Aug. 18, 1953 W. S. CLOUD 2,649,035

APPARATUS FOR MAKING STIFFENED WRAPPERS

Filed April 5, 1951 4 Sheets-Sheet 1

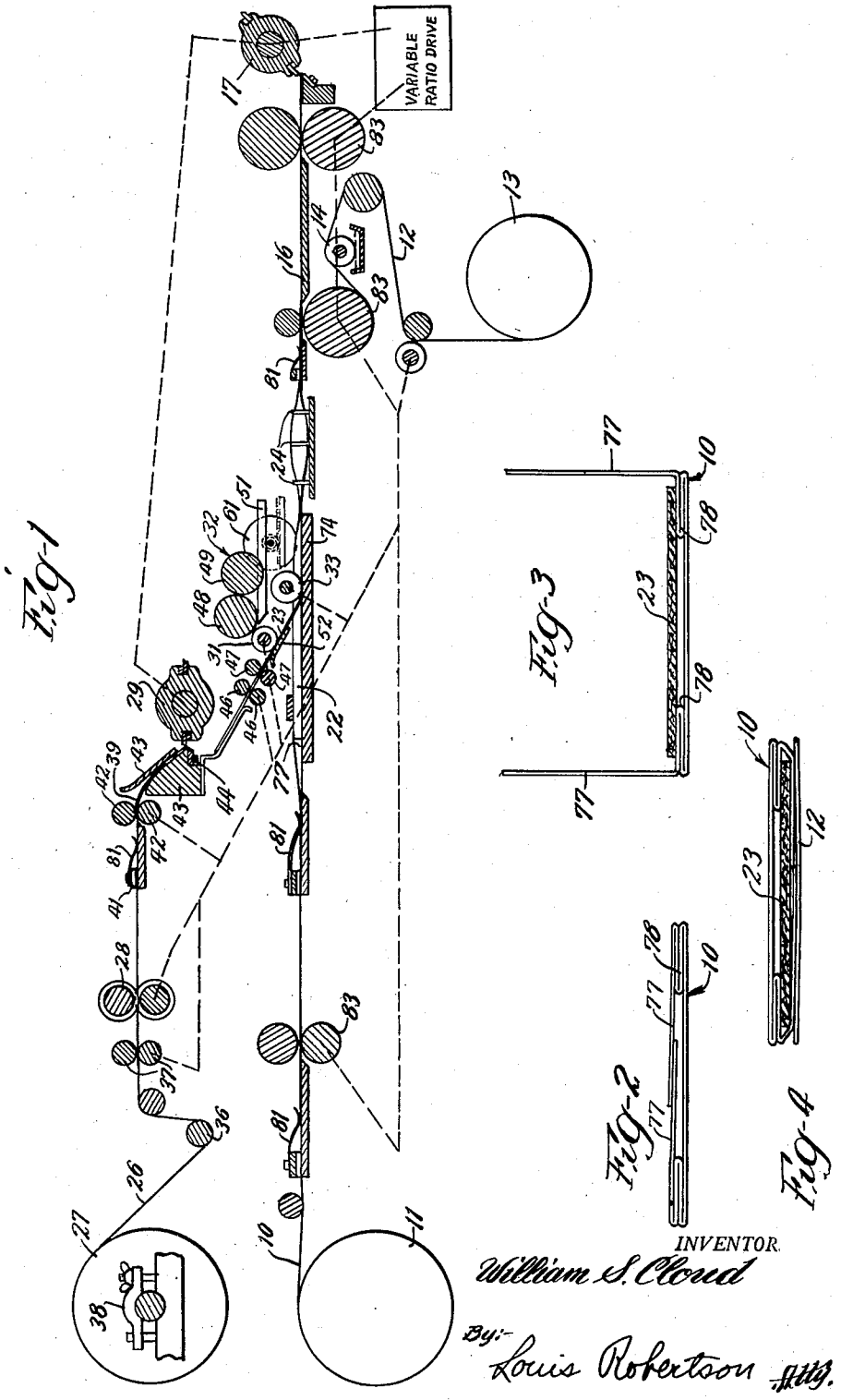


Fig-1

Fig-3

Fig-4

Fig-2

INVENTOR.
William S. Cloud
By:- Louis Robertson Atty.

