F. A. FOSTER AND J. E. FRALEY.

BLANCHER.

APPLICATION FILED MAR. 10, 1921.

1,435,285.

Patented Nov. 14, 1922.

3 SHEETS—SHEET 1.

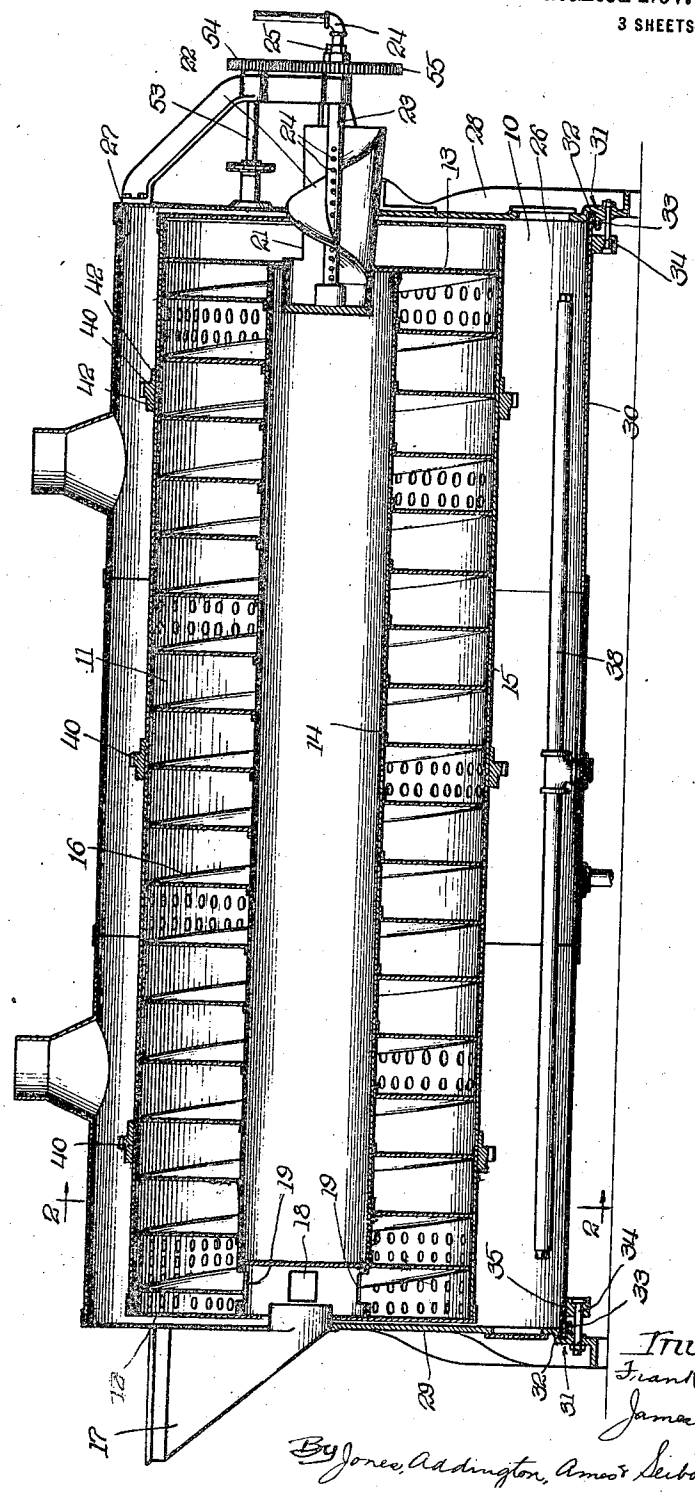

Fig. 1.

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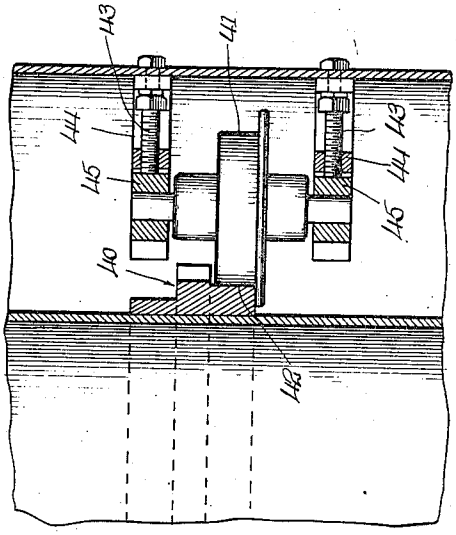

Fig. 3.

