Sept. 8, 1931. H. RICHARDSON 1,822,747

BAG HOLDER

Filed May 26, 1928 2 Sheets-Sheet 1

Fig. 1.

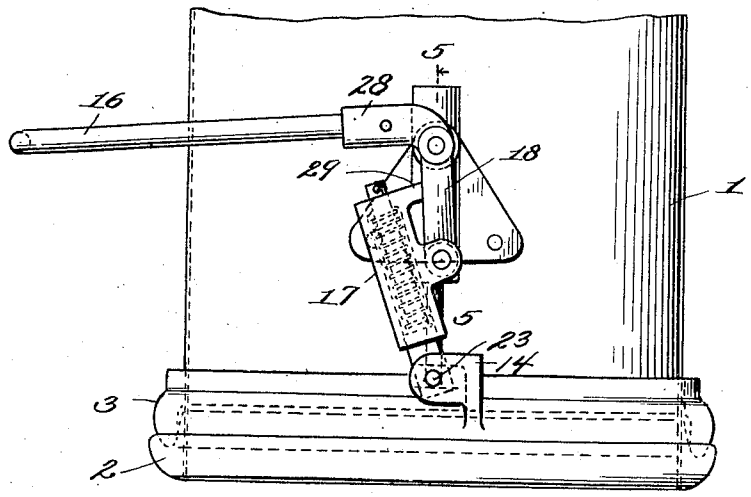
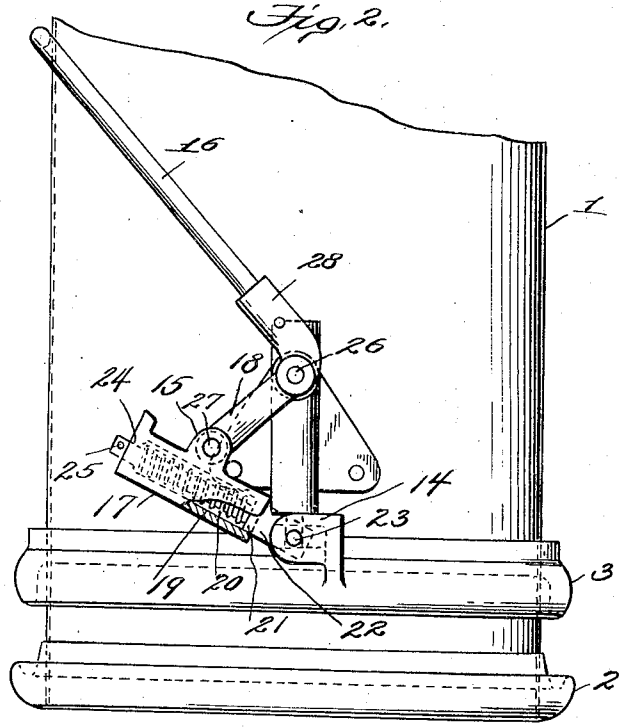


Fig. 2.



Inventor
Henry Richardson

By James L. Norris

Attorney

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Fig. 3.

