R. F. McWILLIAMS.

BEAN ASSORTER.

APPLICATION FILED APR. 3, 1912.

1,080,988.

Patented Dec. 9, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

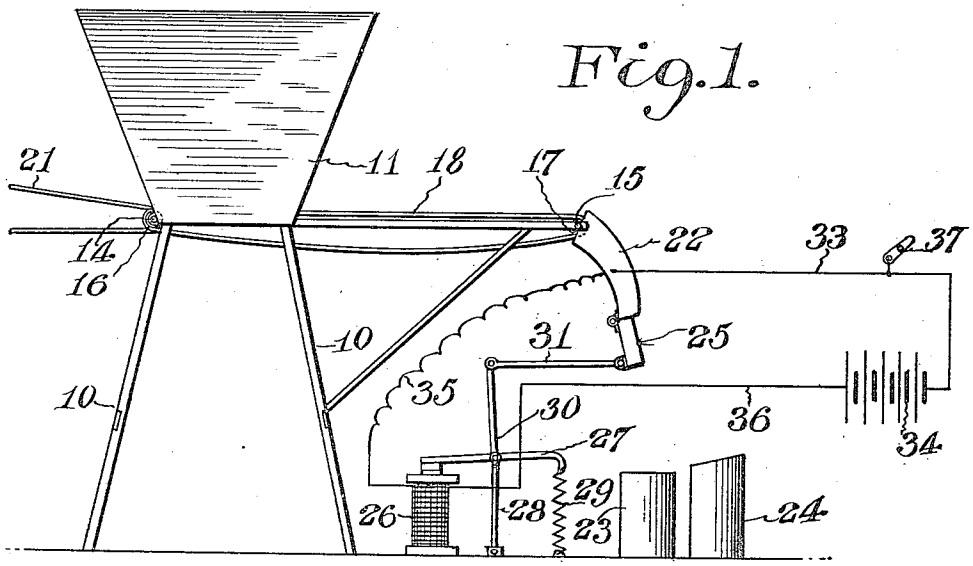
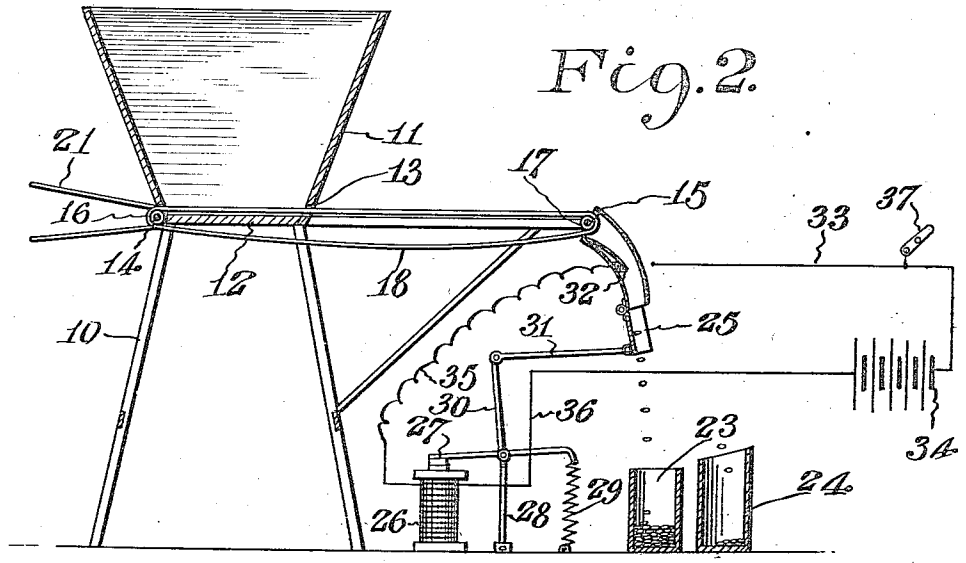


Fig. 2.



