

A. GUDMUNDSEN.
BEET CLEANER.

APPLICATION FILED DEC. 19, 1914.

Patented Sept. 14, 1915.

2 SHEETS—SHEET 1.

1,153.381.

Fig. 1.

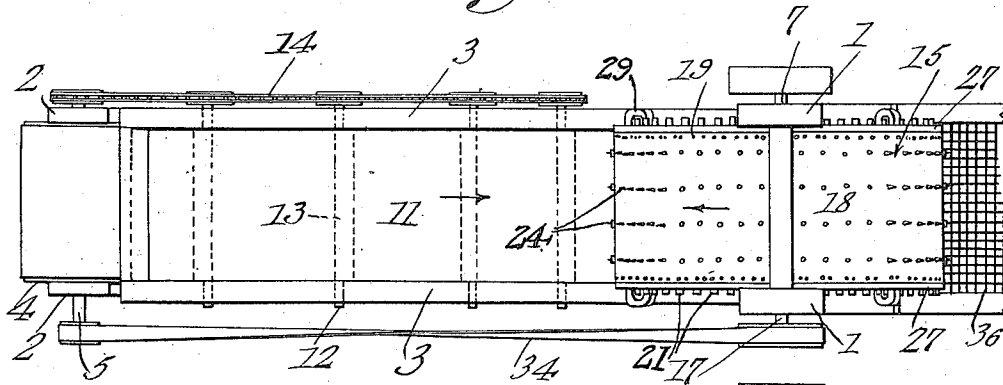
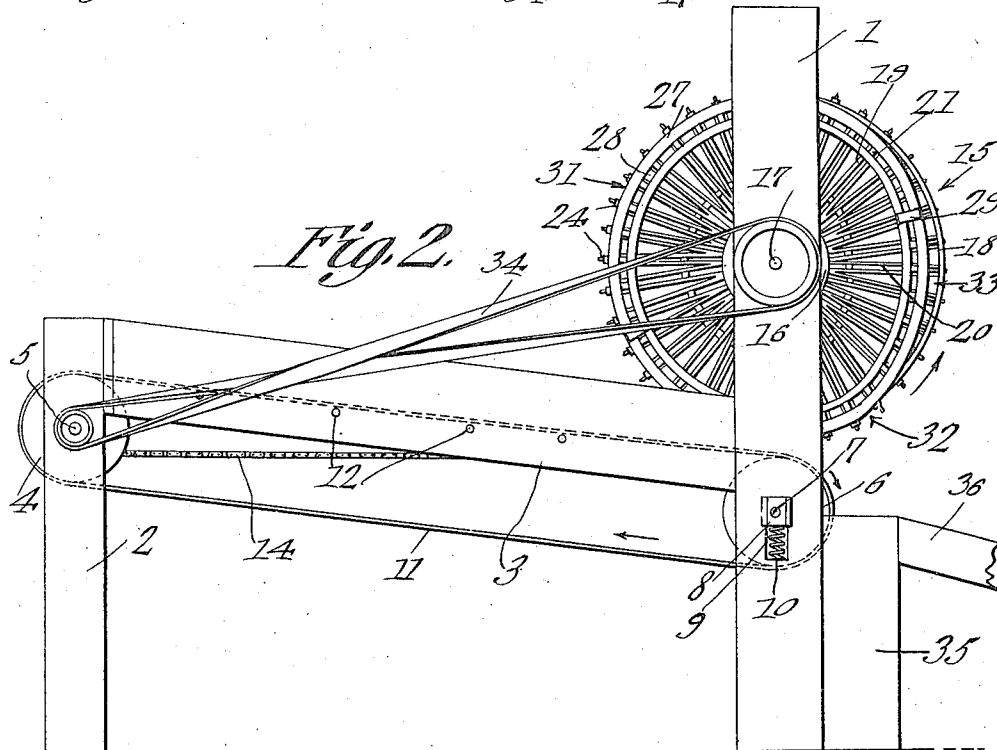


Fig. 2.