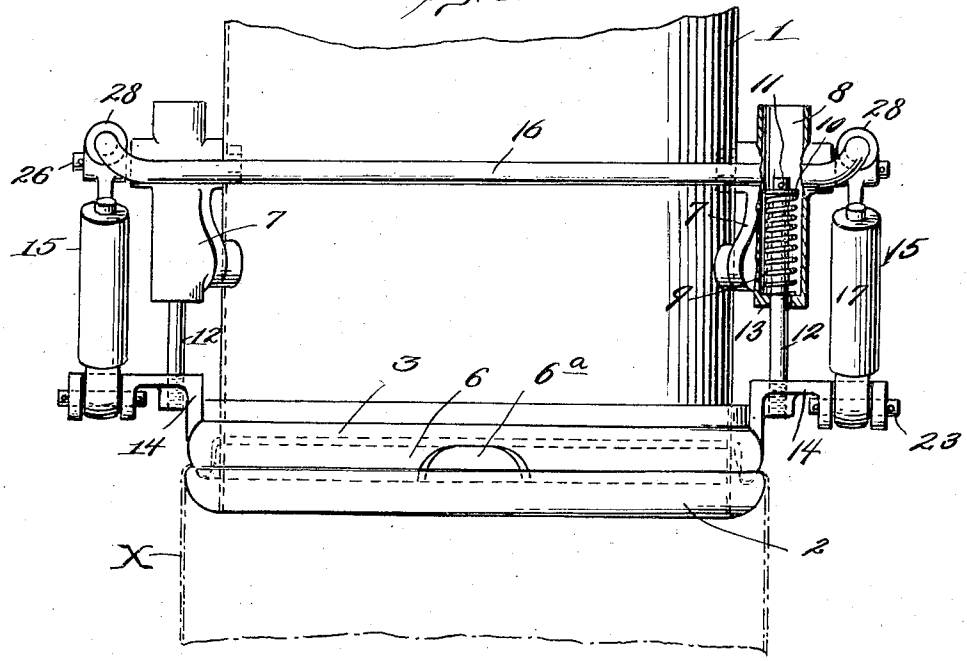


Fig. 5.

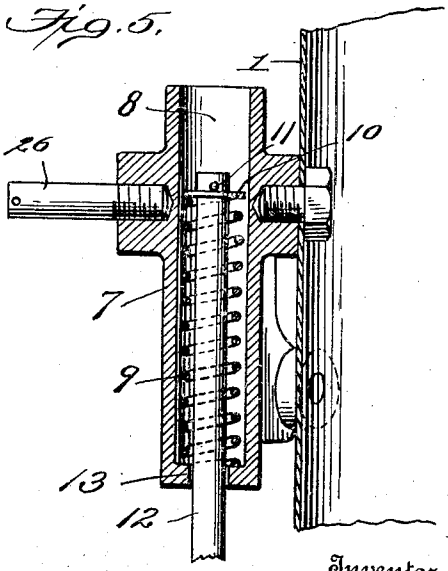
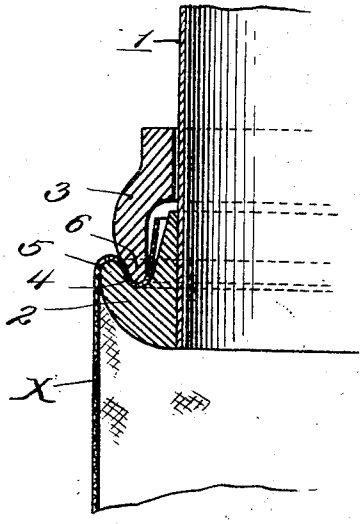


Fig. 4.



Inventor

Henry Richardson

By James L. Norris

Attorney

Patented Sept. 8, 1931

1,822,747

UNITED STATES PATENT OFFICE

HENRY RICHARDSON, OF PASSAIC, NEW JERSEY, ASSIGNOR TO RICHARDSON SCALE COMPANY, OF CLIFTON, NEW JERSEY, A CORPORATION OF NEW JERSEY

BAG HOLDER

Application filed May 26, 1928. Serial No. 280,935.

The present invention relates to improvements in bag holders for holding the mouth of a bag in open condition during filling thereof, and preferably, for also supporting the bag while it is being filled, and the primary objects of the invention are to provide a novel and improved bag holder of this class which enables the mouth portion of the bag to be quickly and easily placed in position to be engaged and held by the holder, to provide a holder of this class which may be operated quickly and with facility to grip and release the bag, to provide a holder which is capable of holding the bag securely during filling thereof but without injury to the mouth portion of the bag, thereby preventing accidental detachment of the bag from the holder during the filling operation, and to provide a holder of this class which may be operated with safety to the attendant.

To these and other ends the invention consists in certain improvements and combinations and arrangements of parts all as will be hereinafter described, the features of novelty being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings:—

Fig. 1 is a side elevation of a portion of a bag filling spout equipped with a bag holder constructed in accordance with the present invention, the parts of the bag holder being shown in bag-holding relation;

Fig. 2 is a view similar to Fig. 1 but showing the parts of the bag holder in relatively separated relation to receive or release a bag;

Fig. 3 is a front elevation of the structure shown in Fig. 1 as viewed from the left, a portion of the structure being shown in section, and the mouth of a bag being shown gripped or held by the holder;

Fig. 4 represents on an enlarged scale a section taken radially through the bag gripping members showing the manner in which the mouth portion of a bag is held between them, and

Fig. 5 represents on an enlarged scale a section on the line 5—5 of Fig. 1.

