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METHOD OF CLOSING BAG TUBE ENDS

Filed April 30, 1959

2 Sheets-Sheet 1

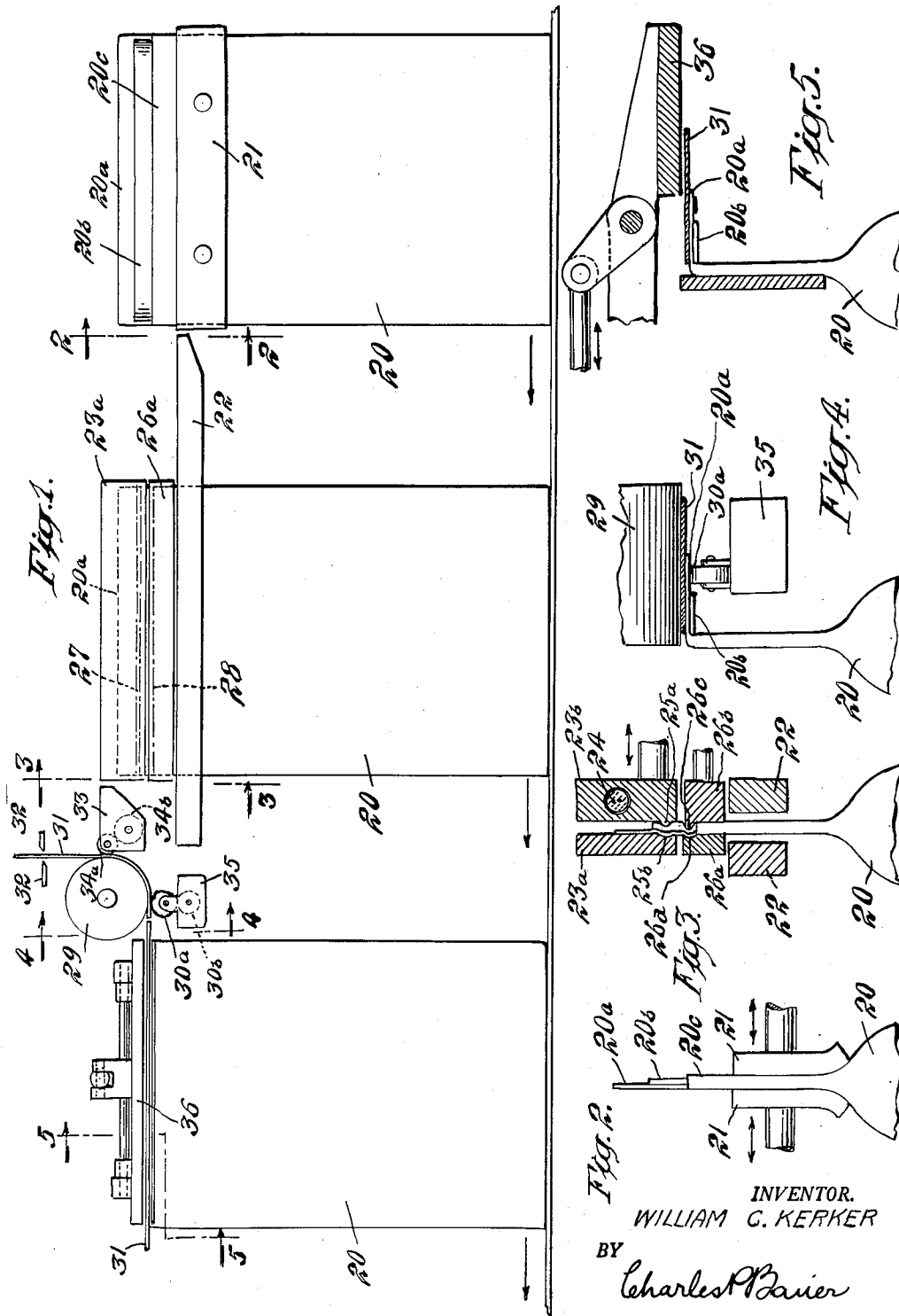


Fig. 2.

