Dec. 6, 1938. J. SIBILLE 2,139,318

VEGETABLE BRUSHER AND GRADER

Filed May 29, 1937 2 Sheets-Sheet 1

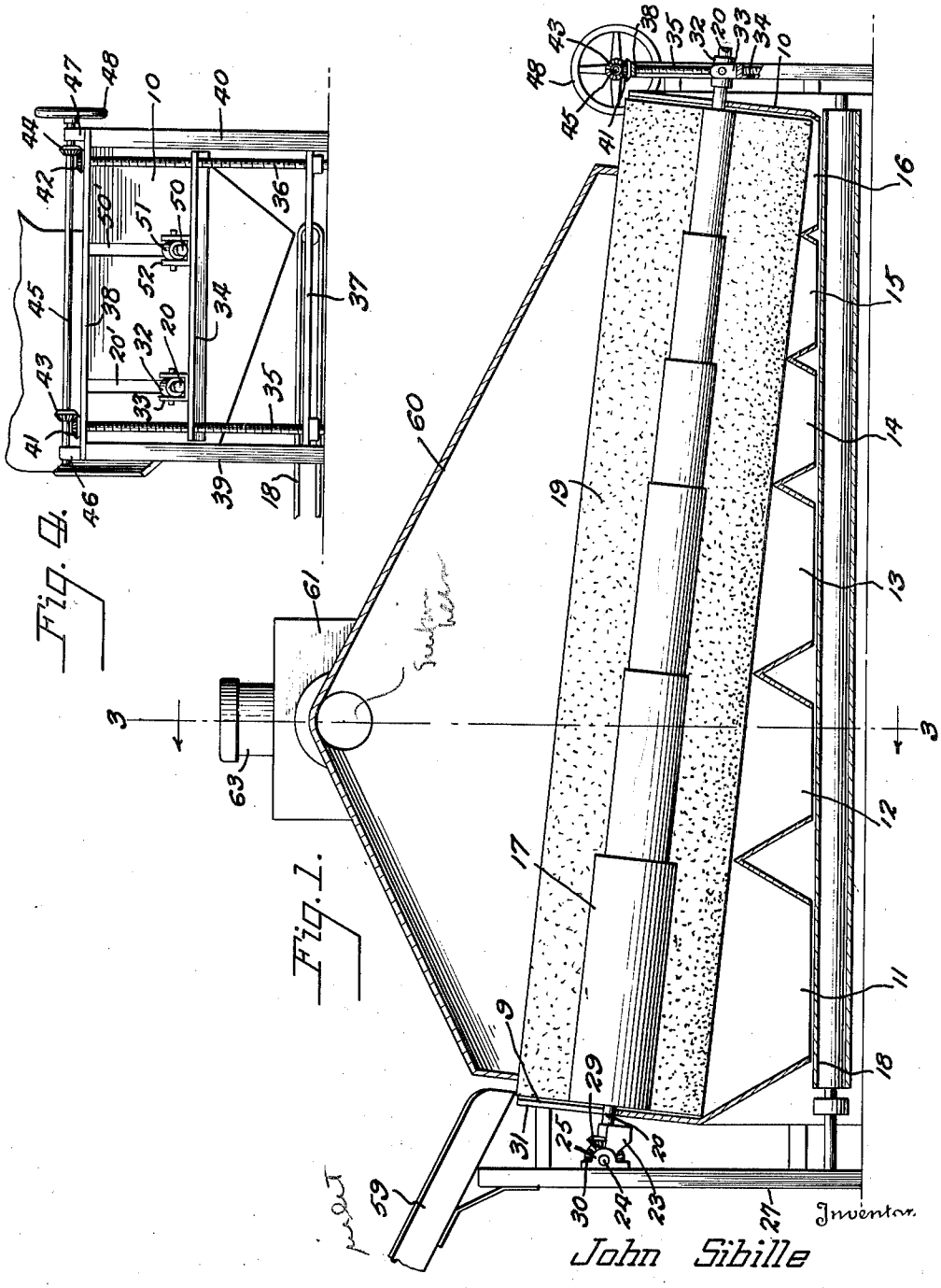


Fig. 4.

Fig. 1.

