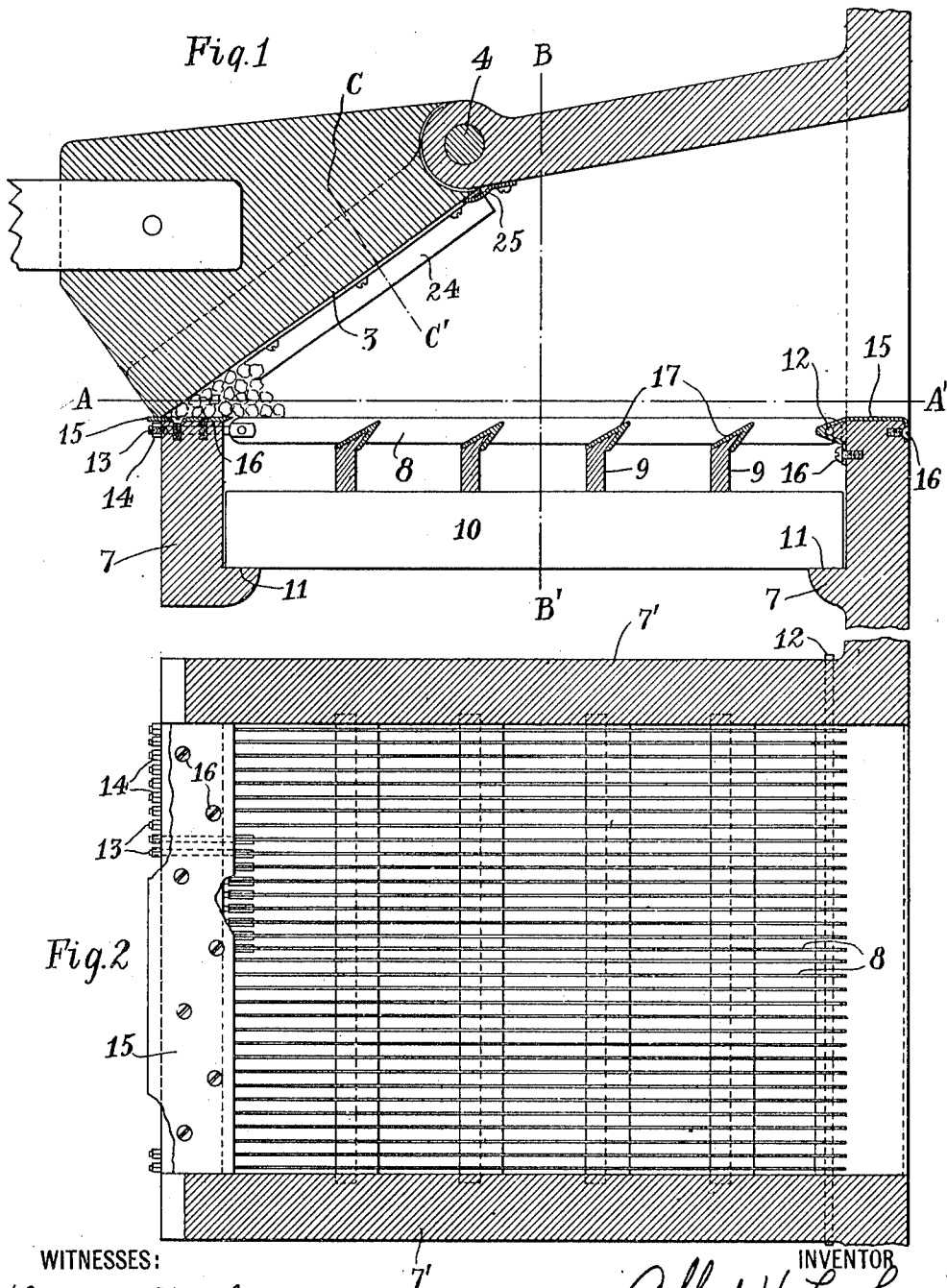




WITNESSES:
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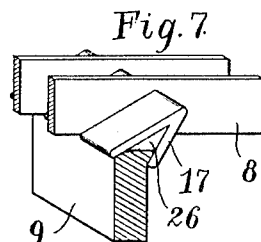
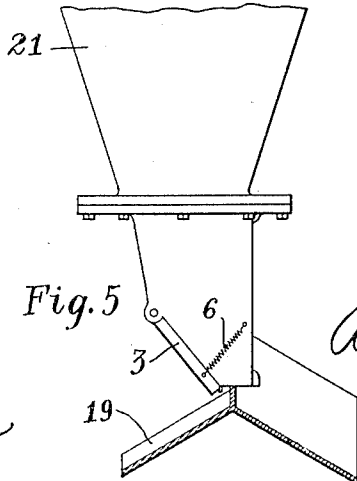
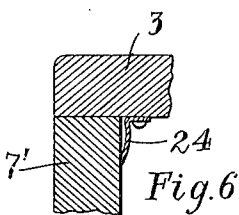
