March 9, 1937. R. S. GRANT ET AL 2,073,476

METHOD FOR MAKING WINDOW BAGS AND WRAPPERS

Original Filed May 10, 1933 4 Sheets-Sheet 1

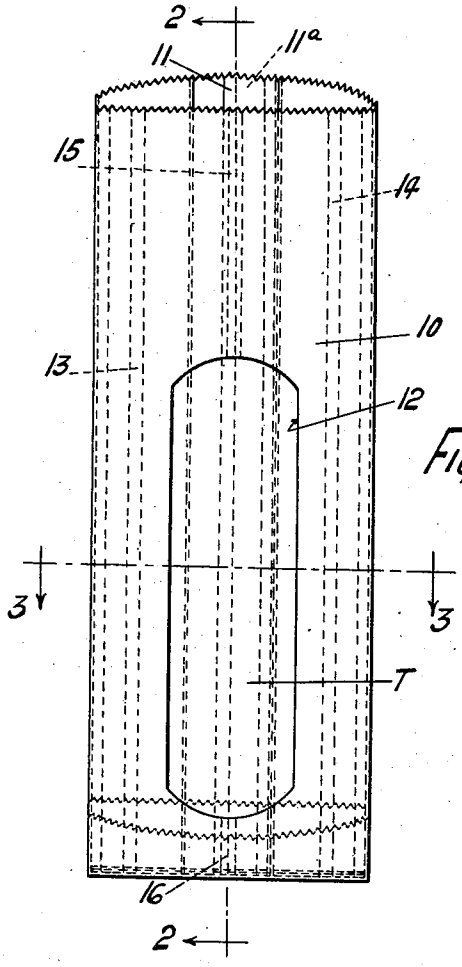



FIG. - 1

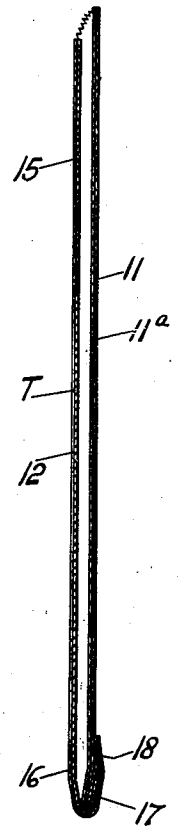



