(No Model.)

G. Y. SMITH.

FLOUR PACKER.

No. 367,857. Patented Aug. 9, 1887.

Fig. 1.

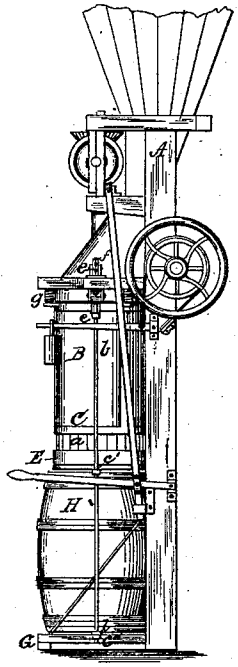


Fig. 2.

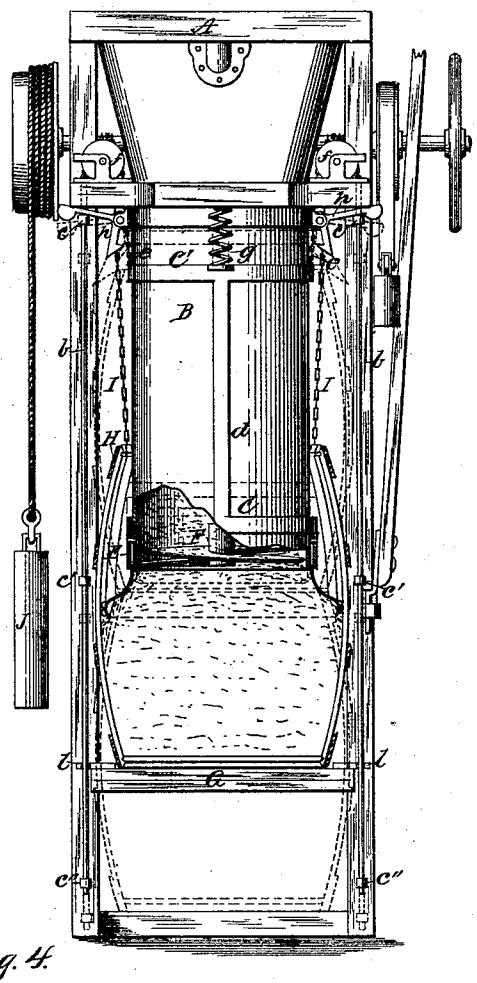


Fig. 3.

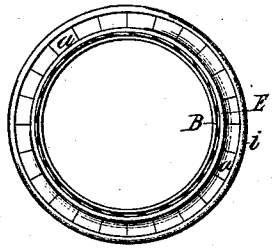
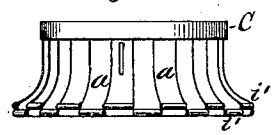


Fig. 4.



Witnesses.
S. Leslie Lecrw,
Dow L'Ecrw

Inventor.
George Y. Smith,
By Justus M. St. John,
His Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE Y. SMITH, OF CEDAR RAPIDS, IOWA.

FLOUR-PACKER.

SPECIFICATION forming part of Letters Patent No. 367,857, dated August 9, 1887.

Application filed October 29, 1886. Serial No. 217,503. (No model.)

To all whom it may concern:

Be it known that I, GEORGE Y. SMITH, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Flour-Packers, of which the following is a specification.

My invention relates to flour-packers operated by a screw or "auger;" and my object is to prevent the spilling and wasting of flour common to this class of packers.

The invention consists, essentially, in the application to the lower end of the packer-tube of an expansile and contractile ring or flange adapted to press tightly against the inside of the barrel and follow the curvature thereof during the filling of the same, and in mechanism for rendering the device operative and automatic, as will be hereinafter fully set forth and described.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of the invention as applied to a packer; Fig. 3, a sectional front elevation of the same; Fig. 3, a plan view of the packing-ring expanded; and Fig. 4, a side elevation of a modified form of the same.

Similar letters of reference indicate like parts.

In the drawings, A represents the frame of a flour-packer of the class mentioned. B is the tube inclosing the auger F. G is the platform upon which the barrel H rests, and J is the weight which, through the medium of the pulley and shaft and the chains I I, raises the barrel at the proper time and supports it in the operation of packing. These, with other parts shown, constitute the main elements of the packer in common use, and need not be more particularly described.

In the use of the common packer the most serious difficulty has been found to be the leaking and loss of the flour between the tube and the barrel. To obviate this it is common to provide the tube with a packing-ring, which, resting upon the top of the barrel and sliding up the tube with the upward movement of the barrel in packing, is designed to prevent the overflow of flour, and does so to a considerable extent; but the protection afforded by this device is not complete, since when the barrel is elevated to the first position a large quantity of air remains in the barrel, chiefly between it and the tube, and this must be expelled before the barrel can be filled. As it cannot escape through the mass of flour in the tube, it seeks the easiest outlet, under or inside the packing-ring, carrying with it more or less fine flour, and this is deposited at the side of the machine, to be trodden under foot and wasted.

My invention is designed to remedy this defect altogether by the following simple means: Near the lower end of the tube B, I mount a ring or collar, C, so as to slide up and down on the tube a limited distance. To this ring are attached a series of thin curved and elastic plates, *a a*, which in their natural position flare, as indicated in Fig. 4. These plates are preferably lapped at the edge, so as to form a tight joint, the overlap corresponding to the direction in which the auger turns, whereby the tendency is to move the flour away from rather than into the joint. At the line of its largest diameter the ring is provided with rubber or other elastic packing, to secure a close connection with the inside of the barrel. This may be a continuous ring, *i*, of rubber or like material, as shown in Fig. 3, or may be connected to the elastic plates *a a* in segments *i' i'*, as illustrated in Fig. 4. In the latter case, to allow for the lateral movement of the plates in expanding and contracting, the segments are set dodging, as shown. Where the parts are nicely fitted and the inside of the barrel is smooth the packing might be omitted.

