

Nov. 10, 1942.

V. F. FRYE

2,301,804

BAG HOLDING APPARATUS

Filed Aug. 3, 1940

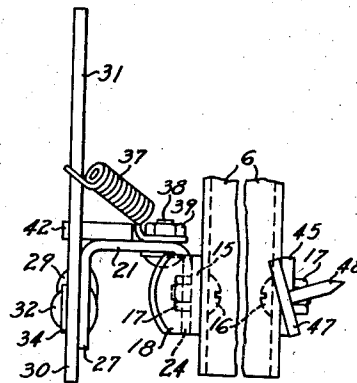
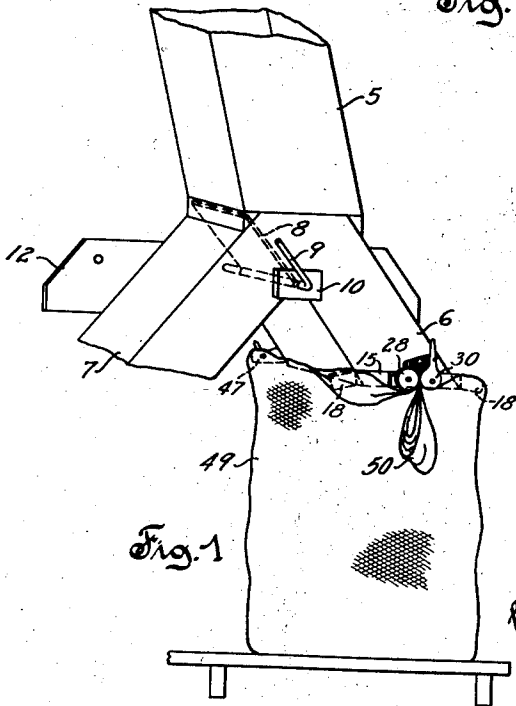
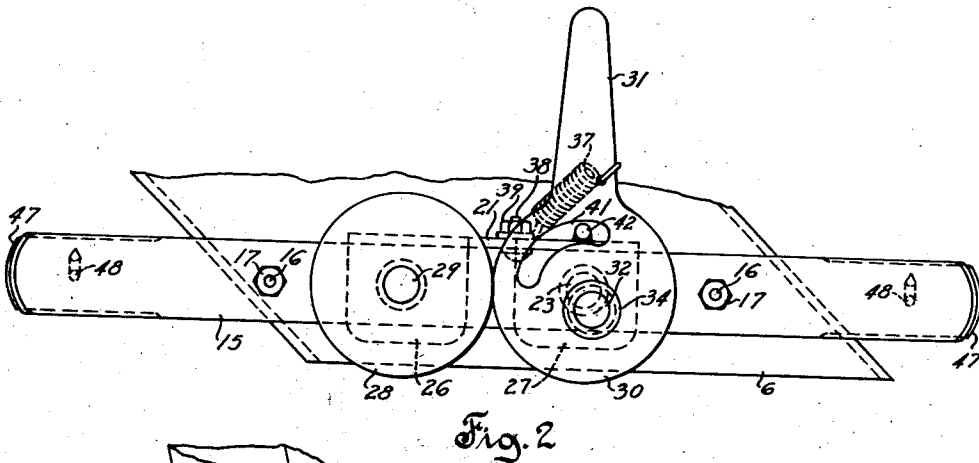
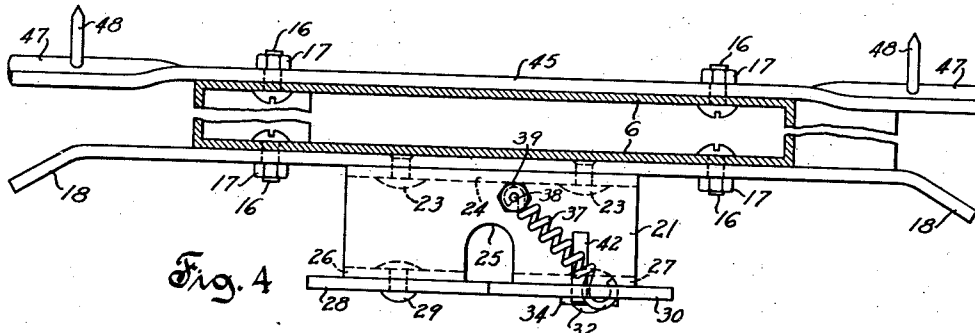


