

C. W. NARAMOR.
SORTING MACHINE.
APPLICATION FILED APR. 1, 1912.

Patented Mar. 18, 1913.

1,056,764.

Fig. 1.

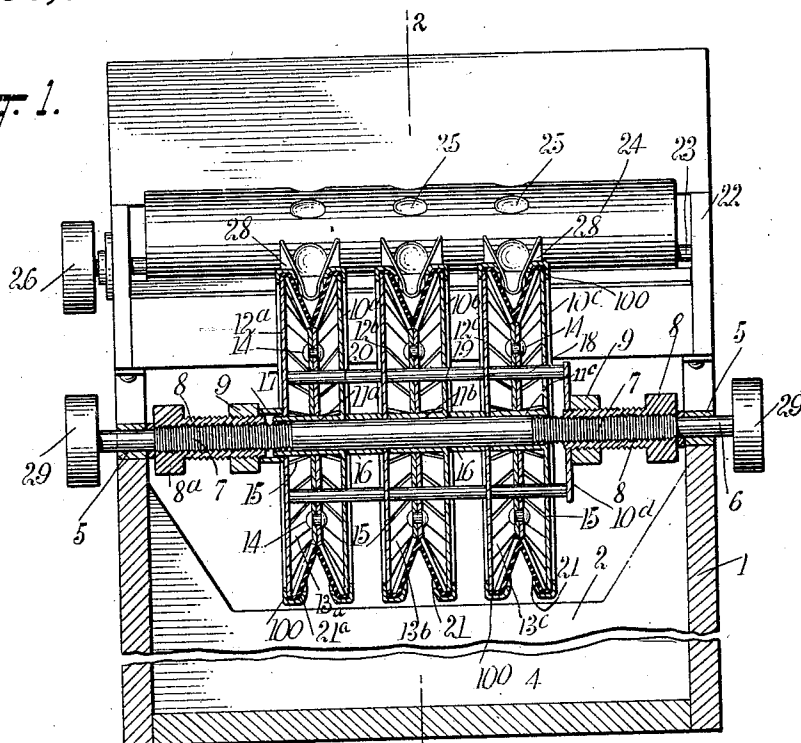
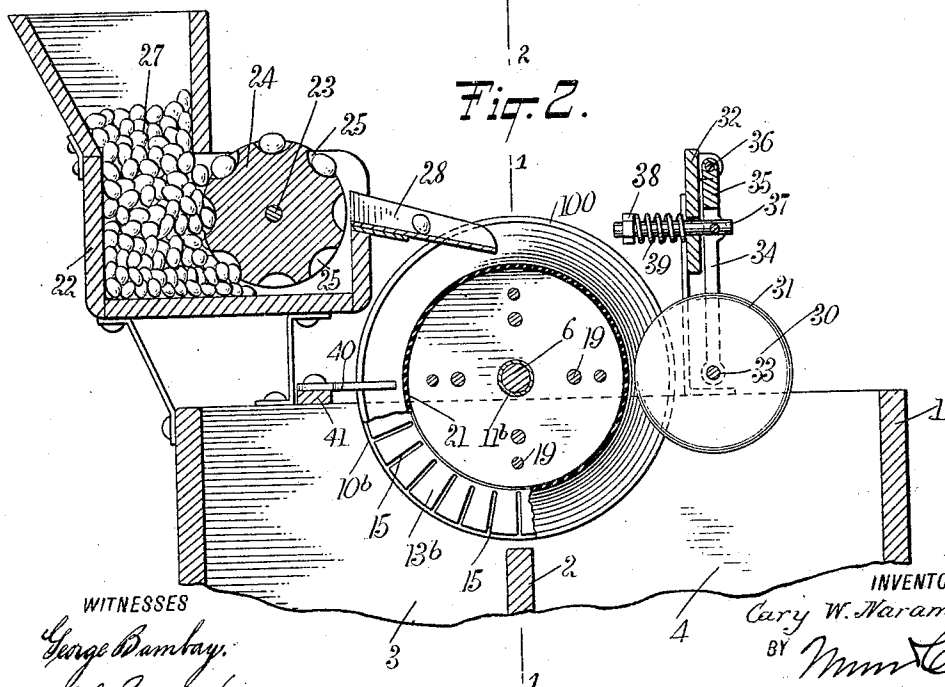


Fig. 2.



WITNESSES

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CARY W. NARAMOR, OF MECOSTA, MICHIGAN.

SORTING-MACHINE.

1,056,764.

Specification of Letters Patent.

Patented Mar. 18, 1913.

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To all whom it may concern:

Be it known that I, CARY W. NARAMOR, a citizen of the United States, and a resident of Mecosta, in the county of Mecosta and State of Michigan, have invented a new and Improved Sorting-Machine, of which the following is a full, clear, and exact description.

My invention relates generally to sorting machines and more particularly it is directed to one particularly adapted to sort beans.