Below the movable ring C another ring, E, is attached at intervals to the tube B, and, being outside of the segmental packing-ring, the rivets or other connections pass through suitable slots in the latter, as indicated in Fig. 4. Referring to Fig. 2, it will be seen that as the packing-ring is raised it is drawn between the tube B and the ring E and the effect is to contract the packing-ring to the dimensions of the outer ring. In this position it is so small as to pass freely into the barrel. In the other extreme position the packing-ring is large enough to press against the inside of the barrel at the largest part, as shown.

Means for the automatic operation of the packing-ring are shown in Figs. 1 and 2. From the upper edge of the ring C a rod or bar, *d*,

extends upward to near the top of the tube, where it is preferably connected with a ring, C', similar to the lower one. Obviously a continuous tube might be used instead of the two rings; but for the sake of economy and lightness rings are preferred. Between the upper ring and the frame-work of the packer is mounted a projectile spring, *g*, or rather two or more such springs are attached here, since the pressure should be uniform on opposite sides of the ring. These springs throw the packing-ring down to its lowest position, when its plates *a a* naturally spread to the largest extent afforded by the surrounding barrel. To the upper ring are connected chains or cords *e e*, which pass over sheaves *f f*, mounted on the frame of the packer. These chains are again connected with the ends of vertical rods *b b*, which pass through suitable holes in projecting lugs *l l* of the platform G. These rods are provided with collars *c c' c''* at proper intervals, and these may be adjustable, if desired. In projecting lugs at the upper end of the tube are pivoted two dogs, *h h*, which hook under the ring C' when raised to the extreme position. A weighted arm of each dog serves for disengagement in connection with the collars and for engagement by gravity as the rods descend.

The operation of the invention will now be seen. When the barrel is in its first position—that indicated by the lower dotted lines—the rods are depressed, as indicated, and the upper ring and its connections are drawn to the position shown by the dotted outlines. In this position the parts are held by the dogs until the barrel is hoisted to the position shown by the upper dotted lines, when the lugs *l l*, having engaged with the collars *c' c'* and the collars *c c* with the horizontal arms of the dogs, the ring has been released, and the packing-ring has descended by the pressure of the spring as far as the sides or bottom of the barrel would allow, when practically no air remains in the barrel below the packing-ring. This pressure of the springs continues to exert itself until the barrel has been nearly filled and has descended nearly to its lowest position, when the lugs *l l*, engaging with the collars *c'' c''*, gradually draw the packing-ring upward, causing it to contract, and at the same time bringing it finally to the position indicated by the upper dotted outline thereof in Fig. 2. It will be apparent that the natural effect of this movement will be to draw in the flour from the sides of the barrel toward the center at the top, and thus prevent any tendency toward overflow as the barrel descends below the tube.

The application to the packer-tube of an automatically-adjustable packing-ring for the inside of the barrel is the gist of this invention. The means by which this may be effected are subject to considerable modification—as, for example, in the device for disengaging the dogs. By forming the ends of the dogs as indicated by the dotted extension they might be disengaged by the barrel itself, and the rods *b b* and their collars thus be dispensed with. On account of its greater accuracy, however, the device shown in the principal outlines is preferred.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a flour packer, the combination of an automatically-expansile elastic packing-ring attached to the packer-tube, and means, substantially as described, whereby the packing-ring is automatically contracted when approaching the top and bottom of the barrel, substantially as and for the purpose specified.

2. In a flour-packer, the packing-ring, substantially as described, having its lower edge formed with an inward curvature, whereby as it is contracted it tends to draw the flour toward the center of the barrel, substantially as and for the purpose set forth.

3. In a flour-packer, the combination of the packer-tube B and the packing-ring composed of thin curved flexible plates connected at the top and overlapping, substantially as and for the purpose set forth.

4. In a flour-packer, the combination of the packer-tube B, the ring C, the thin flexible plates *a a*, and the elastic packing *i*, substantially as and for the purpose specified.

5. In a flour-packer, the combination of the tube B, the ring E, attached at intervals to the tube, the packing-ring composed of thin curved flexible plates, adapted to be contracted when drawn upward between the ring and the tube, and means for automatically raising and depressing said packing-ring, substantially as specified, and for the purpose set forth.

6. In a flour-packer, the combination of the packing-ring, substantially as described, having means for depressing and expanding the same, and a connection with the platform upon which the barrel rests, whereby the downward movement of the platform from any desired point produces a reverse movement of the packing-ring, contracting it in the manner and for the purpose specified.

7. In a flour-packer, the combination of an automatically-expansile packing-ring having a connection with the platform of the packer, whereby it is automatically drawn up the tube as the barrel descends, dogs to hold the packing-ring when so drawn up, and projectile springs to depress it as the dogs are released, substantially as specified.

8. In a flour-packer, the combination of the platform G, having lugs *l l*, the rods *b b*, having collars *c c' c''*, the chains or cords *e e*, the sheaves *f f*, the dogs *h h*, and ring C', all substantially as and for the purpose set forth.

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

GEORGE Y. SMITH.

Witnesses:
G. G. WATTERS,
J. M. ST. JOHN.