Fig. 3

Inventor

V. F. Frye

by
G. P. Palmer
Attorney

UNITED STATES PATENT OFFICE

2,301,804

BAG HOLDING APPARATUS

Veryl F. Frye, La Porte, Ind., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis., a corporation of Delaware

Application August 3, 1940, Serial No. 350,855

7 Claims. (Cl. 248—101)

This invention relates in general to apparatus for holding bags or the like in position during the operation of filling or discharging material into the bags from conduits, spouts or the like.

In the filling of bags with grain or the like, particularly in the case of filling bags from a conduit or chute where there is a continuous feed of the material to be bagged, as in the case of harvester-threshing apparatus operating in the field, it is highly desirable that the bagging apparatus be of such design and construction as to best facilitate positioning the bag on and removing it from the bag holder in a minimum time and with minimum liability of damage to the bag and injury to the operator. Particularly in the case of threshers and harvester-threshers, it is customary to provide a discharge chute having multiple discharge spouts or nozzles controlled by a multi-position valve which will permit discharge of the full supply of material to one of the spouts while the other spout or spouts are cut off by the valve, so that while a bag is being filled from a first spout, the operator can remove a filled bag from a second spout, tie or seal the open end of the bag, move the latter to the ground or other convenient location and place another bag in position to be filled by the second spout.

Bag holding devices of the prior art which permit filling of bags from a spout have defects, more particularly concerned with the lack of full facility in readily and quickly securing the bags in filling position, against any tendency to pull out therefrom, and removing the filled bags from such position. These defects are particularly noticeable where a relatively fast feed of material is to be bagged, and lack of full facility in quickly mounting the bags in and removing them from filling position places the operator under undue strain in keeping the bagging operations synchronized with the continuous discharge of material from the spouts; and in many cases, the speed of the filling operation and the output of the apparatus as a whole has to be slowed down in order to enable the operator to keep up his end of the bag-filling operation.

The present invention contemplates the provision of a bag filling apparatus which provides for securely holding the open mouth of the bag in position to be filled without any such strain on the material of the bag as would seriously damage the same, and which insures that the bag may readily be mounted securely in filling position and be removable therefrom in a minimum time. Advantages in connection with such a bag holder are realized through the use of a holding device which permits ready and simple mounting of the bag in position and at the same time automatically locks the bag against pulling out of normal position until it is properly released by the operator through a relatively simple

operation, this releasable holding and locking operation being preferably secured through a cam-shaped element biased to a position wherein it grips a fold of the bag near the mouth thereof and effective to automatically increase its gripping hold on the bag on display of any tendency of the bag to pull out of position.

A desirable advantage in connection with a bag holder embodying features of the present invention is that the bag may be mounted and held securely in position by merely pulling the edges of a slack portion at the mouth of the bag upwardly between cooperative portions of a device which automatically locks the bag in held position, and serves to automatically release the bag from such position, but only through a simple manual operation by the operator of a trigger portion of the holding and locking device. And a further advantage of a bag-holder embodying this invention is the elimination of sharp bag-holding points or projections adjacent the normal position of the operator tending the filling apparatus, thus greatly reducing liability to injury of the operator, as well as avoiding gouging or tearing of the bags, and thus providing economy incident to increased useful life of the bags.

It is an object of the present invention to provide a simple and improved design and construction of holder for use in the filling of bags and which reduces the time required in mounting the bag in filling position and removing it therefrom, and at the same time provides for holding the bag securely locked against inadvertent pulling out of position.

It is a further object of this invention to provide a simple and improved design and construction of bag holding apparatus of this character, embodying an eccentric holding and locking device biased to holding and locking relation with a portion of the bag and exerting increased holding and locking effect on the bag on any tendency of the bag to pull out of holding position.