The principal object of my invention is to provide a new and improved means of adjustably mounting disks on a rotatable shaft, the construction being particularly adapted for use in bean sorting machines.

The provision of a machine adapted to such uses which will be more efficient in its operation than those now in use is of some consideration in the production of this device, along with the feature of low cost of making and operating.

Other objects and advantages of the invention will appear as the description thereof proceeds, the new and useful features being particularly pointed out in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a vertical sectional view of the machine on the line 1—1 of Fig. 2; Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1.

The machine may be made in different sizes and the various elements thereof may be differently proportioned and may be provided in different materials, whereby machines embodying the same inventive idea may be adapted to larger or smaller plants.

The machine comprises a receptacle 1 of any suitable size and formation provided with an intermediate partition 2 whereby compartments 3 and 4 result.

Rotatably supported in suitable bearings 5 is the shaft 6 preferably positioned over the partition 2 so that one-half of each disk carried by the shaft lies adjacent the compartment 3, the other half of each disk lying adjacent the compartment 4. The shaft 6 is preferably provided with reduced ends whereby it may be supported in the bearings 5, the portions of the shaft adjacent the bearing ends being threaded as at 7, and receiving threaded longitudinally extending

burs 8, threaded exteriorly for the reception of shorter burs 9. Positioned on the shaft 6 are a number of disks 10^a, 10^b, 10^c, each provided with transversely extending portions 11^a, 11^b, 11^c, forming, in effect, hubs, whereby the disks are supported. Positioned on the hubs are the disks 12^a, 12^b, 12^c, each provided with a central opening, the shaft 6 extending through the openings.

Between each pair of disks 10^a, 12^a; 10^b, 12^b; and 10^c, 12^c, are the pair of disks 13^a, 13^b, 13^c, suitably secured together in any manner as by means of rivets or pins 14, it being noted that these disks are provided with a number of radially extending openings 15, whereby the peripheral portions of the disks may be bent in opposite directions, whereby each assumes, as it were, a dished form, these disks with the openings in them, when positioned between each pair of the first-mentioned disks, forming, in effect, a wheel with a V-shaped notch or groove extending continuously around the peripheral portion thereof.

The disks 10^a, 10^b, 10^c, are spaced from the disks 12^a, 12^b, 12^c, by the before-mentioned hubs 11^a, 11^b, 11^c, while the disks 10^a and 10^b are spaced from the disks 12^b and 12^c by the cylindrical sleeves 16 carried on the shaft 6 and positioned between them. The shorter burs 9, through the medium of which the various elements are held together in position on the shaft to rotate therewith, are spaced from the disks 12^a and 10^c by the cylindrical sleeve 17, and by the disk 10^a to be later more specifically described. The outer ends of the long burs 8 are enlarged as at 8^a, and adapted to be engaged by a wrench, whereby they may be turned; the shorter burs 9 are movable along these longer burs 8. In order to properly space the disks 10^a, 12^a, 10^b, 12^b, 10^c, 12^c, from each other when the burs 9 are tightened and to prevent collapse of these disks under the pressure applied by the burs, the disk 10^a is provided with transversely extending pins 18 which pass through openings in the disk 10^c and which engage the disk 12^c, this disk 12^c being provided with transversely extending pins 19 passing through suitable openings in the disk 10^b and engaging the inside of the disk 12^b, this disk 12^b being also provided with transversely extending pins 20 passing through suitable openings in the disk 10^a and engag-

ing the inside of the disk 12^a. Thus a construction is provided whereby tightening of the short burs 9 will bring the various elements into such engagement with the sleeves
 5 carried by the shaft and the pins carried by the different disks that these disks are held secure yet are not deformed.

Referring particularly to Fig. 1, it will be noted that the adjacent inclining sides of
 10 the pairs of disks 13^a, 13^b, and 13^c, are provided with a suitable flexible covering 21, which is preferably rubber, the particular purpose of which will be later set forth. These coverings are held in position by any
 15 suitable means, such as flanges 100, which extend around the peripheral portions of the disks and are suitably bent to be held in place.

Mounted in position adjacent the disks
 20 and suitably elevated with respect thereto is a hopper 22 having a shaft 23 extending longitudinally thereof on which is a cylinder 24 provided with a number of openings 25, the end of the shaft 23 being provided with a pulley 26 whereby the cylinder
 25 may be turned. This cylinder is so positioned within the hopper 22, which is adapted to receive a quantity of beans 27 which are to be sorted, that, as the cylinder
 30 turns, the openings or pockets 25 in the cylinder engage some of the beans, each pocket carrying along a bean with it as it turns over center, each row of pockets 25 being adjacent a chute or outlet 28 which extends
 35 downwardly into position between the inclined sides of the pairs of disks 13^a or 13^b, or 13^c, which are covered with the before-mentioned resilient material.

