

No. 821,811.

PATENTED MAY 29, 1906.

A. MAGUIN.
BEET WASHING MACHINE.
APPLICATION FILED MAR. 4, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

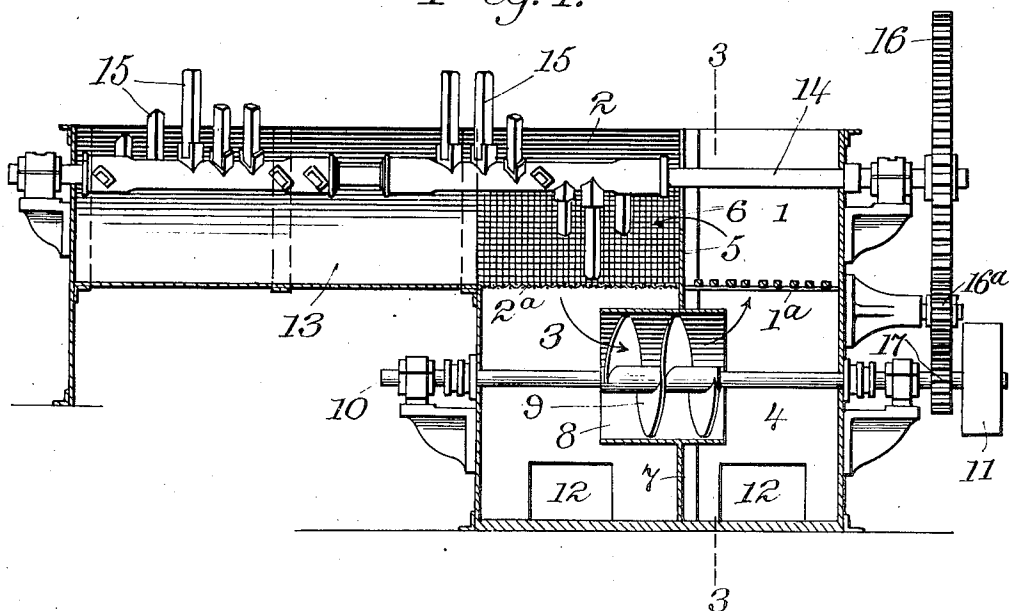
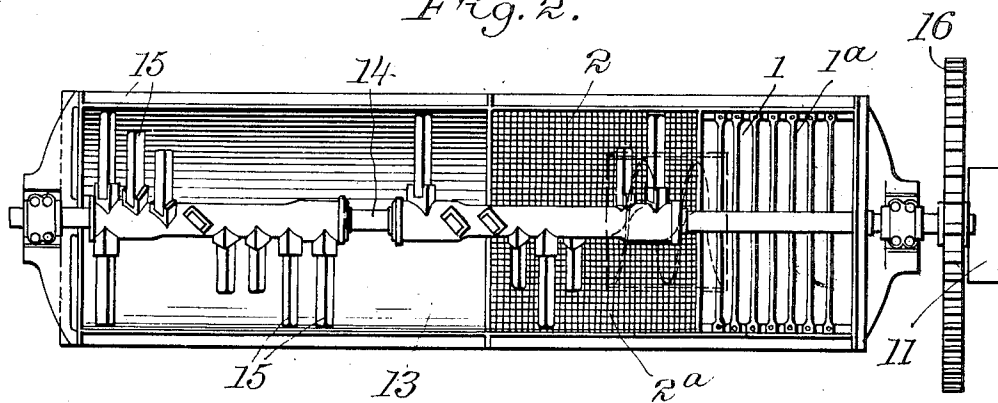


Fig. 2.



