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J. KELLER

GRAIN CLEANER

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Fig. 1.

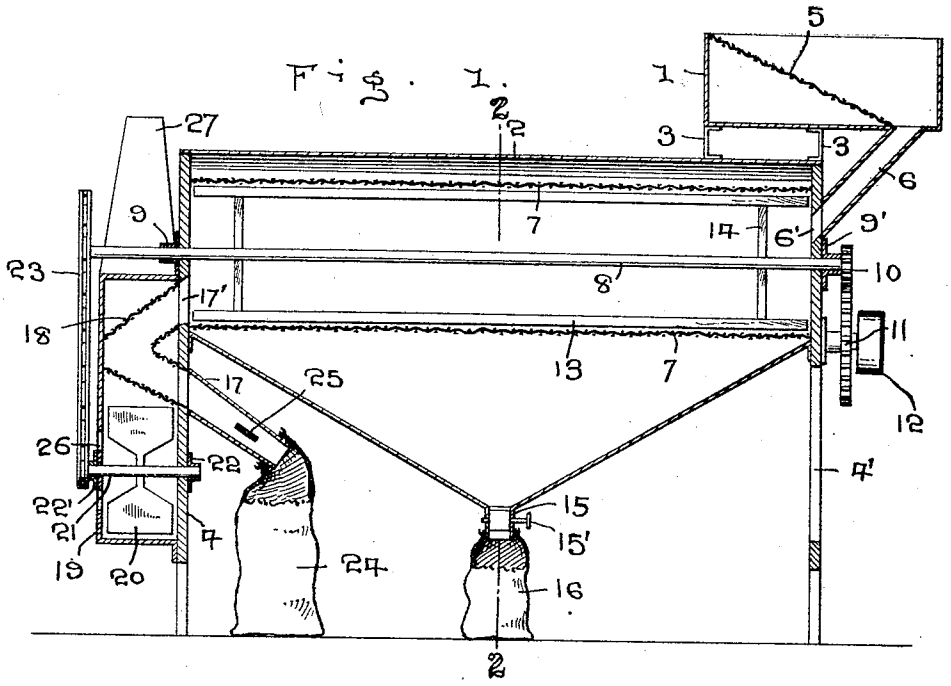
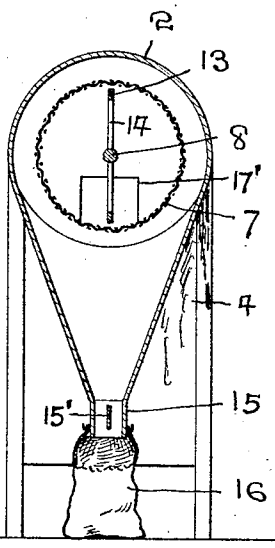


Fig. 2.



WITNESS:

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JOHN KELLER, OF BISMARCK, NORTH DAKOTA.

GRAIN CLEANER.

Application filed January 19, 1924. Serial No. 687,264.

To all whom it may concern:

Be it known that I, JOHN KELLER, a citizen of United States, residing at Bismarck, in the county of Burleigh and State of North Dakota, have invented certain new and useful Improvements in Grain Cleaners, of which the following is a specification, reference being had therein to the accompanying drawing.

The present invention relates to grain cleaners, and aims to provide a novel and improved machine of that kind.

Another object of the invention is the provision of such a machine having novel features of construction to enhance the utility and efficiency of the machine, whereby the separation of the foreign matter from the grain is obtained in a simple and effective manner.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical median section of the machine, portions being shown in elevation.

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

In carrying out the invention, there is provided a horizontal housing or casing 2 having its ends secured to upright end walls 4 and 4′, and a horizontal cylindrical screen 7 is disposed within said housing and also has its ends secured to said end walls. The screen is spaced from the housing to permit small particles to pass through the screen in all radial directions.