Witnesses

J. R. Dineen
M. C. McLearty

A. Gudmundsen

Inventor,

by

C. A. Snow & Co.
Attorneys

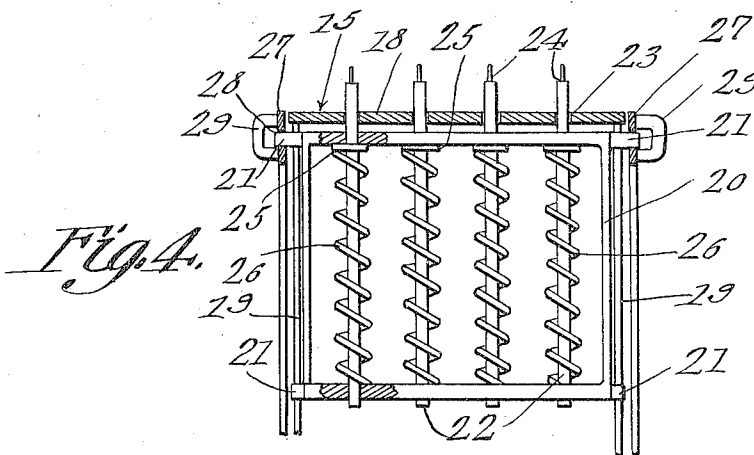
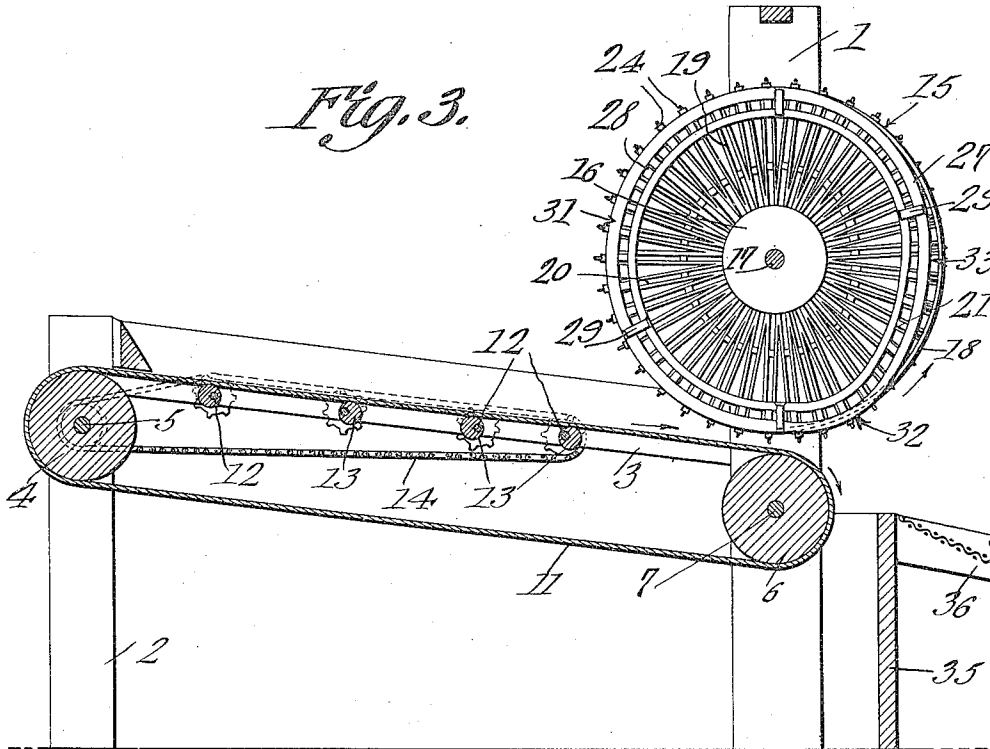
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Witnesses

J. R. Tomlin
M. C. McPartly

A. Gudmundsen

Inventor,

by

C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ABRAHAM GUDMUNDSEN, OF PAYSON, UTAH.

BEET-CLEANER.

1,153,381.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ABRAHAM GUDMUNDSEN, a citizen of the United States, residing at Payson, in the county of Utah and State of Utah, have invented a new and useful Beet-Cleaner, of which the following is a specification.

The present invention appertains to a machine for cleaning beets or other vegetables or articles, and aims to provide a novel and improved contrivance for separating beets or other articles from rocks, sand, pieces of wood, or other trash and refuse.

