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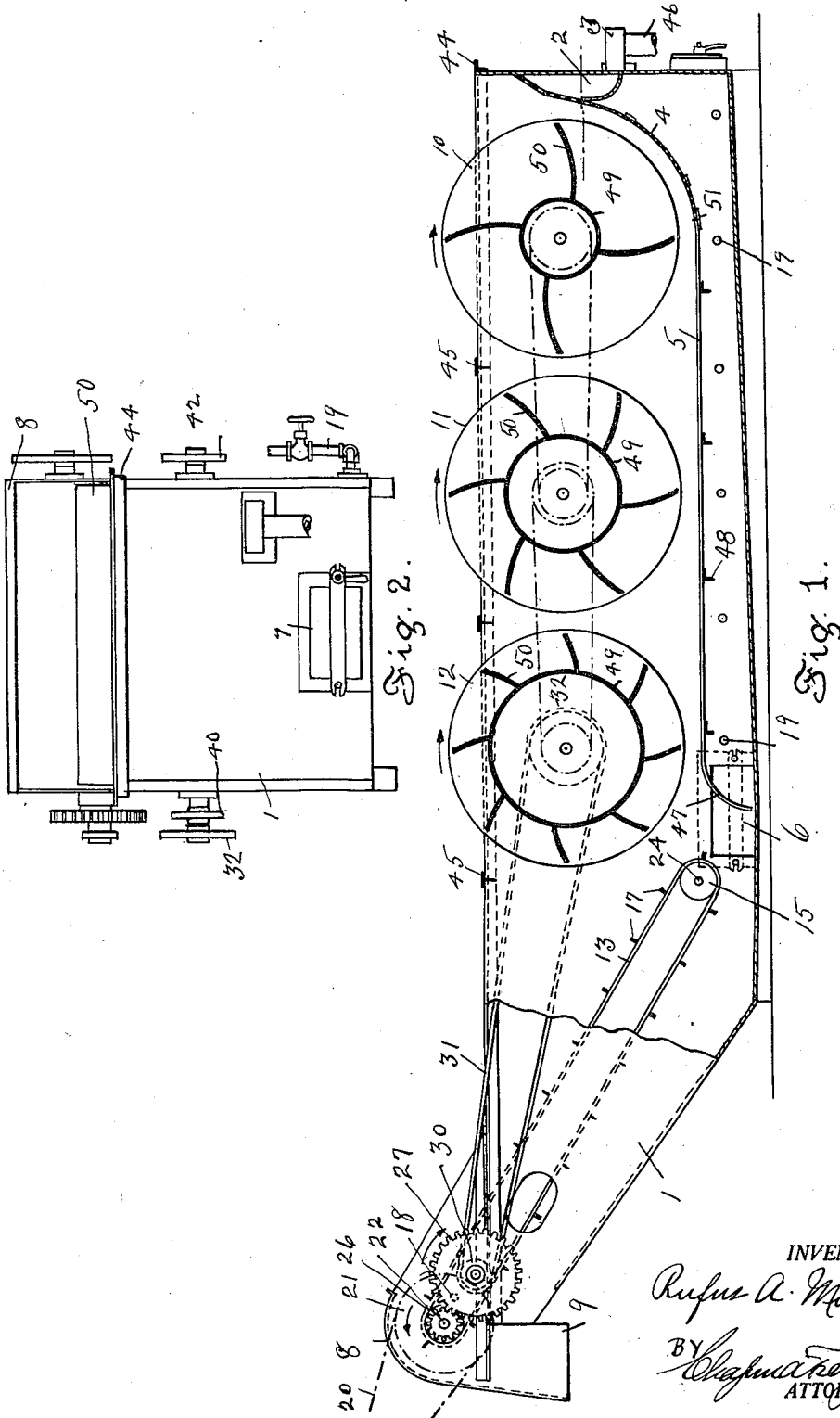
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MACHINE FOR WASHING AND BLANCHING SPINACH AND OTHER VEGETABLES