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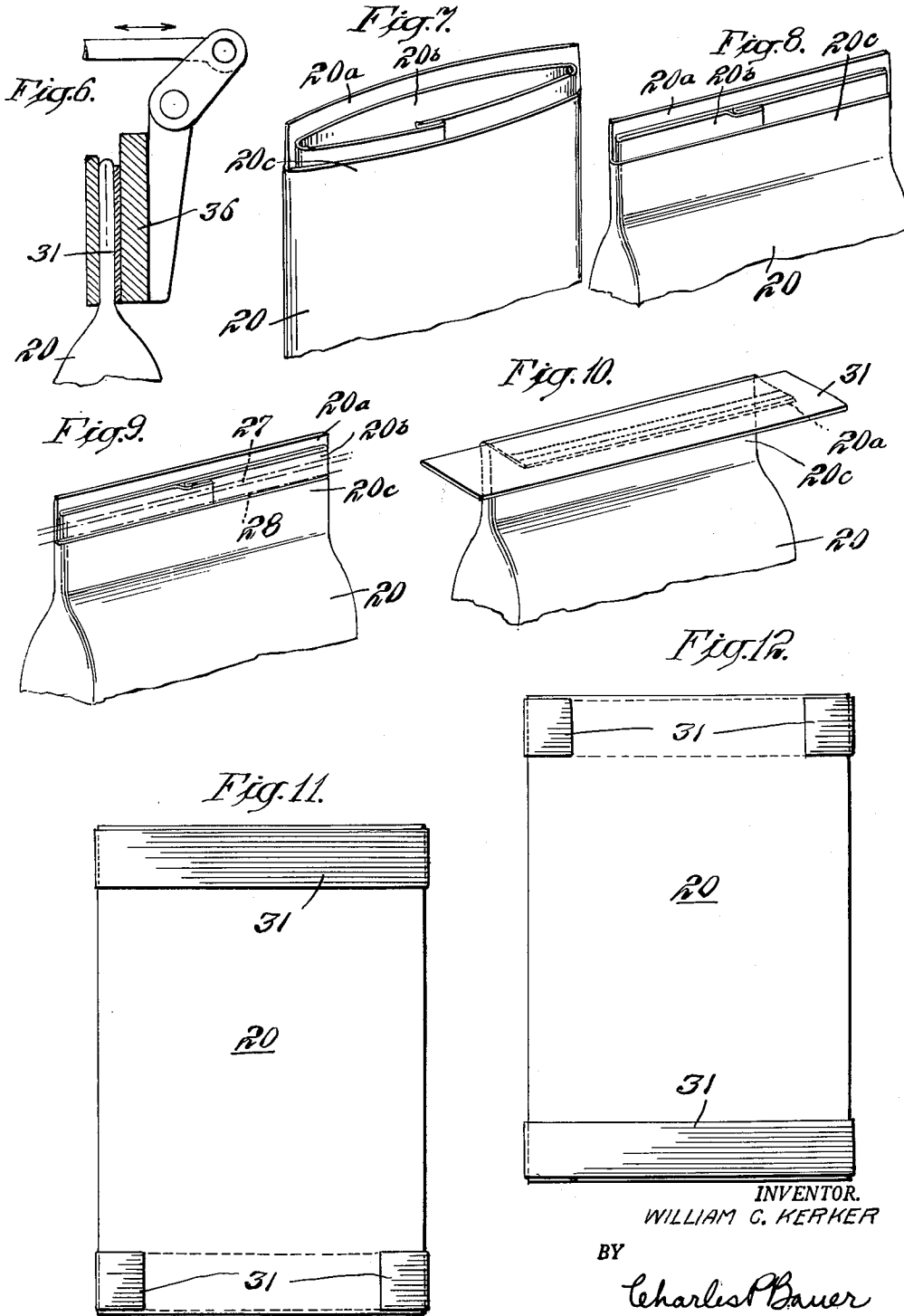
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METHOD OF CLOSING BAG TUBE ENDS

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6 Claims. (Cl. 53-27)

The invention relates to improvements in methods of closing and sealing the ends of bag tubes. More particularly it pertains to the heat sealing and closing of multiwall paper bags to form a liquid and air-tight closure. This method is particularly well suited to close the bag disclosed in the pending application of Thomas M. McCurry, Serial No. 810,079, filed April 30, 1959.