An agitator is mounted for rotary movement within the screen, and is carried by a longitudinal shaft 8 journaled through bearings 9 and 9′ carried by the walls 4 and 4′, respectively, said shaft being disposed in the axis of the screen. The agitator comprises the longitudinal blades or bars 13 arranged closely adjacent to the screen and secured to arms 14 which are secured to the shaft 8.

The shaft 8 is rotated by any suitable means. As shown, a gear wheel 10 is secured on the forward end of the shaft and meshes with a gear wheel 11 supported for rotation from the front end walls 4′ and carrying a pulley wheel 12 for connecting the machine by a belt with an engine or other prime mover.

The grain to be cleaned is dumped or fed into a receiving hopper 1, which is preferably supported from the housing 2 by the supports 3. An inclined screen 5 is provided in said hopper, so that the grain which is dumped into the hopper will gravitate down said screen to provide a preliminary separation, since particles smaller than the grain can drop down through said screen. The hopper 1 has a discharge spout 6 extending from the lower end of the screen 5 to an opening 6′ in the end wall 4′ between the shaft 8 and top of the screen 7, in order that the grain will flow by gravity from the hopper 1 through the spout 6 into the forward end of the screen 7.

The housing 2 has a hopper bottom provided with a spout 15 for the discharge of sand, broken grain, and other small particles which pass through the screen 7, and such particles can be caught in a bag 16 fitted on said spout. A valve 15′ is provided in the spout 15 to control the discharge, in order to shut off the discharge when the filled bag 16 is removed and replaced by an empty bag.

The grain is discharged from the rear end of the screen 7 through an opening 17′ in the rear end wall 4 adjacent to the bottom of the screen, and an inclined discharge spout 17 extends from the wall 4 downwardly and forwardly from a point below the opening 17′ and rear end of the housing 2. A V-shaped screen chute or conduit 18 has its upper end communicating with the opening 17′ and its lower end communicating with the spout 17, for the flow of the grain through said chute by gravity.

The rear end wall 4 carries a casing or chamber 19 enclosing the chute 18 and containing a centrifugal fan or blower 20 in the lower portion thereof below the chute 18. Said fan 20 is carried by a shaft 21 journaled through bearings 22 and 22′ carried by the end wall 4 and casing 19, respectively, and the shaft 21 is connected by a sprocket chain 23 with the shaft 8 for driving the fan. The casing 19 has air inlet openings or ports 26, and a current of air is directed upwardly in the casing 19 through and past the chute 18, the air dis-

charging through a spout 27 leading from the upper end of the casing 19.

The grain which discharges through the spout 17 can be caught in a bag 24 or other receiver, and a valve 25 is provided in said spout 17 for stopping the flow when changing bags.

In operation, the grain to be cleaned is dumped or fed into the hopper 1, from which it flows down through the spout 6 into the screen 7. The agitator being rotated within the screen will carry the grain around with the blades 13 along the screen, whereby particles smaller than the desired grain will pass through the screen by gravity or centrifugal force, and such action continues as the grain is worked rearwardly in the screen by the agitator. The grain flows from the rear end of the screen 7 and down through the chute 18, which is reticulated, so that as the grain flows downwardly in the chute 18 it passes in different directions across the stream of air which is delivered upwardly in the casing 19 by the fan 20. The current of air thus intercepts the grain at different points and at different angles, so as to carry off with the air all dust and chaff, and such lighter foreign matter is thus separated from the grain and discharged through the spout 27. The cleaned grain discharges from the chute 18 through the spout 17.

Having thus described the invention, what is claimed as new is:—

A grain cleaner comprising agitating means having a wall provided with a discharge opening, a casing carried by said wall and having an upper air outlet, said wall providing a partition between said casing and agitating means and having a discharge spout below said opening, a reticulated chute in said casing leading from said opening to said spout, and a fan rotatable within said casing below said chute for directing air upwardly through said chute.

In testimony whereof I hereunto affix my signature.

JOHN KELLER.