FIG. - 2

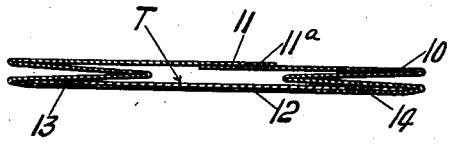



FIG. - 3

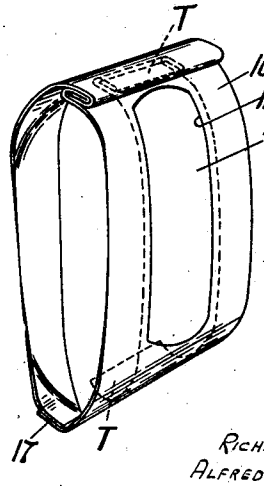



FIG. - 4

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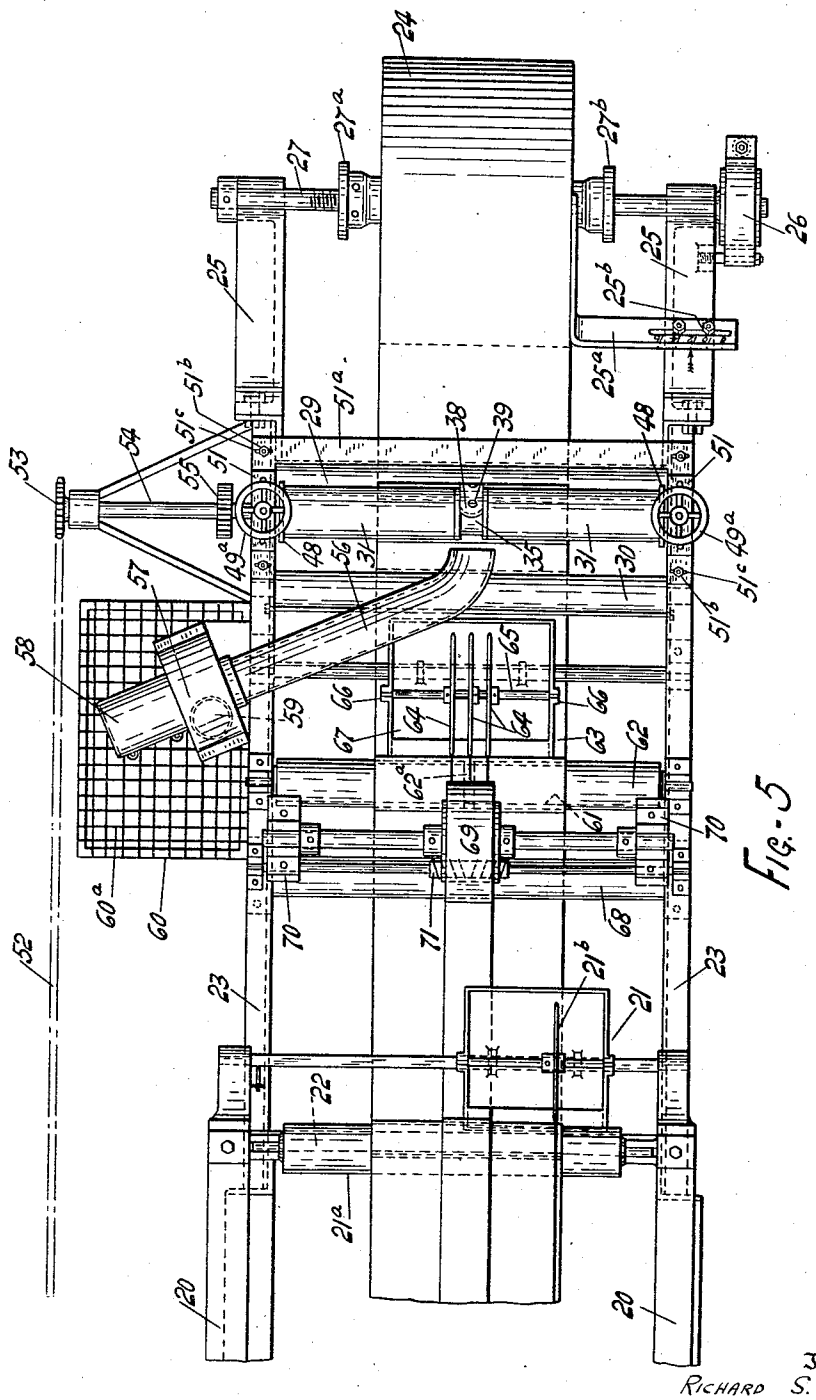


