June 12, 1962 W. T. LESLIE 3,038,427

DEVICE FOR APPLYING BEADING TO STITCHED END BAG

Filed April 1, 1960 2 Sheets-Sheet 1

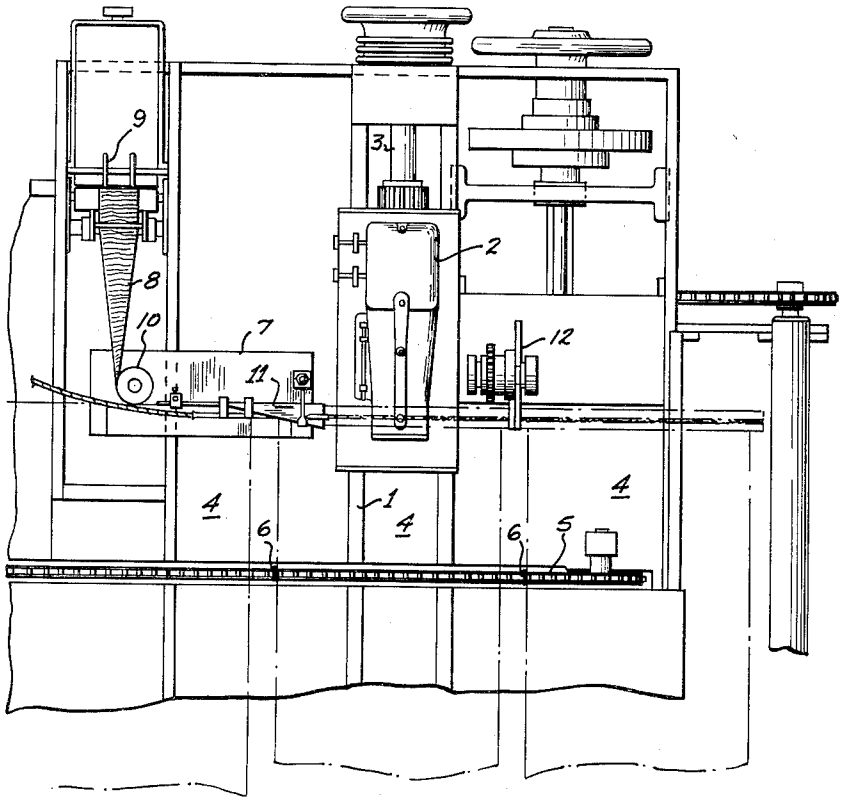


FIG. 1.

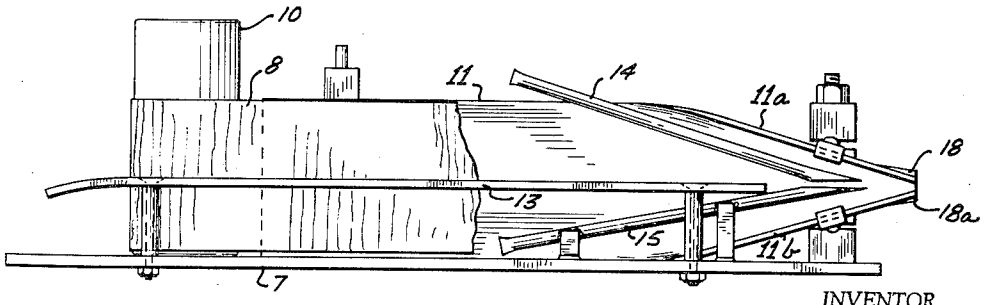


FIG. 2.

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DEVICE FOR APPLYING BEADING TO STITCHED END BAG

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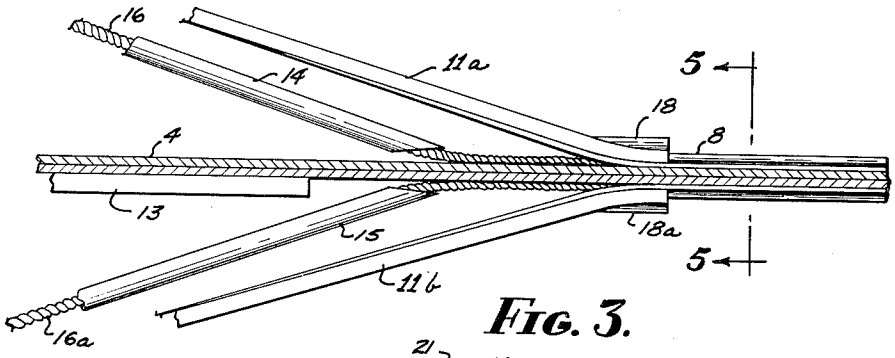


FIG. 3.

