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PATENTED FEB. 13, 1906.

C. W. RAYMOND.
EMPTYING APPARATUS FOR CLAY BINS.

APPLICATION FILED APR. 6, 1905.

3 SHEETS—SHEET 1.

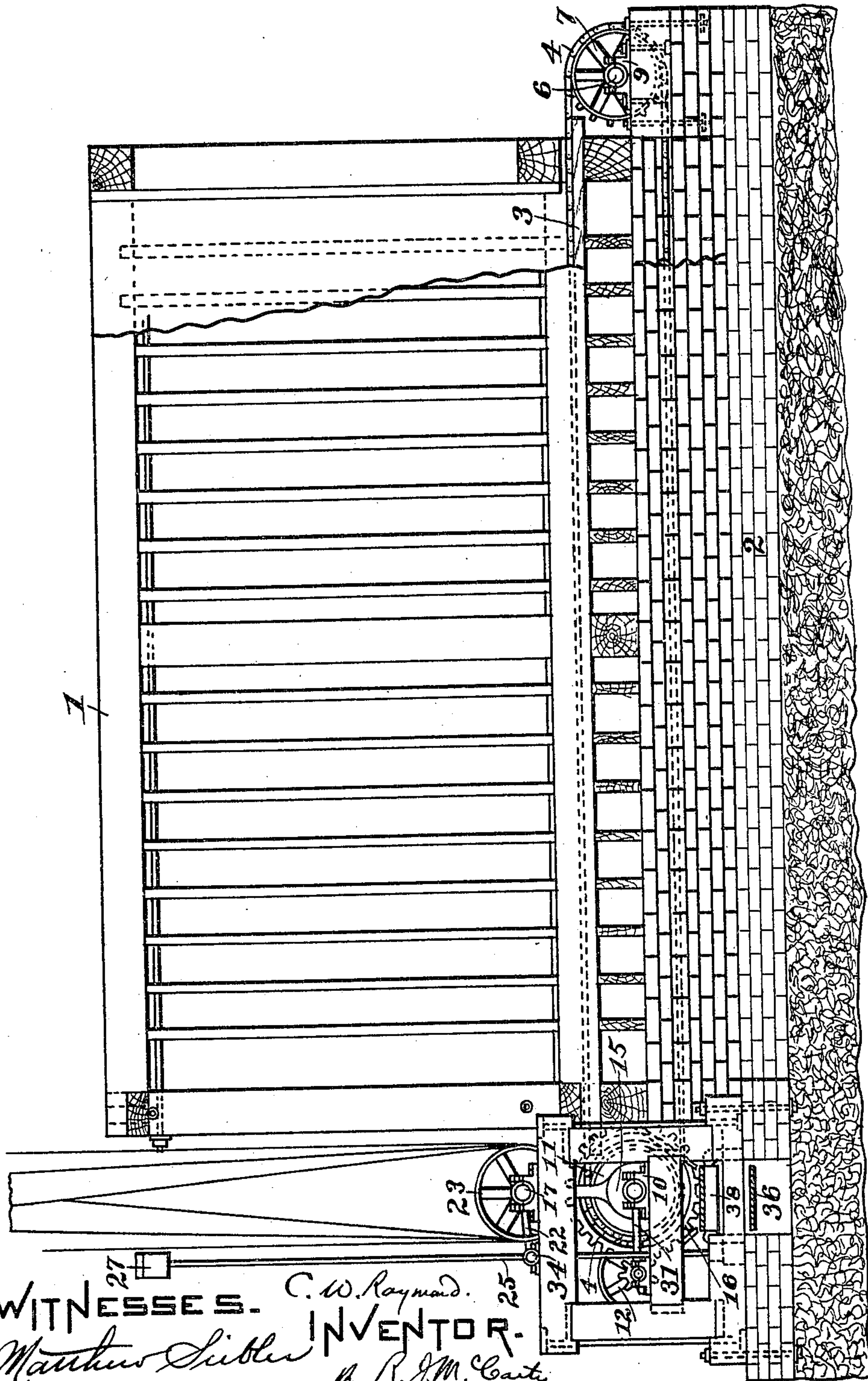


Fig. 1.

