W. S. JEFFRIES.

SEED SEPARATING DEVICE.

APPLICATION FILED DEC. 27, 1919.

1,350,973.

Patented Aug. 24, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

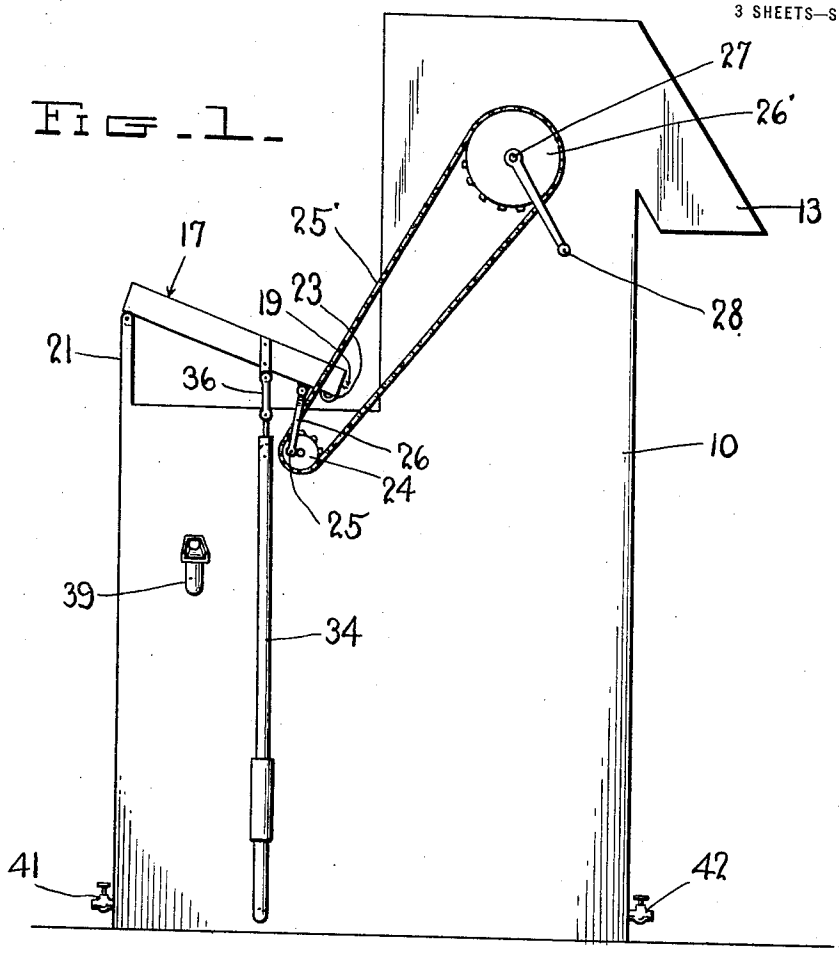
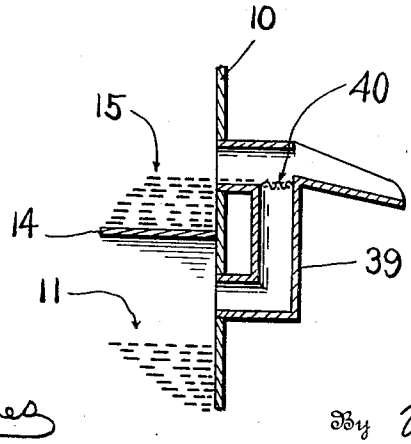


Fig. 6.



