

G. H. DEKKER.  
PEA SEPARATOR.  
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1,286,554.

Patented Dec. 3, 1918.

Fig. 1.

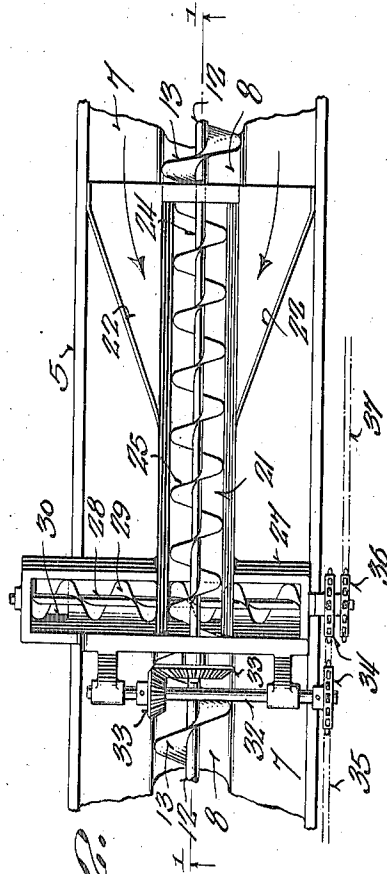
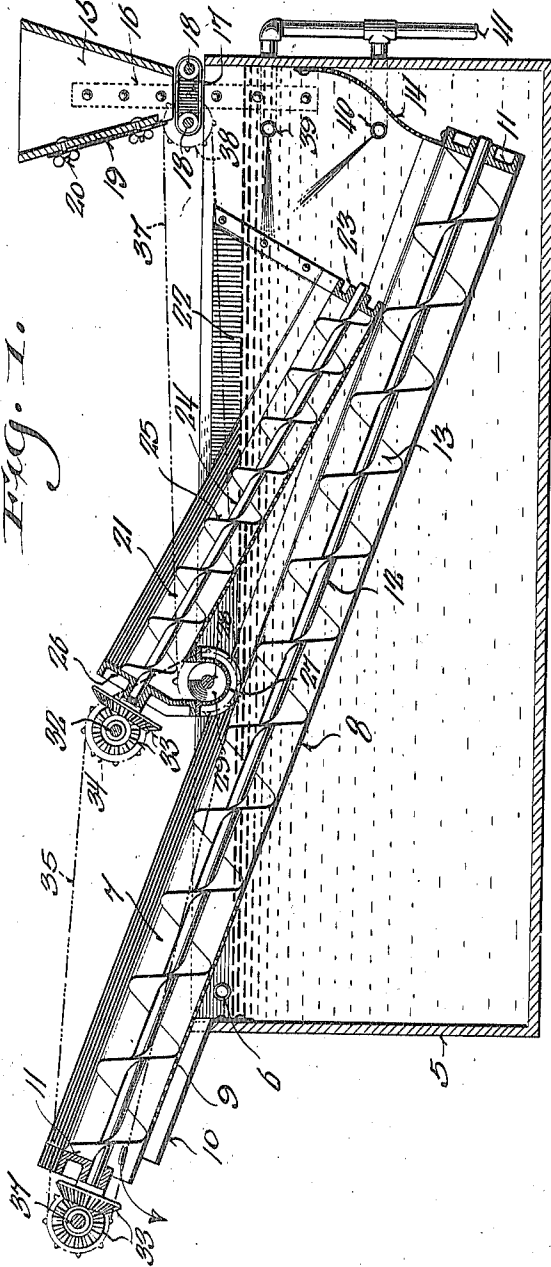


Fig. 2.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## PEA-SEPARATOR.

1,286,554.

Specification of Letters Patent.

Patented Dec. 3, 1918.

Application filed August 27, 1918. Serial No. 251,633.

*To all whom it may concern:*

Be it known that I, GERRET H. DEKKER, a citizen of the United States, and resident of Adell, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Pea-Separators; and I do declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in machines for cleaning and scouring peas or like work material, and for separating sound peas from split or imperfect peas, pods, thistles and other refuse matter which may be associated with the peas subsequent to the hulling operation on the peas, the present machine constituting an improvement of the separator disclosed in the Patent No. 915,832 granted to me March 23, 1909.

It is in general the object of my invention to simplify and otherwise improve the structure and to increase the rapidity and efficiency of operation of machines of this character, one important and more specific object residing in the provision of a machine which is capable of most rapid operation without scattering the work material or discharging it at points other than the desired discharge points of the machine.