FIG. 5

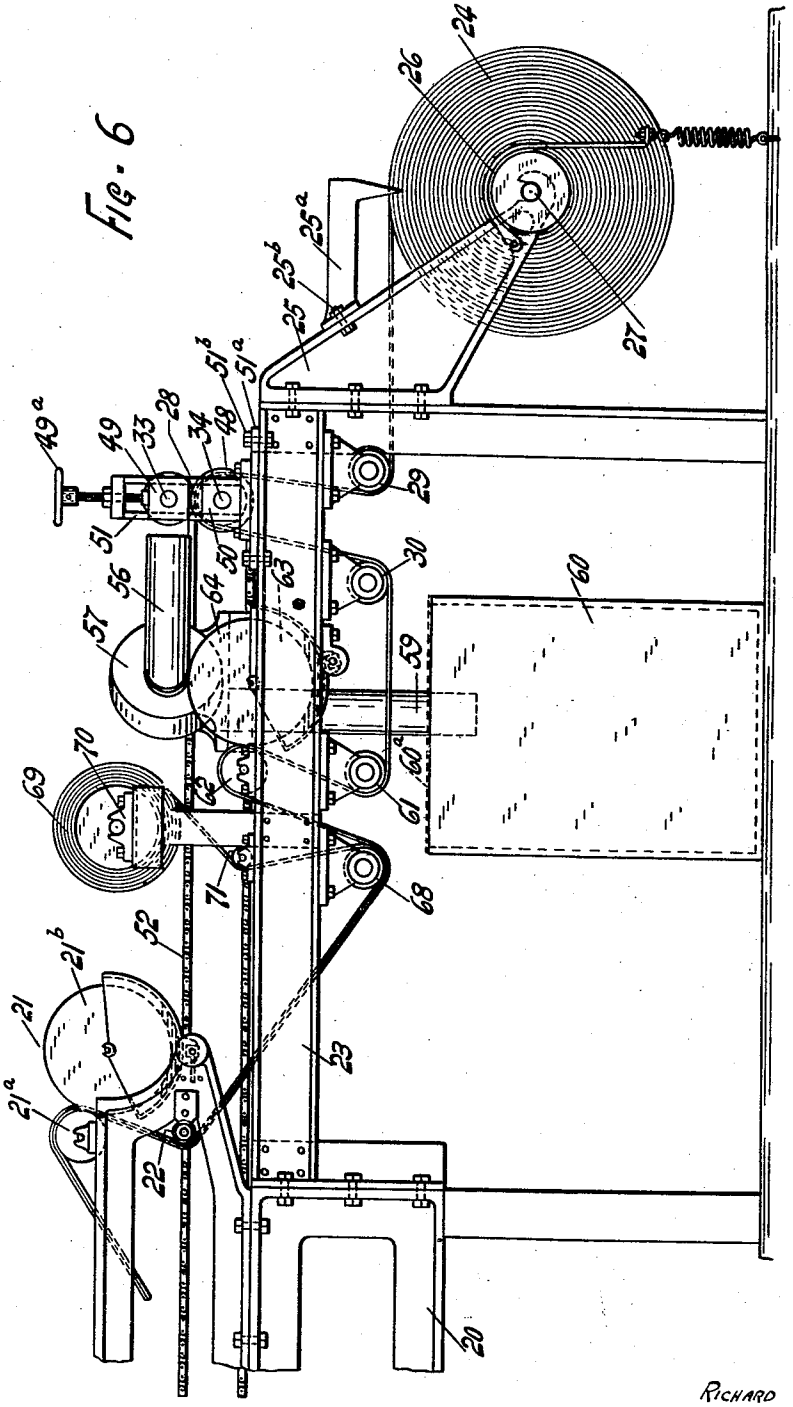
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METHOD FOR MAKING WINDOW BAGS AND WRAPPERS

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Fig. 6




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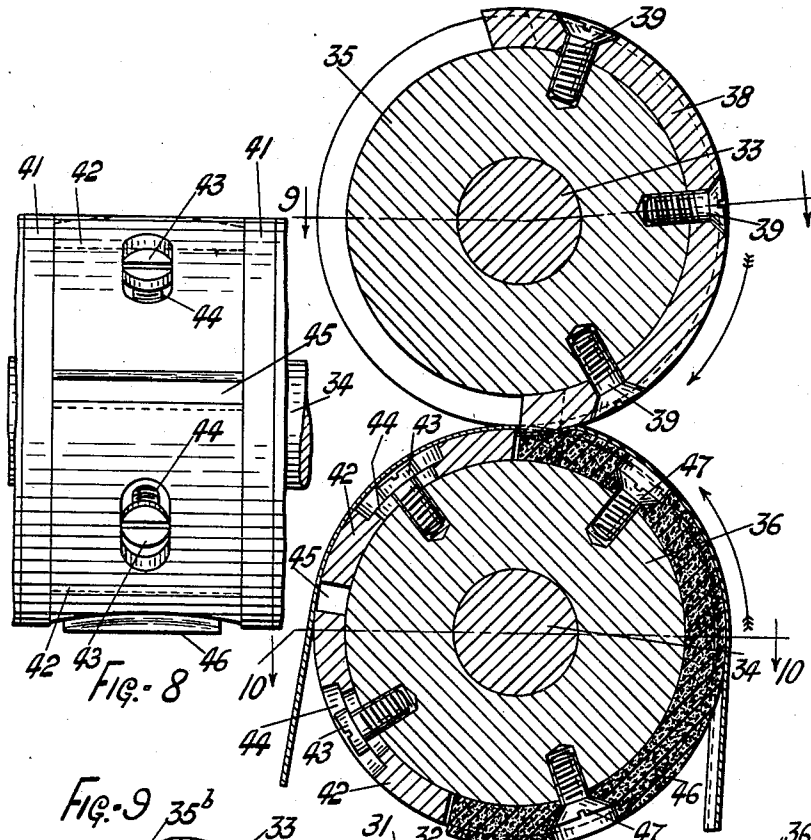