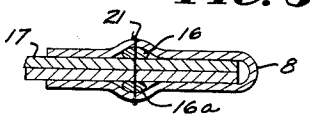


FIG. 7.

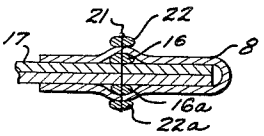


FIG. 8.

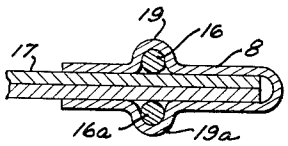


FIG. 5.

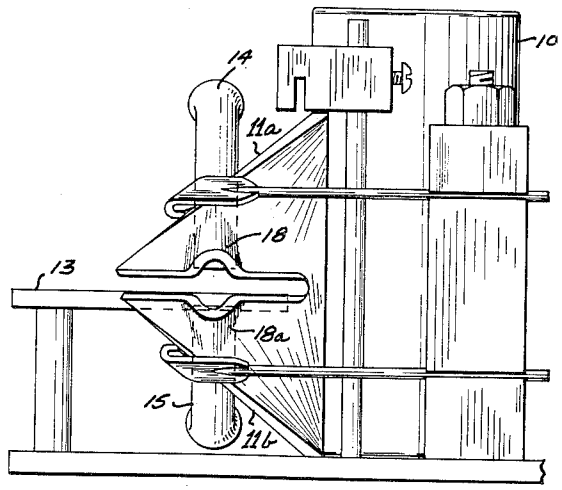


FIG. 4.

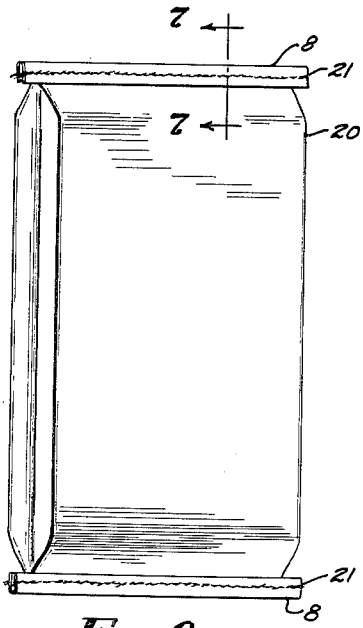


FIG. 6.

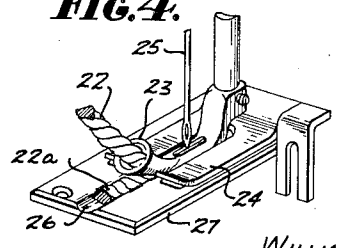


FIG. 9.

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3,038,427

DEVICE FOR APPLYING BEADING TO STITCHED END BAG

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Filed Apr. 1, 1960, Ser. No. 19,412
2 Claims. (Cl. 112—11)

This invention relates to stitched end bags and to stitching machines for applying such stitching and more particularly to a device for use in conjunction with such stitching machines to present an aligned beading for incorporation in the stitched ends of the bags, thereby producing bags in which the lines of stitching are sealed by the interposed beading.