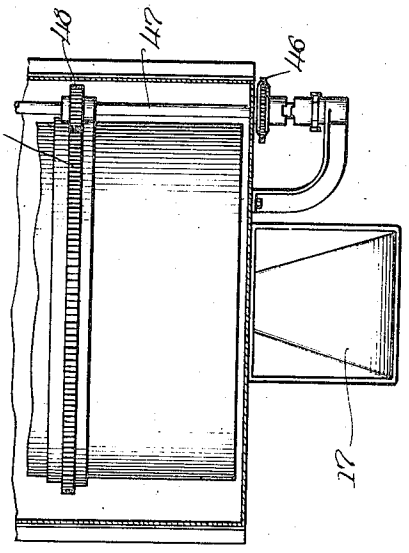

Fig. 4.

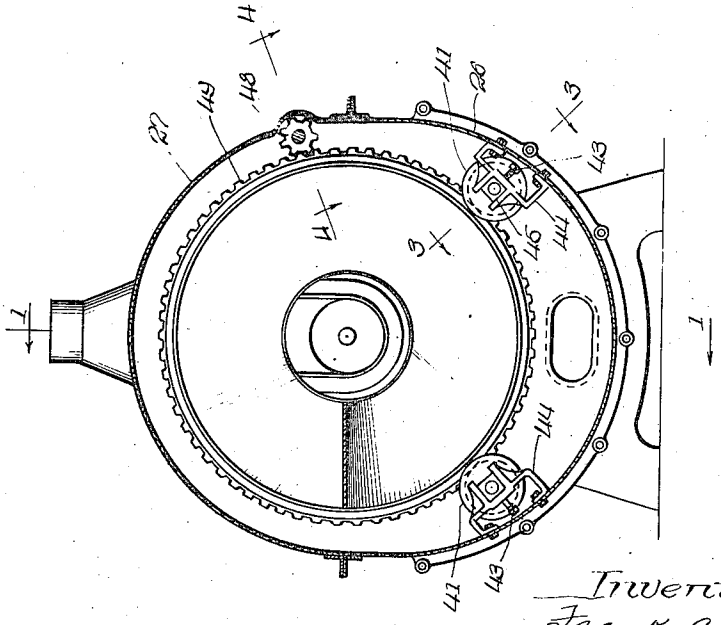

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 6.

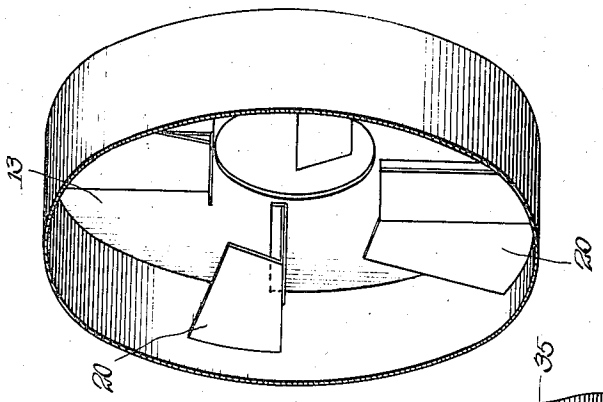


Fig. 7.

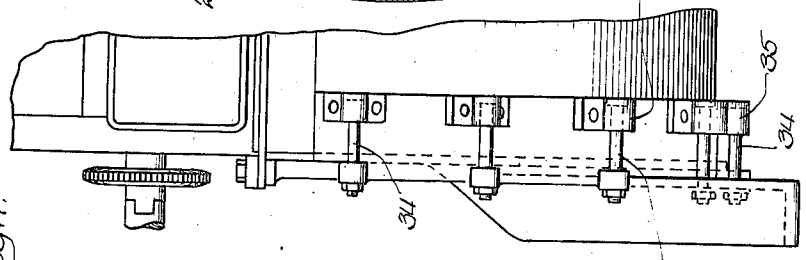
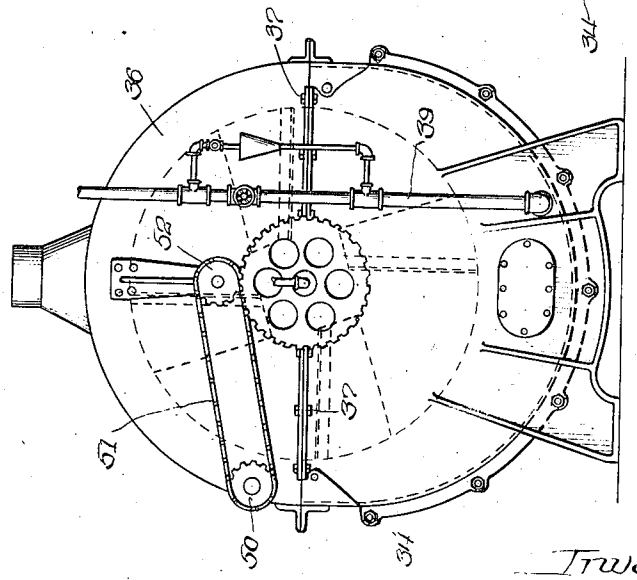