Aug. 18, 1953 W. S. CLOUD 2,649,035

APPARATUS FOR MAKING STIFFENED WRAPPERS

Filed April 5, 1951 4 Sheets-Sheet 2

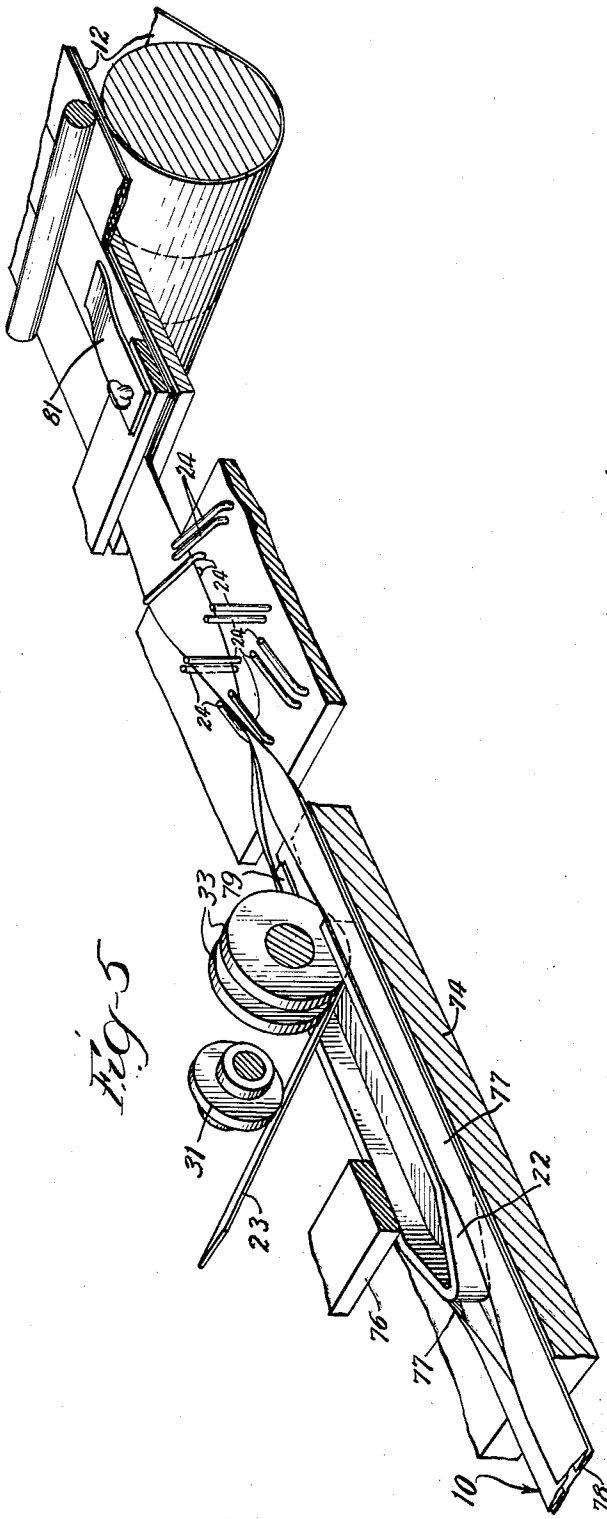


Fig. 5

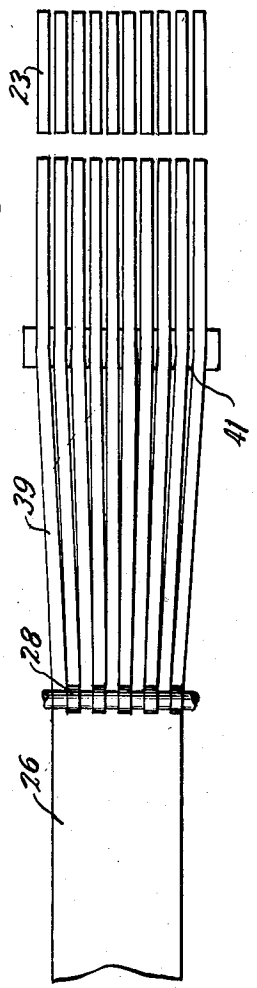


Fig. 6

INVENTOR.
William S. Cloud
By:- Louis Robertson Atty.