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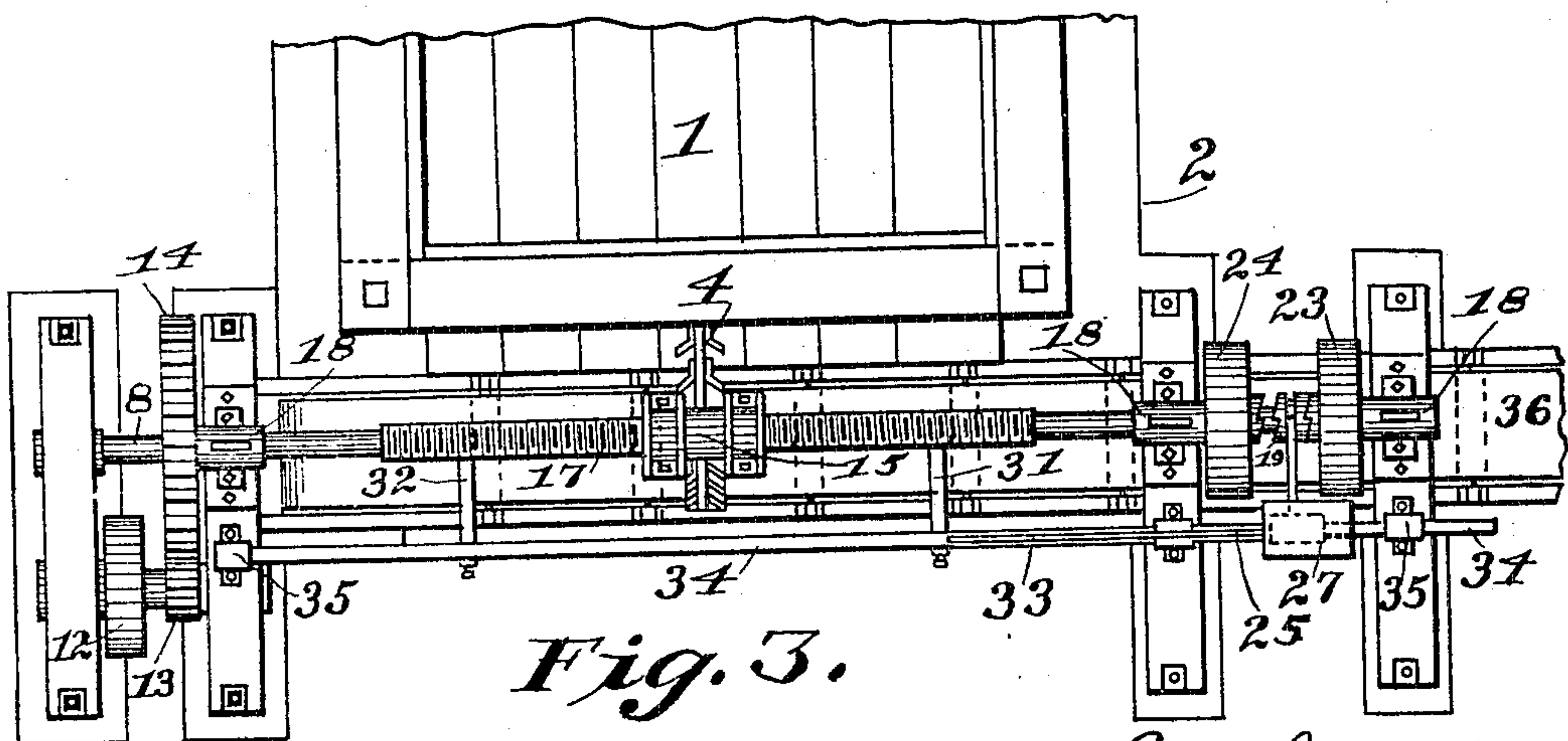
