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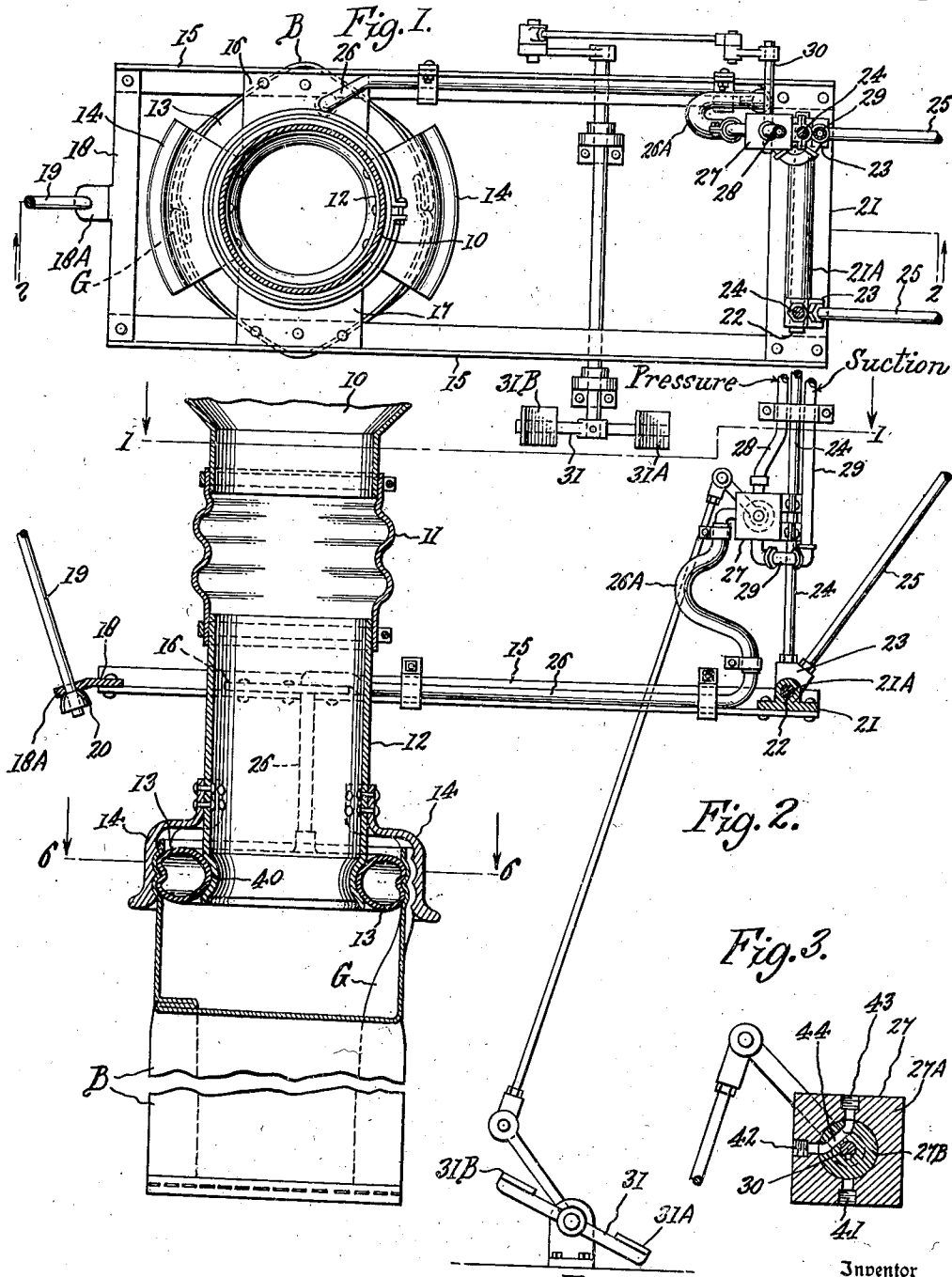
J. J. NEUMAN