These and other objects and advantages are attained by the present invention, various novel features of which will be apparent from the description herein and the accompanying drawing, disclosing an embodiment of the invention, and will be more particularly pointed out in the annexed claims.

In the drawing:

Fig. 1 is a view in perspective of a bag-filling apparatus including a bag-holding device embodying features of the present invention;

Fig. 2 is a view in front elevation of a portion of the apparatus shown in Fig. 1;

Fig. 3 is a side view of the apparatus shown in Figs. 1 and 2, with parts broken away;

Fig. 4 is a plan view of a portion of the apparatus shown in Figs. 1, 2 and 3.

In accordance with the disclosure of the drawing, a discharge spout 5, for handling grain or like material, may be considered such as is usually present in a harvester-thresher where the clean threshed grain or the like is sacked on the machine during its travel through the field in the combined harvesting and threshing operation. At its lower end, this discharge conduit is divided into twin discharge spouts 6 and 7, and is provided with a valve 8, having an external operating handle 9, rotatably mounted in a front bearing plate 10 and a rear bearing and supporting plate or bracket 12 through which the lower end of the discharge spout arrangement may be supported on, or in spaced relation to, a wall or support.

On the lower or discharge end of the spout 6, a bag-holding device in accordance with the present invention is provided; and, while it is not shown, a similar bag-holding device is provided at the lower end of the discharge spout 7. Attached to the front side of the discharge spout, adjacent the lower end thereof, a bag-holder assembly is mounted. This assembly includes a bag-holder bar 15 extending across and laterally beyond the side edges of the spout. This bar 15 is detachably secured in position on the spout by a plurality of headed bolts 16 passing from the inner to the outer side of the front wall of the spout and through corresponding apertures in the bar 15, nuts 17 on the bolts bearing against the outer face of the bar 15. This bar 15 preferably has its end portions beyond the spout bent forwardly at a slight angle, as indicated at 18.

A supporting bracket 21 is secured to the outer face of the bar 15, by a plurality of rivets 23 passing through the bar and a depending inner flange 24 on the bracket. The body portion of this bracket is provided at its forward side with a recess 25 dividing the forward portion of the bracket and the flange, the latter forming two sections 26 and 27.

Mounted on the front face of the depending flange 26 of the bracket 21 is a circular disk 28 secured in position by an axially disposed rivet 29 passing through the flange 26 and the disk and headed over thereon. On the front face of the depending flange 27 of the bracket 21 is mounted a plate 30 of generally disk shape and of substantially the same diameter as the disk 28 but preferably provided with an integral radially extending operating handle 31. This disk or plate 30 is mounted in position on the flange 27 of the bracket 21 through a pivot, preferably in the form of a rivet 32 passing from the inner side of the flange, through the latter and an opening in the plate 30 at a point eccentric with respect to the center of the circular or disk-shaped outline of the plate, the outer end of the rivet being headed over a spacing washer 34. The outer end of the rivet is peened over against the washer 34 in such a manner as to permit free rotation of the disk 30 on the rivet as an axis. The disks 28 and 30 are in the same general plane, and their size and positions of mounting on the flange sections 26 and 27, respectively, are such that the edge portion of the eccentric disk 30 will move substantially into engagement with and away from the adjacent edge of the circular abutment disk 28.

A tension spring 37 has one end thereof secured to an outer portion of the disk or plate 30, as by having this end of the spring inserted and bent over in an opening in the handle portion

31, and the other end of this spring is secured, as through a bolt 38 and an attaching nut 39 thereon, to a laterally and rearwardly removed portion of the bracket 21. The disposition of this tension spring and its attachment to the eccentric disk 30 and the bracket 21 are such that the spring biases the eccentric plate or disk 30 in an anticlockwise direction about its pivotal axis so as to bring an eccentric edge portion of such disk toward and into engagement with the adjacent edge portion of the concentrically mounted disk 28. As the eccentric plate or disk 30 is rotated by the handle 31 in a clockwise direction, against the bias of the spring 37, the rotation of the disk 30 on its eccentric axis produces a separation between the adjacent edges of this disk and the circular disk 28; and as the operating force is removed from the handle, the disk 30 automatically rotates in an anticlockwise direction, through the action of the biasing spring, to again bring the edge portion of the disk 30 toward or into engagement with the edge of the disk 28.