Aug. 18, 1953 W. S. CLOUD 2,649,035

APPARATUS FOR MAKING STIFFENED WRAPPERS

Filed April 5, 1951 4 Sheets-Sheet 3

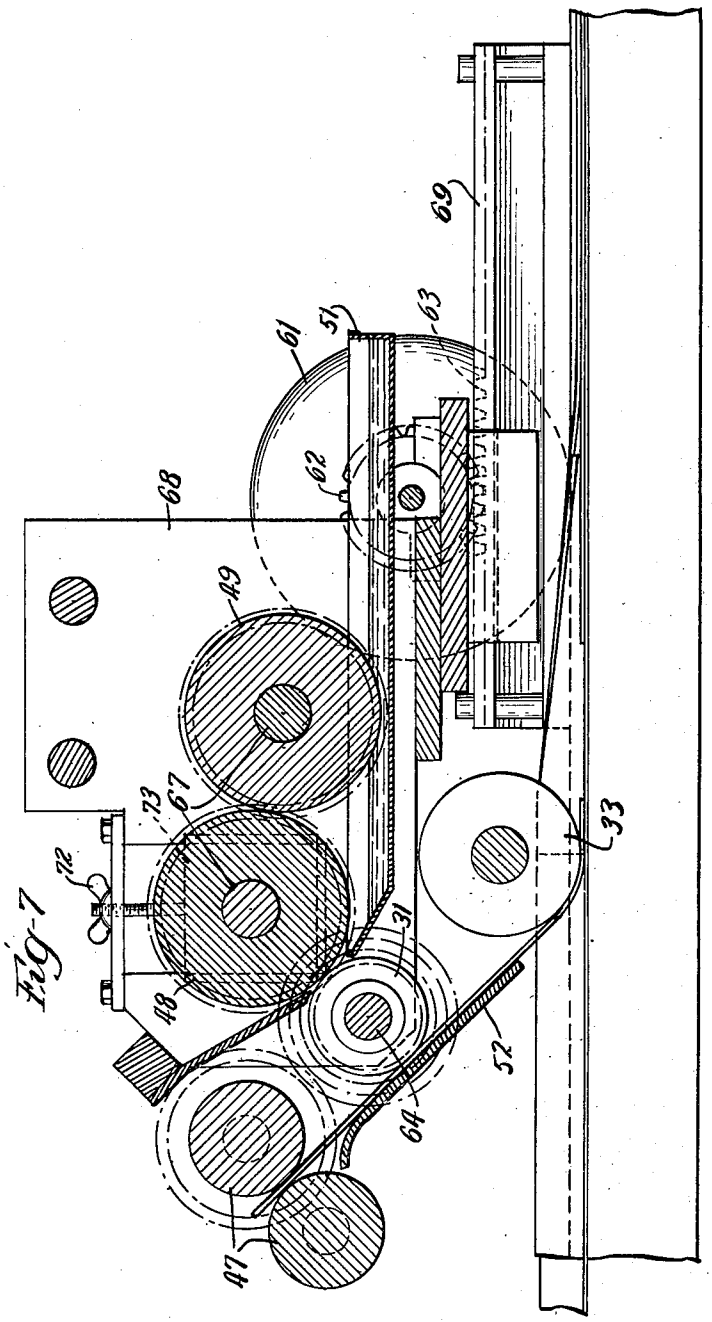


Fig-7

INVENTOR.
William S. Cloud

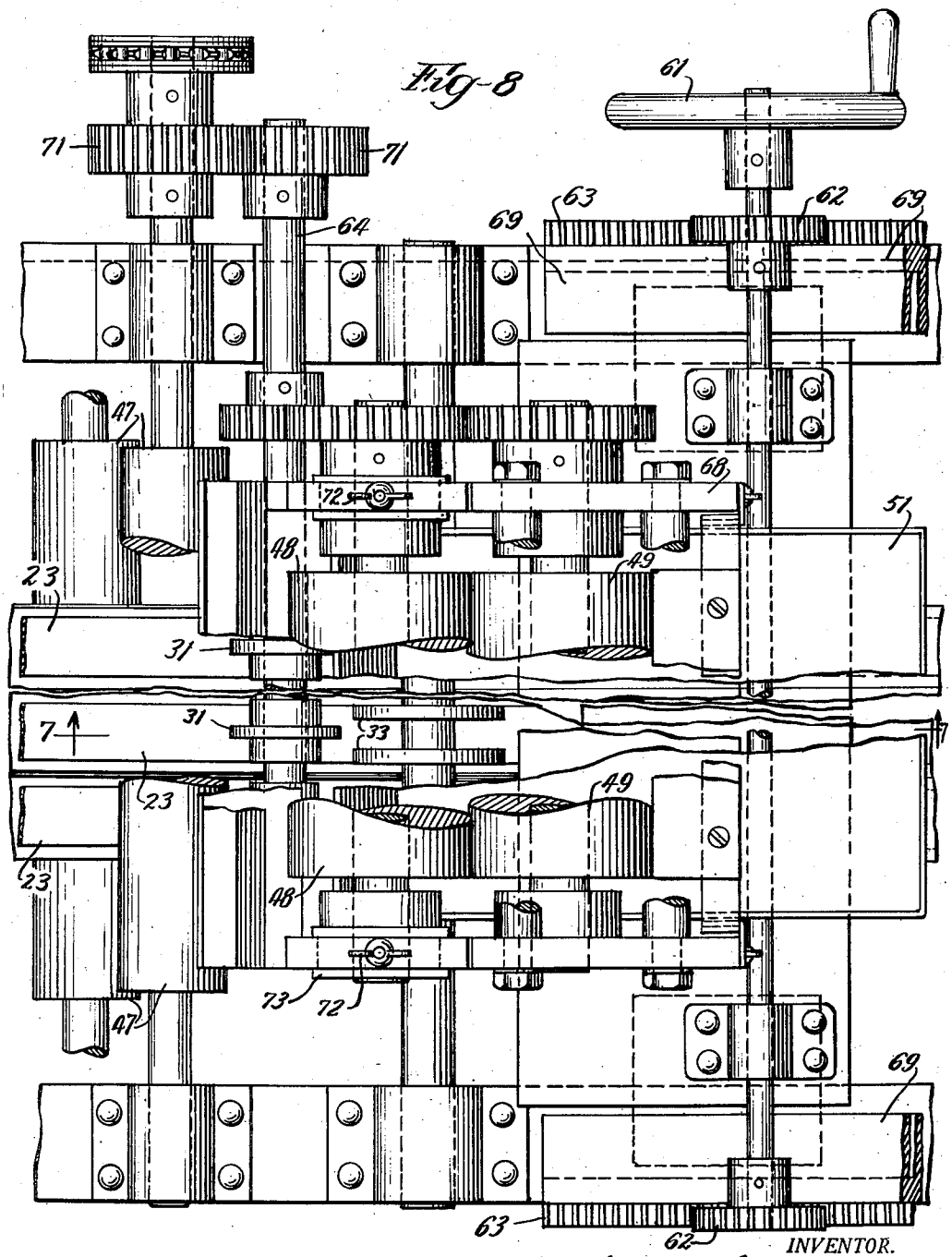
By:- Louis Robertson Atty.

Aug. 18, 1953 W. S. CLOUD 2,649,035

APPARATUS FOR MAKING STIFFENED WRAPPERS

Filed April 5, 1951 4 Sheets-Sheet 4

Fig-8



INVENTOR.
William S. Cloud

By: Louis Robertson Atty.

Patented Aug. 18, 1953

2,649,035

UNITED STATES PATENT OFFICE

2,649,035

APPARATUS FOR MAKING STIFFENED WRAPPERS

William S. Cloud, Wilmette, Ill.

Application April 5, 1951, Serial No. 219,482

15 Claims. (Cl. 93—1)

1

In a form of packaging which has been used for many billions of candy bars, the finished wrappers comprise tubes of paper-like material cut from endless tubes and closed at both ends as by crimping and partially or completely sealing. With a single candy bar, these wrappers provide a rigid package easily handled. When it is desired to provide two or more candy bars or pieces in one bag, the result has no longer had the desired rigidity unless some stiffening member is provided. Of course there have been many packages in which a stiffening member, such as a cardboard insert, was provided. These packages, however, did not lend themselves to the advantageous method of manufacture used in making the wrappers above described.

According to the present invention, an apparatus and method are provided for producing the bags by a method similar to the advantageous method previously used while at the same time inserting stiffeners with a minimum of additional cost.

It should be recognized that cardboard inserts may be desirable for other reasons than to serve as stiffeners. For example, candy bars containing cocoanut tend to exude cocoanut oil, which soaks the underside of the wrapper, discoloring and weakening it. It has been common practice with such bars to place a cardboard insert between the underside of the wrapper and the bar to blot up any such oil. Thus, cardboard inserts may serve several purposes. For convenience, however, the cardboard inserts are referred to herein only as "stiffeners" or the like.

Additional objects and advantages of the invention will be apparent from the description and from the drawings.

Designation of figures

Figure 1 is a diagrammatic view representing the production of wrapper blanks in accordance with the present invention.