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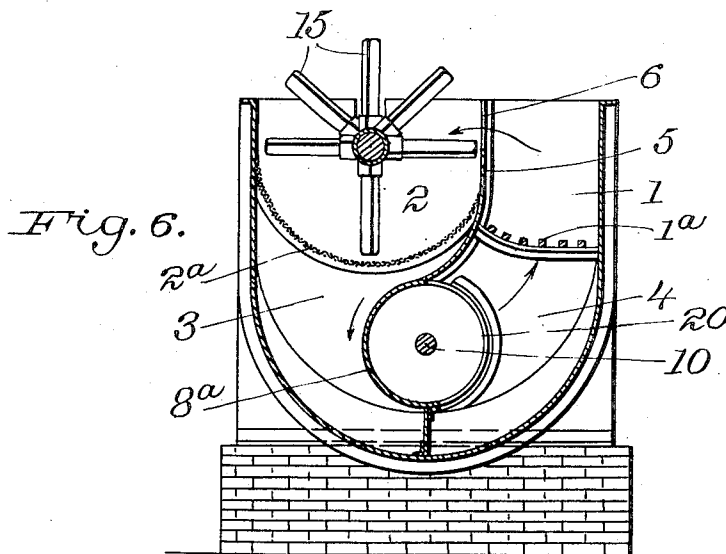
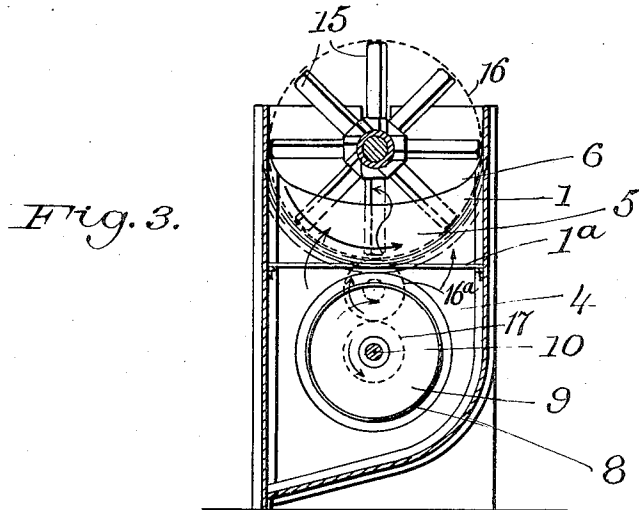
Alfred Maguin
Inventor.
By his Attorney

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3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

Fig. 4.

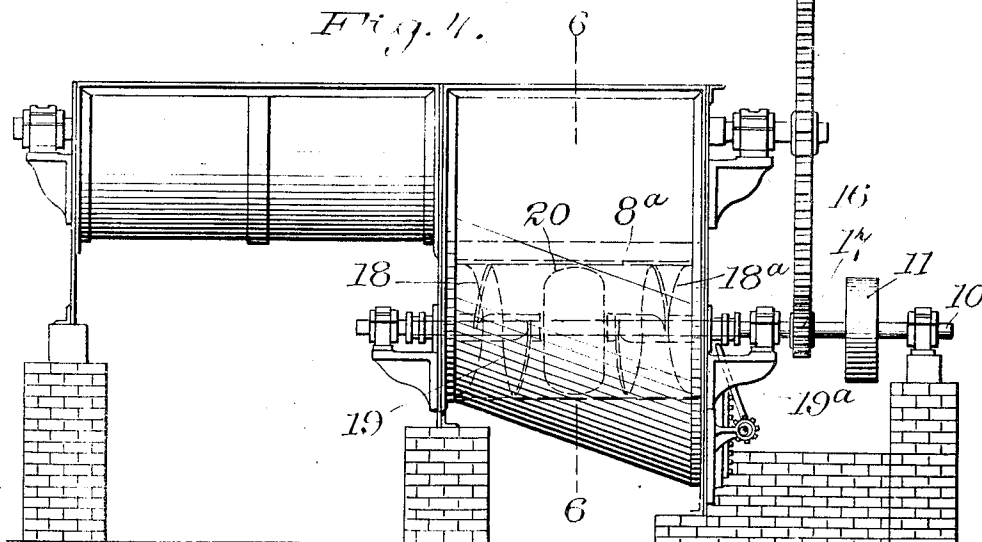
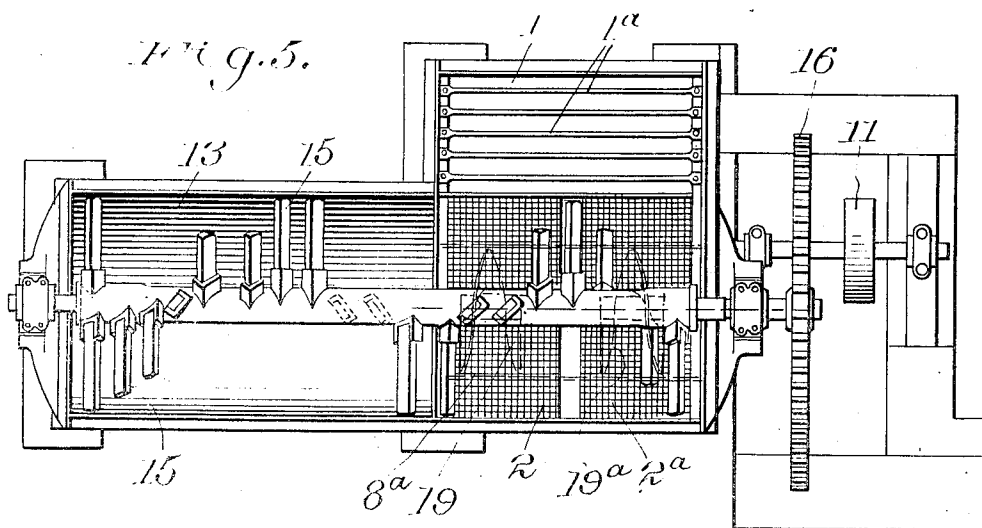


