

A. M. BATES.
BAG FILLING MACHINE.

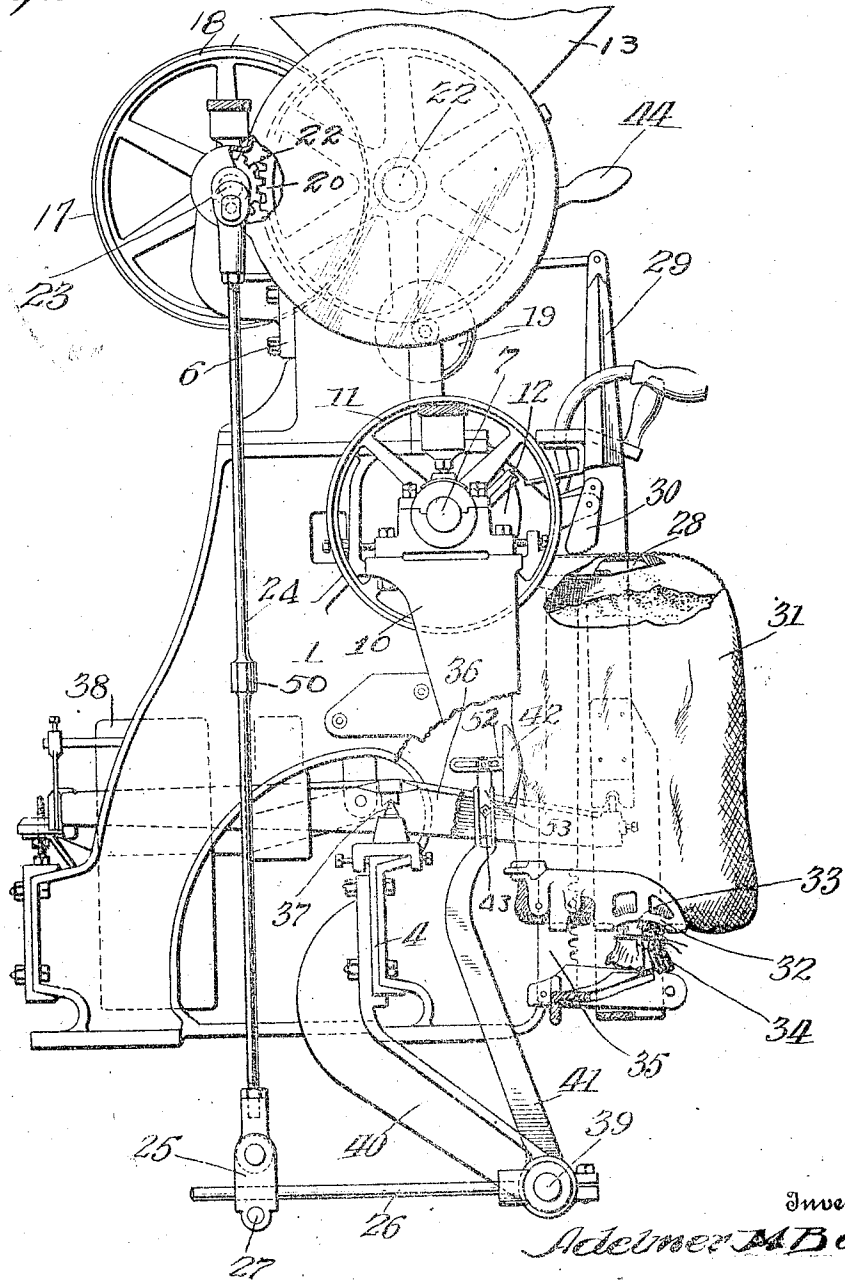
APPLICATION FILED JUNE 20, 1914.

1,138,618

Patented May 11, 1915.

3 SHEETS—SHEET 1.

Fig. 7



Inventor

Adelmer M. Bates

Witnesses

P. J. Hartmann

Bessie S. Rice,

Parker & Curtis

Attorneys

1,138,618.