It is an object of the present invention to provide a method which heat seals a multiwall bag, pastes the lip above the heat seal line, applies tape to such lip, and folds and secures such lip to the face of the bag, resulting in a tight, neat closure.

It is a further object of the invention to provide a method which will form the closure described at a fast rate, which can be performed in a limited area of operating space, which is simple to carry out, and which operates in an effective manner.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the several steps and the relation of one or more of such steps with respect to each of the others thereof, which will be exemplified in the method hereinafter disclosed, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

FIGURE 1 is a schematic view showing successive steps in the method of the present invention;

FIGURE 2 is a sectional view taken along the line 2-2 of FIGURE 1;

FIGURE 3 is a sectional view taken along the line 3-3 of FIGURE 1;

FIGURE 4 is a sectional view taken along the line 4-4 of FIGURE 1;

FIGURE 5 is a sectional view taken along the line 5-5 of FIGURE 1;

FIGURE 6 is a sectional view similar to FIGURE 5 showing the lip of the bag folded against the face.

FIGURES 7 to 12, inclusive, illustrate stages in the formation of the closure by means of the method of the present invention.

Referring more particularly to the drawings there is shown in FIGURE 1 a multiwall paper bag 20 having a heat sealable inner ply. The bag illustrated shows the top end stepped so that the outer ply or plies 20a of the long face of the bag extend beyond the inner ply 20b which in turn extends beyond the outer ply or plies 20c of the short face. The advantages of such construction are fully set forth in the copending application referred to above.

After the bag has been filled, FIGURE 7, pressure is applied to the faces over an area above the filled material. This can be done by pressure plates 21, as shown in FIGURES 1 and 2, which plates are adapted to be moved together or apart. The application of pressure to the bag faces of the filled bag serves to squeeze a certain amount of air out of the bag and to bring the faces into superimposed position for the heat sealing step. FIGURE 8 illustrates the bag after completion of this step.

The bag is then passed between a pair of guide rails 22 to a heat sealing station shown in FIGURES 1 and 3. A jaw 23b is moveable and cooperates with a jaw 23a for

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the application of heat and pressure to the upper lip of the bag. The jaw 23b contains a heating element 24 which supplies a line of heat to the bag through the bar 25a affixed to the jaw. The jaw 23a has a groove 25b which mates with the bar 25a during the heat sealing operation. Below the heat sealing jaws and insulated therefrom is another pair of jaws 26a and 26b. The jaw 26b is moveable and has a scoring bar 26c which mates with the groove 26d in the jaw 26a and scores the bag below the heat seal line. In the particular bag shown, the heat seal is made along a line 27 running across the top edge of the heat sealable inner ply while the score line 28 is made across the heat sealable inner ply just above the top edge of the short face of the outer ply (FIGURE 9). This score line facilitates the folding of the lip as hereinafter described. It will be understood that the heat seal line and the score line can be positioned to suit the particular needs of the bag to which this method is being applied.

Upon completion of the heat sealing of the inner ply the bag is passed over a blade which turns the extended lip over along the score line 28 so that it is substantially at right angles to the faces of the bag. While in such angular position the extended lip is fed between the tape roll 29 and the paste roll 30a. The tape roll applies a strip of tape 31 to the extended lip of the bag. Such tape is cut off by the knives 32 and is of sufficient length and width to project beyond the lip on the three edges. If gummed tape is used the pan 33 contains water which is fed by rolls 34a and 34b to the tape. If ungummed tape is employed the pan 33 is filled with paste similarly fed to the tape. The paste roll 30a picks up paste from the roll 30b running through the paste in pan 35 and applies it in a band to the edge of the extended outer ply. FIGURE 10 shows the bag at this stage.