Fig. 5.



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ALFRED MAGUIN, OF CHARMES, FRANCE.

BEET-WASHING MACHINE.

No. 821,811.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed March 4, 1904. Serial No. 196,706.

To all whom it may concern:

Be it known that I, ALFRED MAGUIN, a citizen of the Republic of France, residing at Charmes, France, have invented certain new and useful Improvements in Beet-Washing Machines, of which the following is a specification.

My invention relates generally to beet-washing machines, and more specifically to an improved device adapted to be used in connection with any rotary washing-machine, and which has for its purpose to separate the beets from stones or other hard bodies of greater specific gravity with which they are mixed.

My invention depends upon the following observed facts: first, that the specific gravity of the sugar-beet is but slightly greater than that of water; second, that if the sugar-beet and the usual accompanying bodies—such as stones, iron, &c.—having a greater specific gravity are subjected to the action of an upwardly-moving column of water of sufficient volume to float the beets, but not to overcome the gravital action of the bodies of greater specific gravity accompanying the beets, then an efficient separation of the beets from such accompanying bodies may be effected.

The accompanying drawings will serve to illustrate my invention, and in which—

Figure 1 is a longitudinal vertical central section of the device. Fig. 2 is a plan view. Fig. 3 is a cross-section on the line 3 3 of Fig. 1 looking from the right and showing in dotted lines the several gears forming the driving connection between the shafts. Fig. 4 is a side elevation of a modification with certain of the interior parts indicated in dotted lines. Fig. 5 is a plan view of the machine shown in Fig. 4, and Fig. 6 is a cross-section on line 6 6 of Fig. 4.

Referring to the drawings, which show two different constructions through which my invention may be carried into effect, 1 2 3 4 indicate four chambers, contained within a suitable casing. Interposed between the chambers 1 and 4 is a grating 1^a, the bars of which are sufficiently separated to permit the passage of stones, nails, &c., but not that of the sugar-beet. Between the chambers 2 and 3 is a screen 2^a, through which the water discharged into the chamber 2 may flow to chamber 3. Between the chambers 1 and 2, which for the purposes of description I will term, respectively, the "receiving-chamber"

and the "discharging-chamber," is a partition 5, cut away at its upper side, as indicated at 6, Fig. 3, and between the chambers 3 and 4 there is a partition 7, in the upper portion of which is arranged a horizontally-disposed tube 8. In this tube is situated an Archimedean screw 9, mounted on a shaft 10, journaled in the base of the machine and rotated by means of a belt-pulley 11 or other convenient means in a direction to propel water from chamber 3 to chamber 4 and upward through chamber 1 to chamber 2.

12 12 are manholes in the base of the casing, through which stones, dirt, or other accumulated materials may be removed.

Connected to the discharge-chamber 2 is a washing-chamber 13, which in construction corresponds to that of the ordinary cylindrical washing-machine. The bottom of this chamber is shown as situated on the same level as that of the bottom of the chambers 1 and 2. A shaft 14 extends through the chambers 1, 2, and 13, and on this shaft and located in the chambers 2 and 13 are a series of radial beater-arms 15, spirally arranged. The shaft 14 is adapted to be rotated at a low rate of speed by means of a gear-wheel 16, meshing with an intermediate gear 16^a, driven by a pinion 17 on shaft 10 or by other convenient means.