Of course, while the number of disks on
 40 the shaft 6 may be varied, it is clear that the number of rows of pockets 25 on the cylinder 24 will be such that the rows of pockets agree in number with the pairs of disks, so that beans may be fed to the disks
 45 simultaneously. The particular form of the hopper 22 and the particular form of the cylinder 24 is not essential, the idea being to provide means for feeding a succession of beans indiscriminately to each of the
 50 pairs of disks positioned along the shaft 6; in order that the shaft with the disks thereon may rotate when beans are being fed to the disks, suitable pulleys 29 may be availed of, being suitably secured to either end or
 55 both ends of the shaft.

Coöperating with the wheels formed by each pair of disks is a pressure device made up essentially of a wheel 30, the edge portions of each side of which are preferably
 60 beveled as at 31, the wheel being adapted to be entered between each pair of resilient surfaces 21 (as shown in Fig. 1, there will be three such surfaces) a suitable mounting or standard 32 being also provided. The
 65 wheel 30 is pivotally supported on a pin

33 carried preferably at the lower end of the arms 34 of the bifurcated frame 35, the frame being pivotally supported at 36 to the standard 32. In order that the wheel 30 may be kept in resilient engagement with
 70 the said resilient surfaces, a lever 37 is pivotally secured between the arms 34 of the frame 35, this lever extending at right angles to the frame and being provided at its outer end with a suitable securing device 38, such as a nut or pin, there being
 75 a helical spring 39 surrounding the lever, the ends of which engage the standard 32 and the pin or nut 38. Thus the tension of the spring keeps the wheel firmly, yet
 80 resiliently, engaged with the disks during the rotation of the shaft 6.

A fixed fork 40, carried on any suitable support 41, extends between the inclined resilient sides of the pairs of disks 13^a
 85 and the disks 13^b, and the disks 13^c, the purpose of which is to engage beans held between the resilient surfaces and bring them out of engagement therewith, permitting them to drop into the receptacle below
 90 the fork.

The operation of the device is as follows:—The shaft 6 is rotated as is the shaft 23, the disks then turning, as well as the cylinder 24 with the pockets therein. The
 95 beans 27 are emptied indiscriminately into the hopper 22, the continued rotation of the cylinder 24 carrying beans successively to the chute or outlet 28 by means of the pockets in the cylinder, the beans then falling down between the resilient surfaces 21 carried by the pairs of disks 13^a, 13^b, 13^c, being
 100 later engaged or brought into close engagement with such resilient surfaces by means of the pressure wheel 30. Any beans that are sound and firm will pass around as the shaft 6 continues to rotate, dropping into the compartment 4 of the receptacle 1; any beans that are soft or stained will be carried on
 105 around past the pressure wheel by the resilient surfaces 21 until they are engaged by the fork 40 and brought out of position between the resilient surfaces where they drop into the compartment 3. The operation of the machine will be continuous, it requiring no
 110 exceptional care or attention, the beans which are good being separated from those which are bad and being collected in separate compartments. This machine may be used with different kinds of beans or different sized
 115 beans, the device being especially adapted to a large capacity in a small space of time, and removing a large percentage of poor beans with a small percentage of good beans among them.
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Having thus described my invention, I claim as new, and desire to secure by Letters Patent:—

1. In a bean sorting machine, the combination of a shaft having threaded portions, 130

a number of disks provided with hubs mounted on the shaft, a number of disks having openings therein through which the shaft extends, means for spacing the said disks, the said disks so spaced forming a number of wheels, there being a plurality of disks positioned between the said disks forming the wheels, burs on the said threaded portions of the shaft, and other burs on the said burs for engagement with the end disk, whereby the disks may be suitably held together.

2. In a bean sorting machine, the combination of a shaft having threaded portions, disks provided with hubs mounted on the shaft, other disks having openings therein through which the said shaft passes, a number of sleeves carried on the shaft for spacing the disks, the said disks forming a number of wheels, and other disks of dished form positioned between the said first disks and secured thereto, together with means on the threaded portions of the shaft for holding all of the disks together.

3. In a bean sorting machine, the combination of a shaft, a number of disks provided with hubs mounted on the shaft, a number of disks having openings therein through which the shaft extends, means for

spacing the disks, said disks so spaced forming a number of wheels, a plurality of pairs of disks between the disks forming the wheels, and means on the shaft for holding the disks in position.

4. In a bean sorting machine, the combination of a shaft, a plurality of disks on the shaft, one of the disks being provided with a hub through which the shaft passes, the other disk being provided with an opening through which the hub passes, a pair of disks secured together and positioned between the first said disks, the peripheral portions of the said pair of disks being bent in opposite directions, resilient material secured to the said bent portions of the said pair of disks, means for holding all of the disks together, and other means for holding them in position on the shaft, the said disks so held together forming a wheel with a peripheral groove therein.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARY W. NARAMOR.

Witnesses:

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MAHLON CARMAN.