Admiral M. Bates:

By Parker & Carter

W. S. Attorneys

A. M. BATES.
BAG FILLING MACHINE.
APPLICATION FILED JUNE 20, 1914.

1,138,618.

Patented May 11, 1915.

3 SHEETS—SHEET 3.

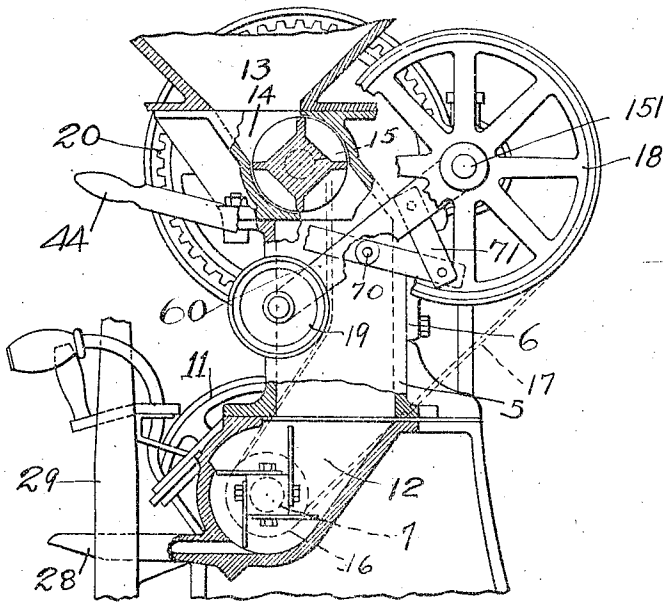


Fig. 3

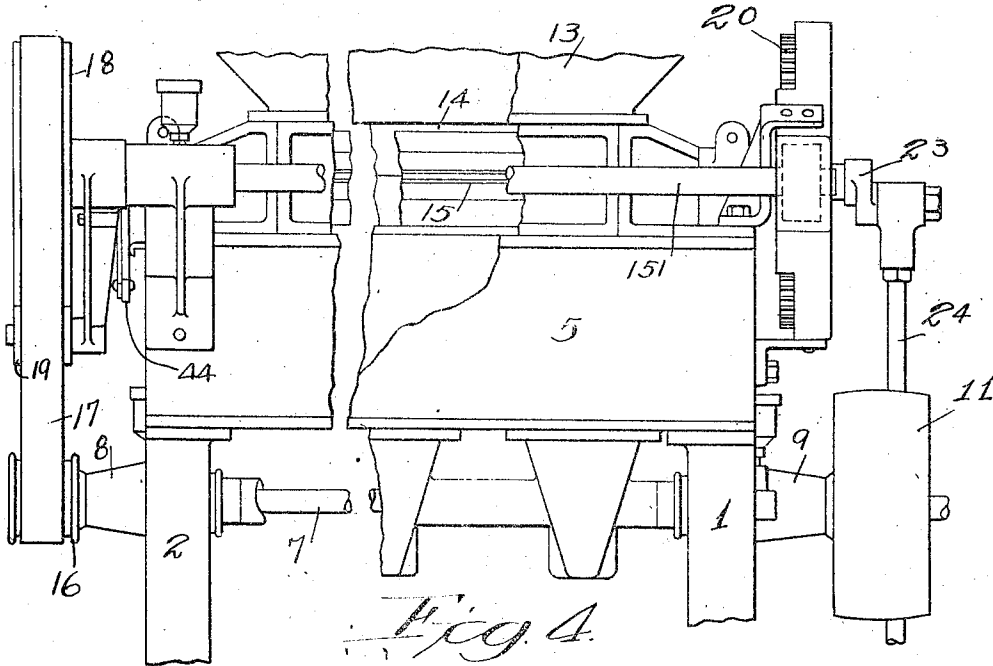


Fig. 4

Witnesses:

C. H. Hunter

Bessie S. Rice,

Inventor
Adelmer M. Bates.

by *Parker & Carter*
his Attys

UNITED STATES PATENT OFFICE.