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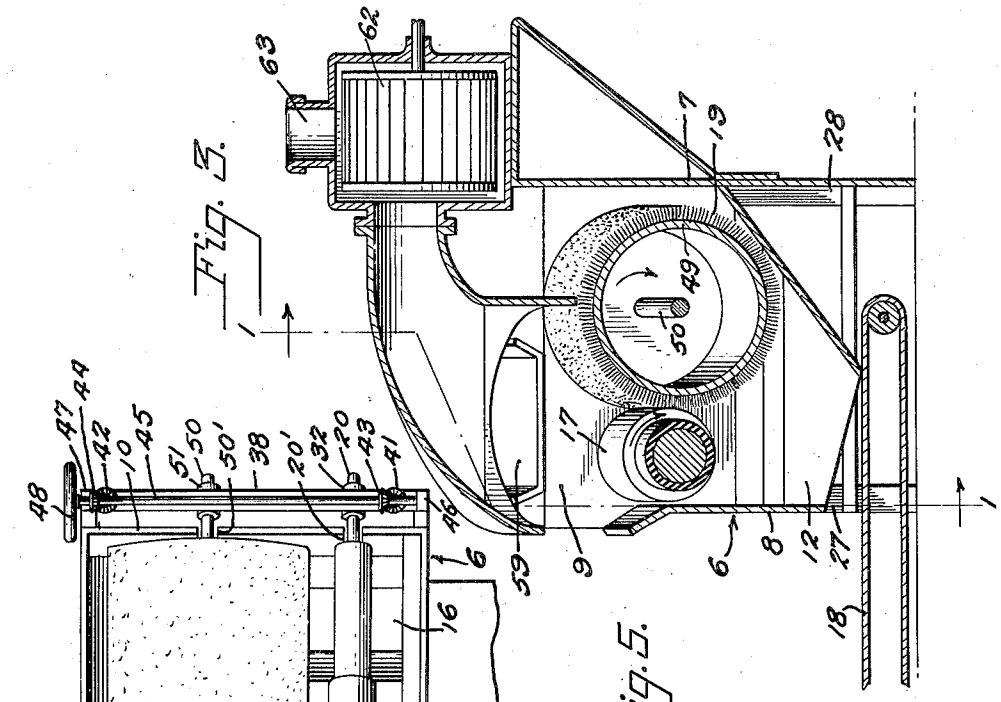


Fig. 3.

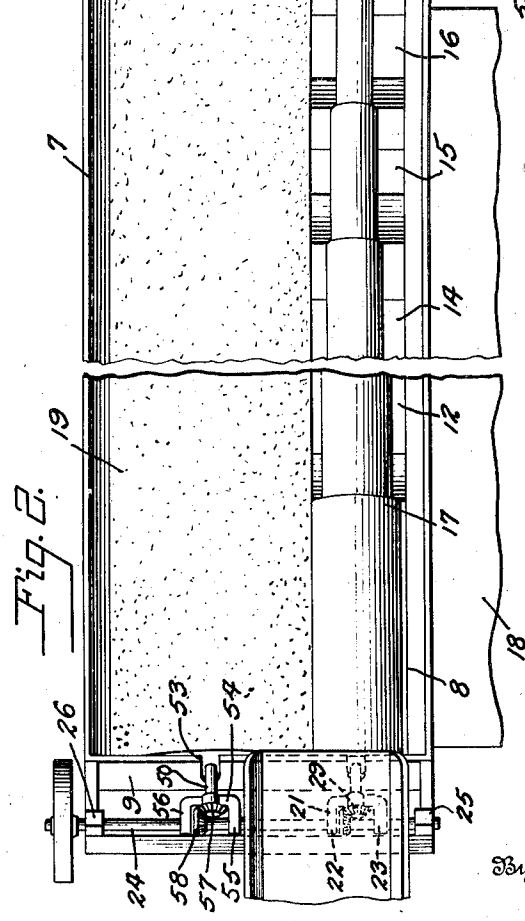


Fig. 2.