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

The invention is illustrated in its preferred embodiment in the accompanying drawings, wherein:—

Figure 1 is a plan view of the improved apparatus. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal section of the machine. Fig. 4 is an enlarged fragmental section of the drum.

In carrying out this invention, there is provided a supporting frame including a pair of standards or uprights 1 at one end, and a pair of standards or uprights 2 at the other end, the standards 1 and 2 at the opposite sides being connected by longitudinal beams 3 which are inclined at a slight angle from the standards 1.

Disposed between the standards 2 at the upper ends of the beams 3, is a roller or pulley wheel 4, the shaft 5 of which is journaled through the standards 2. A similar roller or pulley wheel 6 is disposed between the standards 1 at the lower ends of the beams 3, and its shaft 7 is journaled through bearings 8 slidable within vertical slots or guides 9 provided in the standards 1. The bearings 8 are yieldably supported by means of coiled wire expansion springs 10, whereby the lower roller or pulley wheel 6 may yield downwardly when necessary. An endless conveyer belt 11 is trained around the rollers 4 and 6, and its upper run is disposed between the beams 3, to form with

the beams, a trough for receiving the beets or other vegetables or articles to be separated.

Transverse shafts 12 are terminally journaled through the beams 3 below the upper run of the conveyer belt 11, and are provided with eccentrics 13 between the beams 3 and upon which the upper run of the conveyer belt rests. The shafts 12 of the eccentrics 13 are operatively connected by any suitable means 14, to the shaft 5 of the roller 4, whereby when the conveyer belt is operated, the eccentrics 13 in rotating will vibrate the upper run of the belt, to separate or scatter the beets, in order that they will not remain piled upon each other when passing to the lower portion of the conveyer belt, it being understood that the conveyer belt is so actuated that its upper run moves downwardly or toward the standards 1 to carry the beets therewith.

A drum 15 is mounted between the standards 1 above the lower roller 6 of the conveyer belt, and includes a pair of hubs 16 secured upon a shaft 17 which is journaled through the standards 1. The drum 15 also includes a relatively wide rim 18, and opposite sets or series of spokes or rods 19 terminally secured to the respective hubs 16 and the edge portions of the rim 18. The spokes 19 are arranged in pairs at the opposite sides of the drum, to provide slotted radial guides. The lower portion of the drum 15 is just spaced sufficiently above the lower rollers 6 of the conveyer belt, to enable the beets and trash to pass conveniently between the drum 15 and roller 6.

An annular series of radial rectangular open frames 20 are disposed within the rim 18 of the drum 15, between the opposite spokes or guides 19, and the side bars of the frames 20 are provided with inner and outer lugs 21 engaging the guide slots formed by the respective pairs of spokes 19, and whereby the frames 20 are guided for radial movement. A plurality or series of plungers 22 are slidable through the outer and inner cross bars of each frame 20, and the outer ends of the plungers 22 are arranged to project outwardly through suitable apertures 23 provided in the rim of the drum, the outer ends of the plungers 22 having reduced tips 24. Collars 25 are secured upon the plungers 22 adjacent the outer cross bars of the frames 20, and are

seatable against the outer cross bars of the frames for limiting the outward movement of the plungers, and coiled wire expansion springs 26 are mounted upon the plungers 5 between the collars 25 and the inner cross bars of the frames 20, to yieldably project the plungers when they are free to do so. The periphery of the drum 15 is thus covered with the tips or pins 24 which are adapted to enter and carry with them, the beets, as will hereinafter more fully appear.

As a means for controlling the frames 20 carrying the plungers 22 having the beet-engaging tips or pins 24, a pair of cam rings 27 are disposed between the sides of the drum 15 and the standards 1, and are secured in any suitable manner to the standards. The rings 27 are each provided with an endless approximately annular cam slot 28, and the concentric sections of each ring 27 are connected by outwardly projecting yokes 29 which permit the outer lugs 21 of the frames 20 to pass readily around the cam slots 28 through which the said outer lugs 21 extend. Those portions of the cam slots 28 directly above the conveyer belt 11 and between the upper and lower portions of the rings 27, are concentric with the shaft 17 of the drum, as at 31, and those portions designated 33 of the slots 28 between the portions 32 and the top of the rings 27, are curved inwardly slightly. This inward curvature of the portions 33 is to be taken with respect to the curvature of the portions 31 about the shaft 17 as a center.