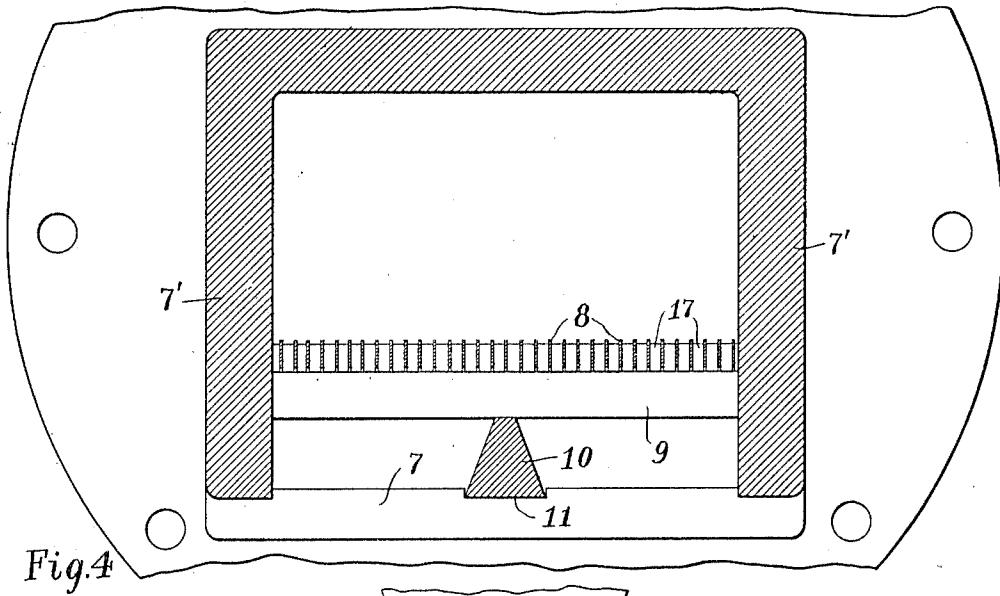
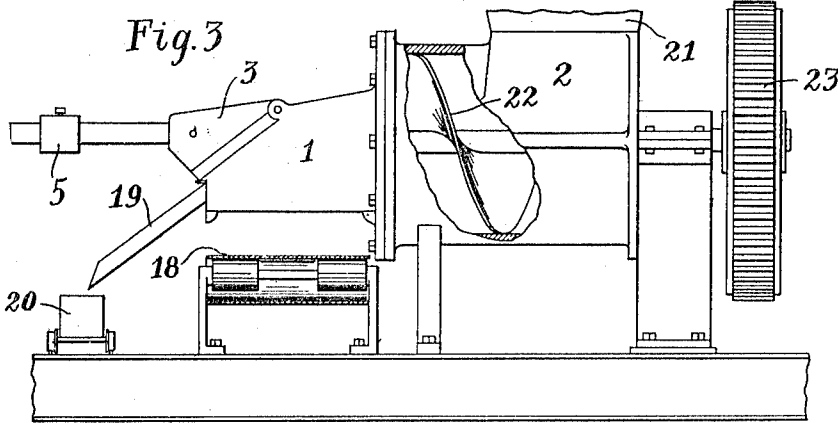
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A. H. COWLES.
CLAY SIEVING MACHINE.
APPLICATION FILED MAR. 16, 1911.