In the manufacture of certain types of bags a plurality of webs of paper are folded longitudinally one about the other into tubular form and the nested tubes are cut into bag lengths which are then delivered one at a time to sewing machines which stitch both ends of each bag length to completely close the bag with the exception of a filling opening or valve adjacent one end thereof. Usually, binding tapes are folded about the ends of the bag lengths and sewed thereto simultaneously with the stitching of the ends of the bag lengths. Bags formed in this manner are extensively used for packaging and shipping commodities of various kinds, including finely divided or powdered materials, such as cement, lamp black and the like. Such bags are not, however, entirely satisfactory when used with very fine materials in that such materials tend to sift through the perforations formed where the stitching passes through the bag walls. While various expedients have hitherto been proposed for overcoming this difficulty, none of them has been wholly satisfactory. It has been proposed, for example, to apply gummed tape over the line of stitching to thereby seal it against leakage. Considerable difficulty has been experienced in effecting a tight bond between the gummed surface of the tape and the bag end, with the result that in use the tape tends to come loose and peel away, and leakage still occurs. It has been suggested that beading, i.e., loosely braided rope-like material, usually formed from cotton strands, be incorporated in the line of stitching to assist in sealing the perforations made by the sewing machine needle as it stitches the bag. Such beading is fed beneath the pressure foot of the sewing machine and, as the line of stitching is formed, the beading is stitched to the outside of the bag and hence overlies the tape. While this arrangement prevents the material from sifting through the perforation in the tape, I have found that leakage still occurs, the material in the bag sifting through the perforations in the bag walls and thence outwardly between the bag walls and the tape.

In accordance with the instant invention, I have found that a sift-proof condition can be obtained where the beading directly overlies the outermost bag wall and is covered by the tape, the stitching passing through the tape, the beading, and the bag walls. Where this is done, the beading effectively seals the perforations in the outermost bag wall and leakage is thereby prevented. Such arrangement required that the beading be interposed between the bag wall and the tape prior to stitching.

Accordingly, a principal object of the instant invention is the provision of a device which in a continuous operation will present and feed beading into proper position on one or both sides of a bag tube, simultaneously present and feed a length of tape into position and fold it about the bag end with the beading underlying the tape, the device acting to present the properly positioned and oriented tape and beading to the sewing machine for stitching.

Still a further object of the invention is the provision of a device of the character described which is simple in construction and yet positive in action, and which insures that the beading will be properly aligned for subsequent stitching.

Still a further object of the invention is the provision of a stitched end bag in which a line of beading is incorporated in the stitching, the beading lying between the outermost ply of the bag and the tape.

The foregoing, together with other objects of the invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by that construction and arrangement of parts of which I will describe as exemplary embodiment.

Reference is now made to the accompanying drawings wherein:

FIGURE 1 is a fragmentary plan view of a bag sewing machine incorporating the beading applicator of the instant invention.

FIGURE 2 is an enlarged side elevational view of the beading applicator and tape folding means.

FIGURE 3 is an enlarged fragmentary side elevational view illustrating the application of the beading.

FIGURE 4 is an end elevational view taken from the right of FIGURE 2.

FIGURE 5 is a vertical sectional view taken along the line 5—5 of FIGURE 3.

FIGURE 6 is a perspective view of a stitched end multiple wall bag.

FIGURE 7 is an enlarged fragmentary sectional view taken along the line 7—7 of FIGURE 6.

FIGURE 8 is a sectional view similar to FIGURE 7 but illustrating a double row of beading lying on both sides of the tape.

FIGURE 9 is a fragmentary perspective view of a sewing machine foot equipped with a beading feeding tube.

In the drawings I have illustrated the beading applying device in connection with a bag sewing machine of a well known type, but it is to be understood that the device may take various forms and may be used in connection with sewing machines of various kinds.

Referring now to FIGURE 1, I have therein shown a a portion of a bag sewing machine comprising a supporting frame 1 on which is mounted a sewing head 2 which is driven from a power shaft 3 connected to any suitable source of power. The bags 4 are moved to and beyond the sewing head in spaced apart relation by means of an endless conveyor, one chain of which is shown at 5, the conveyor being provided with lugs 6 engaging the rear or trailing edges of the bag lengths.

Mounted on the frame 1 in advance of the sewing head is the tape and beading applicator, indicated generally at 7, which continuously folds a sealing tape about the ends of the bags as they move to the sewing head, the tape being sewed to the bags by the same stitching which closes the ends of the bags. The tape 8 is drawn from a source of supply through a paste applying mechanism 9, about an upright roller 10 which moves the tape to an edge-wise upright position from which it is then drawn through a folding member or sweep 11 which folds it about the ends of the bag; and after the tape has once been connected to a bag, it is drawn continuously from the source of supply as successive bags move to the sewing head. The mechanism for applying the beading is an integral part of the applicator 7, the details of which will be explained more fully hereinafter. Subsequent to the application of the tape and beading, the sewed bags are connected together by a continuous length of tape, and a cutting device 12 is provided beyond the sewing head to sever the tape and beading between adjacent bags, the cutting device acting in timed relation to the

movement of the bag lengths. While not illustrated, it is to be understood that a like arrangement of parts will be provided on the opposite side of the frame 1 for closing and stitching the opposite end of each bag tube, as will be well understood by the skilled worker in the art.