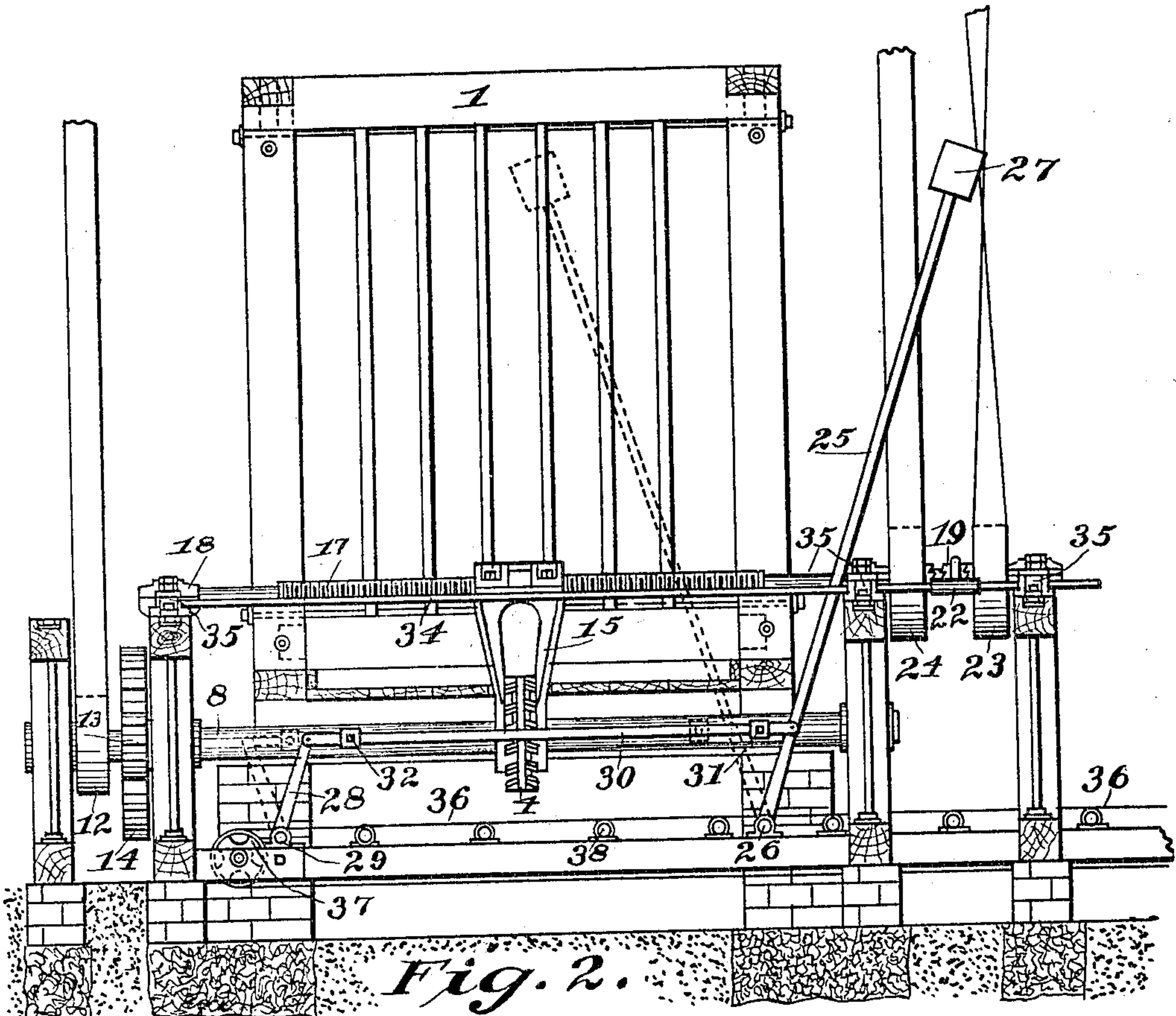
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