2,262,620

BAG FILLING HOLDER

Filed April 22, 1940

2 Sheets-Sheet 1



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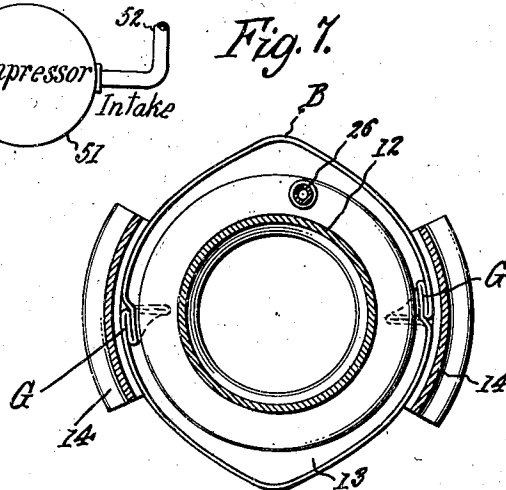
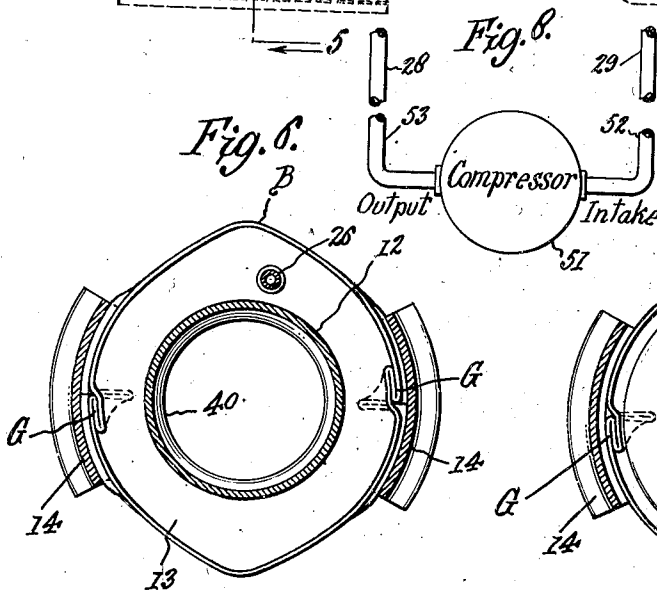
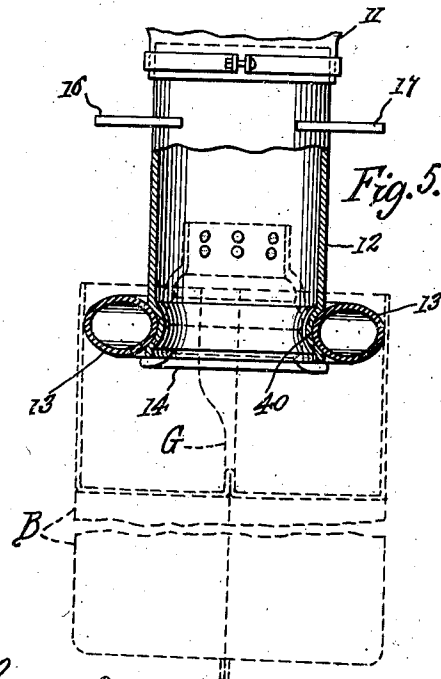
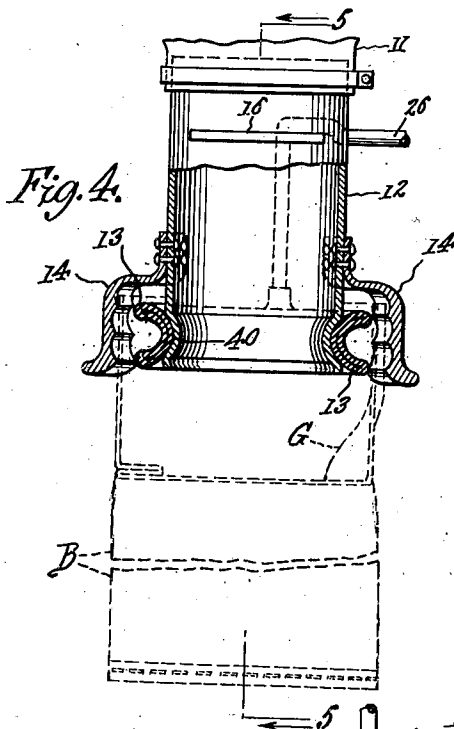
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,262,620

BAG FILLING HOLDER

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Application April 22, 1940, Serial No. 331,048

4 Claims. (Cl. 248—99)

The present invention relates to improvements in Bag filling holders and aims to provide certain improvements over my prior Patents Nos. 2,156,224 granted April 25, 1939; 2,159,858 granted May 23, 1939; and the Richardson Patent No. 2,178,494 granted October 31, 1939.