ADELMER MARCUS BATES, OF CHICAGO, ILLINOIS, ASSIGNOR TO BATES VALVE BAG COMPANY, OF CHICAGO, ILLINOIS. A CORPORATION OF WEST VIRGINIA.

BAG-FILLING MACHINE.

1,138,618.

Specification of Letters Patent.

Patented May 11, 1915.

Application filed June 20, 1914. Serial No. 346,246.

To all whom it may concern:

Be it known that I, ADELMER MARCUS BATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Bag-Filling Machines, of which the following is a specification.

My invention relates to improvements in means for filling flexible walled receptacles such for instance preferably as valve bags which are adapted to contain and be filled with granular or powdered or flowing material.

I have illustrated my invention as applied to a machine for filling cement bags.

My invention is illustrated therefor diagrammatically in one form in the accompanying drawings, wherein—

Figure 1 is an end elevation with parts broken away. Fig. 2 is a front elevation with parts broken away. Fig. 3 is a section. Fig. 4 is a part rear elevation of the upper portion of the machine with parts broken away.

Like parts are indicated by like characters in all figures.

1, 2 are the end frames of a bag filling machine, they are connected together by longitudinal girders 4, 5 and 6.

7 is a propeller shaft mounted in pillow-blocks 8, 9 supported two of them on the frames 1, 2, the other on a bracket 10 projecting from the frame 1.

11 is a driving pulley mounted on the propeller shaft 7 and adapted to be driven from any suitable source of power not here shown.

12 is a propeller or feeding pocket adapted to be supplied with material from a hopper 13 through a feed control box 14 controlled by a shaft 15.

16 is a pulley mounted on one end of the propeller shaft 7 and carrying a belt 17 which drives a reduction pulley 18 on the shaft 151.

19 is an idler pulley therefor.

20 is a gear mounted on the shaft 15 and in mesh with a pinion 22 on the shaft 151.

23 is a short crank arm or eccentric driven by the rotation of the shaft 151.

24 is an eccentric rod driven by the crank 23 and in pivotal connection at its lower end with the block 25. This block 25 is adjustable upon the lever 26 and held in position thereon by a screw 27.

28 is a feed spout mounted on the A frame 29 and adapted to be in line with and fed by the material projected from the propeller or feeding pocket.

30 is a clamp in engagement with the upper side of the feed spout 28.

31 is a bag slipped onto the feed spout 28 which spout penetrates the usual well known valve tube in the bottom of the bag. The bag is held on the spout by the clamp.

32 is a bracket supporting the lower end of the bag apertured as at 33 to contain the closed neck of the bag 34. This bracket is adjustable on the support 35 which is carried by the A frame 29. The A frame itself is supported by a scale beam 36 on the knife-edge 37 counterbalanced by the weight 38.

39 is a rock shaft supported on the bracket 40 downwardly depending from the girder 4.

41, 41 are tamping levers rigidly attached to the rock shaft 39.

42, 42 are convex tamping feet in opposition to the side walls, one for each of the bags and adjustable in position by means of the bolt 43.

44 is a control lever whereby the idler pulley 19 may be manipulated to tighten up the belt 17 when it is desired to drive the shaft 15 and thus the tamping and feed regulating mechanism.

It will be evident that while I have shown in my drawing an operative device still a great many changes might be made both in size, shape and arrangement of parts without departing materially from the spirit of my invention. And I wish therefore that my drawings be regarded as in a sense diagrammatic.

It will be noted that the eccentric crank rod 24 is provided at one end with a right-hand tread and at the other with a left-hand tread so that when rotated by a wrench applied to the portion 50 it may be turned to either increase or decrease as the case may be the distance between the tamping foot 42 and the bag. The tamping foot 42 is mounted on a shank 52 and is slotted to engage a nut on a vertical adjustable member 53 on the tamping lever 41 so that the position of the tamping foot may be adjusted both in a vertical and horizontal plane. The idler pulley 19 is mounted on a lever 60 which lever is concentric with the pulley 18 being mounted on the end of the shaft 151.