A further object resides in the provision of an improved arrangement for collecting and conveying the refuse matter which is separated from the sound peas during the cleansing operation.

With the above and other objects and advantages in view, my invention resides more particularly in the novel construction, combination and arrangement of parts which will be hereinafter described and pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a vertical sectional view taken longitudinally through a separating machine embodying my invention.

Fig. 2 is a plan view of the intermediate portion of the machine.

Referring now more particularly to the accompanying drawings, there is provided an elongated body tank 5 having at one end, which constitutes the rear end of the machine, a water discharge outlet 6, said outlet extending through the upper portion of one of the side walls whereby the level of water in the tank is maintained adjacent its top. Extending obliquely downward in the

tank from the upper edge of its rear end wall to a point adjacent the bottom of its front end wall is a partition plate 7 having its longitudinal central portion curved to form a trough 8 and having its side portions inclined outwardly from this central trough portion, and engaging the side walls of the tank. The partition, including its trough portion, is extended outwardly of the rear end of the machine, and the trough portion adjacent the rear end of the machine is foraminous in nature, as indicated at 9, this foraminous stretch of the trough extending from a point adjacent its rear extremity to a point slightly below the water level of the tank, and a drainage trough 10 extends outwardly from the upper edge of the rear wall under the foraminous trough portion to convey water discharged therefrom back into the tank. Disposed in the ends of the trough portions of the partition plate are bearing heads 11 in which are journaled ends of the shaft 12 of a spiral conveyor 13 whose periphery snugly fits the surface of the trough. The forward end of the partition plate is spaced from the front wall of the tank, and a partition wall 14 extends obliquely upward from the forward end of the partition plate to the upper portion of the front wall of the tank. Thus, upon discharge into the forward end of the tank of work material of greater specific gravity than the water or other cleansing fluid employed, such material will sink into the trough and will be conveyed rearwardly and outwardly through the tank by the spiral conveyor 13.

For feeding such work material into the tank, a hopper 15 is supported above the forward end of the tank by securement to bars 16 upstanding from the side walls of the tank and disposed under this hopper is a feed belt 17 mounted on roller shafts 18, although it will be appreciated that any feeding means may be employed. The feeding action is regulated by a slide plate 19 adjustably secured by the screws 20 to project a pre-determined distance across the discharge mouth of the hopper defined by the lower edge of the inner wall of the hopper and the surface of the feed roller.

For conveying from the tank refuse material of lesser specific gravity than the sound peas or other work material which desirably falls into the trough portion 9 of the main

partition, a second trough 21 is mounted above the intermediate portion of the trough 8, the side walls of this trough being outwardly flared at their upper portions, and the axis of the second trough being disposed at a slight divergence upwardly with respect to the first trough, whereby the forward end of the second trough may lie at the top of the first trough with its rear end spaced there-above. Extending laterally outward from the forward portions of the edges of the walls of the trough 21 are apron plates 22, which as shown more particularly in Fig. 2, are taperingly increased in width from the trough edge portions slightly above the water line of the tank, and which extend obliquely and are secured at their forward corners to the side walls of the tank. Secured in the forward end of the trough 21 is a bearing plate 23 to which is journaled the forward end of a shaft 24 of a spiral conveyor 25 fitting within the trough, the rear end of this shaft being journaled in a bearing plate 26 extending transversely across the tank. Disposed under this plate is a transverse foraminous trough 27, in the ends of which is journaled the shaft 28 of a spiral conveyor 29 disposed in the trough, one end of the trough 27 being extended outwardly of the tank and provided with a discharge opening 30.

For guiding the various shafts heretofore described, countershafts 31 and 32 are journaled respectively rearwardly of and transversely of the rear ends of the conveyor shafts 12 and 24; intermeshing beveled gears 33 being fixed on the angularly disposed pairs of shafts. The shafts 31 and 32 and the shaft 28 all carry beveled gears 34 around which is trained a common sprocket chain 35, and the inner roller shaft 18 of the feed belt 17 is driven by a second sprocket wheel 36 on the shaft 28, around which is trained a sprocket chain 37, also trained about a sprocket wheel 38 on the said roller shaft 18.

For setting up a current of water rearwardly in the upper forward portion of the tank, a feed pipe 39 extends transversely across its front portion, slightly below the water level, and this feed pipe is provided with spray jet nozzles directed horizontally rearwardly. Disposed below this feed pipe 39, and adjacent the partition 7 is a second transverse feed pipe 40, both of these pipes being connected with a common supply pipe 41. The jet nozzles of the second pipe are projected diagonally upwardly and rearwardly in the tank, it being noted that both of the pipes are disposed under the discharge end portion of the feed belt 17.