The shaft 17 of the drum 15 is rotated by a prime mover or driving means of any sort, whereby the drum 15 is rotated counter-clockwise, as seen in Figs. 2 and 3. The shaft 17 of the drum and shaft 5 of the roller 4 are operatively connected by means of a belt or any other suitable means 34, whereby the conveyer belt will be actuated when the drum 15 is rotated.

A chute 35 is attached to the standards 1 and extends downwardly from the lower roller 6 of the conveyer belt, and a chute 36 extends from the upper end of the chute 35 from a point below the outer portion of the drum 15.

In operation, supposing the drum 15 to be rotated properly, which will also drive the conveyer belt, the sugar beets are discharged or dumped onto the upper run of the conveyer belt between the beams 3. The upper run of the conveyer belt in moving toward and under the drum 15 will carry the beets and trash therewith, and the eccentrics 13 in rotating will kick or jar the beets so that they will scatter throughout the area of the conveyer belt to prevent the beets passing under the drum 15 while piled one upon the other. In this manner, a single layer of the beets is carried under the drum 15. Now, as the drum 15 is rotated to carry

the frames 20 therewith, the outer lugs 21 of the frames 20 in passing through the portions 31 of the cam slots 28 will cause the frames 20 to be moved outwardly sufficiently to project the tips or pins 24 and shoulders 70 of the plungers 22 through the apertures 23 of the drum rim 18, and as the tips or pins 24 move downwardly toward the conveyer belt, they will enter the beets and will cause the beets to cling to them. When the frames 75 20 move adjacent the conveyer belt, the plungers 18 are projected, as seen in Fig. 4, so that the tips or pins 24 and shoulders of the plungers are projected beyond the rim 18 of the drum, and thus when the beets are 80 engaged by the tips or pins 24 of the plungers they will seat against the shoulders of the plungers to force the plungers inwardly or outwardly against the tensions of the springs 26. Then, when the frames 20 pass 85 along the portions 32 of the cam slots 28, the beets being carried away from the conveyer belt, will enable the plungers 22 to spring outward to space the beets from the rim 18 of the drum, and to thereby enable 90 any sand or foreign matter between the beets and rim 18 to drop downwardly through the refuse chute 35. Finally, as the frames 20 move along the portions 33 of the cam slots 28, the frames 20 will be moved 95 inwardly to retract the pins 24 within the rim 18 of the drum, and to thereby release the beets and enable them to drop into the chute or receptacle 36. In this manner, the pins 24 engage and carry with them, the 100 beets, but let the rocks, wood and other trash or refuse remain on the conveyer belt so that they will be discharged down through the refuse chute 35 when they pass over the lower roller 36 of the conveyer belt. 105

The lower roller 6 being yieldably supported, may move downwardly when the beets or trash render it necessary, to prevent clogging or the crushing of the beets. The pins 24 being of less diameter than the 110 plungers 22, provide shoulders at the butt ends of the pins 24, against which the beets rest when the beets are engaged by the pins. The plungers 22 being yieldably projected under the influence of the springs 26, may 115 yield inwardly when they encounter rocks or other unyielding objects upon the conveyer belt.

It is thus possible, with the present contrivance, to continually pour the sugar beets 120 onto the conveyer belt, in order that the beets may be separated from the refuse and trash by a continuous operation. The present device is adapted particularly for separating or cleaning sugar beets, although it 125 may be employed with success for cleaning or separating other articles as well. The present apparatus thus enables the beets to be delivered into the cutting machine, without the liability of refuse or foreign matter. 130

being delivered into the cutting machine with the beets, which would be liable to dull or clog the cutters.

If desired, rollers may be mounted upon the outer lugs 21 of the frames 20, to work within the cam slots, for reducing the friction.

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

1. A separator comprising a conveyer, an endless member disposed above the conveyer, retractable pins carried by the endless member and projectable beyond the same to enter objects carried by the conveyer and to carry the objects therewith, and means for retracting the pins to release the said objects.