More particularly the invention relates to certain improvements in pneumatic tube filling holders, more especially to such a holder for use in filling paper or cloth bags with granulated or powdered commodities, such as sugar, grain, salts, cement or like materials.

It is a primary object of this invention to provide a holder which is semi-automatic in operation and on which the empty bag or sack may be placed with a minimum loss of time and effort.

Another important object is to provide such a holder embodying means for firmly gripping the bag at the upper edge thereof and shaking it while in a suspended condition during filling to compact the commodity with which the bag is being filled.

A further object is to provide such a holder that is adaptable without alteration to filling both cloth and paper bags and which will provide a dust-tight seal between the entire circumference of the bag and the holder to prevent loss of material when filling bags with dusty or powdered commodities.

A still further object is to provide such a holder which is adaptable to filling bags such as disclosed in my copending application Serial No. 245,546 where the gussets are folded against the side walls of the bag and remain in such a folded condition during the entire filling operation for the purpose of facilitating the subsequent sewing or other closure operation.

It is a further object of the present invention to provide a holder constructed and arranged to grip the bag with such force as to permit suspended shaking without detachment of the bag and at the same time avoiding any increase in pressure upon the mouth of the bag such as would be apt to rupture the same, and wherein the strain on the mouth of the bag is actually relieved.

A still further object of the invention is to provide an improved holder or clamping arrangement to receive the bag in which gussets have been preformed and received upon the clamping device in the folded condition, thus facilitating later sewing inasmuch as the gussets do not have to be reformed.

A still further object of the invention is to provide for a vacuum means for exhausting the

air from the pneumatic tube which binds the bag in the clamping device, such vacuum arrangement being adapted to save time over an arrangement which depends solely on the tension of the rubber tube to exhaust the air from the pneumatic expansion device.

A still further object of the invention is to provide a novel form of actuating means whereby pressure or vacuum may be put in communication with the pneumatic expansion tube to facilitate easy and quick placement of the bag in the holder and its removal therefrom.

With the above and other objects in view as will become apparent from the subjoined specification and claims, I have illustrated my invention in the attached drawings where—

Figure 1 is a plan view of the improved bag holder with a bag in position for filling as viewed on the line 1—1 of Figure 2.

Figure 2 is a vertical section on the line 2—2 of Figure 1 with parts broken away and parts shown in section.

Figure 3 is an enlarged vertical section on the centerline of the valve which controls the admission and exhaust of pressure fluid.

Figure 4 is a fragmentary vertical section taken through the improved bag holder and showing the collapsed position of the pneumatic tube and the release of the bag.

Figure 5 is a vertical section taken on the line 5—5 in Figure 4.

Figure 6 is a horizontal section taken on the line 6—6 in Figure 2 showing the expanded condition of the pneumatic tube.

Figure 7 is a similar view showing the contracted position of such tube, and

Figure 8 is a diagram showing the output and intake of the same compressor utilized for the creation of pressure and suction in the bag holder.

Referring to the drawings, a hopper 10 is provided from which material is adapted to be fed through the flexible sleeve connection 11 and the holder 12 to the bag B. The lower extremity 40 of the holder 12 is formed with an indentation extending around its entire circumference and into which the pneumatic tube 13 is adapted to be secured by any suitable means such as vulcanizing. At each side of the holder 12 and suitably secured thereto are the clamp shaped members 14 extending down and around the pneumatic tube 13. While shown as two separate clamps, if so desired, a single clamping ring of similar section may extend completely around the holder 12. The inner faces of said clamps are

formed with ribs or corrugations concentric with the outer surface of the tube 13.