Filed Aug. 28, 1933

2 Sheets-Sheet 1



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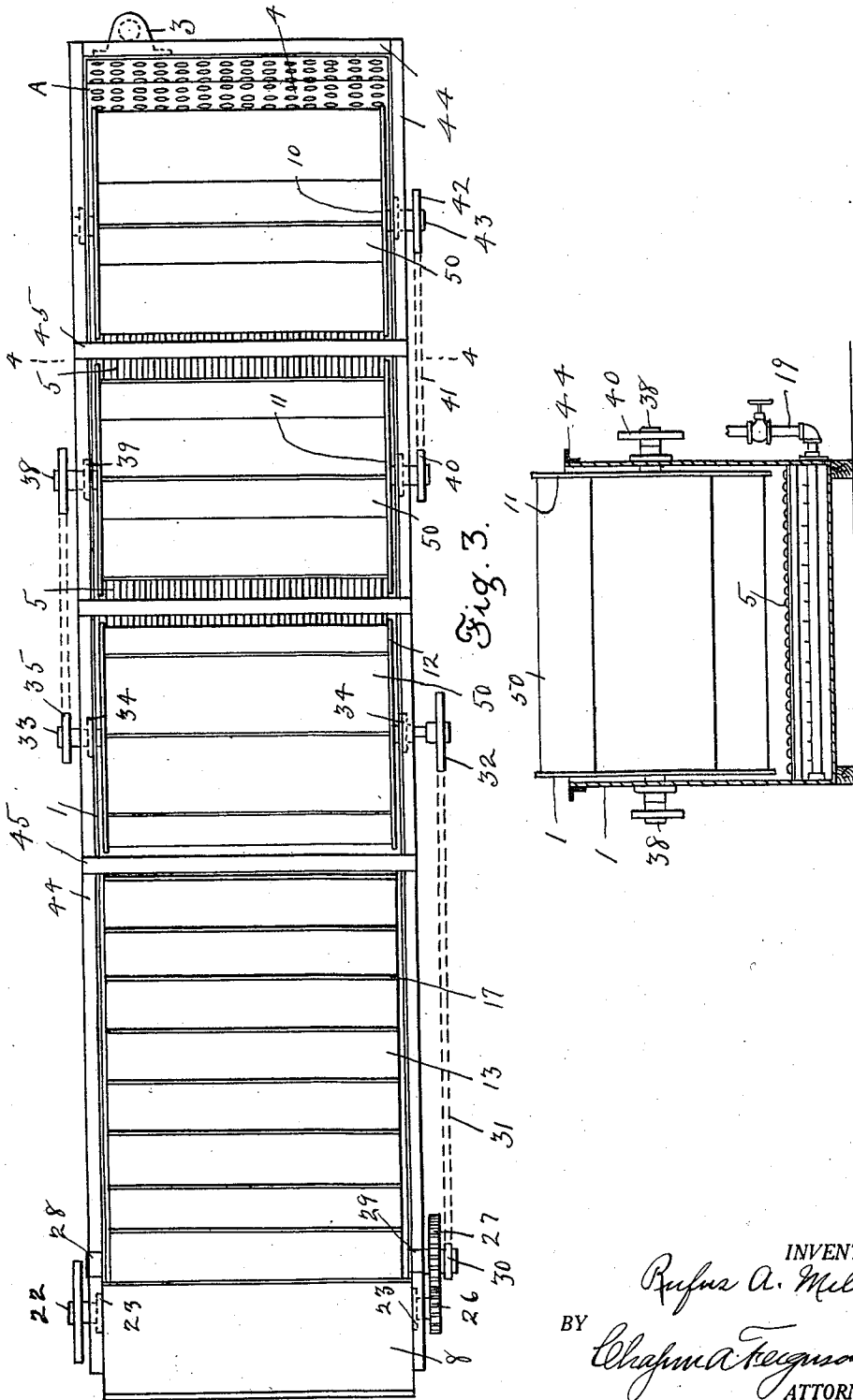
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# UNITED STATES PATENT OFFICE

2,013,522

## MACHINE FOR WASHING AND BLANCHING SPINACH AND OTHER VEGETABLES

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Application August 28, 1933, Serial No. 687,126

1 Claim. (Cl. 146—197)

This invention relates to a machine for continuously cleaning, washing and parboiling spinach or vegetables of like nature before packing in cans or containers for processing and is known as a spinach blancher.

