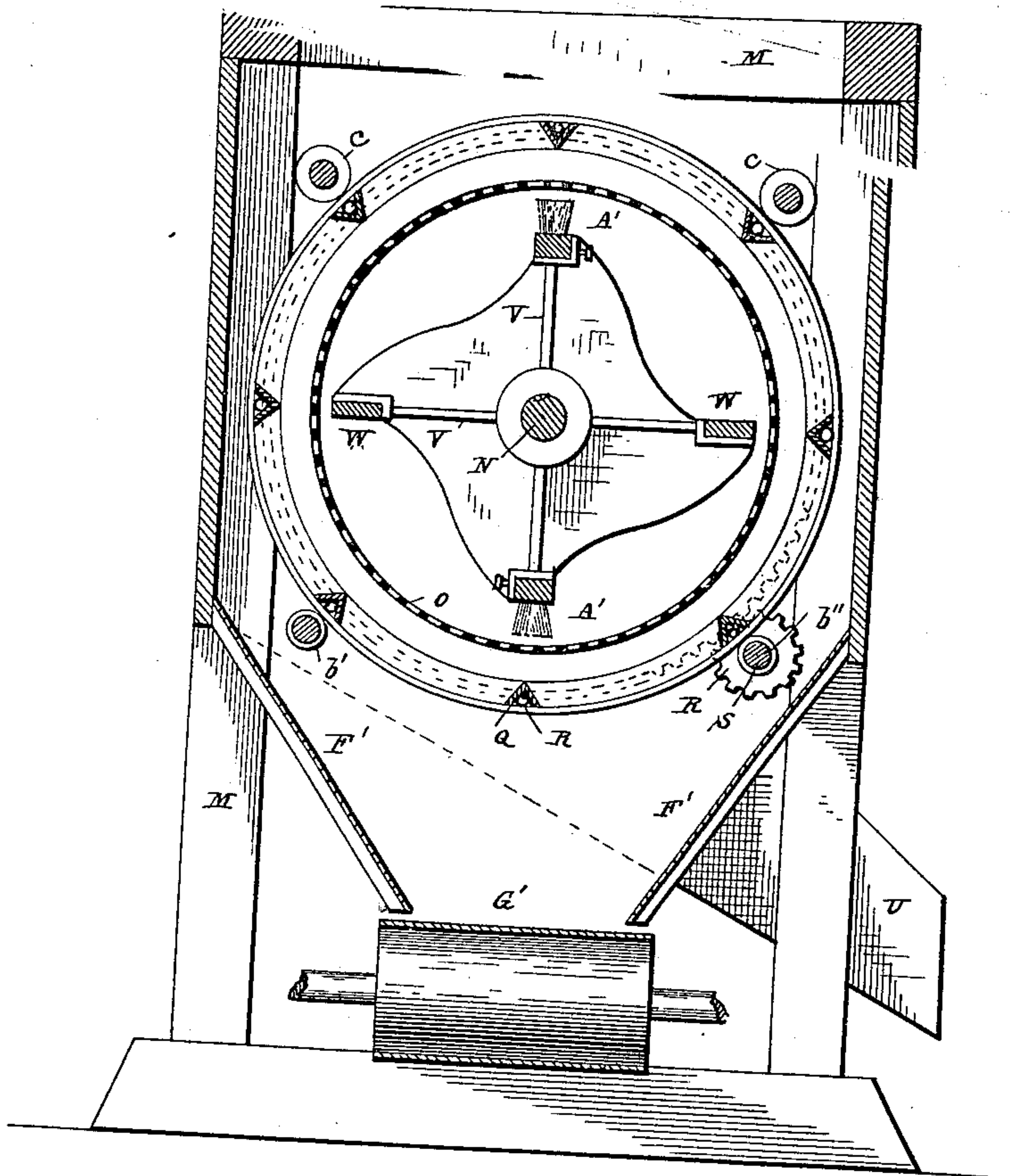
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Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES A. BOYD, OF MINNEAPOLIS, MINNESOTA.

CLAY-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 329,708, dated November 3, 1885.

Application filed March 12, 1885. Serial No. 158,518. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. BOYD, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Clay-Pulverizers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in clay disintegrators and separators.

The object of my invention is to provide a separator and disintegrator for removing the stones, pebbles, and other extraneous matter from the clay, and also to reduce the clay to a finely powdered or disintegrated condition, preparatory to being pressed into brick, as will more fully appear.

Referring to the drawings, Figure 1 is a longitudinal sectional view of the separator and disintegrator arranged in co-operative relation to each other. Fig. 2 is a sectional end view of the disintegrator, taken on the line *x* of Fig. 1.

In the manufacture of brick from dry clay it is necessary that it should be reduced to a finely disintegrated or powdered condition and freed from stones, pebbles, and other extraneous substances. In some localities good clay is found; but, being full of stones and pebbles, and of a lumpy character, it is unfit for brick-making purposes in its natural state. For manipulating such clay and rendering it fit for brick-making purposes, I employ a separator. (Shown at the left hand of Fig. 1.) This machine separates the larger stones from the clay and deposits it into the pulverizer, (shown at the right hand of Fig. 1,) in which the clay is fully disintegrated and freed from the smaller stones and pebbles.

I will now proceed to describe the construction and operation of both machines; but reserve the right to make a separate application for the separator, or the device shown at the left hand of Fig. 1.

A indicates a rectangular frame, in which is secured a slotted or open floor, B, said floor being slightly inclined from the front to the rear end of the machine, so that the stones can be more readily worked toward the rear of the machine and deposited in the chute or spout C.