FIG. 7

FIG. 8

FIG. 9

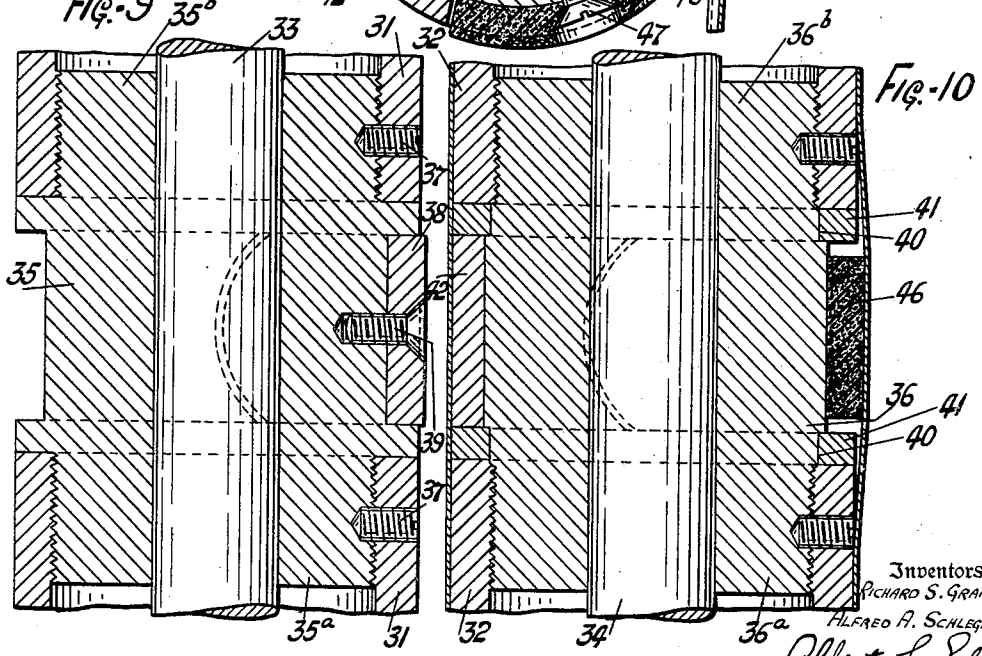



FIG. 10

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## METHOD FOR MAKING WINDOW BAGS AND WRAPPERS

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Original application May 10, 1933, Serial No. 670,336. Divided and this application October 31, 1935, Serial No. 47,570

1 Claim. (Cl. 93—35)

This invention relates to methods and equipment for making window bags and wrappers.

Heretofore there have been many attempts to provide effective, simple and economical procedure and apparatus to make window bags or wrappers, but such equipment and procedure for making the same as heretofore provided have not been entirely satisfactory.

In accordance with one of the prior practices, window-openings are cut in a continuous web of paper and patches of transparent material are adhesively secured over said openings. The cutting and feeding of the transparent patches into proper registry with the window openings require more or less complicated procedure and apparatus.

In accordance with another prior practice, a composite tube made of strips of paper and transparent material secured together in parallel relation is formed into bags having a display portion the full length thereof. This when formed into bags, provides a free, non-reinforced edge of the transparent material at the top of the bag and provides an area of non-reinforced, transparent material at the bottom of the bag.

One purpose of the invention is to provide procedure and apparatus whereby window openings are cut in a continuous web of paper, and a continuous sheet of transparent material applied and secured throughout its length to said paper so as to cover said openings.

A further purpose of the invention is to provide in an apparatus for forming openings in a continuously moving web of paper or the like of improved means for removing from the apparatus the patches of paper or the like cut or punched from the web to form said openings.

A further purpose of the invention is to provide an improved apparatus for forming openings in a continuously moving web of paper or the like.