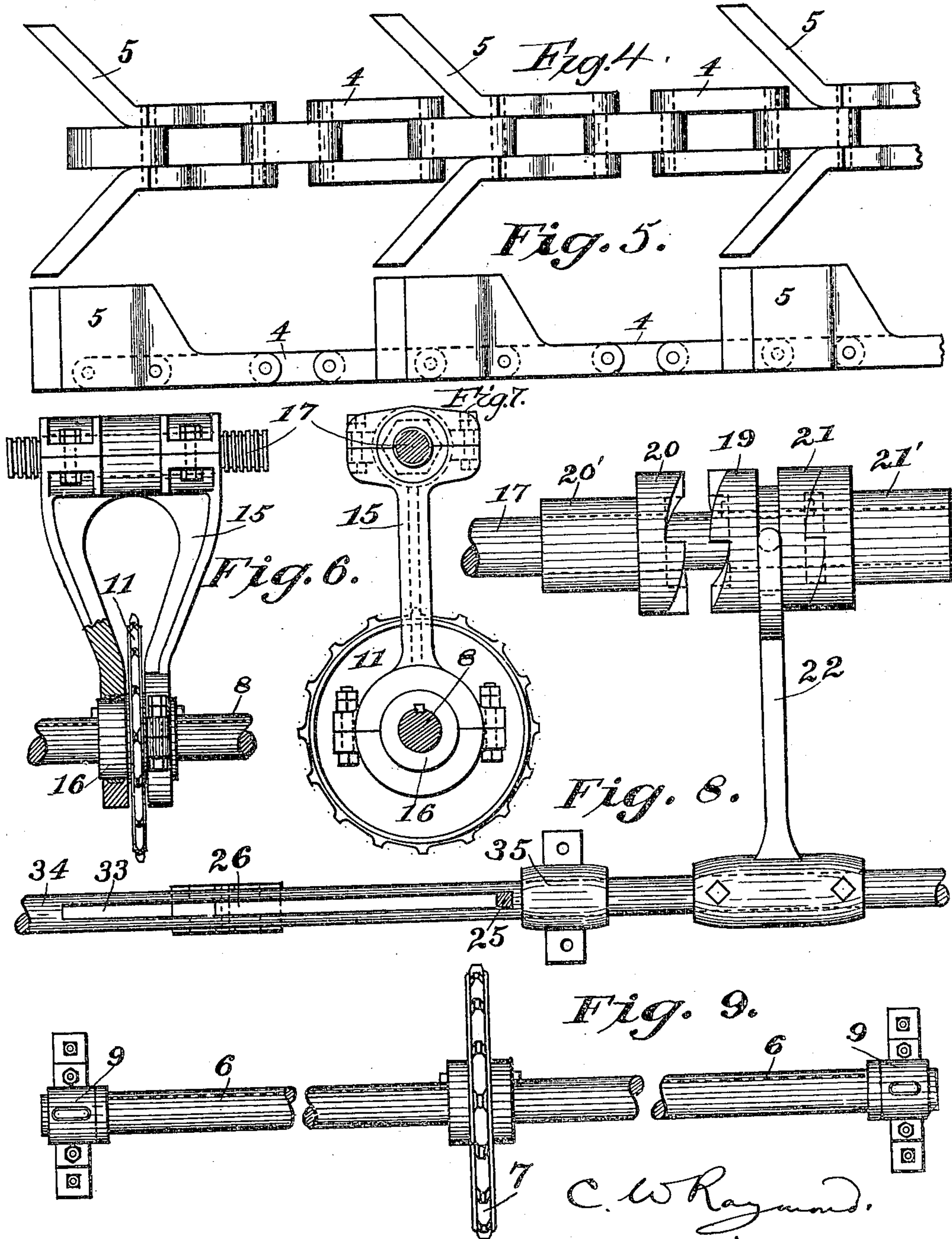
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3 SHEETS—SHEET 3.