The degree of permissible rotation of the eccentric disk 30 about its axis may be limited through cooperation of the end walls of a slot or aperture 41 in the eccentric disk with a pin 42 secured in position, as by welding, on the upper face of the bracket 21.

A second bag-holder bar 45 is secured in position on the rear face of the rear wall of the discharge spout, by means of bolts 46 and nuts 47, similar to the corresponding securing means for the front bag-holder bar 15. The outer ends of the bar 45, laterally beyond the spout, are preferably twisted at a slight angle, as indicated at 47, to carry the upper edge of these extensions forwardly out of the general plane of the body of the bar. A relatively sharp pointed and rearwardly directed bag-holding hook, nail or spike 48 is secured in each of the twisted end portions 47 of the bar 45, the nail or spike being pointed upwardly to a slight extent from its fastening in the end portion of the bar, so as to insure against accidental slipping of the bag from its hanging on such spikes.

The outer end extensions 48 of the forward bag-holder bar 15 may, if desired, be given a slight twist generally along the line of that imparted to the end extensions 47 of the bag-holder bar 45.

In the operation of filling bags through the use of the present invention, the open end of a bag, indicated at 49, is first drawn up over the laterally projecting ends of the rear bag-holder bar 45, and the rear upper edge of the bag is pulled onto the hooks or spikes 48 on the rear holding bar; and the side portions of the open end of the bag are drawn fairly taut over the twisted end extensions 47 of the rear holding bar 45 and over the bent end extensions 48 of the front holding bar 15. And the slack at the upper edge of the bag at the front side thereof is then pinched or lapped, as indicated at 50, and this lapped or folded part of the bag is drawn upwardly between the abutment disk 28 and eccentric disk 30, the lapped portion being free to enter the recess 25 in the bracket 21 as this portion is drawn upwardly between the two disk elements. This insertion of the front lapped portion of the bag is a simple matter, for the frictional engagement of the lapped portion with the edge of the eccentric disk 30, during upward insertion between the disks, rotates the latter disk clockwise against the biasing effect of the

spring 37, thus producing an enlargement of the space between the abutment disk 28 and the cooperative portion of the eccentric disk 30. When the lapped portion of the bag is drawn up sufficiently to take the slack out of the bag, the operator may release his hold on the lapped portion, and the eccentric disk 30 is immediately rotated in a anticlockwise direction, by the biasing spring 37, so as to cause the eccentric disk to firmly clamp and lock the lapped portion of the bag against the edge of the plain abutment disk 28. And any tendency of the lapped portion of the bag to drop or pull out of holding position with respect to the disks 28 and 30 is immediately and effectively counteracted by the incidental anticlockwise rotation of the eccentric disk 30, through the frictional binding effect between the lapped or pinched portion of the bag and the edge of the eccentric disk and through the bias of the spring 37, thus causing the eccentric disk to increase its gripping effect on the lapped portion of the bag and hold the same in a more securely locked manner between the two disks.

With the valve 8 adjusted, as shown in Fig. 1, to open the passage through the spout 6, the grain or like material discharges through the spout 6 and into the bag held thereon, and the bag is filled to the desired point, at which time the operator adjusts the valve 8 so as to close the spout 6 and cause discharge of material through the spout 7 into a bag suitably positioned on a bag holder on the spout 7, similar to the bag holder described hereinabove on the spout 6. By the operation of the eccentric disk 30, through a simple manipulation of the handle 31, in a clockwise direction against the biasing effect of the spring 37, the lapped portion of the bag is released from its gripped or held position between the edges of the eccentric disk 30 and the plain abutment disk 28, and the lapped portion of the bag drops due to gravity, from position between the holding disks. The rear side of the bag is then lifted off the holding spikes or nails 48 on the rear bag holder, and the bag settles to the floor or platform; and it is drawn out from under the spout and tied or sealed and moved out of the way. Another bag may then be mounted on the bag holder of the spout 6, in the manner described hereinabove.