As seen in FIGURE 2, the applicator 7 is provided with an elongated, narrow platform 13 adapted to support the end of each bag and align it midway between the upper and lower edges of the tape 8 as the tape moves end-wise about the upright roller 10. As the tape passes along the folding member 11, it contacts the inclined portons 11*a* and 11*b* thereof which act to fold the opposite side edges of the tape about the end of each bag. In accordance with the instant invention, a pair of feeding tubes 14 and 15 are positioned in advance of the inclined portions 11*a*, 11*b*, the tubes being inclined toward each other with their inner ends positioned for near contact with a bag end being advanced along the platform 13. Thus, as seen in FIGURE 3, the feeding tubes 14 and 15 will serve to juxtapose continuous lengths of beading 16 and 16*a* to opposite sides of a bag length 4 as the latter passes beyond the platform and just prior to the time the inclined portions 11*a* and 11*b* of the folding member juxtapose the opposite side edges of the tape 8 to the opposite side of the bag tube. As in the case of tape 8, after the lengths of beading 16, 16*a* have been connected to the leading bag, they will be continuously drawn from the source of supply as successive bags move to the sewing head. While for purposes of simplicity the bag length 4 illustrated in FIGURE 3 is shown as a single ply bag, it will be understood that most stitched end bags are of multiwall construction, being composed of a plurality of tubular plies.

Since the beading 16, 16*a* is of substantial mass, even when compacted, it has been found desirable to provide channels 18, 18*a* in the inclined portions 11, 11*a* of the folding device which, as seen in FIGURE 4, are in alignment with the applied beading. These channels serve to deform the tape 8 to thereby provide continuous longitudinal pockets 19, 19*a* (see FIG. 5) in the folded tape 8, the pockets receiving the lengths of beading 16, 16*a*. It will be understood, of course, that the feeding tubes 14 and 15 will be positioned so as to apply the beading in proper alignment so that the line of stitching applied by the sewing head 2 will pass through the beading, thereby stitching together the bag end, the beading, and the tape, all in a continuous operation. As should now be apparent, the instant device provides a very efficient means for applying beading to the end of the bag lengths in the area beneath the tape and properly aligning it for contact by the stitching. Since the beading will lie next to the outermost bag ply it serves to effectively seal the perforations formed by the stitching as it passes through the plies, and at the same time the beading is covered and protected by the tape. Since the tape itself is stitched to the bag, it will not pull off even though the adhesive bond fails. Subsequent to stitching, the cutter 12, which severs the tape in the intervals between adjacent bags, also will be utilized to sever the beading, thereby separating the bags from each other.

A completed bag is shown at 20 in FIGURE 6, the ends of the bag being sealed by lines of stitching 21 passing through the ends of the bag, the beading 16, 16*a* and the tape 8. As best seen in FIGURE 7, the stitching operation tends to flatten the beading and, as will be evident, the beading surrounds and closes the perforations in the bag tube formed by the stitching needle. The beading thus effectively seals perforations against material seeking to sift therethrough.

As illustrated in FIGURE 8, it is within the spirit and purpose of the invention to provide additional rows of beading overlying the tape and held in place by the lines of stitching, such additional beading being indicated at 22 and 22*a*. This arrangement provides a double seal against material seeking to sift from the bags. The beading 22, 22*a* may be conveniently applied as a part of the continuous machine operation by providing the pressure foot of each sewing machine with a feeding tube 23, as seen in FIGURE 9, the tube being secured to the foot 24 and positioned to juxtapose the beading beneath the needle 25, the beading passing beneath the foot 24 and being stitched in alignment with the inner beading 16. On the underside the beading 22*a* is fed into position by means of a groove 26 in the feeding dog 27, which dog is part of the standard sewing machine.

If desired, the beading and thread may be passed through a waterproofing solution prior to sewing, to thereby provide an even more efficient closure. Alternatively, the beading and thread may be formed from inherently waterproof material, such as nylon and the like.