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK A. FOSTER AND JAMES E. FRALEY, OF HOOPESTON, ILLINOIS, ASSIGNORS TO SPRAGUE CANNING MACHINERY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BLANCHER.

Application filed March 10, 1921. Serial No. 451,190.

To all whom it may concern:

Be it known that we, FRANK A. FOSTER and JAMES E. FRALEY, citizens of the United States, residing at Hoopeston, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Blanchers, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to vegetable handling apparatus and more particularly to blanchers.

One of the objects of our invention is to provide certain improvements in the construction shown in the patent to Plummer No. 697,272, dated April 8, 1902.

A further object is to provide an improved discharge means for the blancher.

A further object is to provide an improved construction whereby access can be readily had to the conveyor of the blancher for cleaning out, repairs, etc.

A further object is to provide improved means for supporting the rotatable conveyor drum.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings in which an embodiment of our invention is shown—

Fig. 1 is a vertical longitudinal section of our improved blancher;

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

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a rear elevational view of the blancher;

Fig. 6 is a perspective view showing the discharge lifting wing;

Fig. 7 is an enlarged side elevation of part of the front end of the machine.

The blancher shown comprises a cylindrical tank 10, for holding the hot water which is used in blanching, and a screw conveyor 11, located and operating in the tank 10 for carrying the peas or other vegetables from one end to the other of the tank 10, whereby they are softened and washed by the hot water. The conveyor 11 comprises circular front and rear heads 12 and 13 respectively, inner and outer drums or cylinders 14 and 15 respectively, and a spiral or helical web 16 extending between the inner and outer drums. The peas or other vegetables are supplied to the annular chamber between the inner and outer drums 14 and 15 from a hopper 17, which delivers the vegetables to a distributing chamber 18 formed in the front end of the inner cylinder 14, the vegetables being distributed from this chamber 18 to the annular chamber between the inner and outer drums through the discharge opening 19.

For discharging the vegetables from the screw conveyor, the rear end of the screw conveyor is provided with a number of lifting wings or chutes 20 (Fig. 6) secured to the rear head 13 of the screw conveyor. These lifting chutes as they revolve pick up the vegetables which are conveyed to the rear end of the screw conveyor, and deliver them to a hopper or chute 21 in which operates a conveyor screw 22, which removes the vegetables from the chute 21.

In order to facilitate the removal of the peas or other vegetables from the chute 21, water is supplied to this chute, this being effected by making the conveyor screw shaft 23 tubular and providing it with a series of jet perforations 24. Water is supplied to the tubular shaft 23 through a pipe connection 24 having a swivel connection at 25 with the tubular shaft, which permits rotation of the shaft without leakage of the water at this point.

The cylindrical tank 10 is made in upper and lower halves, the lower half 26 being constructed to hold the water and the upper half 27 serving as a cover portion.

In order to facilitate access to the interior construction for purposes of cleaning, repair, etc., the end heads 28 and 29 for the lower semi-cylindrical portion 26 of the tank are made readily detachable with respect to the semi-cylindrical shell portion 30, the connection being such, however, that water-tight connection is provided at the joints as indicated at 31. This readily detachable water-tight connection is effected by providing the cast end heads 28 and 29 with arcuate channels 32 to receive the curved edges of the semi-cylindrical sheet metal shell 30. A packing strip 33 is fitted into

the channel 32 and embraces the edge of the shell 30 to effectually prevent leakage. Each of the end heads 28 and 29 is drawn and held snugly in engagement with the cylindrical shell 30 by means of a set of bolts 34. Each bolt extends through aligned openings in the respective end head and a lug 35 secured to the cylindrical shell 30. By drawing up these bolts 34 the end head may be drawn uniformly and firmly in position with respect to the semi-cylindrical shell 30. When it is desired to obtain access to the interior construction, the bolts 34 are removed, which enables the end head to be slipped away from the shell 30 to permit free access to the interior construction. Of course, in disconnecting this end head, it has to be detached from the end head 36 of the cover 27. These connections between the lower end heads 28 and 29 and the upper end heads 36 may be effected in any suitable manner as by means of bolts 37 extending through registering openings in flange portions in the upper and lower heads respectively.

