No. 672,981. Patented Apr. 30, 1901.

R. W. JESSUP.

SEPARATOR.

(Application filed Dec. 6, 1899.)

(No Model.)

Fig. 1.

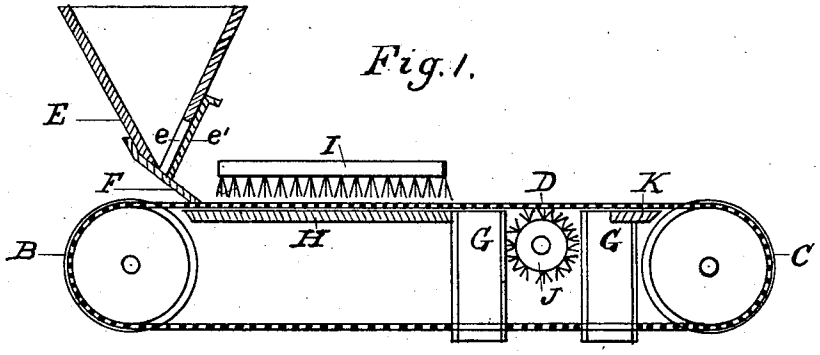
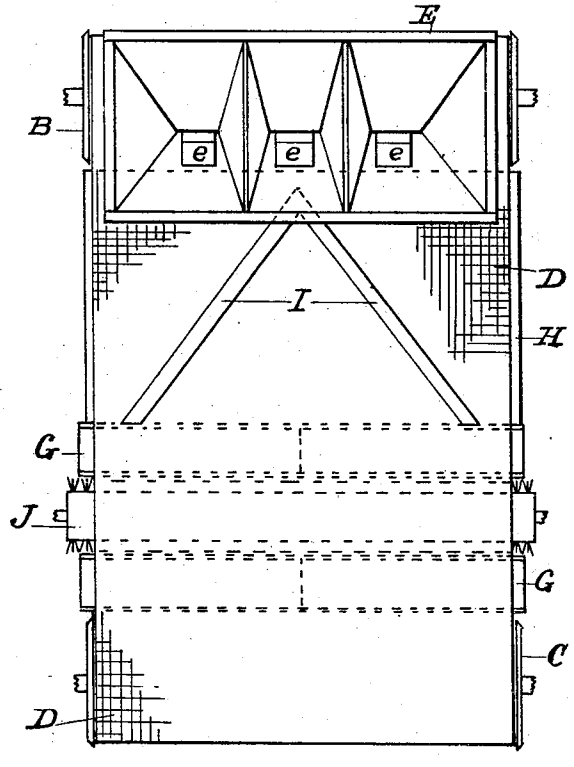


Fig. 2.



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SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 672,981, dated April 30, 1901.

Application filed December 6, 1899. Serial No. 739,361. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. JESSUP, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Separators; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of separators especially adapted for the separation of grains and other small seeds in which the separation is the result of differences in the shape of the particles.

My invention is especially intended to remove oats and straw from wheat; but it is also of advantage in separating mustard-seed or wild buckwheat from wheat or oats or in any case where by reason of differences in size or shape separation may be effected.

The invention, however, is best adapted in connection with and as a preliminary to the use of the needle-screen separators illustrated in Letters Patent Nos. 576,195, 608,049, 612,243, and 639,855, granted upon my applications dated February 2, 1897, July 26, 1898, October 11, 1898, and December 26, 1899, respectively.

The object of my present invention is not only to provide a rough scalper preliminary to the final work of the needle-screen separator, by which I mean the accomplishment of a partial separation and consequent partial cleaning of the wheat by the removal of much of the oats, barley, straws, and other foreign matter prior to subjecting said wheat to the final work of the main or needle-screen separator, but also to provide for more finished work, either alone or in connection with the needle-screen separator.

Briefly stated, my invention consists in a separator comprising an endless traveling screen, means for feeding the material to its surface, a stationary table or bottom upon which the screen travels, said table or bottom being located under the screen where the material is fed thereto and thence extending for a portion of the outward or forward course of the screen, leaving the remainder of said course free and exposed.

It also consists, in connection with an endless traveling screen and means for feeding material thereto, of means for spreading and distributing said material over the surface of the screen in a thin even layer, all of which, together with necessary details of construction, I shall now fully describe by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of my separator. Fig. 2 is a plan of same.

In a suitable frame (unnecessary to show) is a head-roller B and a foot-roller C, said rollers being flanged to receive and guide the endless traveling screen D, which extends between them. One of said rollers may be supposed to be mounted in adjustable boxes in order to keep the screen tight.

E is a hopper of suitable character having one or more outlets. I have here shown three such outlets *e* and each is controlled by a gate *e'*. Below the hopper is a feed-apron F, of leather or other material, which rests its lower edge upon the screen and, being agitated by the movement of the screen, serves to make an even feed of the material which is supplied to it by one or more of the hopper-openings *e*. Suitable mechanism (unnecessary to show) is provided to drive the endless traveling screen.

The material supplied to the screen may, for the sake of illustration, be wheat mixed with oats, barley, straws, sticks, &c. The screen is of a character to let the wheat pass through, while the coarser material—such as large oats, barley, straws, sticks, &c.—remains on the screen and is carried over the tail end and suitably disposed of.

