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AUTOMATIC CHARGE FORMING AND FEEDING DEVICE

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Fig 2

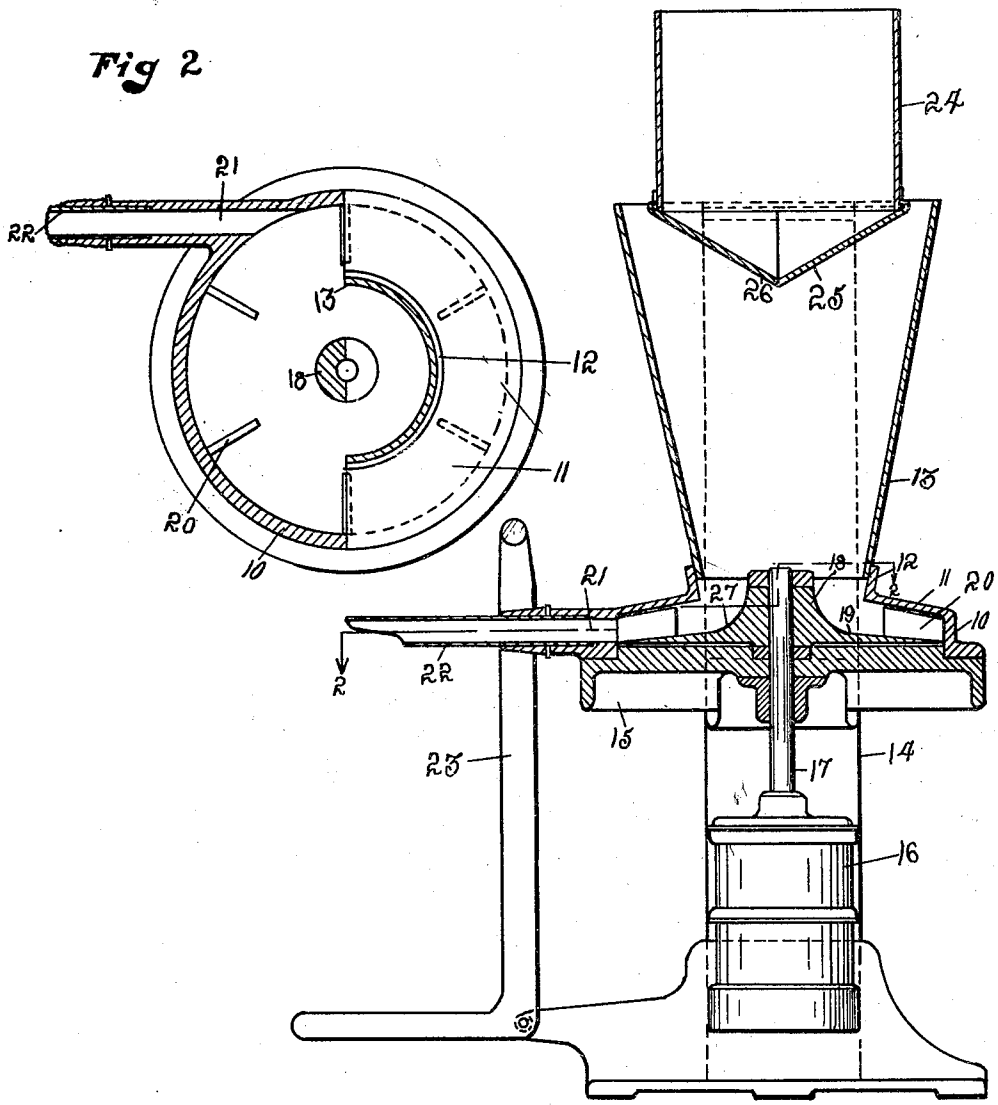


Fig 1

Inventors
Edward W. Menke
Esli A. Marsh

By Owen & Owen

Attorneys

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UNITED STATES PATENT OFFICE

EDWARD W. MENKE AND ESLI A. MARSH, OF CHICAGO, ILLINOIS, ASSIGNORS, BY MESNE ASSIGNMENTS, TO ST. REGIS PAPER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

AUTOMATIC CHARGE-FORMING AND FEEDING DEVICE

Application filed November 2, 1923. Serial No. 316,690.

This invention relates to the combination of a package filling device with an automatic charge-forming device, and is more particularly adapted for filling charges into valve bags and similar packages. The object of the invention is to provide a combination wherein a charge is measured or weighed and then delivered to a feeding device which quickly and completely delivers the charge into a package having a comparatively small inlet, such as a valve bag. Details of the invention will appear as the description proceeds.

In the accompanying drawings forming a part of this application, Figure 1 is a vertical section through one form of apparatus embodying the invention, parts being indicated somewhat diagrammatically; Fig. 2 is a partial section of Figure 1 substantially on the line 2—2.

In the construction shown, there is a casing having a vertical substantially cylindrical wall 10 and an inwardly and upwardly slanting wall 11 connected with wall 10 and terminating in an outwardly flared flange 12 into which there may be fitted a hopper 13.

The apparatus may be supported on any suitable framework 14. The bottom of the casing formed by walls 10, 11 and 12 is closed by a member 15. Disposed beneath the casing is a motor 16 driving a shaft 17 projecting vertically upward concentrically through the casing. Attached to the shaft within the casing there is a propeller comprising a somewhat conically shaped hub 18, a disk 19 and blades 20 on the upper part of the disk. Preferably, the disk forms a substantially complete bottom for the chamber casing and blades 20 terminate immediately adjacent wall 10 and extend upward into close proximity to wall 11. The blades may be continued to the hub, but the inner ends of the blades are not required with most materials and unnecessarily increase the resistance and therefore the blades preferably terminate short of the hub, as shown.