Steam for heating the water in the tank may be supplied through the steam supply pipe 38. Water is supplied to the tank by the water supply tank pipe 39 (Fig. 5).

The screw conveyor 11 which operates in the tank 10 is surrounded by a number of combination bearing ring and drive gear members 40, by means of which the screw conveyor is supported for rotative movement and driven.

A pair of rollers 41 is provided for engagement with the bearing ring portion 42 of each of the members 40 (Figs. 2 and 3). In order to enable the supporting rollers 41 to be adjusted so that all of the bearing ring portions 42 will bear substantially equally on the supporting rollers, each roller is made adjustable by means of a pair of screws 43, threaded in a roller supporting bracket 44 and engaging a sliding bearing block 45. These sliding bearing blocks 45 are slidably mounted in the roller supporting brackets 44, so that adjusting the screws 43 will cause these bearing brackets 45 to be moved in or out. By this adjustment of the bearing rollers 41, the screw conveyor 11 may be supported uniformly throughout its length regardless of slight inaccuracies in manufacturing or assembling the blancher. This is an important feature as the blanchers are often of considerable length, and it is practically impossible to secure such accuracy in manufacture and assembly as would give a uniform support for the rotatable drum, unless provision for adjusting the support were made.

The screw conveyor 11 is driven from a sprocket wheel 46, mounted on a longitudinally extending shaft 47, which extends inside the cover 27 from one end to the other, and has a number of spur pinions 48 secured on it. These spur pinions mesh with the gear portions 49 of the members 40.

The discharge conveyor screw 22 is driven from the shaft 47 through a sprocket wheel 50 mounted on the shaft 47, a sprocket chain 51 driven from the sprocket 50, a sprocket 52 driven from the chain 51, a shaft 53 on which the sprocket 52 is mounted, a pinion 54 mounted on the shaft 53, and a spur gear 55 meshing with the pinion 54 and mounted on the conveyor screw shaft 23.

In operation, the vegetables, such as peas, which are to be blanched, are supplied to the hopper 17, water is supplied to the necessary height in the tank 10, the water heated to the necessary temperature through the steam supply pipe 38, and the machine is put in operation to cause the operation of the screw conveyor 11, and the discharge conveyor 22. The rotation of the screw conveyor 11 carries the peas through the tank, to the rear end of the screw conveyor 11, where the peas are lifted by the lifting chutes 20 and delivered to the discharge hopper or chute 21. The discharge screw conveyor 22 operating in this discharge chute 21 insures the removal of the peas, this removal being facilitated by the supply of water through the jet openings 24, this water acting as a sort of lubricant.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. A blancher comprising a cylindrical tank, a screw conveyor operating in said tank, said screw conveyor comprising a horizontal hollow perforated cylinder, and a helical web in said cylinder, and means for discharging the vegetables from the blancher comprising a delivery chute, and a conveyor operating in said chute, and means for delivering the vegetables from said perforated cylinder to said chute.

2. A blancher comprising a cylindrical tank, a screw conveyor operating in said tank, said screw conveyor comprising a horizontal hollow perforated cylinder and a helical web in said cylinder, and means for discharging the vegetables from the blancher comprising a delivery chute, and a screw conveyor operating in said chute, and means for delivering the vegetables from said perforated cylinder to said chute.

3. A blancher comprising a cylindrical tank, a screw conveyor operating in said tank, said screw conveyor comprising a horizontal hollow perforated cylinder and a helical web in said cylinder, and means for discharging the vegetables from the blancher comprising a delivery chute, and a conveyor operating in said chute, and means for delivering the vegetables from said perforated cylinder to said chute, said chute extending inside said perforated cylinder.

4. A blancher comprising a cylindrical tank, a screw conveyor operating in said tank, said screw conveyor comprising a horizontal hollow perforated cylinder, and a helical web in said cylinder, means for discharging the vegetables from the blancher, comprising a delivery chute, and a conveyor operating said chute, and means for delivering the vegetables from said perforated cylinder to said chute, said chute being open at the top, and extending inside said drum, and lifting wings inside said perforated cylinder for delivering the vegetables to the open top of said delivery chute.

In witness whereof, we have hereunto subscribed our names.

FRANK A. FOSTER.
JAMES E. FRALEY.