Witness

L. B. James

Inventor

W. S. Jeffries

By Victor J. Evans

Attorney

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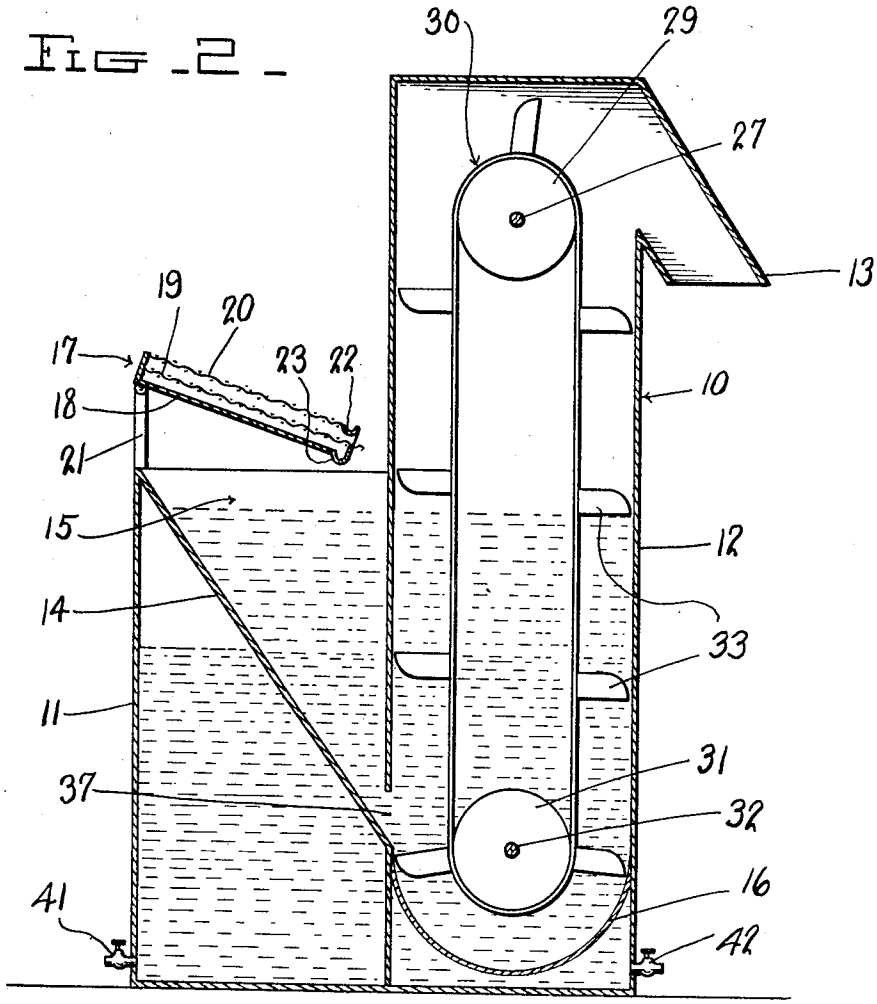
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3 SHEETS—SHEET 2.

FIG. 2.



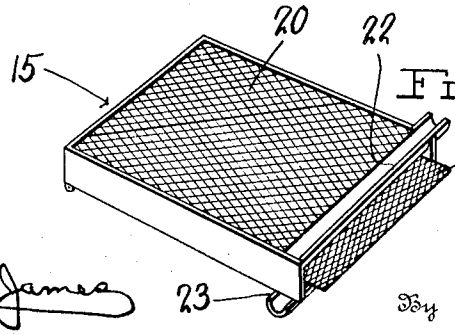


FIG. 5.

Witness

L. B. James

Inventor

W. S. Jeffries

By Victor J. Evans

Attorney

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3 SHEETS—SHEET 3.

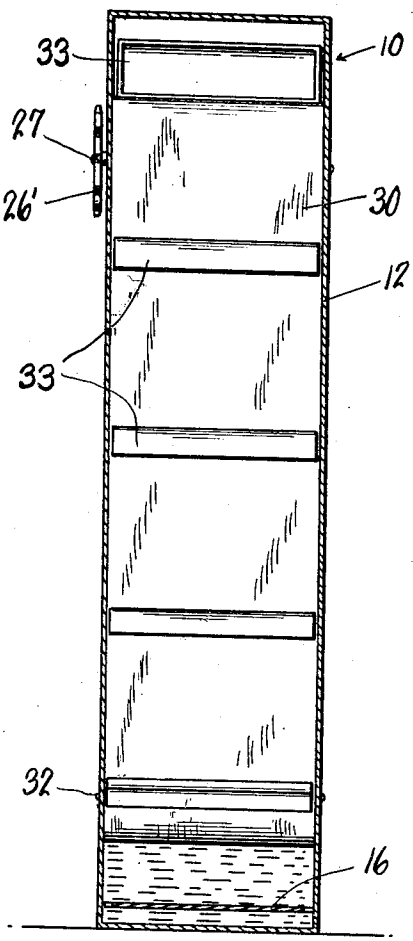


Fig. 3.

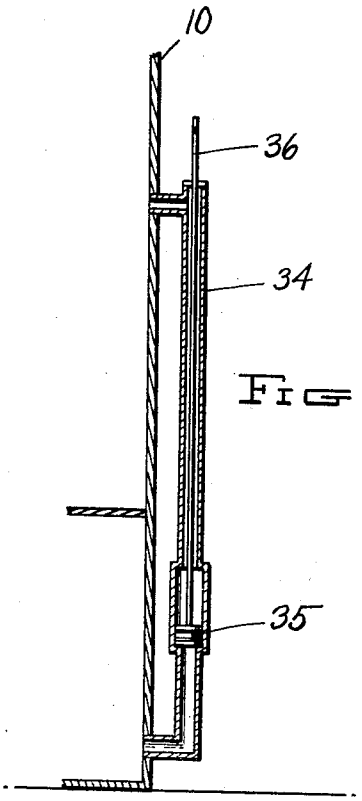


Fig. 7.