1,040,639.

Patented Oct. 8, 1912.

2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

ALFRED H. COWLES, OF SEWAREN, NEW JERSEY.

CLAY-SIEVING MACHINE.

Specification of Letters Patent.

Patented Oct. 8, 1912.

1,040,639.

Application filed March 16, 1911. Serial No. 614,875.

To all whom it may concern:

Be it known that I, ALFRED H. COWLES, a citizen of the United States, and resident of Sewaren, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Clay-Sieving Machines, of which the following is a specification.

My invention relates to a new and improved apparatus for sieving clay and similar plastic materials.

The object of my invention is to provide a device which shall remove from the clay the stones or other foreign substances, which are of such size and constitution that they would spoil the clay, or seriously interfere with the purpose for which the plastic material is intended.

To carry out my invention, I have combined with an ordinary "auger" or "plug" clay handling machine an apparatus which is simple and economical in construction, easily manipulated, and thoroughly efficient in its operation. I have, moreover, made the parts that are subject to wear interchangeable, thereby assuring long life to said parts.

In the drawings attached to and forming a part of this application: Figure 1 is a vertical, longitudinal section through my apparatus; Fig. 2 shows a cross section on the line A A¹ of Fig. 1; Fig. 3 is a side elevation, partly in section, of my device attached to the auger part of an ordinary brick-making machine; Fig. 4 is a section on the line B B¹ of Fig. 1; Fig. 5 shows the device arranged in a vertical position and operating by gravity. Fig. 6 is a section on the line C C¹ of Fig. 1, and Fig. 7 is a view showing the manner of supporting the blades or bars of Fig. 1.

Referring to the drawings: 1 is the frame of the sieve, made preferably of cast iron or steel, which is detachably fastened to the body 2 of a brick-making, or clay handling machine, my device taking the place occupied by the brick molding portion.

3 is a heavy valve piece pivoted at 4 to the body portion 1. In order to control the pressure necessary to cause the valve 3 to open, there is attached thereto an adjustable weight, 5, or spring 6.

7 are the front and back walls of the apparatus across which are stretched, leaving intervals between, a series of thin metal blades or bars 8, resting in slots fashioned

in the uprights 9. These in turn are supported in the sides 7¹ of the frame and rest, for the purpose of increasing the stability, midway between the sides of the frame on the cross-bar 10, supported in the shoulders 11, of the frame 7. Besides supporting the blades 8, these pieces 9 form guides for the sieved clay, meeting it as it comes, with a forward motion, through the sieve and directing it downward. The blades 8 extend the entire length of the base and are detachably held by a rod 12, on one side to the frame, and on the other, by pins to bolts 13, which are adjusted by means of nuts 14. The blades or bars are held in place in a manner similar to that in which the blades of a hack saw are held.

15 are steel plates adapted to receive the wear and are detachably fastened to the frame 7, by means of screws 16.

17 are removable pressed metal tips for protecting from wear the parts 9.

18 is a conveyer belt for removing to the desired point the clay separated from the undesirable foreign substances, which pass out, through the spout 19, into any desirable receptacle, for example, a car 20.

21 is the hopper through which the raw clay is introduced into the clay handling portion 2, and 22 shows the screw of an auger machine actuated by the wheel 23, for forcing the clay into the sieving device.

24 is the scraping flange. 25 answers the same purpose at the top of the valve.

26 shows the slots in which the blades 8 rest.

