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APPLICATION FILED AUG. 30, 1909.

950,409.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

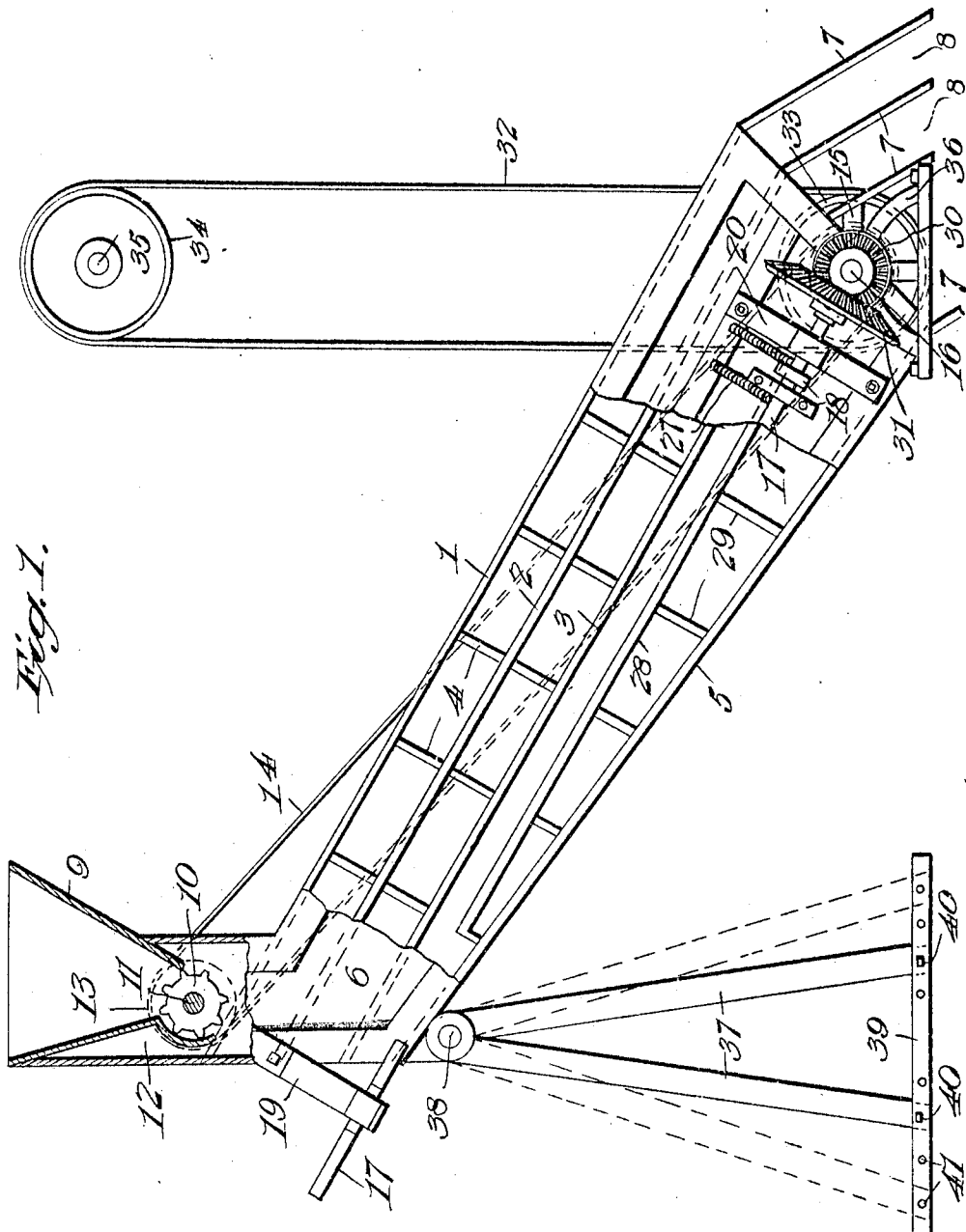


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

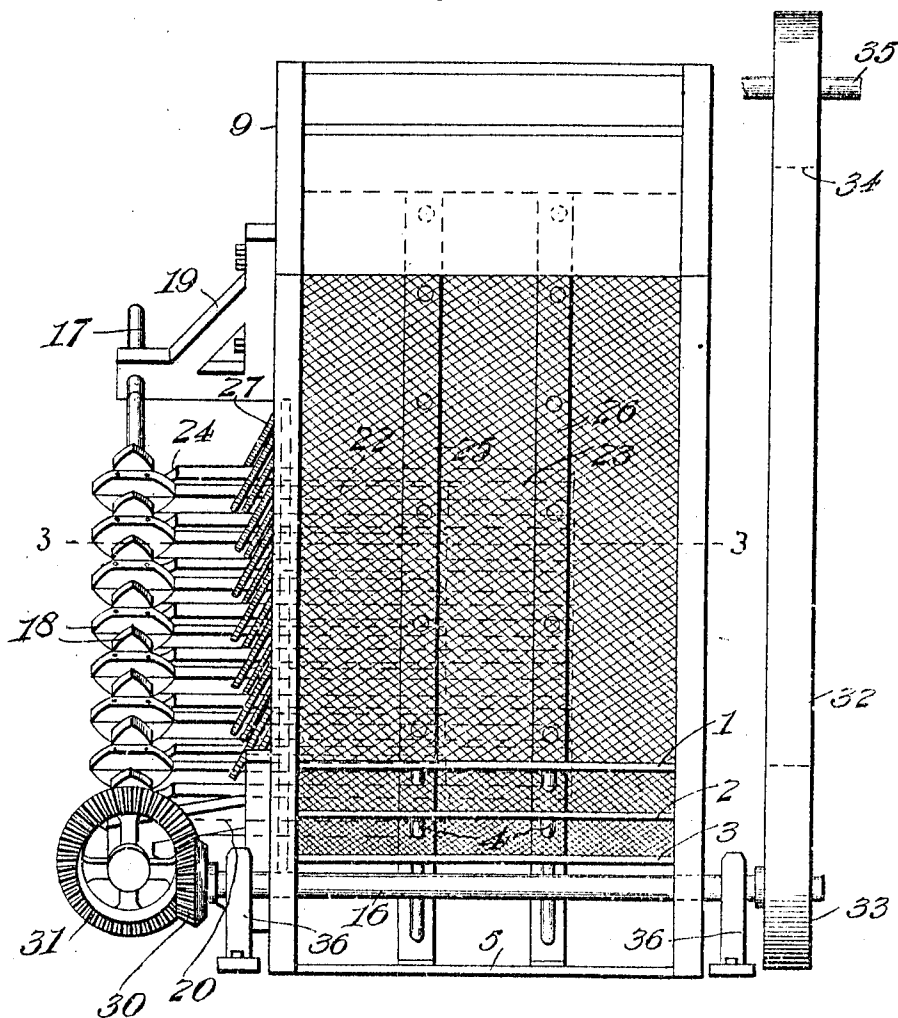
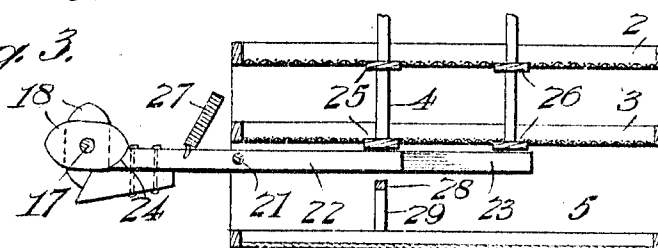


Fig. 3.



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UNITED STATES PATENT OFFICE.

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950,409.

Specification of Letters Patent.

Patented Feb. 22, 1910.

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To all whom it may concern:

Be it known that I, ALMOND A. SHIPPEE, a citizen of the United States, residing at Rowe, in the county of Franklin and State of Massachusetts, have invented a certain new and useful Separator, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to separators for the purpose of separating grain or any other material into different grades of fineness and coarseness by means of a single shaking body containing a screen and a pan under a novel arrangement, combined with novel means for simultaneously agitating all of the screens and the pan to produce the desired result.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation, partly broken away, of a shaking screen embodying the present invention. Fig. 2 is a plan view thereof. Fig. 3 is a vertical cross section through the same on the line 3—3 of Fig. 2.

The shaking screen comprises essentially three parallel or substantially parallel screens 1, 2 and 3, superimposed one above the other and connected at frequent intervals by means of tie rods 4 which space the screens at the proper distance apart and serve as braces for the screens. Beneath the lowermost screen 3 is arranged an imperforate pan 5 which, as will be observed in Fig. 1, is set at a steeper or greater inclination than the screen sections 1, 2 and 3, the idea being that on account of the fineness of the material which reaches the pan 5, a greater inclination will be required to cause the gravitation of said fine material off the discharge end of the pan.

The shaking screen thus far described is closed in at its opposite sides by means of the side panels 6 and is provided at the discharge end thereof with a number of downwardly inclining plates or tail boards 7 forming a number of discharge spouts 8 by means of which the separated or graded material may be delivered into a number of receptacles placed beneath the same.