While the rear edge of the bag is hereinabove described as being hung on hooks or spikes 47, it will be apparent that an automatic holding and locking device, similar to that mounted on the bag-holder bar 15 at the front side of the spout, may be mounted on the rear bag-holder bar 45, so that a lapped portion of the bag may be held at the rear side of the spout in an automatically locked relation between a plain abutment and an automatically urged eccentric disk or trigger device, similar to that described hereinabove as being mounted on the bag holder bar 15, and be released from held position in the same simple manner as described hereinabove.

While the automatic locking bag-holder has been described hereinabove as applied to the front, or the front and rear sides of the spout, it will be apparent that it may likewise be applied to one or both sides of the spout. And where a plurality of such automatic locking devices are used on the bag-holder device, they may be arranged to permit lapped portions of the bag to be inserted individually in the several locking devices and, at the same time, through

suitably interconnected actuating devices, they may be actuated by a single operating member to cause all of the eccentric locking devices 30 to release the bag from held position simultaneously or in a given sequence.

Through use of the simple holder described hereinabove, with its automatically gripping and readily releasable eccentric 30, the operations of hanging the bag in position to be filled and removing the bag from such position are reduced to utmost simplicity and rapidity, thus requiring a minimum of the operator's time for the hanging of the bag in position and its removal therefrom, and hence permitting the operator to properly handle a multiple spout discharge of greater capacity without undue strain on the operator; and aside from this, the absence of sharp hooks or projections adjacent the operator's position, constitutes added insurance against accident to the operator.

It should be understood that the present invention is not limited to the exact details of design and construction described and shown herein, for obvious modifications within the scope of the appended claims will be apparent to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:

1. In combination with a material discharge spout, a device for holding bags in position to be filled from said spout and comprising a bag-holder element mounted in position at the rear side of the discharge end of the spout and having bag-holding end extensions beyond the lateral edges of said spout, a bracket supported on said spout at the front side thereof, cooperative bag-locking elements mounted on said bracket intermediate the lateral edges of said spout and comprising an abutment member, a member rotatable on a substantially horizontal axis extending from front to rear of said spout and having an eccentric cam portion movable toward and downwardly with respect to said abutment member into effective bag-holding position, and means for biasing said eccentric member to move said cam portion downwardly into gripping relation with a portion of said bag inserted between said abutment member and said eccentric member, and said eccentric member automatically exerting an increased holding and gripping effect on said bag in counteraction to any dropping of the portion of the bag between said abutment member and said eccentric member.

2. In combination with a material discharge spout, a device for holding bags in position to be filled from said spout and comprising a bag-supporting holder mounted in position at the front side of the discharge end of the spout and comprising a mounting bar secured to said spout and having its ends extending laterally beyond said spout, a bracket mounted on said bar and having a flange portion, cooperative bag-locking elements mounted on said flange portion and including an abutment member, a member rotatable on a substantially horizontal axis extending from front to rear of said spout and having an eccentric cam portion movable toward and downwardly with respect to said abutment member into effective bag-holding position, and means for biasing said rotatable member in a direction to force the eccentric cam portion thereof into gripping and holding relation with a portion of said bag inserted between said abutment member and said rotatable member, and said rotatable member being automatically operative to exert an

increased holding and gripping effect on said bag in counteraction to any dropping of a portion of the bag between said abutment member and said rotatable member.

3. In combination with a material discharge spout, a device for holding bags in position to be filled from said spout and comprising a bag-supporting holder mounted in position at the front side of the discharge end of the spout, said holder including a mounting bar having its ends extending beyond said spout to constitute supports for portions of the bag at the open end thereof, a bracket mounted on said bar and having a vertically extending flange portion through which said bracket is secured to said bar, a second vertically extending flange portion spaced from said first flange portion, cooperative bag-locking elements mounted on said second flange portion intermediate the lateral edges of said spout and comprising an abutment member, and a member rotatable on a substantially horizontal axis extending from front to rear of said spout and having an eccentric cam portion, said bracket and said second flange portion thereon being recessed opposite a point between said abutment member and said rotatable member to permit reception of a forwardly extending lapped portion of said bag, and means for biasing said rotatable member in a direction to move the eccentric cam portion thereof into holding and gripping relation with a lapped portion of said bag inserted between said abutment member and said rotatable member, and said eccentric cam portion automatically exerting an increased gripping and holding effect on the portion of said bag between said abutment member and said cam portion in counter-action to any dropping of said portion of the bag from normal held position.