A further purpose of the invention is to provide effective apparatus for the application of adhesive to a continuously moving web of paper or the like, having a series of openings therein for effectively securing a continuously moving web of transparent material onto said paper web over said openings.

A further purpose of the invention is to provide as an effective attachment for a bag-making machine equipment such as described in any one or more of the next preceding four paragraphs to be operated in synchronism with said bag-making machine.

The foregoing and other purposes of the invention are attained by the procedure and equipment illustrated in the accompanying drawings and described somewhat in detail in the succeeding paragraphs. It is to be understood that the invention is not limited to the form thereof illustrated and described.

This case is a division of our copending application Serial No. 670,336, filed May 10, 1933.

Of the accompanying drawings,

Figure 1 is a front elevation of a display window bag made by using the invention;

Figure 2 is a longitudinal section on line 2—2 of Figure 1;

Figure 3 is a transverse section somewhat enlarged on line 3—3 of Figure 1;

Figure 4 is a perspective view of a bag when filled and closed about its contents;

Figure 5 is a plan view of equipment embodying and adapted to carry out the invention as an attachment to a bag machine, one end portion of which is shown;

Figure 6 is a side elevation of the equipment shown in Figure 5;

Figure 7 is an enlarged section through the rotary window forming dies;

Figure 8 is a fragmentary elevation of the lower die;

Figure 9 is a section on line 9—9 of Figure 7; and

Figure 10 is a section on line 10—10 of Figure 7.

Referring to Figures 1 to 4 of the drawings, showing the invention as embodied in a bag, the numeral 10 indicates the body of a bag formed of a tube of paper with the usual seam 11 at the back of the bag and formed with the window opening 12 in the face of the bag intermediate the ends of the tube. The seam 11 may be secured by the usual strip of adhesive 11a. The wall of the tube may comprise the usual front and rear portions and the connecting side portions, which latter may be of the usual bellows type as shown.

On the rear of the front face of the bag a continuous strip of transparent material T, such as a sheet comprising a cellulose derivative which may be a product obtainable upon the market under the trade name "Cellophane," is secured longitudinally substantially from the top to the bottom of the bag preferably by continuous strips 13 and 14 of adhesive at each side of the opening and strips 15 and 16 respectively above and below the opening 12.

The transparent material T preferably extends substantially the full length of the tube from

which the bag is formed so that it extends into the bottom fold 17 of the bag, the adhesive strips 13, 14 and 16 also preferably extending into said fold. The fold is preferably secured by an adhesive strip 18 in the usual way. Any form of fold to provide the bottom may be used such as the simple fold shown or the fold heretofore used in providing a flat-bottom, SOS or automatic bag.

By this construction it will be apparent that the transparent material is so incorporated in the bag that there is no tendency for separation of the transparent material from the flexing of the bag in inserting materials therein or in folding the top portion of or handling the filled bags. The transparent material being secured the full length of the bag and also anchored in the bottom fold or seam, it will flex with the material of the bag as required when filled and closed about its contents as shown in Figure 4 without separation. There are no exposed free edges of the transparent material subject to tearing and there are no areas of unsupported transparent material in or adjacent the bottom of the bags to be loosened or disrupted by flexing or pressure, nor are there any transverse parts between the transparent material and the body of the bag on the inside thereof to be loosened by the longitudinal flexure to which the bag is subjected in folding the top portion to enclose its contents or subject to being loosened by the bag filling operations or by bag filling tools. This bag may be manufactured by the use of the simple equipment and the economical procedure which will be described in the succeeding paragraphs.

With reference to Figures 5 to 10 of the drawings, the numeral 20 designates the end frame of any suitable bag-making machine to which a continuous web of bag-forming material may be supplied. In the particular machine illustrated, the adhesive applicator 21 of known construction is mounted at the end of the machine to which the bag-forming material is supplied, an idler roller 22 being provided to guide the web between the backing roller 21a and the adhesive applying roll 21b. From the applicator 21 the web is drawn through the usual bag-forming instrumentalities (not shown).

The improved attachment may comprise a frame 23 adapted to be bolted or otherwise secured at one end in operative relation with the end of frame 20, frame 23 carrying the improved equipment of the present invention.

