

UNITED STATES PATENT OFFICE

2,462,286

BAG PACKER AND WEIGHER WITH
JIGGING DEVICE

Herman S. Rhodes, Birmingham, Ala., assignor
to St. Regis Paper Company, New York, N. Y.,
a corporation of New York

Application August 19, 1944, Serial No. 550,138

5 Claims. (Cl. 249—60)

1

This invention relates to a device for jiggling or settling the material in a bag while it is being filled upon a weighing device. More particularly the invention relates to settling the material in a package, which is being filled on a weighing device, without interfering with the action of the weighing device. Details of the invention and further objects will appear as the description proceeds.

In the accompanying drawings forming part 10 of this specification—

Figure 1 is a diagrammatic view of one embodiment of the invention, showing sufficient parts of the filling and weighing device to indicate the way in which the invention may be applied.

Figure 2 is a sectional plan view on the line 2—2 of Figure 1.

Figure 3 is a vertical section of the lower part of the apparatus on the line 3—3 of Figure 1. 20

Figure 4 is a front view of an alternative form of bottom support.

In the drawings, the jiggling device is shown diagrammatically as being applied to a valve bag filling machine. As shown, a valve bag 10 has its valve threaded onto a filling spout 11 which may be supplied with material by any suitable means, not shown, and which may be of the type shown in the patent to Bates 1,209,105 December 19, 1916 or any suitable variation thereof. The filling spout is shown as being supported upon a frame 12 which in turn is pivoted at 13 upon a scale beam 14 mounted upon a fixed portion of the frame indicated at 15. Frame 12 is maintained upright by a connecting rod 16 pivoted 30 to frame 12 and to a fixed member 17.

Mounted on the lower part of frame 12 there is a bracket 18. Pivoted at 19 on bracket 18 there is a bag saddle or bottom support 20 for bag 10. A motor 21 is mounted on bracket 22 attached to the lower end of frame 12, and by means of a belt 23 drives a shaft 24 mounted in bracket 18. On shaft 24 there is an eccentric 25 which operates a connection 26 to the rear side of bottom support 20.

The apparatus illustrated is intended for constant operation of motor 21. As is customary in valve bag filling devices of this kind, an empty bag is placed upon the filling tube and then discharge of material is started from any suitable

2

source through the filling tube into the bag. When a sufficient weight of material has been placed in the bag to lower frame 12, there is automatic means, not shown, which stops the feed of material into the bag, for example, as shown in United States Letters Patent to W. R. Peterson 1,818,094 granted August 11, 1931.

The purpose of the present invention is to settle the material in the bag, while it is being filled, without upsetting the weighing operation or changing the weight which there is in the bag at the time the feed is shut off by the weighing device. As will be seen, the connection of the motor to the eccentric is such that the eccentric will rotate at the same speed as the motor. The result is a very rapid oscillation of bottom support 20. It will be noted also that pivot 19 is approximately in the middle of the bottom of the bag so that the oscillation of the bottom support does not actually lift the bag but rocks the bottom from side to side, one side going down at the same time that the other side goes up. The eccentricity of eccentric 25 in the drawings is not intended to be to scale. In one successful embodiment of the invention employed in filling one hundred pound bags with chicken grits, the eccentricity has been between $\frac{1}{8}$ and $\frac{1}{4}$ of an inch, giving the rear side of bottom 20 a travel through between $\frac{1}{8}$ and $\frac{1}{4}$ of an inch. With this construction it was found that as rapid a vibration as 1750 revolutions per minute would result in practically no interference with the weighing operation, while satisfactorily settling the material in the bag and allowing the filling of a given amount of material into a smaller bag than could be done if no settling action were employed. The rapid oscillation of bottom 20 has a slight jarring action on the scale beam, imparting a slight quiver thereto, but any interference it might have with the accuracy of the weighing action is counterbalanced by the elimination of the resistance of the knife edges to movement because of the quivering action, so that the weighing is performed accurately.

A construction with the pivot of the bottom support moved to one edge of the bottom support so that the greater part of the bottom support was raised and lowered at each rotation of the eccentric was sufficient to interfere somewhat with the accuracy of the weighing with the speed

of rotation at about 1800 revolutions per minute. Likewise an increase of the throw up to half an inch interfered with the accuracy of weighing, and even the proportions employed and described above interfered somewhat with the weighing action when the speed was reduced materially below 1750 revolutions per minute. Therefore, a speed of 1750 revolutions per minute and a maximum throw of not much over one quarter of an inch in apparatus for filling a one hundred pound bag, or an oscillation through less than 3°, and a pivoting of the bottom support approximately under the middle of the bag, seem to be necessary requirements for achieving the utmost accuracy of weights with the type of material and package described.

With narrower bags, the throw should be increased or else the attachment should be nearer the pivot of the bottom support, so that the lift of the edge of the bag remains about the same. A bag shortens somewhat as it is filled, due to the spreading of the bag walls. If a flat bottom support is used, such as shown in Figure 3, it may be best to let the bottom of the bag hang at one side of the support until there is enough material in the bag to spread the bottom, after which the bottom may be lifted onto the support.