Figure 2 is an end view showing the cross-sectional folding of the paper forming the tube blank which represents the main body of the package of this invention.

Figure 3 is a view similar to Fig. 2 but showing the side portions of the tube blanks spread apart and a stiffener inserted.

Figure 4 is a view similar to Fig. 2 but showing the assembly after it has been closed upon the stiffener, inverted and applied to a backing sheet.

Figure 5 is a diagrammatic perspective view representing the spreading open of the tube

2

stock, the tucking of a stiffener therein, the closing and inverting of the stuffed tube stock and the application of the backing sheet thereto.

Figure 6 is a somewhat diagrammatic view representing the slitting of the stiffener web and the spreading apart of the strips split therefrom.

Figure 7 is a vertical sectional view of the glue applying and tucking unit, being taken approximately on the line 7—7 of Figure 8.

Figure 8 is a fragmentary view looking down on the structure shown in Figure 7 with many parts partially broken away.

Although the law requires a full and exact description of at least one form of the invention, such as that which follows, it is, of course, the purpose of a patent to cover each new inventive concept therein no matter how it may later be disguised by variations in form or additions of further improvements; and the appended claims are intended to accomplish this purpose by particularly pointing out the parts, improvements, or combinations in which the inventive concepts are found.

Prior bag-set making

Many details of the apparatus chosen for illustration have not been fully illustrated, inasmuch as these would be understood from the prior Cloud Patent No. 2,180,338. It may be briefly explained that according to this patent, a set of printed split tube blanks 10, which may also be called tube stock, are drawn in parallel relationship from rolls 11 and applied to a backing sheet 12 drawn from a roll 13 and to which glue or other adhesive has been applied by glue applier 14. An operator working by an aligning table or board 16 manipulates the tube blanks to keep the printed portions in longitudinal registry, advancing some and retarding others to this end. Suitable severing means such as a rotating cutter 17 shears the assembly at intervals between the printed portions to form wrapper blanks. As explained in Cloud Patent 2,180,338, each of these units is then folded over along its bottom and secured. Ultimately a bar of candy is inserted in each bag of the set and the top is folded over and secured to complete the wrapping of the candy bars. Before application of the backing sheet 12, it may be perforated along lines which will facilitate tearing the finished bags from one another.

According to this prior method, the tube stock 10 was fed with its split side down so that the split side was ultimately glued to the backing sheet 12.

General Description

According to the present invention, as illustrated, the tube stock 10 is initially fed with its split side up. The split side portions 77 are then spread apart by a spreader 22, stiffener inserts 23 are inserted, the tube stock is closed about the inserts and inverted as it advances by twisting guides 24, so that it is applied split side down to the backing sheet 12. This invention has also been contemplated in a form where the tube stock 10 is initially fed with its split side down, the inserts 23 placed in the tube, and the application to the backing sheet 12, therefore, made without any inverting step. However, the form first described is at present preferred as it facilitates visual inspection of the entire process.

The cardboard forming the inserts is initially in the form of a web 26 drawn from a roll 27. It is slitted into strips 39 by slitters 28. The slitters preferably comprise upper and lower sets of spaced circular knives cooperating in shearing pairs. The strips are spread apart and then jointly cut into inserts 23 by severing means such as a rotating knife 29. The inserts could be fed from stacks of previously cut inserts, but the illustrated form of the invention is more simple and reliable. Glue is applied to each insert by a glue-applying roller 31 forming part of a shiftable gluing unit 32. The insert is ultimately tucked into the tube stock by a roller 33, against which the insert is pressed by table 74. As previously mentioned, the stiffened tube stock is then inverted by the twisting guides 24, applied to the glued side of the backing sheet 12, and severed and closed at one end to form the bag-sets.

Decurling

When the cardboard web 26 is drawn from roll 27, it is likely to have a residual tendency to curl which would cause trouble after the strips are cut into individual inserts. This is overcome by a decurling roll 36 about which the web is drawn by feed rolls 37 or 42. An adjustable brake or tensioning device 38 is provided on the shaft of roll 27 for adjusting the tension of the web 26 about decurling roll 36. It will be observed that with this arrangement of the brake the roller tension on the roll increases as the roll becomes smaller. This is desirable because the tendency of the web 26 to curl increases as the roll becomes smaller. It has been found that the two offset one another so that adjustment of the brake is rarely necessary.