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EMPTYING APPARATUS FOR CLAY-BINS.

No. 812,230.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed April 6, 1905. Serial No. 254 147.

To all whom it may concern:

Be it known that I, CHARLES W. RAYMOND, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Emptying Apparatus for Clay-Bins; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in apparatus for emptying storage-bins.

The apparatus is shown herein in connection with a clay-bin; but it will be understood that it is suitable for application with any storage-bin.

One of the chief difficulties met with by brick-makers or clay-workers is in obtaining a satisfactory and uniform feed of clay to the press or pug-mill.

It is therefore the object of this invention to overcome this trouble by providing an automatically-emptying apparatus, which is illustrated in the accompanying drawings.

In the accompanying drawings, Figure 1 is a side elevation of a clay-bin, showing my emptying apparatus applied. Fig. 2 is a front elevation of the same. Fig. 3 is a top plan view of the front end of the same. Figs. 4 and 5 are detail views of the feed-chain; Figs. 6 and 7, detached views of the traveling yoke on the front end of the feed-chain. Fig. 8 is a detail view of the clutch mechanism by means of which the lateral movements of the feed-chain are reversed. Fig. 9 is a detail view of the rear shaft of the feed-chain.

In a detail description of the invention similar reference characters indicate corresponding parts.

The bin 1 is mounted upon a suitable foundation 2 and consists of a rectangular framework with a floor or bottom 3. The feed-chain 4, as shown in Figs. 4 and 5, is of special construction, each alternate link being provided with outwardly-extending wings 5, which move over the bottom 3 of the bin beneath the clay or material and remove the same as the said chain revolves and moves laterally over the bottom of the bin.

The mounting of the feed-chain 4 and its operation are as follows: The rear shaft 6 is

suitably mounted in bearings 9 at one end of the machine. This shaft carries a sliding sprocket-wheel 7, which is movable lengthwise on the shaft to an extent approximately the width of the floor of the bin. The front shaft 8 is suitably mounted in bearings 10 at the front end of the machine, and upon this shaft is slidingly mounted a second sprocket-wheel 11, similar to the mounting of the rearward sprocket-wheel 7. The feed-chain 4 passes over these sprocket-wheels 7 and 11. The shaft 8 is a driving-shaft, receiving constant motion from belt-pulley 12 through pinion 13 and spur-wheel 14, the latter being on the shaft. The feed-chain is thus constantly rotated during the emptying operation. The front sprocket-wheel 11 is moved back and forth along the shaft 8 in order to impart to the feed-chain lateral movements to sweep the bottom of the bin while said chain is revolving.

15 designates a yoke which loosely incloses the hub 16 of the sprocket-wheel 11 and has a screw-threaded engagement with the horizontal screw-shaft 17. The screw-shaft is mounted in bearings 18 in the forward end of the bin, and on one end of said shaft there is a clutch consisting of three members 19, 20, and 21, the middle member 19 being movable on the shaft by a shifter-fork 22 to engage it with either clutch member 20 or 21 to impart reverse movements to said screw-shaft 17. The hubs 20' and 21' of the clutch members carry pulleys 23 and 24, which are belted to the source of power. The belt on pulley 23 is a cross-belt, so that it may have a reverse movement from belt 24.