Similar parts are designated by the same reference characters in the several figures.

Bag holders embodying the present invention may be used generally for holding open the mouths of bags composed of fabric, paper or other flexible material while the same are being filled from a filling spout which may be supplied with grain or other powdery, granular or analogous materials, the bag holder also serving to suspend and thereby support the bags from the spout during the filling thereof. The preferred embodiment of the invention is shown in the accompanying drawings and will be hereinafter described in detail but it will be understood that the invention will not be restricted to the precise construction shown as equivalent construction are contemplated and such will be included within the scope of the claims.

In the present instance, 1 represents a chute or spout which may be composed of tubular sheet metal and may serve to conduct the material from any source of storage or from weighing apparatus to the bags to be filled, the spout being arranged vertically and open at its lower end so that it will discharge the material therefrom, and the bottom of the spout is spaced above the floor or filling platform sufficiently to enable the bags to be attached to the lower end of the spout and to be suspended therefrom while being filled.

The bag holder, according to the present invention, comprises a pair of cooperative members 2 and 3, these members consisting preferably of endless rings or flanges which may be made as castings, the member 2 being of a diameter to fit within the mouths of the bags to be filled and being suitably fixed upon the lower end of the spout 1, while the cooperating ring-like member 3 is fitted loosely around the exterior of the spout and is slidable vertically thereon or in a direction toward and from the stationary member 2. The member 2 is formed with a continuous annular groove 4 and a surrounding lip 5 over which the mouth portion of the fabric or other bag, designated X may be drawn, and the member 3 is formed with a continuous annular or circular flange 6 which conforms with and is shaped to fit into the circular groove 4 in the member 2, the flange 6 of the member 3, when seated in the groove 4,

lying immediately within the lip 5 of the member 2. The mouth portion of an empty bag is applied to the holder, while the member 3 is elevated, as shown in Fig. 2, by slipping the mouth portion of the bag upwardly about the member 2 and drawing its upper edge taut around the exterior of the spout 1, this operation being done easily by the hand of the attendant grasping the mouth portion of the bag at one side of the spout, and while the mouth portion of the bag is thus held taut, the member 3 is lowered, causing its flange 6 to engage the mouth portion of the bag and to force it downwardly into the groove 4, and pressure applied between the members 2 and 3 will cause the mouth portion of the bag to be securely gripped and held around its circumference between the lip 5 of the member 2 and the flange 6 of the member 3. In order to accommodate the slack portion of the bag produced by grasping it and drawing it taut around the spout above the member 2, the flange 6 of the member 3 is cut away or recessed as at 6ª, at a suitable point in its circumference, this cut-away portion or recess accommodating any folds that may be formed at this point in the bag mouth and it also enables the attendant to hold the bag in position to be properly engaged and held by the member 3 without danger of injuring the hand of the attendant.

Preferably, means is provided for yieldingly holding the member 3 in its elevated position until lowered to grip and hold a bag. As shown in the present instance, a pair of brackets are bolted or riveted to diametrically opposite sides of the spout and each of these brackets is formed with a vertical cylindrical chamber 8 which contains a compression spring 9, the lower end of the spring resting on the bottom of the chamber 8 while its upper end abuts against a plate 10 which is held by a pin 11 on the upper end of a rod 12, the latter being movable vertically through an opening 13 formed in the bottom of the chamber 8 and being threaded or otherwise connected to a lug 14 which projects from the respective side of the member 3. The arrangement of the brackets 7 and springs 9 at diametrically opposite sides of the spout and the connection of the spring supported rods 12 to the member 3 at diametrically opposite sides thereof enables the springs 9 to normally support the member 3 evenly and yieldingly above the member 2, as shown in Fig. 2, so that both hands of the attendant will then be free to apply an empty bag to the holder or to remove or otherwise handle a filled bag.