The control lever 44 is pivoted on the frame at 70 and has pivoted at its free end a link 71 pivoted to a lever 60 whereby when the lever 44 is pulled down the idler pulley 19 will be released from the belt and the feed and tamping will no longer take place.

The use and operation of my invention are as follows: When my machine is at rest and no bags are being filled the idler pulley on the belt drive at the right end of the machine is in such position that the belt is loose and the feed controlling and tamping mechanisms are inoperative. The propeller wheel which I have not illustrated, as it forms no part of my invention is rotating idly in the empty propeller pocket. The operator then slides the valve bag onto the feeding tube and tightens up the belt. The tamping mechanism and the feed controlling mechanism both come instantly into operation and material is fed down into the propeller pocket and thence discharged through the propeller tube into the bag. Any granular material such as cement, lime or flour. Such materials, however, must be packed into the bag rather tightly to protect the bag from breakage and distortion and to enable the comparatively small size bag in proportion to the weight carried to be used. As the material gradually fills the bag the operation of the tamping feet becomes more and more effective, and I find that when this action is sufficiently rapid and travels as it does through a short distance the material will be tamped and packed tightly in the bag with a minimum power demand. This because the action merely agitates the material in the bag and is not compelled as in cases where the bag is tamped from the bottom to lift the entire weight of the bag and contents. Thus there is no interference with the weighing action and mechanism because the round smooth broad tamping foot is free to swing along the side of the bag and its action is so rapid that the bag is in no wise supported by the tamping mechanism. The operation of the filling, weighing and measuring means needs here no explanation as it forms no part of my invention, as herewith claimed. In this application I have, however, shown enough to indicate generally the arrangement of an operative machine embodying my invention.

I have used the term tamping, but a corresponding and perhaps broader term is the word striking. The object of the arrangement is to strike the stretched side of the bag along which the material is flowing and against which it lodges as the bag gradually fills up. Generally speaking, therefore, my arrangement consists of means for suspending the bag from above and preferably a filling tube which enters the bag; means for feeding material into the bag

through a filling tube if a valve bag and filling tube are used and the slide means for striking the side of the bag. Of course, this latter means could be applied to an open-mouthed bag filled from above in some of the many familiar ways. The striking means should preferably deliver a short, sharp hammer blow on the side of the bag and it should preferably comprise a wide convex show foot or striking surface which will strike the bag over a very considerable area.

I claim:

1. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above with means for inserting the material therein and means for striking the side wall of the receptacle while the material is being inserted.

2. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle from within in an upright position with means for inserting the material therein, and means for striking the side wall of the receptacle while the material is being inserted.

3. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above comprising a filling tube projecting within the receptacle with means for inserting the material therein, and means for striking the side wall of the receptacle while the material is being inserted.

4. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above comprising a filling tube projecting within the receptacle with means for forcibly feeding the material through said filling tube into the receptacle, and means for striking the side wall of the receptacle while the material is being inserted.

5. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above with means for inserting the material therein and means for striking the side wall of the receptacle intermediate its ends and substantially at right angles to its length while the material is being inserted.

6. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle from within in an upright position with means for inserting the material therein and means for striking the side wall of the receptacle intermediate its ends and substantially at right angles to its length while the material is being inserted.

7. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright po-

sition from above comprising a filling tube projecting within the receptacle with means for inserting the material therein, and means for striking the side wall of the receptacle intermediate its ends and substantially at right angles to its length while the material is being inserted.

8. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above comprising a filling tube projecting within the receptacle with means for forcibly feeding the material through said filling tube into the receptacle, and means for striking the side wall of the receptacle intermediate its ends and substantially at right angles to its length while the material is being inserted.

9. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above with means for inserting the material therein and means for striking the side wall of the receptacle a series of blows while the material is being inserted.

10. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle from within in an upright position with means for inserting the material therein, and means for striking the side wall of the receptacle a series of blows while the material is being inserted.

11. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above comprising a filling tube projecting within the receptacle with means for inserting the material therein, and means for striking the side wall of the receptacle a series of blows while the material is being inserted.

12. In a filling device for flexible walled receptacles the combination of means for suspending the receptacle in an upright position from above comprising a filling tube projecting within the receptacle, with means for forcibly feeding the material through said filling tube into the receptacle, and means for striking the side wall of the receptacle a series of blows while the material is being inserted.

13. In a filling device for flexible walled receptacles the combination of a filling tube adapted to enter the bag at its upper end and suspend it in an upright position with means for feeding the material through such tube while the receptacle is hanging thereon, and a hammer rapidly vibrating through a short excursion to strike the bag a series of blows without giving it a pendulous movement while the material is being inserted.

14. In a bag filling machine the combination of means for supporting and filling the bag with means for controlling the flow of material to the filling means and means

responsive to the operation of said controlling means for striking the side of the bag during the filling process.

15. In a bag filling machine the combination of means for supporting and filling the bag with means for controlling the flow of material to the filling means and means responsive to the operation of said controlling means for striking the side of the bag during the filling process, said striking means operating at substantially right angles to the length of the bag and intermediate its ends.

16. In a bag filling machine the combination of a filling tube adapted to be inserted within the bag to support it, a striking device below the filling tube and in proximity to the space to be occupied by the bag, and means for reciprocating the same so as to cause it to deliver a series of hammer blows against the side of the bag.

17. In a bag filling machine the combination of a filling tube adapted to be inserted within the bag to support it, a striking device below the filling tube and in proximity to the space to be occupied by the bag, and means for reciprocating the same so as to cause it to deliver a series of hammer blows against the side of the bag, said means comprising a connection from the hammer to a rotating shaft.

18. In a bag filling machine the combination of a filling tube adapted to be inserted within the bag to support it, a striking device below the filling tube and in proximity to the space to be occupied by the bag, and means for reciprocating the same so as to cause it to deliver a series of hammer blows against the side of the bag, said means comprising a rock shaft, a connection from the striking device to the rock shaft, and a crank shaft to drive the rock shaft.

19. In a bag filling machine the combination of a support whereby the bag is suspended from above with means for filling the bag from above, a striking device at the side of the bag space provided with a broad surface to engage the bag, and means for moving the striking device so as to deliver a series of hammer blows on the bag.

20. In a bag filling machine the combination of a support whereby the bag is suspended from above with means for filling the bag from above, a striking device at the side of the bag space provided with a broad curved surface to engage the bag, and means for moving the striking device so as to deliver a series of hammer blows on the bag.

21. In a bag filling machine a propeller shaft, a pulley thereon, an idler pulley of greater diameter than the pulley on the propeller shaft, a belt connecting them, a pinion carried by the idler pulley, a gear in mesh therewith, a measuring device connected to and driven by said gear, a belt pass-

ing over the two pulleys, and manually operative means for tightening said belt to effect an operative connection therethrough between the propeller shaft and the measuring device.

22. In a bag filling machine a high speed propeller shaft, a low speed measuring shaft, and a discontinuous frictional driving connection between them.

23. In a bag filling machine a propeller shaft, a pulley thereon, an idler pulley of greater diameter than the pulley on the propeller shaft, a belt connecting them, a pinion carried by the idler pulley, a gear in mesh therewith, a measuring device connected to and driven by said gear, a belt passing over the two pulleys, manually operative means for tightening said belt to effect an

operative connection therethrough between the propeller shaft and the measuring device, and bag tamping means actuated in response to the rotation of the measuring device.

24. In a bag filling machine a high speed propeller shaft, a low speed measuring shaft, a discontinuous frictional driving connection between them, and bag tamping means actuated in response to the rotation of the measuring device.

In testimony whereof, I affix my signature in the presence of two witnesses this 3rd day of June 1914.

ADELMER MARCUS BATES.

Witnesses:

MINNIE M. LINDENAU,
BESSIE S. RICE.