The clutch mechanism is engaged to reverse the travel of the shaft 17 and yoke 15 by the following mechanism: 25 designates a shifting lever which is pivoted to a sill at 26 and carries a weight 27 at its upper end to maintain it in either of the extreme positions shown in full and dotted lines in Fig. 2. 28 is a short link-lever which is pivoted at 29 in line with the pivot 26 and has connected to its upper end a horizontal link-lever 30, which is pivoted at its other end to the shifting lever 25. Connected to opposite points of the link-lever 30 are horizontal arms 31 and 32, which occupy positions approximately in line with the extreme sides of the bin in order that when the yoke 15 of the feed-chain has nearly reached the limit of its movement on either side one or the other of these arms 31

or 32 is tripped or engaged by said yoke and is thereby caused to throw the shifting lever 25 to an opposite position and to reverse the clutches.

5 Referring to Fig. 8, it will be seen that the shifting lever 25 moves in an elongated slot 33 in shifting rod 34. The shifting rod 34 is slidingly mounted in bearings 35, and rigidly secured thereto is the shifter-fork 22, before
10 referred to. The length of the slot 33 is less than the length of movement of the shifting lever 25 at the point where said shifting rod passes through said slot, or, in other words, the length of the slot 33 is shorter than the
15 throw of the shifting rod at that point. This is necessary in order that the shifting lever 25 may engage either extreme end of the slot 33 in order to impart the necessary movement to the shifter-fork 22. The feed-chain,
20 it will thus be seen, while revolving throughout the depth of the bin is at the same time moving laterally by this reversing mechanism. The lateral movement imparted to the front end of the chain through the yoke 15 will
25 have the effect of imparting similar movement to the rear sprocket-wheel 7 through the chain, so that the entire body of the chain is caused to move laterally or at right angles to the plane of its revolution. The clay or
30 other material removed from the bin is delivered by the feed-chain onto a belt conveyer 36, which passes around a wide-face pulley 37 and over rollers 38 to the pug-mill or other place of delivery. (Not shown.)

35 Having described my invention, I claim—

1. In an emptying apparatus for storage bins, a feed chain or carrier revolving over the floor of the bin, means for imparting lateral movement to said feed-chain during its
40 revolving movement, and automatic means for reversing the lateral movements during the revolving movement.

2. In an emptying apparatus for bins, a feed-chain revolving over the floor of the bin,
45 sliding sprocket-wheels upon which said feed-chain is mounted, a yoke engaging one of said sprocket-wheels, a screw-shaft upon which the said yoke is mounted, and means for reversing the direction of rotation of the

screw-shaft to reverse the lateral movements 50 of the feed-chain, through the yoke.

3. In an emptying apparatus for bins, the combination with a bin, of a feed-chain revolving over the floor thereof, sprocket-wheels upon which said feed-chain is mounted 55 shafts upon which said sprocket-wheels are slidingly mounted, a yoke engaging one of said sprocket-wheels, a screw-shaft upon which said yoke is mounted, clutch and pulley mechanism on said screw-shaft, and 60 means for throwing said clutch to reverse the movements of the screw-shaft and therewith the yoke.

4. In an emptying apparatus for storage bins, a clay-bin, a feed-chain revolving over 65 the floor of said bin, laterally-sliding sprocket-wheels upon which said chain is mounted, a controlling-yoke engaging one of said sprocket-wheels, a screw-shaft upon which said yoke is mounted, clutch and pulley de- 70 vices on said screw-shaft, means for rotating the pulleys in opposite directions, arms engaging said yoke at the limit of its movement in either direction, and mechanism between said arms and said clutch devices whereby the 75 clutch is shifted to reverse the movement of the screw-shaft.

5. In an emptying apparatus for storage bins, a bin, a feed-chain revolving over the floor of said bin, laterally-movable sprocket- 80 wheels supporting said feed-chain, a controlling-yoke engaging one of said sprocket-wheels, a screw-shaft upon which said yoke is mounted, clutch and pulley mechanism mounted upon said screw-shaft and whereby 85 the direction of rotation of the screw-shaft is reversed, means for reversing said direction at the limit of the movement of the yoke in either of its lateral directions, and an off-con- 90 veyer to receive from the feed chain or carrier.

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

CHARLES W. RAYMOND.

Witnesses:

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