In the apparatus above described (illustrated in Figs. 1, 2, and 3) the planes in which the circulating fluid travels through the chambers 1 2 3 4 are parallel to the planes occupied by the shafts 14 10. In the modification shown in Figs. 4, 5, 6 the plane of the circulation is at right angles to said shafts. In such construction the circulation of the water through the chambers 1 2 3 4 is effected by means of two Archimedean screws of opposite pitch 19 19^a, located in a tube 8^a, the screws being so arranged as to draw water through the opposite ends 18 18^a of the tube (best shown in Fig. 4) and to discharge it at the middle of the tube through an opening into the chamber 4.

The operation of my improved device is as follows: A sufficient amount of water is introduced into the casing to completely fill the chambers 3 and 4 and partially fill the chambers 1, 2, and 13. The shafts 10 and 14 are then set in rotation and through them the Archimedean screw 9 and beater-arms 15. The beets and the accompanying bodies—such as stones, nails, &c.—which are usually fast to the beets, but which may not be, are

now fed into the chamber 1 and by reason of their weight fall upon the grating 1^a. At the grating the beets and the accompanying bodies are subjected to the action of a body of water projected upward by the influence of the screw 9 or screws 19 19^a through the grating 1^a. The upward velocity of the body of fluid is made sufficient to lift the beets, whose specific gravity is but slightly greater than water, and float them over the partition 5, but not sufficient to overcome the gravital movement of the stones, nails, and other bodies of greater specific gravity than the beets, which bodies pass through the grating 1^a and settle upon the bottom of the chamber 4, from whence they may be removed through a manhole 12 when a sufficient amount has been accumulated. Thus the beets while floating from chamber 1 to chamber 2 in the moving body of water are effectually separated from the accompanying bodies. The beets after passing over the partition 5 and being no longer subjected to the upward action of the body of water fall upon the screen 2^a in chamber 2, the water passing through the screen into the chamber 3. In the chamber 2 and in the chamber 13 the bodies are subjected to the beating and forwardly-propelling action of the beater-arms 15, the beets being tossed and tumbled through the water which separates them from mud and clay, as in any ordinary washing-machine, until the rear end of the chamber 13 is reached, when they are discharged from the machine in the usual manner.

It will be observed that by reason of the disposition of the several chambers, partitions, and screw or screws a given volume of water is maintained in continuous circulation, thereby economizing water, and, further, that the beets during the time they are in chamber 1—i. e., during the time that they are separating from the bodies of greater specific gravity—are not subjected to any mechanical force which in any wise will injure them.

Having thus described my invention, I claim—

1. A beet-washing machine, comprising a series of connected chambers, including a receiving, a discharging, and a washing chamber, a grating in the bottom of the receiving-

chamber, agitating and propelling means in the washing-chamber, and means for maintaining a body of water in circulation by drawing it from the discharging-chamber and delivering it in an upward direction through the grating into the receiving-chamber.

2. In a beet-washing machine, the combination of a series of connected chambers, located on the same level, including a receiving, a discharging, and a washing chamber, a partition cut away at the top between the receiving and discharging chambers, a grating in the bottom of the receiving-chamber, and means whereby a body of water may be drawn from the discharging-chamber and projected upward, through the grating, and into the receiving-chamber.

3. In a beet-washing machine, the combination of a series of connected chambers, including a receiving, a discharging, a washing and a propelling chamber, a partition cut away at the top between the receiving and discharging chambers, a grating in the bottom of the receiving-chamber, a partition having a central opening dividing the propelling-chamber, and water-propelling means in said propelling-chamber, whereby water may be drawn from the discharging-chamber and projected in an upward direction, through the grating, and into the receiving-chamber.

4. In a beet-washing machine, the combination of a series of connected chambers forming a closed fluid-circulating system including a receiving and a discharging chamber, on approximately the same level, and having perforated bottoms, a partition between these chambers cut away at the top, and means for drawing the fluid down through the bottom of the discharging-chamber and forcing it up through the bottom of the receiving-chamber, a fluid-tight extension to said discharge-chamber, and means for gradually forcing the beets in said discharge-chamber into said extension.

In testimony whereof I affix my signature in the presence of two witnesses.

ALFRED MAGUIN.

Witnesses:

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MUNNENUEL.