The object of the invention is to provide a machine that will in one continuous operation thoroughly cleanse the spinach or other like material by washing, and blanch the same to the proper degree for packing.

The invention consists of the novel construction and arrangement of the parts and combination of parts hereinafter more fully set forth in the following specification and pointed out in detail in the appended claim.

In the accompanying drawings,—

Figure 1 is a side elevation of the assembled machine, partly in section.

Figure 2 is a front end view of Figure 1.

Figure 3 is a top plan view of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 3.

Referring to the accompanying drawings, forming part of this specification, and in which like reference numerals designate like parts throughout the several views thereof, 1 designates the tank shell, consisting of sides, end and bottom made of sheet steel reinforced with angle irons 44 and braced at the top with T bars 45, as shown, or in any other substantial manner. It will be seen that the tank bottom has a slight pitch or decline to facilitate drainage. An overflow trough 2 is secured to the inside of the tank end plate at a predetermined height and communicates by means of an opening through the said end plate with an overflow pocket 3 in the bottom of which is an opening, thus maintaining the proper water level in the tank 1 at all times. The bottom opening in the overflow pocket 3 may be tapped and a pipe 46 connected so that the overflow water may be conveyed to any desired point. A perforated plate 4, the full width of the tank 1, curves down from the end plate at a point above the overflow trough 2 to a connecting bar 51 and from there a grating 5, the full width of the tank, built of half oval bars spaced apart extends horizontally for a distance terminating in a curve 47 down to a point at or near the beginning of the incline in the bottom of the tank. This grating is supported by angle irons 48 attached to the sides of the tank as shown but may be supported in any convenient manner. The purpose of the perforated plate 4 and grating 5 is to provide a guide for the material being treated, beginning at the feed

and continuing through the agitating period, keeping the material a distance from the bottom of the tank and in proximity to the agitating means, allowing the sand or other foreign material which is separated from the spinach or other material by washing or agitation to pass through the openings in said grating and be deposited on the bottom of the tank 1. It will be understood that the said guiding means may be constructed in any other suitable way adaptable to the purpose for which it is intended.

Three watertight clean out doors 6 and frames 7 are provided, one on each side and one on the end of tank 1. These doors are fully detailed on the drawings but may be of any easily manipulated watertight construction and are for cleaning out foreign matter and washing the inside of the bottom of tank 1 after using. A hood 8 terminating in a discharge spout 9 the full width of the tank 1 is attached to the end of the tank opposite the feed end thereof.

Three revoluble reels 10, 11, and 12 equally spaced within the tank are constructed of circular sheet metal ends or head disks separated by and attached to central drums 49 by means of angle iron rings. Vanes or blades 50 the length of said drums are attached thereto and extend outwardly in a curve to near the periphery of the heads 10, 11, and 12. These reels may be constructed as shown or all connections may be of flanged construction or in whatever manner may be found most economical. It will be noted that while the three reels 10, 11, 12, have the same diameter and longitudinal dimensions there is a difference in the diameters of the drums 49, and the number and depths of the blades 50. Reel 10 has a proportionately small drum and four blades, reel 11 has a drum one and a half times the diameter of reel 10 and six blades, reel 12 has a drum twice the size of reel 10 and eight blades. The reason for these differences will be explained later.

A discharge apron conveyer 13, the width of the tank, is placed in an inclined position at the discharge end of tank from a point about level with and near the termination of the guide 5 to a point within the hood 8 above the discharge spout 9. This conveyer is formed of two link belts, one at either side within the tank and operates over two sprocket wheels located at the upper end within the hood 8 and two idler wheels 15 at the lower end and is provided with bars 17 forming flights to aid in conveying the material.

A water pipe extends across within the hood 8 with perforations on the side next to the dis-

charge end of conveyer. The spray from this pipe loosens and washes out any material which has a tendency to lodge on the apron and prevents it being carried back down into the tank.