The operation is as follows:—The blades 8 are about an eighth of an inch thick, and are about a quarter of an inch apart. The blades having been inserted and brought to the desired tension, the clay is introduced into the hopper 21. Previous to its introduction, the clay is preferably subjected to a rough sieving, by which foreign substances, say as large as a quarter of an inch in diameter or greater are removed. There must also be in the clay, or added thereto, such an amount of water as will render it sufficiently plastic. When the machine is started the clay, just as in the process of brick-making, is forced forward and into the sieving device. As it reaches here its own fluidity and the pressure on the mass of clay entering the sieve forces it down between the blades, or bars, 8, the guides 9 with their forwardly directed tips assisting

to direct the forwardly moving clay mass downward. If the blades are arranged, as assumed above, at a distance of say $\frac{1}{4}$ th of an inch apart, it is evident that all bodies of $\frac{1}{4}$ th inch diameter, or larger, will remain above the blades and be separated out from the clay. These bodies, stones for example, will collect on the top of the blades and will be gradually forced by the pressure urged clay and the succeeding stones forward against the downwardly inclined face of the valve 3. This inclined shape of the valve face, as well as the inclined shape of the top of the casing, assists in forcing the clay downward between the blades. By varying the size or position of the weight 5, or the force of the spring 6, the time of opening of the valve under accumulating pressure and the discharge of the foreign substances from the sieve can be predetermined and arranged at will. The clay issuing from the sieve can be received upon and carried away by the conveyer 18, while the stones pass out through the mouth 19 into any desired receptacle.

It is evident that the portions of the machine coming into contact with the clay and the foreign substances will wear out first, and I have, as mentioned above, provided for the renewal of the exposed parts.

The sides of the moving valve should be protected from clay wedging between them and the frame, by well-known means, such, for instance, as is employed in types of clay machines where pistons move downward pressing clays under high pressure and are then withdrawn for a new charge. A pliable flange 24, which acts as a scraper keeps the clay from adhering to the walls and working into the joints.

In using the sieving machine, if one is operating on material containing only a few stones, the valve C may be fastened down, to prevent too much clay being passed out through the valve.

In Fig. 5, I have shown the device arranged vertically, operating by gravity, without the necessity for any forcing mechanism. The device is provided with a hopper through which the clay is introduced in a proper condition of plasticity.

Having thus fully described and illustrated my invention, what I claim, is:—

1. A device for separating clay from the foreign solid material contained therein, consisting of a frame, and comprising a base formed of longitudinally extending, laterally spaced bars, a top portion inclined

to the base, an automatic valve pivoted to the frame, in combination with means for forcing the clay forward along the bars, and means for regulating the pressure under which the valve is to act.

2. In a clay sieving device, a casing, a base composed of a series of longitudinally extending, laterally spaced screening blades, in combination with a series of transverse shaving knives disposed below the upper edge of said blades, adapted to direct the plastic material downward between the blades.

3. In a clay sieving device, a series of longitudinally extending laterally spaced screening blades, in combination with a series of transverse shearing knives said knives lying below the upper edge of the screening blades and having their upper edges inclined forward toward the entrance of the device.

4. In a clay sieving device a series of longitudinally extending laterally spaced screening blades, in combination with a series of transverse shearing knives having their upper ends inclined forward toward the entrance of the device, the inclined cutting surfaces being adapted to be removed.

5. In a clay sieving device, a metal casing, a base comprising a series of detachable longitudinally extending and laterally spaced blades, transverse shearing knives cooperating with said blades and disposed in a plane below the upper edges of said blades, an automatic valve pivoted to the top of the casing, in combination with means adapted to force the material under treatment between the transverse shearing knives and slide the coarser material along the screening blades.

6. A gravity operated sieving device for plastic materials, comprising a hopper, a metal casing, a sieve portion detachably connected to said casing and composed of a series of bars extending longitudinally of the casing and spaced laterally across the same, in combination with an automatic valve controlling the pressure in the casing, and means for regulating the pressure on said valve.

Signed at New York city in the county of New York and State of New York this 13th day of March A. D. 1911.

ALFRED H. COWLES.

Witnesses:

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ALBERT STETSON.