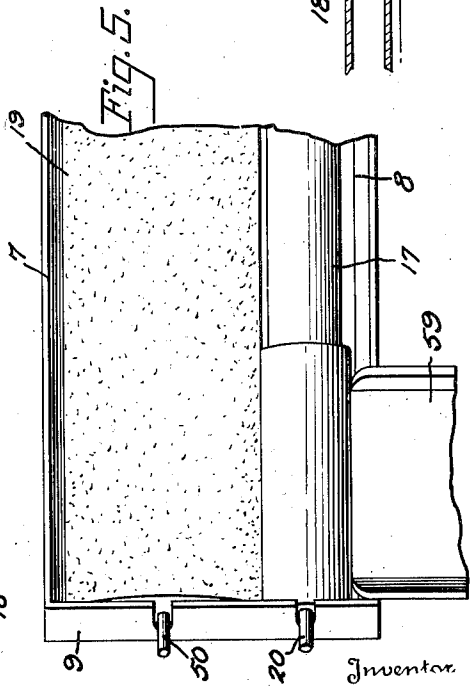


Fig. 5.

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UNITED STATES PATENT OFFICE

2,139,318

VEGETABLE BRUSHER AND GRADER

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Application May 29, 1937, Serial No. 145,640

4 Claims. (Cl. 146—193)

This invention relates broadly to vegetable brushing and grading machines; and, more particularly to machines adapted to clean and grade vegetables of the comparatively hard type, such as Irish and sweet potatoes.

The main object of the invention is to provide a machine for the purpose described, which can be very cheaply manufactured, and in which the brush part of the machine cooperates with a grading roller, not only to clean the vegetables but also to grade the same.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Figure 1 is a longitudinal section of the machine taken on the line 1—1 of Figure 3;

Figure 2 is a top plan view of the machine with the hood removed therefrom;

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1;

Figure 4 is an end elevation of the machine illustrated in Figure 1; and

Figure 5 is a fragmentary plan of a slightly modified form of the invention.

As shown in the drawings, the machine comprises a casing designated generally by the reference numeral 6. This casing comprises side walls 7 and 8, end walls 9 and 10, and a bottom constructed to form outlet hoppers 11, 12, 13, 14, 15 and 16, corresponding in number to the different sizes of vegetables to be graded during their passage along a downwardly inclined grading roller 17. An endless conveyor belt 18 is mounted to travel below all of said hoppers for the purpose of removing therefrom the graded vegetables.

As shown in Figures 2 and 3 of the drawings, the grading and brushing operation are performed by the grading roller 17 and a brush 19, of the stiff bristle type commonly used in cotton ginning machines. The grading roller 17, preferably rubber covered, is mounted for rotation by means of a shaft 20 extending lengthwise of the casing 6, directly over the outlet hoppers. The shaft 20 is journaled at its upper end in a yoke bracket 21 having the arms 22 and 23 thereof rotatably mounted on a drive shaft 24. The drive shaft 24 is journaled at its opposite ends in brackets 25 and 26, suitably secured to standards 27 and 28. The upper end of the shaft 20 has a bevel gear 29 secured thereto and meshing with a bevel gear 30 suitably secured to the shaft 24 between the arms 22 and 23 of the yoke bracket 21. This end of the shaft 20 projects through a slot 31 formed in the end wall 9 and is thereby prevented from lateral movement with respect to the casing 6.

The lower end of the shaft 20 is slidably mounted in a collar 32 pivoted in a U-shaped bracket 33 suitably secured to a cross bar 34 mounted for vertical adjustment at the lower end of the machine. The cross bar 34 is provided with screwthreaded apertures at its opposite end to receive the screwthreaded shafts 35 and 36 which are journaled parallel to each other in cross bars 37 and 38 secured at their opposite ends to the standards 39 and 40 respectively. The upper ends of the shafts 35 and 36 are provided with bevel gears 41 and 42, respectively, meshed with bevel gears 43 and 44 suitably secured to the adjusting shaft 45, which is journaled at its opposite ends in bearings 46 and 47, mounted on the cross bar 38. A handwheel 48 secured to one end of the shaft 45 serves to impart rotation to the shaft 45 and mechanism connected thereto to raise and lower the cross bar 34 as desired.

The brush 19 comprises a drum or cylinder 49 suitably mounted on and coaxial with the shaft 50, the lower end of which is slidably mounted in a sleeve 51 pivotally connected to the U-shaped bracket 52 secured to the cross bar 34. The connection between the shaft 50 and the cross bar 34 is identical with that between the shaft 20 and the same cross bar. Obviously it is intended that the lower ends of the shafts 20 and 50 shall be raised and lowered simultaneously to vary the inclination of the grading and brushing mechanism as desired. Slots 20′ and 50′ are formed in the end wall 10 to permit these vertical movements of the shafts 20 and 50.