Slitting and separating

From the feed or guide rolls 37, the web 26 passes through slitters 28. As best seen in Fig. 6, the strips 39 thus formed are spread apart by spreaders 41. Another pair of feed rolls 42 then feeds the strip past guides 43 to the rotating shearing knife 29 which in cooperation with fixed blade 44 shears the strips 39 to form the separated inserts 23. Just before each insert is severed from the web, its leading end is seized by feed rolls 46 and shortly thereafter it is seized by a second pair of feed rolls 47. The rolls 46 and 47 are driven at the same speed, which is a faster peripheral speed than the feed of feed rolls 37 and 42. This faster feed separates the severed inserts from the following strips so that the inserts are spaced apart the desired distance, allowing room between them for severing the tubular blanks and folding the ends. The first of these feed rolls 46 grips the cardboard lightly

so that they will slide easily on the cardboard while the speed is restrained by virtue of the fact that it is still part of the web 26. As soon as the severance of each piece is complete, its forward speed is increased by the rollers 46. Although the rolls 47 grip the inserts firmly, they will have been fully severed before they reach these rolls.

Glue-applying unit

It is desirable that the inserts be glued to one side 77 of the tube stock forming the ultimate package, or to the backing paper, so that once the insert has been properly positioned in the tube blank, it will not be shifted longitudinally from this position (as by a careless operator working by aligning table 16), and thus be positioned where it will hinder or prevent the crimping of the end of a bag set. It is for this reason that glue is applied to each strip by the glue-applying rolls 31. Glue is supplied to roll 31 by feed rolls 48 and 49, the feed roll 49 running in a pool of glue in glue pan 51 and in contact with roll 48 which runs in contact with the rolls 31. The inserts are pressed against glue roll 31 by guide plates 52, which are spaced from the glue rolls 31 so as not to pick up glue therefrom when no insert is present.

For ease in feeding the leading end of the tube stock through the machine, it is desirable that the glue-applying unit 32 be shiftable as a unit, without changing the relative positions of rolls 31, 48 and 49, to give access below it, particularly in the vicinity of tucking roll 33. To this end, the entire glue-applying unit is mounted on a shiftable carriage which may be shifted by turning hand wheel 61. As seen best in Fig. 8, the hand wheel 61 turns a pair of pinions 62 which operate on racks 63 to prevent angular shifting of the glue-applying unit. It should be understood that accurate parallelism of shaft 64 carrying glue-applying rolls 31 is important so that each of these rolls will bear suitably on its associated insert 23.

As seen best in Fig. 7, the shaft 64 and the shafts 67 for feed rolls 48 and 49 are carried by side members 68 of a carriage frame. This carriage may be slidably mounted on suitable slides 69, which should be engaged with a smooth running fit unless other means is provided for supporting the rear of the gluing unit.

It is desirable that the last feed rolls 47 be close enough to tucking roll 33 so that the inserts will be safely below the tucking roll 33 before being released by feed rolls 47. This does not provide much space for the insertion and removal of glue-applying roll 31. At the same time, it is somewhat desirable that the glue-applying roll 31 apply a thin line of glue to a portion of the inserts which do not come in contact with tucking roll 33.

Both of these considerations are satisfied by providing a narrow glue roll 31 along the center of each insert 23 as seen in Fig. 8 and having tucking roll 33 divided as seen in Figs. 5 and 8 so as to engage each insert 23 along its edges and permit the gluing roll 31 to pass between the halves of tucking roll 33 as the gluing unit is traversed away from its active position for access to the parts below it.

The gluer may be driven by pinions 71 which separate from one another as the gluer is traversed away from its active position.

The amount of glue applied can be regulated by thumb screws 72 which raise and lower bear-

ing blocks 73 to adjust the pressure or clearance between the various rolls of the gluer.

It will be recognized that application of glue to the side 77 which is to be folded over against the insert 23 is the equivalent of applying the glue to the insert. The illustrated form of the invention is preferred, as it eliminates the necessity of applying glue only at predetermined portions of a continuous member and rather permits a continuous gluer application which is effective only when the inserts are present. If glue were applied continuously to side 77, this would prevent proper opening of the bag sets for insertion of candy bars and might interfere with proper functioning of cutter 17.