A paper-supply reel 24 may be mounted on brackets 25 on frame 23, a brake 26 being operable on the reel to maintain the paper web drawn therefrom under tension. The reel 24 may be supported on a shaft 27 having axially adjustable reel embracing collars 27a and 27b threaded thereon to support the reel centrally of the equipment. An indicator 25a adjustably mounted on one bracket 25 may be provided to facilitate centralizing the reel 24. This indicator may be bolted as at 25b through a slot thereon and may have suitable indicia thereon as shown cooperating with a mark such as the arrow shown on the bracket 25 for facilitating proper adjustment of the indicator whereby one side of the reel 24 may be adjusted on shaft 27 into contact with the indicator properly to centralize the reel.

The rotary window-cutting dies are illustrated at 28, a roller 29 being utilized to guide the paper web to said dies and a roller 30 to guide said web from said dies.

The rotary die construction preferably comprises upper and lower rotary members each formed by a pair of tubes 31, 31 and 32, 32 respectively, each tube adapted to be removably secured in any suitable way on the shafts 33 and 34 respectively for the upper and lower dies, with the inner ends of the tubes in spaced relation and with central die supporting members 35 and 36 removably secured therebetween as by having threaded portions 35a and 35b and 36a and 36b respectively engaged in the tubes on each die-shaft and preferably secured by set screws 37, 37.

The upper die-supporting member 35 comprises a sleeve on the central shaft formed with an outer peripheral groove in which is secured an arcuate die-plate 38, screws 39, 39 being threaded through said plate into member 35 for this purpose. The outline of this plate may be that desired for the window opening and it projects beyond the periphery of tubes 31 and die-supporting member 35 whereby its outer edges providing shearing edges for cooperation with the lower die.

The lower die-supporting member 36 comprises a sleeve on the lower die shaft formed with reduced shoulders 40, 40 to support hardened rings 41, 41 in juxtaposition to the inner ends of tubes 32 and spaced apart to receive the projecting portion of the upper die-plate 38 therebetween in shearing engagement with the central edges of said rings. These rings are reversible on the shoulders 40 when worn out to present fresh shearing edges for cooperation with the upper die.

The central portion of member 36 is sufficiently reduced from the outer periphery of the tubes 32 and rings 41 as to support therein substantially flush with said periphery a pair of adjustable arcuate die plates 42, 42. The extreme ends of these plates are of such outline as to cooperate in shearing relation with the ends of the die plate 38 as shown in Figure 7 and are adjustably secured on the lower die-supporting member 36 as by screws 43, 43 threaded through slots 44, 44 in said plates, the intermediate or mean ends of the plates 42 being spaced apart sufficiently as indicated at 45 as not to interfere with proper adjustment thereof with respect to the upper die plate 38.

To facilitate disposal of the patch of paper cut from the web by the dies to form the openings therein, the space in the lower die structure between the extreme ends of the lower die plates has secured therein a yielding pad 46 of suitable material such as sponge rubber which may be retained therein by screws 47, 47 threaded into member 36, the pad being of sufficient thickness to be substantially compressed by the die plate 38 and upon release of said compression to force outwardly and upwardly of the die the cut patch of paper.

One or the other of the rotary die structures may have flanges 48, 48 at the ends thereof for embracing the ends of the other to hold the dies in proper registry.

The shafts 33 and 34 are relatively adjustable as by carrying shaft 33 on blocks 49, 49 adjustable by hand-screws 49a, 49a to move the upper roll into cooperation with the lower. The shaft of the lower die structure is preferably carried in blocks 50, 50, blocks 49 and 50 being relatively movable in brackets 51, 51 and also removable therefrom to permit replacement of the dies for various sizes or types of bags.

Brackets 51 preferably are mounted on an adjustable bar 51a on the top of frame 23, this bar

being adjustable transversely of the frame as by being secured by bolts 51b extended through slots 51c in bar 51a and secured to frame 23. By this construction the dies are adjustable widthwise of the paper web whereby the openings may be centered in the web if desired.