The upper end of the shaft 50 passes through a slot 53 in the end wall 9; and is journaled in a yoke bracket 54 similar to the bracket 21, and having its arms 55 and 56 pivoted to the shaft 24. A bevel gear 57 secured to the upper end of the shaft 50 meshes with a bevel gear 58 on the drive shaft 24. The construction so far described is such that the shafts 20 and 50 are parallel to each other and are so mounted in the machine that their inclination to the horizontal may be varied as desired in order to control the rate of travel of the vegetables from the inlet end to the various discharge hoppers.

As shown in Figures 1 and 2 of the drawings, an inlet chute 59 is suitably mounted to feed the vegetables directly to the upper ends of the machine. It will be apparent from the illustration of the gear in Figure 2 that the grading

roller 17 and the drum 49 rotate in the same direction. The operation of the machine is such that the vegetables are thoroughly brushed and cleaned, thereby removing dust, dirt, scale and other foreign matter. To remove the dirt and dust, the machine is provided with a hood 60 extending over the machine and connected at its upper end to a casing 61 in which a suction fan 62 is mounted, the casing being provided with a discharge outlet 63 to conduct the dust and foreign matter away from the machine.

It is not necessary that the chute 59 be arranged as shown in Figure 1 of the drawings to direct the material centrally of the line of contact between the brush 49 and the upper portion of the grading roller 17. The chute 59 may be arranged at the side of the machine directly over the grading roller 17. The effect is substantially the same, since the material falling on the grading rollers will be directed at once to the brush, because the upper surface of the grading roller rotates in the same direction as the upper surface of the brush.

It is of the utmost importance that the brush and grading roller in this machine rotate in the same direction. This eliminates all possibility of crushing the vegetables between the brush and grading roller. The fruit, or other vegetables, is practically floated between the brush and roller; and is rotated positively in the opposite direction, thereby ensuring a thorough brushing and removal of foreign matter during its passage through the machine. The upward rotation of the brush toward the hood inlet also throws the dirt and other foreign matter directly toward said inlet.

While I have shown and described a preferred embodiment herein, it must be understood that the invention is not to be considered as limited except as indicated by the scope of the claims appended hereto.

What I claim is:

1. A vegetable grading and brushing apparatus, comprising: a supporting frame; a grading roller journaled in said frame and having stepped cylindrical surfaces, decreasing in diameter successively from one end to the other, a cylindrical brush journaled in said frame to rotate about an axis parallel to the axis of said roller and with its brush surface substantially in contact with the widest part of said roller and means for rotating said brush and roller in the same direction, and suction means disposed over said roller and brush for withdrawing matter removed from the surfaces of the vegetables during the brushing and grading operation.

2. A vegetable grading and brushing apparatus, comprising: a supporting frame; a grading roller journaled in said frame and having stepped cylindrical surfaces, decreasing in diameter successively from one end to the other, a cylindrical brush journaled in said frame to rotate about an axis parallel to the axis of said roller and with its brush surface substantially in contact with the widest part of said roller and means for rotating said brush and roller in the same direction, means for varying the inclination of said brush and roller relative to the horizontal, and suction means disposed over said roller and brush for withdrawing matter removed from the surfaces of the vegetables during the brushing and grading operation.

3. A vegetable grading and brushing machine comprising: a supporting frame, a stepped grading roller and a cylindrical brush journaled in said frame to rotate about parallel axes inclined to the horizontal, said brush having its brush surface in contact with the widest part of said roller, means for delivering vegetables to be brushed and graded to the upper ends of said brush and roller, and means for rotating said brush and roller simultaneously in the same direction, and suction means disposed over said brush and roller for withdrawing matter removed from the surface of the vegetables during the brushing and grading operation.

4. A vegetable grading and brushing machine comprising; a supporting frame, a stepped grading roller and a cylindrical brush journaled in said frame to rotate about parallel axes inclined to the horizontal, said brush having its brush surface in contact with the widest part of said roller, means for delivering vegetables to be brushed and graded to the upper ends of said brush and roller, and means for rotating said brush and roller simultaneously in the same direction, and suction means disposed over said brush and roller for withdrawing matter removed from the surface of the vegetables during the brushing and grading operation, and means for simultaneously raising or lowering one end of said brush and roller.

JOHN SIBILLE.