Dec. 21, 1965 R. C. NASH 3,224,309

APPARATUS FOR USE IN PREPARING ADHESIVE COATED TAPES FOR USE

Filed Aug. 27, 1962 2 Sheets-Sheet 1

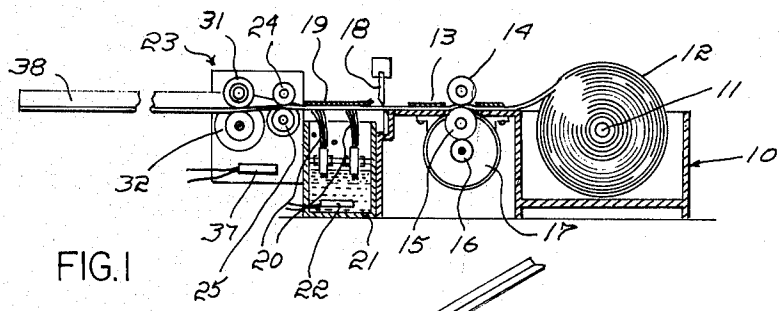


FIG. 1

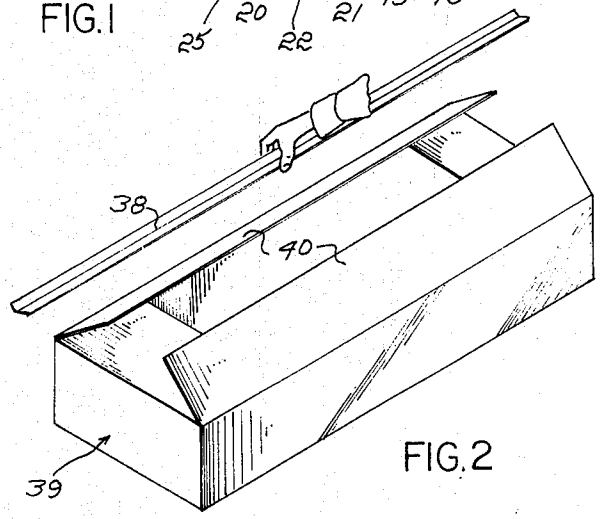


FIG. 2

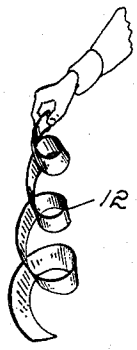


FIG. 3

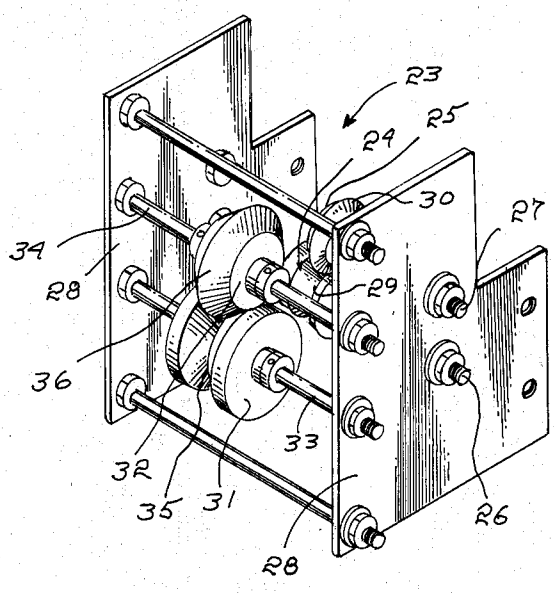


FIG. 4

INVENTOR.
Ralph C. Nash
BY
Abbott Spear
ATTORNEY

Dec. 21, 1965 R. C. NASH 3,224,309

APPARATUS FOR USE IN PREPARING ADHESIVE COATED TAPES FOR USE

Filed Aug. 27, 1962 2 Sheets-Sheet 2

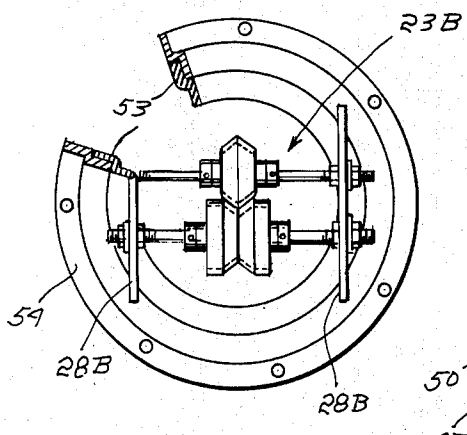
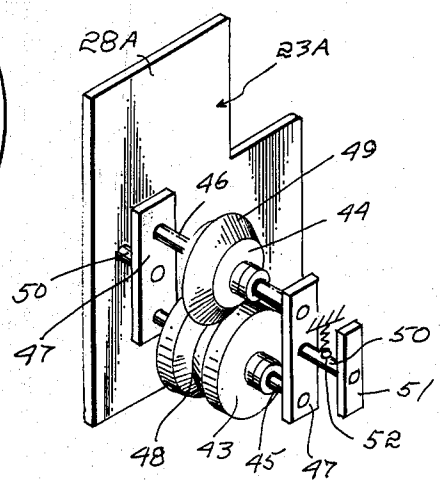