The dies are driven in synchronism with the bag-forming machine as by means of a chain 52 driven by a sprocket (not shown) on the bag-forming machine and trained over a sprocket 53 on a shaft 54 which may drive the lower die member and has a gear thereon (not shown) meshing with gear 55 on the upper die member, the drive from the bag-machine to the dies being such that the surface speed of the die rollers equals the surface speed of the web-feeding means (not shown) in the bag machine.

Means are associated with the dies to convey the patches of paper cut from the web away from the web to a point of disposal. The preferred means for this purpose comprises a pneumatic conveyor tube 56 having its mouth adjacent to and slightly above the posterior bight of the dies (see Figures 5 and 6), whereby the upwardly and outwardly forced patch will be projected toward said mouth from the lower die, the tube 56 being extended to a suction fan 57 driven by a motor 58 at the side of the apparatus and having an outlet 59 therefrom into a suitable receptacle 60 which may be covered by a screen 60a. The fan 57 is adapted to maintain a strong current of air inwardly from the mouth of the tube 56 to the outlet 59 to convey the patches of paper to the receptacle 60.

An idler roll 61 is arranged to guide the web of paper as best shown in Figure 6 from the roller 30 to the backing roller 62 for an adhesive applicator indicated generally by the numeral 63. This device includes three applicator discs 64, 64 preferably adjustably secured upon a shaft 65 journaled in bearings 66, 66 on a supply tank 67 for the adhesive, discs 64 dipping into adhesive in this tank whereby the peripheries thereof will carry films of adhesive. These discs are adapted to press against the web passing over roll 62 and are so arranged as to apply three comparatively narrow strips of adhesive to the web of the paper, one continuous strip at each side of the row of window openings in the web and the other strip centrally of the web between the window-openings therein, this strip being interrupted, of course, by the window openings. In order that the central disc may not apply adhesive to the surface of roll 62 which is exposed by the window openings as the web passes thereover, which adhesive would be smeared onto the under surface of the web, which later becomes the outside of the bag, the roll 62 is formed with a reduced central portion or groove as at 62a with which the central applicator disc cannot contact. This reduced portion or groove is sufficiently narrow that the tension of the paper stretched across this groove will be sufficient to maintain the paper in effective contact with the central applicator disc to receive an adequate amount of adhesive.

An idler roll 68 is so arranged as to have the web of paper advancing from the applicator 63 trained thereunder along with a superposed continuous strip of the transparent material. A reel of this material may be provided at 69, bearings 70, 70 being provided to support the same, and the web of transparent material drawn from reel 69 may be extended over a spreader roll 71 and down about roll 68 into superposed relation with the paper web, the tension of the assembled webs pressing them against roll 68 whereby the webs are effectually secured together by the adhesive strips applied to the paper web by applicator 63.

The improved attachment is so associated with the bag machine 20 that the composite web thus formed may be drawn from roller 68 about roller 22 to the bag-machine applicator 21. The bag machine is adapted to fold this material into a tube and form bags from this tube by folding the margins of the composite material upwardly and adhesively securing them together. It will thus be apparent that the bag delivered from the bagging machine will be that illustrated in Figures 1 to 4 of the drawings.

It will be obvious that instead of feeding the composite web from the improved attachment to a bag machine, this material may be immediately cut to suitable length to form wrappers instead of bags, these wrappers being of advantage over those heretofore provided for the reason that the transparent material is secured to the wrapper on both sides and beyond both ends of the opening throughout the length of the wrapper and this material, when the wrapper is applied about an article, will be secured in the folds of the wrapper and there will be no areas, except as defined by the display window openings at which the transparent material is unsupported or unreinforced.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claim.

What is claimed is:

That method for making display window bags having bellows type side walls which comprises providing a web of flexible relatively opaque material with a window opening therein, providing a web of relatively transparent material substantially of equal length with said first web, applying strips of adhesive to said first-named web one on each side of the opening throughout the length of the web and similar strips from the ends of the opening to the ends of the web, superposing said transparent web onto said opaque web over the opening and in contact with said adhesive strips, forming said composite web into a tube, folding said tube to provide bellows type side walls, and securing one end of said tube to form a bottom while leaving the other end of the tube open to provide a mouth for the bag.

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