9 designates a hopper for delivering the material to the screen sections, said hopper

having mounted in the base thereof a ribbed feed roll 10 mounted on a horizontal shaft 11 journaled in suitable bearings in the hopper supporting frame 12, said shaft having at one end a pulley 13 fast thereon which receives a driving belt 14 leading downward around another pulley 15 on the drive shaft 16 of the machine. The ribbed feed roll 10 by revolving constantly forces the material from the hopper in the desired quantity and with the desired rapidity downward upon the uppermost screen section 1.

The mechanism for imparting shaking movement to all of the screens and the pan simultaneously comprises a cam shaft 17 extending at an inclination along one side of the body of the screen as best shown in Fig. 2, said shaft being provided with a number of cams 18, the projecting or operative portions of which are arranged alternately at ninety degrees apart, as illustrated in Figs. 2 and 3. This cam shaft 17 is mounted in suitable bearing brackets 19 and 20 projecting from one side of the shaking body of the screen.

21 designates a fulcrum rod extending parallel to the cam shaft 17 and connected at its opposite ends to the machine frame. Journaled upon the fulcrum rod 21 are two sets of levers of unequal length, 22 designating the shorter levers and 23 the longer levers. All of said levers terminate in a common plane at their outer extremities where they are beveled, as shown at 24 for coöperation with the cams 18 above referred to and as clearly illustrated in Figs. 2 and 3.

Extending along the bottoms of the screen sections are longitudinal stringer bars 25 and 26, and it will be observed that the inner ends of the shorter levers 22 strike against the under side of the lower stringer bars 25 while the inner ends of the longer levers 23 strike against the lower surface of the stringer bar 26, as best shown in Fig. 3. All of the levers 22 and 23 are returned to their initial positions by means of return springs 27 preferably of spiral form, as shown.

Secured to the pan 5 and arranged above the same is a striker rail 28 which extends parallel to the inner and lower stringer bar 25, as indicated in Fig. 3, said striker rail being connected fixedly to the pan 5 by means of stanchions 29, as best shown in Fig. 1. It will now be observed that as the inner ends of the levers 22 are moved up-

ward by the cam action described, they strike against the stringers 25 and 26 and as they move downward said levers come in contact with the striker rail 28. In this way a quick upward and downward agitation is imparted to all of the screen sections 1, 2 and 3 and also the bottom pan 5 causing a gradual gravitation of the material along the several screen sections and the pan until discharged through the spouts 8 into separate and individual receptacles placed to receive the different grades of material.

Motion is imparted to the cam shaft 17 by means of the driving shaft 16 which is provided on one end with a bevel gear 30 which meshes with another bevel gear 31 on the adjacent end of the cam shaft. Motion is imparted to the driving shaft 16 by a drive belt 32 which extends around a pulley 33 on the shaft 16 and a drive pulley 34 on a power shaft 35. The shaft 16 is mounted in suitable bearing standards 36 and in addition to serving as a driving shaft of the machine it also constitutes the screen support, the screen as a whole being supported at its lower end on said shaft 16 and being adapted to be adjusted partially around said shaft as a center. To this end the upper opposite end of the screen body is supported by downwardly diverging legs 37 which have a jointed connection at 38 with the screen body, as shown in Fig. 1, the lower ends of said legs being adapted to be connected at a various number of points with a supporting base 39 by means of detachable keys or pins 40 to be inserted in any of a longitudinal series of holes 41 in the base 39 as indicated by full and dotted lines in Fig. 1. This enables the inclination of the screen sections and pan to be varied according to the nature of the material being operated upon.

I claim:—

1. A shaking screen comprising a plurality of superimposed screen sections, an im-

perforate pan located beneath the lowest of said sections, a plurality of levers operating in both directions of their movement upon said shaking screen, a rotary cam shaft, and cams thereon coöperating with said levers all of said screen sections and the pan being framed together to move in unison.

2. A shaking screen comprising a series of superimposed screen sections, a pan arranged beneath the lowest of said sections, two sets of levers of unequal length operating with a striking movement in both directions against portions of the shaking screen, and means for imparting movement to said levers including a cam shaft, and return springs connected with the levers.

3. A shaking screen comprising a series of superimposed screen sections, a bottom pan underlying the lowermost screen section, a striker rail on the upper side of said pan, a series of agitator levers operating between the lower screen section and said striker rail, and a cam shaft coöperating with said levers.

4. A shaking screen comprising a frame, a series of inclined superimposed screen sections, an imperforate pan arranged below the lowest of said sections, a cam shaft extending along one side of the body, agitator levers actuated by said cam shaft and co-operating with the shaking screen, a combined screen-supporting and driving shaft geared to said cam shaft and having one end of the shaking screen journaled thereon, and means for supporting and varying the height of the opposite end of the screen frame.

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

ALMOND A. SHIPPEE.

Witnesses:

CHARLES J. TANKHURST,
CHARLES A. TINSORMAULT.