In the operation of my improved separator, the work material is fed from the hopper by the feed belt 17 and falls transversely through the jets of the feed pipes

and through the current which is set up by said jets. Sound peas, being heavier than water, sink through the current and fall into the forward end of the trough portion 8 of the main partition, the foraminous partition wall 14 serving to deflect such sound peas thereinto in the possible event that they move forwardly of the end of the partition in falling movement. Thistle heads, and other refuse which will float, are conveyed on the current of water between the apron extensions 22 and are fed by the current onto the conveyor 25, by which they are carried to the transverse conveyor 29 and thence outwardly of the machine. Particles of lesser specific gravity than sound peas, such as split and imperfect peas, are delayed in their falling action through the water and are swept by the current onto the conveyor 25 and are likewise carried from the machine, the discharge of such particles on the conveyor 25 being facilitated by the upward inclination of the lower jet nozzles setting up a diagonal flow of water. The sound peas are carried by the conveyor 13 to the upper end of the trough 9 and are thence discharged, the upper foraminous end portions of the trough 9 draining the peas.

A simple and positive cleaning and separating operation is thus set up which may be carried out in a fairly rapid manner without detracting from the efficiency of the machine, or scattering the work product in an objectionable manner. By the foraminous nature of the bottom of the trough 11 together with the foraminous nature of the baffle wall 14 and the foraminous bottom of the trough 9, a continuous circulating current may be set up in the tank.

What is claimed is:

1. A separator including a tank having a certain liquid level, a partition extending transversely across the tank and inclined downwardly from the rear upper portion of the tank to the forward lower portion of the tank, the central portion of the partition being depressed to form a trough, a spiral conveyor in the trough, means for setting up a flow of liquid rearwardly in the upper front portion of the tank, means for discharging work material into the front upper portion of the tank, and a second conveyor disposed above the intermediate portion of the first conveyor for receiving work material carried by said current of liquid.

2. A separator including a tank having a certain liquid level, a partition extending transversely across the tank and inclined downwardly from the rear upper portion of the tank to the forward lower portion of the tank, the central portion of the partition being depressed to form a main trough, a spiral conveyor in the trough, means for setting up a flow of liquid rearwardly in the upper front portion of the tank, means

for discharging work material into the front upper portion of the tank, a second conveyer disposed above the intermediate portion of the first conveyer for receiving work material carried by said current of liquid, the rear portion of the main trough extending past the rear end of the tank and having its trough portion perforated from its rear end portion to a point below the liquid level of the tank, and a foraminous partition wall extending obliquely upward from the front end of the partition to the front wall of the tank.

3. A separator including a tank having a certain liquid level, a partition extending transversely across the tank and inclined downwardly from the rear upper portion of the tank to the forward lower portion of the tank, the central portion of the partition being depressed to form a trough, a spiral conveyer in the trough, means for setting up a flow of current rearwardly in the upper front portion of the tank, means for discharging work material into the front upper portion of the tank, a second conveyer disposed above the intermediate portion of the first conveyer and inclined upwardly at an acute angle to the partition, and a lateral discharge conveyer extending transversely between the first conveyer and the upper end of the second conveyer.

4. A separator including a tank having a certain liquid level, a partition extending transversely across the tank and inclined downwardly from the rear upper portion of the tank to the forward lower portion of the tank, the central portion of the par-

tition being depressed to form a trough, a spiral conveyer in the trough, means for setting up a flow of current rearwardly in the upper front portion of the tank, means for discharging work material into the front upper portion of the tank, a second trough disposed above the partition trough and extending longitudinally with respect thereto and having its forward end portion disposed below the liquid level and its rear end portion disposed above the liquid level, a spiral conveyer in said second trough, apron wings extending from the portions of the trough side below and adjacent the water level to the sides of the tank, and a lateral conveyer disposed under the upper end of the second named conveyer.

5. A separator including a tank having a certain liquid level, a conveyer extending into the tank below the liquid level, a second conveyer disposed over the first conveyer and having its end adjacent the receiving end of the first conveyer spaced inwardly therefrom, means for discharging work material into the tank above the receiving end of the first named conveyer, a pipe disposed transversely in the tank above the receiving end of the first named conveyer and jet nozzles from said pipe extending diagonally upward and inward with respect to the receiving conveyer end.

In testimony that I claim the foregoing I have hereunto set my hand at Adell, in the county of Sheboygan and State of Wisconsin.

GERRET H. DEKKER.