The bag is now made so that the extended lip is positioned under a folding plate 36, shown in FIGURES 1 and 5, which plate is actuated to fold over the extended lip along the score line 28 against the short face of the bag (FIGURE 6). The paste on the extended edge of the outer ply will hold the extended lip in folded position whereas the pasted tape will reinforce the closure and cover the edge of the lip, thus insuring a neat and tight closure. In some cases where there are few plies or they are of light weight, the pasted turned down lip will provide a sufficient and effective closure without the use of the tape and this step may be omitted. The ends of the tape are preferably turned over the side edges of the bag and secured to the opposite face, as shown in FIGURE 12. If the bottom of the bag has been closed in a similar manner, it will be apparent that both ends of the bag will have the same neat, attractive appearance (FIGURES 11 and 12).

It should be further noted that the entire extended lip consisting of the outer ply and the heat sealed inner ply is folded over along the top edge of the short face and secured thereto. Consequently, any pressure from the contents of the bag will be exerted against the fold line rather than against the heat seal. This is particularly important in the packaging of granular materials which have a tendency to work into the heat seal and eventually break such seal causing leakage.

In carrying out this method a suitable horizontal conveyor may be employed to move the bag through the various stages illustrated in FIGURE 1. Although this particular method has been described in conjunction with a particular type of bag, it will be evident that the method can also be used in providing a similar closure for other types of multiwall paper bags having a heat sealable inner ply.

Since certain changes may be made in carrying out the above method without departing from the scope of the in-

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vention, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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

1. The method of closing and sealing the open end of a filled multiwall bag having a stepped end with an exposed heat sealable inner ply of the type described which comprises the steps of applying pressure to the bag faces over an area above the filled material to evacuate air and align the faces, heat sealing the exposed inner ply to close the bag, folding over the end of the bag along a line below the heat seal band, adhesively securing a tape over the edge of the folded portion and securing such folded over portion and tape to the face of the bag.

2. The method of closing and sealing the open end of a filled multiwall bag having a stepped end with an exposed heat sealable inner ply of the type described which comprises the steps of applying pressure to the bag faces over an area above the filled material to evacuate air and align the faces, heat sealing the exposed inner ply to close the bag, scoring the bag along a line below the heat seal band, adhesively securing a tape over the edge of the folded portion and securing such folded over portion and tape to the face of the bag.

3. The method of claim 2 in which the steps of heat sealing and scoring are performed simultaneously.

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4. The method of claim 2 which includes the step of applying and adhesively securing a tape over the edge of the folded portion and the face of the bag.

5. The method of closing and sealing the open end of a filled multiwall bag having a stepped end with an exposed heat sealable inner ply of the type described which comprises the following steps while the bag is in an upright position: applying pressure to the bag faces over an area above the filled material to evacuate air and align the faces, heat sealing the exposed inner ply to close the bag, partially folding over the end of the bag along a line below the heat seal band to a plane angularly disposed to the faces of the bag, adhesively applying a tape along the outer side of the folded over portion while in such angularly disposed position with the tape extended over the lateral edge of such portion, applying adhesive to the inner side of such portion, completing the folding over and adhesively securing such portion and tape against the face of the bag.

6. The method of claim 2 in which the steps of scoring and folding are carried out together.

References Cited in the file of this patent

UNITED STATES PATENTS

2,015,199	Sparks et al.	Sept. 24, 1935
2,356,472	Rothaug	Aug. 22, 1944
2,404,337	Williams et al.	July 16, 1946
2,409,621	Geimer et al.	Oct. 22, 1946
2,571,103	Belcher et al.	Oct. 16, 1951
2,729,928	Willbrandt	Jan. 10, 1956