Means is provided for forcing the member 3 downwardly to grip and hold the mouth portion of a bag which has been applied to the member 2, such means being preferably yieldable whereby ample pressure will be exerted to securely hold the bag and movement of said means into fully locked position, notwithstanding variations in thickness or irregularities in the mouth of the bag, is insured and furthermore the means for thus operating the member 3 is preferably so constructed that it will lock automatically and thereby maintain the member 3 in bag-holding position during the filling operation or until the operating mechanism is released. The operating means for the member 3, as shown in the present instance comprises a pair of toggles 15 which are located preferably at diametrically opposite sides of the spout and are connected by a handle 16 which serves to actuate them in unison. Each toggle comprises pivotally connected members 17 and 18. Each member 17 comprises a casing having a longitudinal bore 19 which contains a coiled compression spring 20. One end of the spring bears against the upper end of the chamber 19 and its opposite end bears against a shoulder 21 formed on a plunger 22, the lower end of this plunger being pivotally connected to the respective bracket 14 on the bag-holding member 3, by a pivot pin 23 and the upper end of the plunger being reduced in diameter so that it will move freely longitudinally within the spring 20 and it is movable axially through an opening 24 in the member 17, the movement of the plunger 22 under the expansive tendency of the spring 20 being limited by a stop pin 25 which passes through the upper end of the plunger 22 and is arranged to come into contact with the upper end of the member 17. The cooperating toggle member 18 is pivoted on a pin 26 which is fixed to and projects outwardly from the bracket 7, the member 18 being pivotally connected to the member 17 by a pivot pin 27 which is supported by lugs formed at a side of the member 17. The handle 16 is yoke shaped so that it will straddle the spout, and its ends are fixed in angularly extending sockets 28 which are fixed to or formed as integral parts of the respective toggle members 18, the sockets 28 preferably extending approximately at right angles to the toggle members 18 so that the handle 16 will occupy an approximately horizontal position when the toggles are locked, as shown in Fig. 1, and may swing upwardly into substantially the position shown in Fig. 2 when the toggles are unlocked. The upper end of each of the toggle members 17 is formed with a lug or projection 29 which is arranged to bear against the adjacent side of the respective toggle member 18 when the toggles have been operated to swing the pivots 27 into a position slightly beyond a line connecting the pivots 23 and 26, the toggles being then locked, and the projections 29 acting, under the expansive tendency of the springs 20, to retain the toggles in locked condition, as will be clear from Fig. 1.

The operation of the bag holder construct-

ed as hereinbefore described is as follows:— Normally, the handle 16 will occupy the raised position shown in Fig. 2, it being held in such position by the springs 9 which act to elevate the bag-engaging member 3, undue upward swing of the handle being prevented by the engagement of the handle against the adjacent side of the spout, as shown in Fig. 2. At this time, the toggles are flexed and the bag-engaging member 3 is elevated above the bag-engaging member 2 so that the mouth portion of a bag may be applied quickly and with facility to the lower end of the spout without obstruction from the member 3. While the mouth portion of the bag is drawn and held taut around the lower end of the spout above the member 2, the handle 16 is swung downwardly until its motion is arrested by the engagement of the lugs 29 on the toggle links 17 with the sides of the respective toggle links 18. The straightening of the toggles incident to the downward swing of the handle 16 forces the member 3 downwardly, and as the toggles approach locked positions, the flange 6 of the member 3 engages and forces the mouth portion of the bag into the circular groove 4 in the member 2, and the final motion of the toggles under the action of the handle 16 causes a heavy pressure to be exerted on the mouth portion of the bag interposed between the members 2 and 3. However, the pressure applied to the bag portion of the mouth will be a yielding one, as the force is applied from each toggle member 17 to its respective plunger 22 through the interposed compressible spring 20, so that the member 3 is capable of accommodating itself to folds, seams and the like in the mouth portion of the bag, thus avoiding excessive pressure which might damage the bag. When the handle 16 has been fully lowered, the toggles are locked, so that the handle will remain in its lowered position as shown in Fig. 1 and the bag mouth will be automatically held in locked condition, so that filling thereof may be performed without requiring the attendant to hold the handle 16. When filling of the bag has been completed, the bag is released from the holder by the simple operation of pushing the handle 16 upwardly sufficiently to unlock the toggles, the handle being moved into its fully released position and the member 3 fully raised above the member 2 by the lifting action of the springs 9. Both hands of the attendant will then be free to remove or otherwise handle the filled bag.