The holder 12 is supported on the parallel right angle sectioned members 15 by the plates 16 and 17 which are suitably secured thereto in opposed relation. At their extremities nearest the holder the members 15 are connected by the transverse member 18 which is formed with the extension 18A adapted to receive the rod 19. The rod 19 has the collar 20 fixed on the lower extremity thereof and thereby supports the frame 15 and the holder 12. The upper end of the rod 19 is attached to a shaking device (not shown) which may be a motor driven eccentric similar to that shown in my Patent No. 1,823,283 or any other suitable means for imparting a reciprocating motion to said rod 19 for the purpose of shaking down the contents of the bag B during filling. The opposite extremities of the members 15 are also joined in fixed spaced apart relation by the transverse member 21 which is formed with the journal portion 21A adapted to receive the shaft 22. The outer ends of the shaft 22 extend beyond the journal portion 21A and have pinned thereto the rod connectors 23 into which are tapped the supporting rods 24 and 25. The rods 24 and 25 are rigidly secured at their upper extremities to any suitable supporting structure (not shown).

The tube 13 is connected by means of the pipe 26 and the flexible hose connection 26A to the valve 27 which is supported on one of the rods 24. The valve 27 consists of a hollow body portion 27A with three holes or passages 41, 42 and 43 adapted to receive hose or pipe connections and communicating in 90° spaced apart relation with a hollow inner portion. Fitting in the hollow inner portion of the body 27A is the rotatable cylinder 27B having a passage 44 formed therein which is adapted when rotated to the proper position to connect the hose 26A with either the pipe connection 28 or 29. The cylinder 27B is pinned to a shaft 30 and through suitable lever rods and shafts is adapted to be rotated through 90° by means of a double foot pedal 31 having the foot engaging plates 31A and 31B.

In operation the mouth of a bag B is placed over the tube 13 of the holder 12 and inside of the clamp members 14 and the foot plate 31A is depressed thus operating the valve 27 to connect the tube 13 with a suitable source of pressure fluid such as compressed air through the pipes 26 and 28. The tube 13 is thus inflated and presses the upper edges of the bag against the corrugations of the clamp members 14. The portions of the tube 13 between the clamp members 14, which are not restrained thereby, expand further until the slack in the mouth of the bag is taken up and the mouth is then fully expanded and a perfect seal is established between the mouth of the bag and the tube 13. No dust or material is thus permitted to escape. While the material is fed into the bag the entire frame 15 is rapidly moved up and down by the rod 19 about the pivot 22 thus thoroughly shaking down the material in the bag and compacting the same.

When the bag is filled, the operator depresses the foot plate 31B, thus operating the valve 27 to cut off the supply of compressed air and connecting the pipe 26 to the pipe 29. The pipe 29 is connected with a suction means and the air is thus rapidly exhausted from the tube 13, which is completely collapsed against the sides of the

holder 12 and the bag B drops to the floor or other suitable means for removal such as the conveyor as shown in my Patent No. 1,823,283. A new bag B is then placed on the holder and the operation repeated.

It is preferred that the pipe 29 be connected to the intake of the same compressor which supplies the pressure to the pipe 28 thus obviating the necessity of a vacuum pump.

It will be noted that since the tube 13 is completely deflated that its outer circumference is thereby greatly reduced thus permitting the empty bag to be quickly and easily placed and adjusted thereon. If the tube 13 were merely exhausted to atmosphere it would not only take longer to deflate but would still have a fairly large outer circumference thus making it much more difficult to place the empty bag thereon.

By use of the restraining clamps 14 the bag is not only held much more securely but it will be noted, as shown in Figures 1, 6 and 7, that the gussets G may be clamped in a folded condition thus preventing undue expansion of the mouth of the bag B by the filling material. Since the gussets G are thus maintained in a folded condition they do not have to be reformed prior to sewing and the time usually wasted in performing this operation is entirely eliminated.