Having thus described my invention in an exemplary embodiment, and with the understanding that modifications may be made without departing from the spirit and the purpose of it, what I desire to secure and protect by Letters Patent is:

1. In a bag stitching machine wherein the ends of flat folded tubular bag bodies are advanced beneath a sewing head for stitching, a combined tape and beading applicator positioned in advance of the sewing head, said applicator comprising a horizontally disposed platform of a size to receive and support the ends of bag tubes advanced toward the sewing head, means for delivering a continuous length of tape to an endwise position adjacent said platform with a longitudinal edge of said platform extending lengthwise of the tape intermediate its opposite side edges, sweep means for infolding the opposite side edges of the tape about the ends of the bag tubes as the bag tubes are advanced over said platform, said sweep means consisting of a plate the leading edge of which is vertically disposed, said plate being gradually turned inwardly from top and bottom and terminating at its trailing end in a horizontally disposed nip of a size to cause the opposite side edges of the tape drawn therethrough to be juxtaposed to opposite sides of the bag tubes as the tubes pass through said nip, feeding means in advance of said nip for feeding continuous lengths of beading into contact with opposite sides of the bag lengths, said feeding means comprising an elongated pair of tubular members lying within the confines of the inturned sweep and arranged to converge on opposite sides of the bag tubes in an area intermediate the trailing end of said platform and the nip of said sweep, and a pair of channels formed in the nip of said sweep in alignment with the discharge ends of said tubular members, said channels extending away from the surfaces of said sweep contacting the tape and acting to form continuous longitudinal pockets in the tape overlying the length of beading fed into contact with the bags, said channels coacting with said tubular members to maintain the lengths of beading in vertical alignment, whereby a single line of stitching may be passed through both sides of the tape and the lengths of beading covered thereby.

2. In combination in a bag stitching machine, a sewing head, conveyor means for sequentially presenting the ends of flat folded tubular bag bodies to said sewing head for the application of a single line of stitching across the ends of said bag bodies, a tape and bead applicator mounted in advance of said sewing head, said applicator comprising a horizontally disposed platform positioned to support the ends of bag tubes advanced toward the sewing head, means for delivering a continuous length of tape to an endwise position adjacent said platform with a longitudinal edge of the platform extending lengthwise of the tape intermediate its opposite side edges, said last named means including means for applying adhesive to the surface of the tape facing said platform, sweep means for infolding the opposite side edges of the tape about the ends of the bag tubes as the tubes are advanced over said platform, said sweep means comprising an elongated member having a leading edge which is essentially vertically disposed

and mounted in close proximity to the longitudinal edge of said platform but spaced therefrom by a distance sufficient to permit the tape to pass therebetween, said elongated sweep member being gradually turned inwardly from top and bottom and terminating at its trailing end in a horizontally disposed nip of a size to cause the opposite side edges of the tape drawn therethrough to be juxtaposed to the opposite sides of the bag tube as they pass through said nip, said nip lying beyond the trailing end of said platform in general horizontal alignment therewith, a pair of elongated tubular members positioned to feed continuous lengths of beading into contact with opposite sides of the bag tubes in vertical alignment, said tubular members lying within the confines of the inturned portions of said sweep and positioned with their discharge ends in close proximity to the path of travel of the bag tubes as they pass from said platform to the nip of said sweep, and mating channels formed in the upper and lower surfaces of said sweep means in the area of said nip in alignment

with the discharge ends of said tubular members, said channels acting to form continuous longitudinally extending pockets in the infolded sides of the tape positioned to surround the lengths of beading, with the channels and the lengths of beading contained therein in vertical alignment so that a single line of stitching may be concurrently passed through the tape and beading.

References Cited in the file of this patent

UNITED STATES PATENTS

1,508,695	Hill	Sept. 16, 1924
1,764,846	Maier	June 17, 1930
1,860,339	Le Vesconte	May 24, 1932
2,115,282	Potdevin	Apr. 26, 1938
2,242,857	Fortuin	May 20, 1941
2,512,048	Althoff	June 20, 1950
2,594,207	Pierce	Apr. 22, 1952
2,847,955	Peterson	Aug. 19, 1958