D is the frame, of wood or other suitable material, the rear end of which is provided with friction-wheels *a*, adapted to travel in grooves *b* in the sides of the frame of the machine.

E are cross-bars forming part of the frame D, in which the steel brushes F are secured, said brushes being made adjustable by means of set-screws, or in any convenient or well-known manner, so that they can be set nearer to the open floor B as the ends of the brushes become worn away. The front end of the frame D is hung to the crank-shaft G, said crank-shaft being mounted in suitable bearings in the frame of the machine, and provided with a band-wheel, H, by means of which rotary motion is imparted to the crank-shaft and to the frame D.

I is a hopper or feed-box into which the clay is thrown, and is worked toward the rear of the machine by means of the brushes F, the finer portions of the clay falling through the open floor onto the endless traveling belt or conveyer K, which conducts it to the disintegrator, or to any other desired point.

The pounding and scraping or sweeping action of the brushes F on the clay tends to break up any lumps that may be in the clay, and, as before stated, works the larger pebbles and stones into the chute C at the rear end of the machine.

The separator just described may be mounted on top and made a part of the disintegrator, as shown in dotted lines at the right hand of Fig. 1, in which case the belt or conveyer will be arranged to travel in the opposite direction to that shown, in order to deposit the clay in the hopper L of the disintegrator.

The disintegrator is shown in longitudinal vertical section at the right hand of Fig. 1, as before indicated, and is constructed and operated as follows: M indicates a rectangular or other shaped frame-work of the machine, in which the shaft N is mounted in suitable bearings. O is a perforated cylinder or screen secured to the bands or heads P and P', said bands or heads being also connected together or strengthened in position by the Λ -shaped bars Q and rods R. The cone or wedge shaped top of the bars Q prevents the clay from lodging thereon. The bands or heads P P' are provided with a flat peripheral surface, *a*,

which forms a track for the friction-wheels b' b'' , located at both ends of the machine, upon which the screen-cylinder is supported. Friction-rollers c c are also secured to the framework of the machine, and impinge on the top of the screen-cylinder, by which means the cylinder is held in its proper working position and is prevented from being raised up or dislodged from its bearings on the friction-wheels b' b'' . The head or band P' is provided with spur-teeth d , which mesh with the pinion-wheel R on the shaft S , and by which means the screen-cylinder is made to revolve. One end of the screen-cylinder is partly closed, the central portion being left open to permit the chute or spout to project into the screen-cylinder a short distance. The other end of the cylinder is left open, and is provided with a flaring rim, T , which facilitates the discharge of the stones and pebbles from the screen-cylinder into the chute or spout U . The shaft N is provided with a series of arms, V , to which the beaters W and steel brushes A' are secured, the brushes and beaters being secured to the arms V diametrically opposite each other. The brushes A' are made of steel strips or wires, and are adjustably secured onto the arms V , so that they can be moved out toward the perforated cylinder when they become worn. The beaters W may also be made adjustable on the arms V for the same purpose. The function or office of the beaters is to break the lumps and stir up the clay, while the brushes serve to keep the meshes of the cylinder open and permit the finely-pulverized clay to pass therethrough. The outer end of the shaft N is provided with a band-pulley, B' , by which means the shaft is driven from any suitable or convenient source of power. The shaft N is also provided with a spur-gear wheel, C' , which meshes with a spur-wheel, D' , mounted on a suitable spindle secured to the frame M . The wheel D' meshes with a spur-wheel, E' , secured on the end of the shaft S , which imparts a slow rotary motion the screen-cylinder through the pinion-gearing R and d , as hereinbefore explained.

By the system of gearing herein described a slow rotary motion is imparted to the screen-cylinder and a rapid rotary motion given to the brushes and beaters on the shaft N .

The frame of the machine is properly inclosed with any suitable material, and to each side are secured the deflecting-boards F' , beneath which is placed the endless belt or carrier G' , driven in any suitable manner, which

carries away the disintegrated and finely-pulverized clay as rapidly as it comes from the screen. The cylinder is, by preference, set at an angle in its bearings, to facilitate the discharge of the stones and pebbles into the chute U ; but the front end of the machine may be depressed, or the rear end of the machine elevated, and the same result accomplished.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for pulverizing clay for brick-making purposes, a separator having an inclined floor and reciprocating brushes arranged to operate above said floor, as described, in combination with a pulverizer having a perforated rotating cylinder and a central shaft provided with brushes and beaters located in said cylinder, as set forth.

2. A clay-pulverizer consisting of a perforated independently-rotating cylinder having an independently-rotating shaft mounted therein, said shaft being provided with beaters and metallic brushes, as set forth.

3. In a clay-pulverizer, a rotating shaft mounted in a perforated cylinder or chamber, provided with adjustable metallic brushes, whereby the brushes can be moved toward the walls of the perforated cylinder or chamber as they become worn.

4. In a clay-pulverizer, a perforated screen-cylinder, mounted on and between friction-wheels, as set forth, the rotating shaft provided with adjustable brushes and beaters, in combination with the shaft S , located below the center of the cylinder and forming a support for one side of the same, and the intermediate gearing for driving the shaft and cylinder, as set forth.

5. A clay-pulverizer consisting of a perforated screen-cylinder, with heads or rings, as described, the heads being connected together by angle bars and rods, as set forth.

6. A clay-pulverizer consisting of a perforated cylinder having one end partially closed to receive the feed-spout L , the other end being enlarged or flared, as described, to facilitate the discharge of the stones or pebbles, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES A. BOYD.

Witnesses:

CHARLES L. HASTINGS,
H. W. BOYD.