Extending substantially tangentially of the casing chamber, there is an outlet passage 21 which leads to a delivery spout 22 adapted to enter the valve of a valve bag or a similar restricted opening in a receptacle. A support 23 for a receptacle is indicated diagrammatically.

Above hopper 13 there is indicated diagrammatically a charge-forming device 24 having gates 25 and 26 through which a charge may be delivered into hopper 13. The charge-forming device may be of any desired type and the particular construction of this device forms no part of the present invention. It is only essential that the device shall measure or weigh desired charges of material and deliver the charges separately to hopper 13.

The operation of the device is as follows. After a receptacle has been placed in receiving relation to spout 22, device 24 is tripped or actuated so as to discharge a properly separated charge into hopper 13. The rotation of the propeller drives the material from the hopper through the outlet and spout into the receptacle. The curved and outwardly slanting surface 27 of the propeller, from the hub to the outer edge thereof, assists centrifugal force in completely clearing the propeller of material, so that the measured or weighed charge is completely driven from the hopper and propeller casing through the discharge outlet into the receptacle. The close proximity of the outer ends of blades 20 to wall 10 and of their upper edges to wall 11, as well as the downwardly slanting inclination of wall 11, are other features assisting in the complete discharge of the material from the propeller casing.

It will be readily understood that in addition to the use of any well known or suitable charge-weighing or measuring device in the location indicated for member 24, and the use of any desirable support for a receptacle receiving material from outlet spout 22, other obvious changes may be made in the device within the scope of the appended claims.

What we claim is:

1. In combination, a casing having a vertical axis, a rotatable propeller within the casing and substantially concentric therewith, the casing having a discharge outlet substantially tangential thereof, a discharge

spout connected with said outlet and adapted to enter a restricted opening in a receptacle, and a charge-forming device above the casing and adapted to discharge a separated amount of material forming a suitable charge for the receptacle, said propeller comprising a central hub, a disk extending from the lower side of the hub and blades on the upper side of the disk, the outer surface of the hub slanting gradually into the upper surface of the disk.

2. In combination, a casing having a vertical cylindrical wall and an annular wall slanting inwardly and upwardly from the top of said cylindrical wall, a rotatable propeller mounted within and concentrically with the casing, said propeller comprising a substantially horizontal disk and blades on the upper side of the disk, the outer ends of the blades terminating in close proximity to said cylindrical wall and the upper sides of the blades terminating in close proximity to said annular wall.

3. In combination, a casing having a vertical cylindrical wall and an annular wall slanting inwardly and upwardly from the top of said cylindrical wall, a rotatable propeller mounted within and concentrically with the casing, said propeller comprising a substantially horizontal disk and blades on the upper side of the disk, the outer ends of the blades terminating in close proximity to said cylindrical wall and the upper sides of the blades terminating in close proximity to said annular wall, there being a substantially tangential outlet from said casing and a spout leading from said outlet and adapted to enter a restricted opening in a receptacle, and means for feeding a charge of material to the casing through the central opening in said annular wall.

4. In combination, a casing having a vertical cylindrical wall and an annular wall slanting inwardly and upwardly from the top of said cylindrical wall, a rotatable propeller mounted within and concentrically with the casing, said propeller comprising a substantially horizontal disk and blades on the upper side of the disk, the outer ends of the blades terminating in close proximity to said cylindrical wall and the upper sides of the blades terminating in close proximity to said annular wall, there being a substantially tangential outlet from said casing and a spout leading from said outlet and adapted to enter a restricted opening in a receptacle, and means for feeding a charge of material to the casing through the central opening in said annular wall, and the inner ends of said blades terminating short of said central feeding opening.

5. In combination, a casing having a substantially cylindrical wall and an annular wall slanting inwardly and upwardly from the top of said cylindrical wall, a hopper adapted to guide material into the central opening of said annular wall, a charge-forming device adapted to feed a separated charge of material into said hopper, and a propeller within the casing, said propeller comprising a central hub concentric with the casing, a disk projecting outward from the lower end of the hub, and blades on the upper side of the disk, the outer ends of said blades extending into close proximity to the cylindrical wall and the upper sides of the blades extending into close proximity to the annular wall, there being a substantially tangential discharge opening from the casing.

6. In combination, a casing having a substantially cylindrical wall and an annular wall slanting inwardly and upwardly from the top of said cylindrical wall, a hopper adapted to guide material into the cylindrical opening of said annular wall, a charge-forming device adapted to feed a separated charge of material into said hopper, and a propeller within the casing, said propeller comprising a central hub concentric with the casing, a disk projecting outwardly from the lower end of the hub, and blades on the upper side of the disk, the outer ends of said blades extending into close proximity to the cylindrical wall and the upper sides of the blades extending into close proximity to the annular wall, there being a substantially tangential discharge opening from the casing, the outer surface of the hub curved outwardly into the upper surface of the disk and the upper surface of the disk slanting downward to the outer edge thereof.

In testimony whereof we have hereunto signed our names to this specification.

EDWARD W. MENKE.
ESLI A. MARSH.