Witnesses:-

J. P. Wablen.

A. F. Goodman.

Inventor,

R. F. McWilliams.

By Reynolds & Reynolds

Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

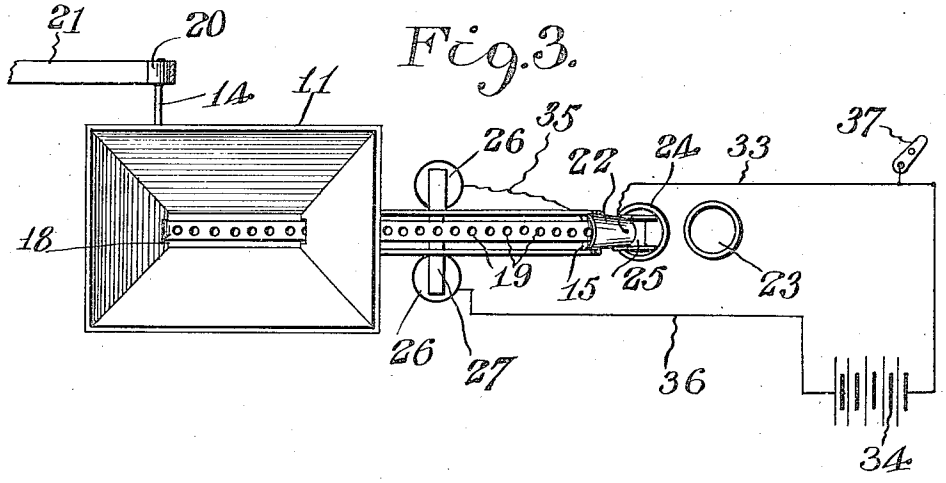
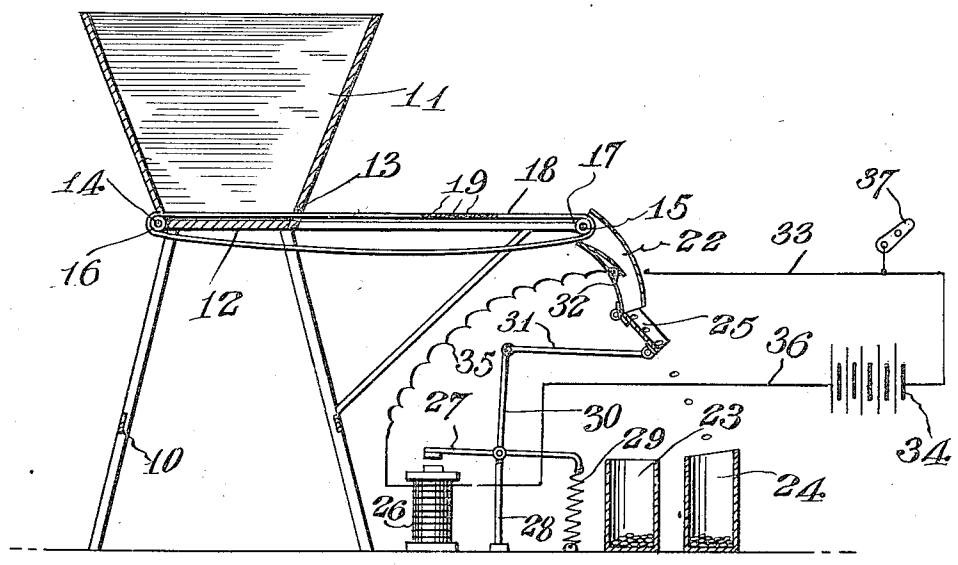


Fig. 4.



Witnesses:—

J. P. Wahler.

K. L. Woodman.

Inventor.

R. F. McWilliams,

By Brownell & Brownell

Attorney

UNITED STATES PATENT OFFICE.

RAY F. McWILLIAMS, OF BARRYTON, MICHIGAN.

BEAN-ASSORTER.

1,080,988. Specification of Letters Patent. Patented Dec. 9, 1913.

Application filed April 3, 1912. Serial No. 688,336.

To all whom it may concern:

Be it known that I, RAY F. McWILLIAMS, a citizen of the United States, residing at Barryton, in the county of Mecosta, State of Michigan, have invented certain new and useful Improvements in Bean-Assorters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in bean assorters and the object of my invention is to provide a machine in which the good and poor beans are separated as they fall from a discharge spout by a swinging chute the movement of which is caused by the varying intensity of electric current, the intensity of which is varied by light reflected from the surface of the beans upon some substance which changes its electric resistance under the influence of light, as for instance a selenium cell.

With these and other objects in view, my invention will be more specifically pointed out in the accompanying drawings which show a preferred embodiment of my device and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawings, Figure 1 is a side elevation of my complete device. Fig. 2 is a longitudinal section of the same showing the position of the chute upon the passage of a good bean. Fig. 3 is a top plan of my device. Fig. 4 is a longitudinal section showing the position of the chute upon the passage of a poor bean.