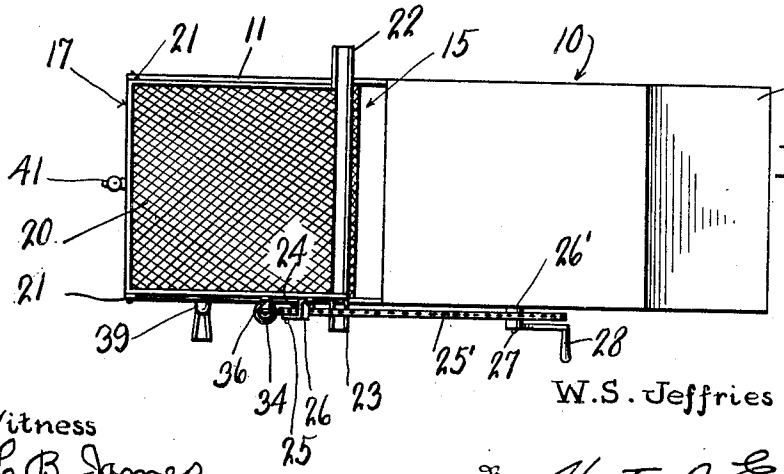


Fig. 4.

Witness

L. B. James

Inventor

W. S. Jeffries

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

WINFIELD S. JEFFRIES, OF GREAT FALLS, MONTANA.

SEED-SEPARATING DEVICE.

1,350,973. Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed December 27, 1919. Serial No. 347,663.

To all whom it may concern:

Be it known that I, WINFIELD S. JEFFRIES, a citizen of the United States, residing at Great Falls, in the county of Cascade and State of Montana, have invented new and useful Improvements in Seed-Separating Devices, of which the following is a specification.

This invention relates to devices for the separation of seed from undesired matter and has for its object the provision of a device for the separation of wheat grains from the foreign seed matter therein and also for separating the smut grains from the wheat grains.

An important object is the provision of a device of this character which will be simple and inexpensive in manufacture, which will be efficient and thorough in operation, durable in use, and a general improvement in the art.

With the above and other objects and advantages in view the invention consists in the details of construction to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which—

Figure 1 is a side elevation,

Fig. 2 is a longitudinal sectional view,

Fig. 3 is a detail vertical sectional view taken at right angles to Fig. 2,

Fig. 4 is a plan view,

Fig. 5 is a detail view of the screen members,

Fig. 6 is a detail view showing the construction of the screening device at the overflow pipe, and

Fig. 7 is a detail view of the pump mechanism.

Referring more particularly to the drawings, the numeral 10 designates a casing which is formed to provide a tank 11 and a conveyer housing 12 which is provided with the discharge spout 13. The tank 11 is separated from the interior of the major portion of the casing by an inclined top wall 14 which defines a compartment 15. Disposed within the lower end of the conveyer housing 12 is an arcuate sheet 16 which has one end terminating at the lower edge of the inclined wall 14 and this sheet forms a pocket for a purpose to be hereinafter described.

The top of the compartment 15 is open and above this open top is disposed a screen structure designated broadly by the numeral 17. This structure comprises an inclined sheet metal plate 18, a screen 19 of comparatively fine mesh disposed thereabove and still another screen 20 of coarse mesh disposed above the screen 19. These various members are secured together by any desired means and the assembly is held above the open end of the compartment 15 by means of suitable flexible members 21 secured to the assembly and to the casing of the device. The lower edge of the screen 20 is formed to provide a trough 22 which is tapered and which is adapted to discharge to one side of the casing and the lower edge of the plate 18 is similarly provided with a tapered trough 23 discharging in the other direction.

Journaled upon the casing 10 is a sprocket 24 upon which is eccentrically mounted, as shown at 25, one end of a pitman 26 connected with one lower corner of the screen assembly and trained about this sprocket 24 is a chain 25 in turn trained about a sprocket 26 mounted upon the shaft 27 journaled transversely through the upper portion of the housing 12. The shaft 27 carries a crank handle 28 which, when rotated, results in rotation of the sprocket 24 and consequent vertical reciprocation of the screen assembly.

Secured upon the shaft 27 within the housing 12 is a drum 29 about which is trained an apron 30 extending downwardly through the housing 12 and trained about a similar drum 31 mounted upon a shaft 32 journaled transversely of the lower portion of the housing 12. This apron 30 carries a plurality of buckets 33.

The tank 11 is adapted to contain a liquid of such density that healthy wheat grains will sink therein while smut grains will float. The tank 11 is in communication with the compartment 15 through a pipe 34 with which is associated any ordinary or preferred type of plunger pump structure 35 which has an operating rod 36 pivotally connected with the screen assembly, as shown. It will be observed that one wall of the conveyer housing 12 is spaced slightly above the lower edge of the inclined wall 14 to provide an opening 37 which establishes communication between the compartment 15 and the housing 12.