The screen, though it may be of any suitable character, is preferably a wire belt, well known in commerce. It is a particularly open-meshed fabric and serves the purpose well. Under the upper fold or actively functional part of the screen is a stationary table or bottom H, which extends from a point just before the line of feed to a line somewhere beyond said feed and short of the foot-roller, the object being to carry it far enough to afford ample space on the screen for receiving and spreading the material while over the stationary table or bottom and sufficient space beyond where the screen is clear and exposed to permit the wheat to drop off the end of the bottom and through the screen into the grain-

chutes G G. This table or bottom lies directly under the screen, which moves over and in contact with it, scraping along over it.

Over the screen, above the plane of the stationary table or bottom, is a spreading device I of suitable character. This is best arranged, as shown in Fig. 2, in a double-incline or V shape, with the apex centrally disposed and pointing toward the head of the screen in line with the central feed-opening *e*. The spreader is best formed as a bristle brush, as shown in Fig. 1, and its disposal is such that it evens down the material into a flat thin layer over the entire surface of the screen. Beyond the table, under the screen, are the grain-chutes G, between which is a revolving bristle brush J, the function of which is fully described in another application by me for a patent now pending, Serial No. 737,416, filed November 18, 1899. Beyond the last grain-chute is a small table K to help support the screen as it reaches the foot-roller and to bridge over the space between the two.

Grain from the farmer carries more or less straw, sticks, &c., and as it comes to the terminal elevators it also carries pieces of coal, bricks, board, &c., which will not pass through the ordinary feed of the power-separators; neither would it pass through a feed which would supply the grain to a belt without a spreader. In my machine I feed the grain to the screen through, say, the center feed-opening *e* in line with the apex of the spreader, which after the grain is on the screen spreads it out in a thin sheet. The spreader is enabled to do this by having the stationary table or bottom H under the screen. Then when this thin layer reaches the end of the table or bottom the particles of wheat drop through the exposed screen, while the now quiescent remaining particles continue on to the bristle brush, which, gently disturbing them and altering their positions, causes some more wheat to fall through, and finally the oats, barley, straws, sticks, bits of coal, wood, &c., are discharged over the tail end.

A separator of this kind, which is not dependent upon the undisturbed condition of the material, as in my pending application heretofore noted, is also of advantage in enabling me to apply a blast of air from the back of the head-roller to the material upon the screen. Where a lot of wheat or oats is treated which contains mustard-seed or wild buckwheat, I will use a mesh wire for a screen, which will carry the grain over and let the smaller seeds drop through. In this case also the stationary table or bottom is necessary to properly spread the grain, and the little jar will assist in dropping the smaller seed through the screen onto the bottom board or table, from which they will be dragged forward to the end of the table and dropped off.

Where in the claims the term "perforated screen" is employed, it is to be understood as distinguishing from a slatted carrier or conveyer and including such screens as have holes or reticulations—such, for instance, as the wire-mesh screen shown.

The action of the separator herein described and claimed is substantially as follows: The wheat, oats, barley, short straw, and the like are fed to the screen above the table, and the mesh of the screen being sufficiently large to permit the passage therethrough of the wheat any of the material which is of as small diameter as the wheat-grains and which has its shortest diameter presented to the screen will tend to pass through the holes of the screen, but will be prevented by the table, with which the ends of the seed and the like will contact before they can pass entirely through the screen. The long seeds or material—such as oats, for instance—will thus be momentarily held in a substantially vertical position until the movement of the screen topples it over into a substantially horizontal position on the screen, in which position it can be carried by the screen after it passes from over the table, and the wheat is permitted to drop through.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a separator, the combination of an endless perforated screen, the working face of which travels continuously in one direction, and a stationary table beneath the working face of said screen and so arranged relatively to the screen as to prevent the passage of material through that portion of the screen above the table, substantially as described.

2. In a separator, the combination of an endless traveling screen, means for feeding the material thereto, a bottom under the screen at the place of feed and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed, and means for spreading the material upon that portion of the screen which the bottom underlies.

3. A separator comprising an endless traveling screen, means for feeding the material thereto, a stationary bottom or table under the screen, and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed, means for spreading the material upon that portion of the screen which the stationary bottom or table underlies, and chutes under the exposed portion of the screen beyond the bottom or table, to direct the separated particles away.

4. In a separator, the combination of an endless traveling screen, means for feeding the material thereto, a stationary bottom or table under the screen at the place of feed and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed and means located above the screen beyond the feeding means, for spreading the material af-

ter being fed, and over that portion of the screen which the bottom or table underlies.

5. In a separator, the combination of an endless traveling screen, means for feeding the material thereto, a stationary bottom or table under the screen at the place of feed and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed, and inclined spreaders over the screen at that portion which the bottom or table underlies, said spreaders converging toward the feeding means, whereby the material is distributed over the screen above the bottom or table.

6. In a separator, the combination of an endless traveling screen, means for feeding the material thereto, a stationary bottom or table under the screen, at the place of feed, and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed, and a bristle brush located over the screen at that portion which the bottom or table underlies, and adapted to spread the material over said screen.

7. A separator, comprising an endless traveling screen, means for feeding the material thereto, a stationary bottom or table under the screen, at the place of feed, and thence extending for a portion, only, of the operative length of the screen, leaving the remaining portion free and exposed, a spreading device over that portion of the screen which the bottom or table underlies, for distributing the material upon the screen, directing-chutes below the free or exposed portion of the screen, and a rotating bristle brush under said free or exposed portion, and adapted to disturb and alter the position of the particles thereon.

In witness whereof I have hereunto set my hand.

ROBERT W. JESSUP.

Witnesses:
JOHN MCCANDLESS,
H. W. CROCKER.