4. In combination with a material discharge spout, apparatus for holding bags in position to be filled from said spout and comprising a bag-supporting holder mounted in position at the rear side of the discharge end of said spout and provided with bag-holding extensions beyond the spout, bag-piercing points mounted on said extensions, a bag-supporting holder mounted in position at the front side of said spout, said latter holder including a mounting bar having bag-supporting extensions laterally beyond said spout, a bracket mounted on said latter bar and having a flange portion thereon secured to said holding bar, a second vertically extending flange portion spaced from said first flange portion, cooperative bag-locking elements mounted on said second flange portion intermediate the lateral edges of said spout and comprising an abutment member, and a cooperative member rotatable on a substantially horizontal axis extending from front to rear and having an eccentric cam portion movable toward and downwardly with respect to said abutment member into effective bag-holding position, and means for biasing said rotatable member to move the eccentric cam portion thereof toward said abutment member and downwardly into holding and gripping relation with a forwardly extending lapped portion of said bag inserted between said abutment member and said cam portion of said rotatable member, the eccentric cam portion of said rotatable member automatically exerting an increased gripping and holding effect on said bag in counteraction to any dropping of the portion of said bag between said abutment member and said eccentric member.

5. In combination with a material discharge spout, a device for holding bags in position to be filled from said spout and comprising a bag-supporting holder mounted in position on the discharge end of the spout, said holder including cooperative bag-supporting elements mounted on said spout at one side thereof and intermediate the edges thereof, one of said elements serving as an abutment, and the other element being rotatable on a generally horizontal axis extending toward the opposite side of said spout and having an eccentric cam portion, and means for biasing said rotatable element in a direction to move the eccentric cam portion thereof toward and downwardly with respect to said abutment element to bring said cam portion into gripping and holding relation with a portion of the open end of a bag inserted between said abutment member and said eccentric cam portion and wherein said cam portion is automatically operative to exert an increased gripping and holding effect on said portion of the bag in counteraction to any dropping thereof.

6. In combination with a material discharge spout, a self-locking bag-holding device for holding bags in position to be filled from said spout and comprising a supporting bracket mounted on said spout at the front side and adjacent the mouth thereof, cooperative bag-holding and locking elements mounted in side by side relation on said bracket intermediate the side edges of said spout and comprising an abutment member, and a member rotatable on a generally horizontal axis and having an eccentric cam portion, and means for biasing said rotatable member in a direction to move the eccentric cam portion thereof toward and downwardly with respect to said abutment member to bring said cam portion into gripping and holding relation with a portion of the open end of a bag inserted between said abutment member and said eccentric cam portion, said rotatable member being automatically operative to cause said cam portion to exert an increased gripping and holding effect on said portion of the bag in counteraction to any dropping thereof.

7. In combination with a material discharge spout, a self-locking bag-holding device for holding bags in position to be filled from said spout, said device comprising cooperative bag-supporting elements mounted at the front side and intermediate the side edges thereof and adjacent the lower open end of said spout and in position to engage and grip a bight portion of the bag at the forward edge of the open end thereof when the latter is in position to be filled from said spout, one of said elements serving as an abutment member, and the other element being rotatable on a horizontal axis extending from front to rear of said spout, said rotatable member having an eccentric cam portion, and means for biasing said rotatable member in a direction to move the eccentric cam portion thereof toward and downwardly with respect to said abutment member during rotation of said rotatable member to bring said cam portion into gripping and locking relation with a portion of the open end of the bag inserted between said abutment member and said cam portion, said eccentric cam portion automatically exerting an increased holding and gripping effect on said portion of the bag in counteraction to any dropping thereof.

VERYL F. FRYE.