Communicating with the compartment 15 is an outlet pipe 38 which discharges above a pipe 39 leading back to the tank 11 and

a strainer 40 is disposed above the pipe 39. Any suitable opening may be provided for filling the tank 11 and the tank 11 and also the lower portion of the housing 12 are provided with drain cocks 41 and 42, respectively, whereby liquid within the device may be entirely drained therefrom.

The operation is as follows:

The grain is poured upon the screen 20 and the crank 28 is rotated whereupon the swinging movement imparted to the screen assembly by the pitman 26 will cause the chaff and other large matter to drop into the trough 22 from which it will be discharged at one side of the device. The wheat grains and small seeds will then drop onto the screen 19 and the small foreign seeds will pass therethrough onto the plate 18 and will pass into the trough 23 from which they will be discharged at one side of the casing. The wheat and smut grains will then be together upon the screen 19 and will fall therefrom into the compartment 15. As the handle 28 is rotated and the screen assembly reciprocated it will be seen that the pump 35 will be operated to draw the liquid from the tank 11 through the pipe 34, and into the compartment 15 from which it will also pass into the housing 12. The wheat and smut grains falling into the liquid in the compartment 15 will be separated for the reason that the smut grains will float upon the surface of the liquid while the wheat grains will sink and upon striking the inclined walls 14 will slide therealong and pass through the opening 37 into the pocket formed by the curved sheet 16. As the crank 28 is rotated the conveyer plate 30 will of course be moved and the buckets 33 thereon will pass successively above the curved sheet 16 and will pick up and carry to the top of the housing the wheat grains. The buckets 33 have perforated or screen bottoms so that after the buckets pass above the level of the water within the housing the water will drain from the seeds and as the buckets pass the top of the housing and start to descend the grains will be pumped into the discharge chute 13.

When the liquid within the compartment 15 reaches the overflow pipe 38 it will pass therethrough, carrying with it the smut grains floating upon its surface and as these grains are carried out through the pipe 38 they will be caught by the screen 40, it being inclined will permit them to fall onto the floor or ground while the liquid will pass into the pipe 39 and back to the tank 11. This operation is continuous as long as grain is poured onto the screen assembly and the crank 38 is rotated.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simple and easily operated means whereby smut grains may be separated from wheat in a very rapid and efficient manner.

While I have shown and described the preferred embodiment of my invention, it is of course to be understood that I reserve the right to make such changes in the form, construction, and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A device of the character described comprising a casing including a housing, a tank and a compartment located between the tank and the housing and communicating with the latter at its lower end, means mounted above said compartment for feeding into said compartment grain to be separated, a conveyer within said housing operating to remove therefrom grain sinking through a liquid in the casing, means for driving said conveyer, means driven by said conveyer driving means for operating said grain feeding means, an outlet pipe leading from said compartment, a pipe leading from said outlet pipe into said tank, means driven by said feeding means for circulating the liquid through said pipes, and screening means interposed at the juncture of said second named pipe with said first named pipe.

2. In a device of the character described including a tank and a compartment disposed thereabove and both containing a liquid, means for feeding grain to be separated into said compartment, means for removing the grain which sinks through the liquid, a pipe establishing communication between said tank and said compartment and having a discharge opening, a screen located within said pipe, and means for circulating liquid through said compartment, said pipe and said casing, said screen operating to remove from the liquid and discharge through said opening the grain failing to sink through the liquid.

3. A device of the character described comprising a casing containing a liquid of sufficient density that wheat grains will sink therein and smut grains will float thereon, mechanism for feeding into the casing wheat and smut grains to be separated, a conveyer mechanism for removing continuously the wheat grains sinking through the liquid, and means for moving the liquid in a current through the casing whereby to effect overflowing of the liquid to carry out the smut grains floating thereon, said last named means comprising a pipe having a discharge opening and provided with a screen adjacent the opening, and a pump operating to force the liquid through said pipe.

4. A device of the character described comprising a casing including a housing, a tank, and a compartment between the tank

and housing and communicating with the latter at its lower end, said casing containing a liquid of such density that wheat grains will sink therethrough and smut grains will float thereon, means operating within said housing for removing grain sinking through the liquid, mechanism disposed above said compartment and adapted to discharge thereinto wheat and smut grains, means for simultaneously operating said means and said mechanism, and means for effecting a continuous flow of liquid from said tank into said compartment and back comprising a pump driven by said mechanism and including a piston connected therewith and operating within a pipe communicating with said tank and said compartment.

In testimony whereof I affix my signature.

WINFIELD S. JEFFRIES.