By providing toggles for operating the movable bag-gripping member, great pressure can be brought to bear upon the bag mouth engaged between the bag holding members by actuation of the handle, and hence accidental detachment of the bag during filling thereof is practically impossible while the handle is in its lowered position, it being locked in this position by the toggles. The yieldable members of the toggles however, will prevent the application of excessive pressure upon the mouth of the bag, as might occur if tucks or folds in the bag mouth are presented between the holding members, damage to the bags being thus avoided, and moreover, there will be no obstruction to the movement of the toggles into fully locked position at each operation.

By mounting the bag-engaging members on the tubular chute or spout through which the material is introduced into the bags, the operation of placing each bag in filling position is simplified and facilitated, as the top edge of the bag mouth can be readily drawn taut about the chute or spout immediately above the lower bag-engaging member by grasping the bag mouth at one side by one of the hands of the attendant, the attendant's other hand being free to operate the handle to force the upper bag-engaging member downwardly to clamp the bag mouth, and the bag is then securely held and supported in position for filling from the chute or spout.

I claim:—

1. The combination of a filling spout, cooperative bag-holding members supported exteriorly thereon adjacent to its discharge end, one of said members being moved axially of the spout to grip and hold a bag mouth between it and the other member, and yieldable toggle means for actuating said movable member to grip the bag mouth and to lock said member in gripping position.

2. The combination of a filling spout, a pair of bag-holding members arranged exteriorly thereon, one of said members being fixed to the spout adjacent to its discharge end and adapted to enter the mouth of a bag and the other member being reciprocable axially of the spout above the fixed member, and yieldable means for raising the reciprocable member above the fixed member to expose it for the application of a bag mouth thereto, and yieldable means for forcing said reciprocable member downwardly to grip the bag mouth between it and the fixed member and to lock said reciprocable member in bag gripping position.

3. The combination of a filling spout, a pair of ring-like bag-holding members arranged exteriorly and circumferentially thereon adjacent to its discharge end, one of said members being movable axially relatively to the other to grip and hold the mouth of a bag between it and the other member, toggle means at opposite sides of the spout for operating and locking the movable member, and a handle straddling the spout and connected to said toggle means for actuating and locking them in unison.

4. A bag holder comprising a pair of ring-like members relatively movable to receive and hold a bag mouth between them, an oper-

ating handle, and yieldable means connecting said handle to one of said members for relatively moving said members yieldingly to grip and hold the bag mouth.

5. A bag holder comprising a pair of members relatively movable into clamping engagement with a bag mouth, and toggle means for relatively moving said members, said toggle means embodying yieldable means for forcing one of said members into bag-holding relation with the other member.

6. A bag holder comprising a pair of cooperative relatively movable rings for holding a bag mouth between them, and toggle means embodying a yieldable member operative to force the rings into bag-holding relation and to yieldingly lock them in such relation.

7. The combination of a filling spout, a pair of bag-holding rings encircling it circumferentially adjacent to its discharge end, said rings being relatively reciprocable in an axial direction, means for yieldingly holding the rings in relatively separated relation, yieldable toggle means at opposite sides of the spout for yieldingly forcing the rings into bag-holding relation and for yieldingly locking them in such relation, and a yoke-shaped handle straddling the spout and connected to said toggle means for actuating them in unison.

8. The combination of a tubular support, a bag-holding ring encircling it toward its lower end and having an annular groove therein to receive the bag mouth, a cooperative bag-holding ring encircling the support above the first mentioned ring and having an annular flange to enter said groove and clamp the bag mouth therein, said flange having a portion of its circumference cut away to receive folds in the bag mouth, and means for raising and lowering the upper ring relatively to the lower ring.

In testimony whereof I have hereunto set my hand.

HENRY RICHARDSON.