5 A system of steam piping 19 is arranged as shown in Fig. 2 and Fig. 4. The horizontal pipes within the tank are perforated as indicated and described and not only provide means for heating the water but the jets of steam blowing from the  
10 perforations keep the water in constant agitation thereby aiding in freeing the spinach or other material of sand or other foreign matter.

Referring to Fig. 1, power from any convenient source is transmitted by link belt 20 to sprocket  
15 wheel 21 keyed to the far end of shaft 22 which rotates in bearings 23 mounted one on either side of hood 3. On the shaft 22 are secured in line the sprocket wheels which operate the apron conveyer, 13. At the opposite or lower end of the conveyer, 13. At the opposite or lower end of the conveyer the idler wheels 15 are secured to shaft 24  
20 which rotates in bearings mounted one on either side of tank 1. On the near end of shaft 22 is keyed a pinion 26 which is in mesh with a gear 27 keyed to shaft 23 which rotates in bearings 29  
25 mounted one on either side of tank 1. On shaft 28 is keyed sprocket wheel 39 which transmits power through link belt 31 to sprocket wheel 32 keyed to one end of shaft 33 which rotates in bearings 34 mounted one on either side of tank 1.  
30 Reel 12 is also secured to shaft 33. On the opposite end of shaft 33 is keyed sprocket wheel 35 which transmits power to one end of shaft 38 which rotates in bearings 39 mounted one on either side of tank 1. Reel 11 is secured to shaft  
35 38 and on the opposite end is also keyed sprocket wheel 40 which transmits power through link belt 41 to sprocket wheel 42 keyed on shaft 43 which rotates in bearings 44 mounted on either side of tank 1. Reel 10 is also secured to shaft 43.

40 Having described the mechanism of the machine, the operation is as follows; the tank 1 is filled with water to the overflow level, steam is turned on through the piping system 19 and when the water has reached the proper degree of heat,  
45 power is applied which revolves the reels and operates the conveyer apron. The green or raw spinach is fed in at A and reel 10 immediately plunges it down under the water. The guide plate 4 prevents the material from slipping from  
50 the reel and the water agitated, partly by the steam jets from the perforated pipes and partly by the motion of the reel. The material is churned

about in such a manner that it is cleaned of foreign matter which falls down through the grating 5 and is deposited on bottom of tank. As the spinach reaches the other side of the reel and starts to emerge the curved blade sweeps it  
5 clear of reel 10 and reel 11 immediately submerges it again, treats it in the same manner as did reel 10 and passes it on to reel 12 which finally delivers the blanched spinach to the conveyer 13 which in  
10 turn takes it up to the discharge and as it passes over the end of conveyer the water spray from pipe 18 dislodges any which may have a tendency to adhere to the apron and all clean and blanched the spinach is discharged through discharge spout  
15 9 to be conveyed to the packing table by any convenient means.

Referring to the difference in size of the drums of the reels, spinach in the green or raw state is fluffier or more bulky, hence the drum of reel 10  
20 is relatively small to allow more space for the spinach when it first enters the machine. The hot water wilts the spinach and when it reaches reel 11 it requires less space so that the drum of reel 11 is relatively larger to keep the material  
25 well down under the water, and when the spinach reaches reel 12 it is wilted and still smaller bulk, therefore for the same reason the drum of reel 12 is likewise made still larger, giving the spinach  
30 at this point a good final submersion.

Having thus described my invention what I  
35 claim is:

A machine for washing and blanching spinach and other vegetables, comprising a tank having an inclined bottom, a plurality of drums of different  
40 diameters revolubly mounted in said tank and each having blades projecting therefrom, the blades of each drum varying in number and length from the blades of the other drums, the said drums increase in diameter from the feed end to the discharge  
45 end of the tank, and the blades decrease in length and increase in number as the drums increase in diameter, whereby to accommodate the spinach as it decreases in bulk as it is passed from the feed end to the discharge end of the tank, a  
50 conveyor at the discharge end of the tank, means for operating said conveyor, means for operating said drums simultaneously, a grating mounted in said tank between the said drums and the bottom of the tank, an overflow trough at the feed end of said tank, and a plurality of water-tight doors 50 in said tank below said grating.

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