2. A separator comprising a conveyer, a rotary drum mounted above the conveyer, retractable pins carried by the drum and projectable through the rim thereof, and means for projecting and retracting the pins as they approach and leave the conveyer, respectively.

3. A separator comprising a conveyer, a rotary drum mounted thereabove, radially slidable frames carried by the drum within the rim thereof, pins carried by the frames and projectable through the rim of the drum, and means for sliding the frames outwardly and inwardly as they approach and leave the conveyer, respectively, to project and retract the pins.

4. A separator comprising a conveyer, a rotary drum mounted thereabove, radially slidable frames carried by the drum within the rim thereof, pins carried by the frames and projectable through the rim of the drum, and an endless cam disposed at one side of the drum, the said frames having means engaging the cam and the cam being of such formation as to move the frames outwardly and inwardly as they approach and leave the conveyer, respectively, to thereby project and retract the pins.

5. A separator comprising a conveyer, a rotary drum mounted thereabove, radially slidable frames carried by the drum within the rim thereof, pins carried by the frames and projectable through the rim of the drum, a cam ring supported at one side and having a cam slot, yokes connecting the sections of the said ring formed by the said slot, the said frames having lugs engaging in the said cam slot, and the cam slot being of such formation as to move the frames outwardly and inwardly as they approach and leave, respectively, the conveyer, to project and retract the pins.

6. A separator comprising a conveyer, a rotary drum mounted thereabove including an apertured rim and radial guides within the rim, radial frames slidably engaging the guides, pins carried by the frames and projectable through the apertures of the

rim, and means for sliding the frames outwardly and inwardly as they approach and leave the conveyer, respectively, to project and retract the pins.

7. A separator comprising a conveyer, a rotary drum mounted above the conveyer and including a rim and radial guides within the rim, radial frames slidably engaging the guides, plungers slidably carried by the frames and having pins projectable through the rim, springs disposed between the plungers and respective frames for yieldably projecting the plungers, the plungers having means engageable with the frames to limit the outward movement of the plungers, and means for sliding the frames outwardly and inwardly as they approach and leave the conveyer, respectively, to project and retract the pins relative to the rim.

8. A separator comprising a conveyer, a rotary drum mounted thereabove and including an apertured rim and radial guides at the opposite sides within the rim, radial frames disposed between and slidably engaging the opposite guides, pins carried by the frames and projectable through the rim, endless cams disposed at the opposite sides of the drum, the frames having lugs engaging the cams, and the cams being of such formation as to move the frames outwardly and inwardly when they approach and leave the conveyer, respectively, to project and retract the pins.

9. A separator comprising a conveyer, a rotary drum mounted thereabove and including an apertured rim and radial guides within the rim at the opposite sides of the drum, rectangular open frames disposed between the opposite guides, a series of plungers slidably through the outer and inner cross bars of each frame and having pins at their outer ends projectable through the rim, springs disposed between the plungers and frame for yieldably moving the plungers upwardly, the plungers having means engageable with the frame for limiting their outward movement, and endless cams disposed at the opposite sides of the drum, the frames having lugs engaging the guides and cams, and the cams being so formed as to move the slides outwardly and inwardly as they approach and leave the conveyer, respectively.

10. A separator comprising a conveyer, a rotary drum mounted thereabove, radially slidable frames carried by the drum within the rim thereof, spring-pressed pins carried by the frame and projectable through the rim of the drum, and means for sliding the frames outwardly and inwardly as they approach and leave the conveyer, respectively, to project and retract the pins.

11. A separator comprising a conveyer, a rotary drum mounted thereabove, radially slidable frames carried by the drum within

the rim thereof, spring-pressed pins carried by the frames and projectable through the rim of the drum, a cam ring supported at one side and having a cam slot, yokes connecting the sections of the said ring formed by the said slot, the said frames having lugs engaging in the said cam slot, and the cam slot being of such formation as to move the frames outwardly and inwardly as they ap-

proach and leave, respectively, the conveyer, 10 to project and retract the pins.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ABRAHAM GUDMUNDSEN.

Witnesses:

SHORES LOVELESS,

CLAUDE E. HAYES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."