Referring more specifically to the drawings, in which similar reference numerals designate corresponding parts throughout, 10 designates a suitable supporting frame upon which is positioned a hopper 11 having inclined side and end walls and a bottom 12 which is provided at one end with a relatively small discharge opening 13. Journaled in suitable bearings carried by the frame 10 are spaced parallel shafts 14 and 15 provided with pulleys 16 and 17 over which is passed a belt 18, which belt, as shown, bears against the bottom of the hopper in alinement with its discharge opening. This belt is provided throughout its length, upon its outer face, with a plurality of spaced pockets or chambers 19 of suitable size to receive a single bean passed through the discharge opening of the hopper, thus providing a mechanism for discharging the beans one at a time. The belt may be actuated by the application of any suitable form of power applied to one of the shafts as for instance, by means of the pulley 20 and belt 21.

Supported by the frame and in position to receive the beans as they fall from the belt 18 is a discharge spout 22 through which the beans pass on their way to the receptacles 23 and 24, the passage of the beans to these receptacles being governed by a swinging chute 25 pivoted to the lower end of the spout. As will be seen, when the chute occupies the position shown in Fig. 2, the beans will pass to the receptacle 23 while when the chute occupies the position shown in Fig. 4, the beans will be deflected to the receptacle 24.

My invention consists primarily in providing means whereby the passage of the beans, either good or poor, from the spout will automatically cause the chute to swing to the proper position for directing each bean to its proper receptacle. As a means for accomplishing this I provide an electromagnet 26 having an armature 27 which is pivoted intermediate its length upon a supporting standard 28 and which is normally held out of engagement with the magnet by means of a spring 29. Extending vertically upward from the pivotal point of this armature and preferably formed integrally with the armature is an arm 30 the upper end of which is pivotally connected to one end of a connecting rod 31 the other end of which is pivotally connected to the free end of the chute. As shown in the drawings this connecting rod is so proportioned that when the armature is in raised position the chute occupies the position shown in Fig. 4 in which position the beans will be directed to the receptacle 24 which is for poor beans. When upon the other hand, the armature is attracted by the magnet the chute is swung to the position shown in Fig. 2, in which position, the beans are directed to the receptacle 23 which is for good beans. As a means for actuating this magnet I have provided some substance the electric resistance of which changes under the influence of light, such as a selenium cell and this cell, as shown, is positioned within the spout 22 as at 32 in such a manner that the bean upon passing from the spout will reflect light

upon the cell and so decrease its resistance. As is well known good beans have a white glossy surface and will therefore reflect considerable light while poor beans have a dark dull surface and do not reflect light. It will therefore be seen that the resistance of the cell will vary in proportion to the quality of the bean. A conductor 33 connects this cell with one pole of a battery 34 while a conductor 35 connects the cell with one binding post of the electromagnet. A conductor 36 connects the other pole of the battery 34 to the other binding post of the magnet, thus forming a circuit through the selenium cell which is of such delicacy that a good bean will reflect sufficient light to reduce the resistance of said cell sufficiently to permit the passage of a current heavy enough to energize the magnet, while a poor bean will not reflect enough light.

In operation the beans are placed in the hopper 11, the belt is started and the circuit is closed by a suitable switch 37. As previously described the beans are conveyed by the belt to the spout through which they pass one at a time, reflecting a varying amount of light upon the selenium cell and thus varying its resistance in such a manner as to control the movement of the chute and effectively sort the beans.

Although I have described the resistance element of my device as consisting of a selenium cell it will of course be understood that other substances may be substituted if desired and that minor changes in details of construction may be made, without in the slightest degree departing from the spirit of my invention.

What I claim is:—

1. A device of the character described, comprising a spout, means for delivering particles differentiated as to light reflecting power singly to said spout, a chute pivoted to the discharge end of said spout and movable to direct the passage of the particles upon leaving the same and means operable by the reflected light from the particles for actuating said chute.

2. A device of the character described, comprising a spout, means for delivering particles differentiated as to light reflecting power singly to said spout, a chute carried by the lower end of said spout and movable to direct the particles upon their passage from the same, means including an electric circuit for moving said chute, and means actuated by the light reflected from the particles for varying the current in said circuit.

3. An assorter for particles differentiated as to light reflecting power, comprising a hopper having a discharge opening, an endless belt movable beneath said opening and provided with pockets proportioned to receive a single particle, a spout positioned to receive the particles as they pass from said belt, a movable chute pivoted to the lower end of said spout and means dependent upon the quality of the particles passing from the spout for swinging said chute, said means comprising a selenium cell positioned in the spout and adapted to receive light reflected from the particles, a battery circuit including said cell, an electromagnet in said circuit, an armature for said magnet, and connecting means between said armature and chute.

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

RAY F. McWILLIAMS.

Witnesses:
MYRNA H. GRISWOLD,
CLYDE HUNT.