Tube spreader

A structure for a tube spreader 22 which has been found satisfactory is seen best in Fig. 5. This may comprise simply a plow-shaped bar supported over table 74 by a brace 76. As the tube stock is initially fed past this plow, its split side portions 77 are raised up and as the tube stock continues to be drawn through the machine it is plowed open by the spreader or plow 22. If, as is preferred, the tube stock is of the accordion type, provided with pleats 78, these accordion pleats pass under the plow 22 and the inserts are applied on top of the accordion pleats. Where side portions 77 leave the plow, guide plates may be provided to ease them back to the closed position while holding down the accordion pleat 78. Guide plates 79 may also be provided to direct the tube stock past the plow. A plate for holding down pleats 78 as they approach plow 22 may also be provided. Also a yieldably mounted plate below the plow may hold the tube stock snugly up against it.

Twisting guides

While inversion of the tube stock has proved possible without them, it is preferred to provide twisting guides to ensure uniform action of the tube stock. The twisting guides 24 may, as seen best in Fig. 5, comprise simple pairs of fingers of successive angularities to gradually invert each tube stock. Fig. 5 somewhat foreshortens the apparatus, relatively more length of tube preferably being allowed between successive pairs of twisting guides 24. The first of these twisting guides serves the additional function of closing the tube stock as it is drawn through this twisting guide. It is possible that the twisting guides could be dispensed with but they have been found to be one way of substantially avoiding difficulties at the twisting position.

Suitable tensioning devices 81 may be provided at various points, such as those shown, for keeping the various webs or strips taut and running smoothly. These tensioning devices may be adjustable as seen in Fig. 5 of Cloud Patent 2,180,338, adjustability in some instances being desirable, particularly for helping maintain the printed tube blanks moving uniformly so that relatively little manual shifting will be required to keep them in longitudinal registration.

Length variation

In the apparatus built under Cloud Patent 2,180,338, the ratio of drive between feed rolls 83 and rotary cutter 17 is adjustable. Occasional adjustment is necessary because the length of the tube stock varies somewhat with humidity and temperature. A more substantial change in relative ratio of drive may be relied upon for an appreciable change in the desired ultimate length of the bag for various sizes of candy bar. In addition, there may be an adjustment for an immediate shift of relative angularity (registration) to produce a non-cumulative change at the position in which the bag-sets are severed. Thus, if the speed ratio is approximately correct, the centering can be kept close to the midpoint between printed or labeled portions of the tubes by an occasional registration adjustment.

According to the present invention, the rotary cutter 29 is driven in 1:1 ratio with the cutter 17 and the various feed rolls 37, 42, 46 and 47 are driven in constant ratio relationship to the drive of the feed rolls 83. As a result, it is rarely necessary to make any special adjustment with respect to the insertion of the stiffening members. Of course the rotary knife 29 is angularly adjustable on its shaft by means of a set screw or otherwise so that initially or for each length of package it may be adjusted to cut the strips in such timed relationship that each strip will be centered in its package.

The ratio of the various feed rolls is not necessarily 1:1. The feed rolls 46 and 47 will have approximately the same peripheral speed as the feed rolls 83. The speed of the feed rolls 37 and 42 is somewhat slower, the discrepancy controlling the length of gap between the inserts. A variable speed drive may be provided between the drive for feed rolls 37 and 42 and that for the other feed rolls.

Cardboard inserts having a U-shaped cross-section have been used in candy wrappers, and it is contemplated that inserts 23 may be so shaped although certain minor and obvious modifications would have to be made in the illustrated apparatus.

I claim:

1. Apparatus for making a stiffened wrapper including means for feeding a slitted tubular wrapper blank, means for plowing open the sides of the wrapper, means for feeding a continuous length of stiffener strip, means for cutting said strip into sections, applying glue to each section, and inserting each section in the opened tubular blank, means for closing the tubular blank about the insert and twisting it as it advances to turn it over, means for applying a backing strip to the split side of the tubular blank and means for cutting the tubular blank driven in timed relation to the means for cutting the stiffener strip to cut the tubular blank between the inserts to form stiffened package blanks.

2. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener stock from a roll, means for flexing the web to reduce its tendency to curl, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks and twisting the tube blanks to invert them as they advance, means for feeding a backing web, means for applying adhesive to one face thereof, means for applying said face to the tube blanks along both sides of the split to complete

the tubular structure and means for severing the parallel completed tube blanks driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

3. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener stock from a roll, means for flexing the web to reduce its tendency to curl, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks and twisting the tube blanks to insert them as they advance, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

4. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks and twisting the tube blanks to invert them as they advance, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

5. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

6. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks and twisting the tube blanks to invert them as they advance, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks between the inserts, thus forming stiffened package blanks.

7. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks between the inserts, thus forming stiffened package blanks.

8. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks, and means for varying the speed ratio of the feed means as to the severing means.

9. Apparatus for forming a stiffened package blank, including means for feeding a strip of stiffener stock, shearing means for shearing the strip to form inserts, means for driving the inserts faster than the feed of the strip to separate the inserts, means for feeding a split tube blank at a speed faster than the feed of the strip, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened

tube blank, means for closing the tube blank and twisting the tube blank to invert it as it advances, means for feeding a backing web, means for applying and securing the web to the tube blank along opposite sides of the split to complete the tubular structure and means for severing the completed tube blank driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

10. Apparatus for forming a stiffened package blank, including means for feeding a strip of stiffener stock, shearing means for shearing the strip to form inserts, means for driving the inserts faster than the feed of the strip to separate the inserts, means for feeding a split tube blank at a speed faster than the feed of the strip, means for spreading apart the sides of each tube blank adjacent the split, means for stuffing the inserts in the opened tube blank, means for closing the tube blank and twisting the tube blank to invert it as it advances, means for feeding a backing web, means for applying and securing the web to the tube blank along opposite sides of the split to complete the tubular structure and means for severing the completed tube blank driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

11. Apparatus for forming a stiffened package blank, including means for feeding a strip of stiffener stock, shearing means for shearing the strip to form inserts, means for driving the inserts faster than the feed of the strip to separate the inserts, means for feeding a split tube blank at a speed faster than the feed of the strip, means for spreading apart the sides of each tube blank adjacent the split, means for stuffing the inserts in the opened tube blank, means for closing the tube blank, means for feeding a backing web, means for applying and securing the web to the tube blank along opposite sides of the split to complete the tubular structure and means for severing the completed tube blank driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

12. Apparatus for forming a stiffened package blank, including means for feeding a strip of stiffener stock, shearing means for shearing the strip to form inserts, means for driving the inserts faster than the feed of the strip to separate the inserts, means for feeding a split tube blank at a speed faster than the feed of the strip, means for spreading apart the sides of each tube blank adjacent the split, means for stuffing the inserts in the opened tube blank, means for closing the tube blank, means for feeding a backing web, means for applying and securing the web to the tube blank along opposite sides of the split to complete the tubular structure and means for severing the completed tube blank driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks, and means for varying the speed ratio of the feeding means to the severing means.

13. Apparatus for making a stiffened wrapper including means for feeding a slitted tubular wrapper blank, means for plowing open the sides of the wrapper, means for feeding a continuous length of stiffener strip, means for cutting said strip into sections, applying glue to each section, and inserting each section in the opened tubular blank, means for closing the tubular blank about the insert, means for applying a backing strip to the split side of the tubular blank and means for cutting the tubular blank driven in timed relation to the means for cutting the stiffener strip to cut the tubular blank between the inserts to form stiffened package blanks.

14. Apparatus for forming a set of side-by-side stiffened package blanks including means for feeding a web of stiffener, means for slitting the web into a plurality of strips, means for spreading apart the strips, shearing means for shearing the side-by-side strips to form a set of inserts, means for advancing the inserts faster than the feed of the web to separate the inserts, means for feeding split tube blanks at a speed faster than the feed of the web, means for spreading apart the sides of each tube blank adjacent the split, means for applying glue to the stiffener inserts and stuffing them in the opened tube blanks, means for closing the tube blanks, means for feeding a backing web, means for applying and securing the backing sheet to the tube blanks along both sides of the split to complete the tubular structure and means for severing the parallel completed tube blanks between the inserts, thus forming stiffened package blanks.

15. Apparatus for forming a stiffened package blank, including means for feeding a strip of stiffener stock, shearing means for shearing the strip to form inserts, means for driving the inserts faster than the feed of the strip to separate the inserts, means for feeding a split tube blank at a speed faster than the feed of the strip, means for spreading apart the sides of each tube blank adjacent the split, means for stuffing the inserts in the opened tube blank, means for closing the tube blank, means for feeding a backing web, means for applying and securing the web to the tube blank along opposite sides of the split to complete the tubular structure and means for severing the completed tube blank driven in timed relation with the first-named severing means to sever the tube blanks between the inserts, thus forming stiffened package blanks.

WILLIAM S. CLOUD.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,121,817	Ferres	Dec. 22, 1914
2,063,392	McCain	Dec. 8, 1936