It will be obvious that due to the construction and relative arrangement of the hopper 10, the flexible sleeve 11, the holder 12 and the tube 13 that the entire passage for material from said hopper into the bag is not only completely sealed against escape of dust or material, but that this is accomplished without the use of sliding or reciprocating parts which invariably become clogged and jammed with material. It is not believed that this is so thoroughly accomplished by any other existing shaking type bag filling holder.

It will be appreciated that the clamps 14 are rigid and therefore permit the pneumatic tube 13 to expand the bag into a very firm gripping and holding arrangement in which suspended shaking of the bag will be permitted without incurring the likelihood of the bag sliding off the support. In other words the corrugated clamps 14 afford a solid abutment against which to clamp the bag and incidentally to relieve the strain on the mouth of the bag. Also the pneumatic tube 13 expands the bag into the fixed corrugations, thus providing added protection against slipping off. The clamps 14 are constructed to cover more or less of the circumference of the tube, depending on the size and type of bag for which the holder is designed; it being desirable to leave some open space to facilitate quick placing of the empty bags on the holder.

Another advantage of the clamp 14 is that the gussets G may be clamped in a folded condition, thus facilitating later sewing as the gussets do not have to be reformed. In the Richardson patent the lateral tension induced at the mouth of the bag by the tube unfolds the gussets. The advantages of clamping the gussets in folded condition are described in my application Serial No. 245,546.

The suction or vacuum means for exhausting the air from the pneumatic tube saves time over the Richardson arrangement where the exhaust of the air depends solely on the tension of the rubber tube which takes a much longer time. Also, by using vacuum, the pneumatic tube 13 is more completely collapsed, thus facilitating easy

and quick placement of the empty bag on the holder.

In Figure 8 is shown a single compressor 51 having an intake 52 and output 53 connected respectively with the suction and pressure lines 29 and 28. This arrangement enables one compressor to furnish pressure for inflating the flexible bag-holding tube, while the intake of the same compressor provides suction for deflating the tube 13.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. In a bag filling machine including a shaking table and a filling tube carried by said table, means for holding a bag with its open mouth in place on the discharge end of said filling tube, comprising a pneumatic flexible tube carried by said filling tube and adapted to enter the mouth of the bag, rigid clamp members fixed to said filling tube and having parts extending radially outward of said pneumatic tube and adapted to surround at least a portion of the outer periphery of the mouth of the bag, said pneumatic tube being inflatable to expand the bag against said clamp members, and being deflatable to release the bag, a conduit carried by said table and in fluid communication with said pneumatic tube, pressure and suction connections to said conduit, a valve for selectively controlling the communication of said suction and pressure connections to said conduit to control the inflation and deflation of said pneumatic tube, and an actuator for said valve.

2. In a bag filling machine including a filling tube, means for holding a bag with its open mouth in place on the discharge end of the filling tube, comprising annular means on the discharge end

of said filling tube adapted to enter the mouth of the bag, said annular means being expansible and contractable radially stationary means adjacent the discharge end of said filling tube spaced radially outwardly from said annular means, means for expanding said annular means to clamp said bag against said stationary means, and means for quickly contracting said annular means to thereby permit quick and easy placement of an empty bag thereon.

3. In a bag filling machine including a filling tube, means for holding a bag with its open mouth in place on the discharge end of the filling tube, comprising an annular pneumatic tube on the discharge end of said filling tube adapted to enter the mouth of the bag, stationary means adjacent the discharge end of said filling tube and spaced radially outwardly from said pneumatic tube, means for inflating said pneumatic tube to expand the bag against said stationary means and clamp the same in place, and means for quickly and completely deflating said pneumatic tube to thereby permit quick and easy placement of an empty bag thereon.

4. In a bag filling machine including a filling tube, means for holding a bag with its open mouth in place on the discharge end of the filling tube, comprising an annular pneumatic tube on the discharge end of said filling tube adapted to enter the mouth of the bag, stationary concentric segments spaced radially outwardly from the discharge end of said filling tube and adapted to surround at least a portion of the outer periphery of the mouth of the bag, the inner surfaces of said segments being grooved circumferentially, and means for selectively inflating and deflating said pneumatic tube, said pneumatic tube cooperating with said segments during inflation to force the mouth of the bag against the grooved inner surfaces of said segments to thereby clamp the bag in place.

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