In Figure 4 there is shown a type of bottom support 201 with a downwardly curved central portion 27 in which the bottom of the empty bag may hang. This is shown arranged to fill a bag closed by sewn seams. As material is filled into the bag and the sides spread, the bottom of the bag is supported on the curving sides of the support, as described in the Bates and Cosford Patent 1,597,006, issued Aug. 24, 1926. The jiggling action assists in properly filling the bottom of the bag and causing it to climb up on the curving sides of the bottom support, as it minimizes the effect of friction between the bag and the support as well as assisting in filling out the bag bottom. The bottom support 201 may be rocked on pivots 191 in the same way in which bottom 20 is rocked on pivots 19.

It will be readily seen that wide variations may be made in the means for filling material into the bag and in the construction of the weighing means, its connections to the bag support, and the means by which it stops the flow of material when a sufficient charge is in the bag, also in the means for producing the jiggling oscillations, while retaining some advantages of the invention described above and defined in the appended claims, and in its broadest aspects could be applied to filling open mouthed bags, although especially adapted for filling valve bags.

What I claim is:

1. In apparatus for filling and weighing valve bags the combination comprising, weighing scale means, bag supporting means pivotally mounted upon said scale means for weighing thereby, a filling spout mounted upon said bag supporting means, means for stopping the flow of material through said spout in response to weighing action of said scale means, a bag bottom support for supporting the bag in position on said spout during filling, means pivotally mounting said bottom support on said bag supporting means along a generally horizontal axis which passes adjacent the center of the bag bottom, and means for rapidly oscillating said bottom support about its pivotal mount during filling and weighing of the bag with an amplitude of oscillation insufficient materially to alter the position of the center of gravity of the bag with respect to the scale means

and at a frequency too high for the scale means to respond thereto in its action of stopping said flow.

2. In apparatus for filling and weighing valve bags, the combination comprising, a scale beam having a weight operatively associated with one end thereof, bag support means pivotally mounted upon the other end thereof, a filling spout mounted upon said bag support means, means for controlling a flow of material through said spout in response to weighing action of the scale beam, a bag bottom support pivotally mounted upon said bag support means upon an axis which passes adjacent the center of the bag bottom, said bottom support being positioned to support the bag when on the spout, the axes of the two above-mentioned pivotal mounts being substantially parallel, and means for rapidly oscillating the bag bottom support about its pivotal mount during the filling of the bag, the amplitude of the oscillations being sufficiently small and their frequency sufficiently high that the center of gravity of the bag and the weighing action, are substantially unaltered by the oscillations.

3. In apparatus for filling and weighing valve bags the combination comprising, weighing scale means, bag support means pivotally mounted upon said scale means for weighing thereby, a filling spout mounted upon said bag support means, means for stopping the flow of material through said spout in response to weighing action of said scale means, a bag bottom support for supporting the bag in position on said spout during filling, means pivotally mounting said bottom support on said bag supporting means along a generally horizontal axis which passes adjacent the center of the bag bottom, the pivot axes of said bag support means and of said bottom support pivotal mounting means being substantially parallel, and means for rapidly oscillating said bottom support about its pivotal mount during filling and weighing of the bag with oscillations insufficient materially to alter the position of the center of gravity of the bag relative to the scale means and at a frequency too high for the scale means to respond thereto to actuate said means for stopping the material flow.

4. In apparatus for filling and weighing valve bags the combination including, scale means, bag supporting means pivotally mounted upon said scale means, a filling spout mounted upon said bag supporting means, control means for stopping the flow of material through said spout in response to weighing action of said scale means, a bag bottom support for supporting the bag in position on said spout during filling, means pivotally mounting said bottom support on said bag supporting means along an axis which passes adjacent the center of the bag bottom, and means mounted upon the bag supporting means for rapidly oscillating said bottom support about its pivotal mount during filling and weighing of the bag, such oscillations being of an amplitude sufficiently small that the position of the center of gravity of the bag is not materially altered relative to the bag support means, and the frequency of said oscillations being too high to influence the weighing action of the scale means.

5. In apparatus for filling and weighing valve bags the combination comprising, a scale beam having a weight operatively associated at one end thereof and pivotally mounted intermediate the extremities thereof, bag support means pivotally mounted upon the opposite extremity of

5

said scale beam, a spout mounted upon the bag support means, means for producing a flow of material through the spout and into a bag, control means for said flow operable in response to weighing action of the scale beam, a bag saddle 5 pivotally mounted adjacent the center thereof upon the bag support means, the axes of said pivotal mounts being substantially parallel, and means for oscillating the bag saddle about its pivotal mount during the filling of the bag 10 through an arc of not more than about three degrees and at a frequency in the neighborhood of 1700 or more per minute.

HERMAN S. RHODES.

Number
15 476,963

6

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
532,304	Baldwin	Jan. 8, 1895
1,138,618	Bates	May 11, 1915
2,144,046	Cundall	Jan. 17, 1939
2,205,010	Hartman et al.	June 18, 1940
2,345,287	Peterson	Mar. 28, 1944

FOREIGN PATENTS

Country	Date
Germany	May 30, 1929