FIG.5

FIG.6



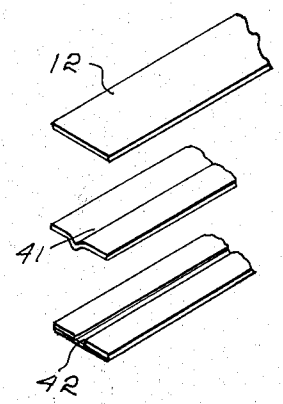


FIG.7

INVENTOR.
Ralph C. Nash
BY
Abbott Spear,
ATTORNEY

United States Patent Office 3,224,309 Patented Dec. 21, 1965

3,224,309

APPARATUS FOR USE IN PREPARING ADHESIVE COATED TAPES FOR USE

Ralph C. Nash, 61 Manchester St., Nashua, N.H.

Filed Aug. 27, 1962, Ser. No. 219,433
7 Claims. (Cl. 83—156)

The present invention relates to the preparation of adhesive coated, flexible tapes for use and to apparatus for effecting such preparation.

The flexibility of adhesive coated tapes makes their use difficult, a difficulty to which the length of the tape strips and tendency of such tapes to curl, particularly towards the end of the roll, contributes. This difficulty, while common in other fields, is particularly well illustrated in the sealing of the flaps of corrugated cartons.

In practice, dispensers are used that project lengths of tapes in a condition for use but, due to their flexibility, such lengths drop floorward as they are projected. It is necessary, accordingly, for a workman to use both hands in order to hold the length of tape extended for application. It is thus hard for him to close the carton flaps, to apply the tape accurately to the butted flaps, and to press the tape into sealing position. As a consequence, the sealing of cartons is a relatively slow and inefficient operation and is frequently attended by imperfect sealing.

The general objective of the present invention is to enable such adhesive coated flexible tapes to be so prepared that lengths may be dispensed that are free of the above noted objections and this objective is attained by deforming the length of tape as it is being projected, the deformation being in the form of a lengthwise channel reinforcing the projected length so that it is sufficiently inflexible to enable it to be held and applied while held by one hand with the other hand being free to close the carton flaps and then to assist in the positioning of the length of tape and the pressing of the positioned length into correct sealing relation to the butted flaps.

Another objective of the invention is to provide means by which one end of the deformed length is held approximately horizontal by the dispenser so that it may be readily removed therefrom by the worker with its relative inflexibility making it easy for him to position the length with adequate end portions available for application to the walls of the cartons. In this connection, each dispenser may be so located that such deformed lengths are projected into a position over or under a carton to be sealed, a position which may be close to the zone to be sealed.

Yet another objective of the invention is to provide tape deforming means that may be adjusted so as to enable the gummed surfaces of marginal portions of the channel-like deformation to be disposed towards or away from each other as required in use whether the deforming means is a single pair of rolls or includes multiple roll pairs.

Another objective of the invention is that of providing tape deforming means in the form of an attachment for tape dispensers.

These and other objectives, novel features, and advantages of the invention will be apparent from the accompanying drawings in which there are shown illustrative embodiments thereof.

In the drawings:

FIGURE 1 is a longitudinal, vertical section of a tape dispenser in accordance with the invention,

FIGURE 2 is a perspective view showing a deformed length of tape held by one hand over the flaps of a carton that are to be sealed together,

FIGURE 3 is a view showing the same length of tape in a typical condition if not provided with a lengthwise reinforcing deformation,

FIGURE 4 is a perspective view, on a substantially increased scale, of the deforming means of the embodiment shown in FIGURE 1,

FIGURE 5 is an end view of similar deforming means whose supporting structure is rotatably attached to the dispenser,

FIGURE 6 is a view of another embodiment of the deforming means in which a pair of rolls is so mounted that it may be turned transversely between two operative positions, and

FIGURE 7 is a perspective view illustrating three different tapes.

In FIGURE 1, a tape dispenser is generally indicated at **10** and is shown as having a spindle **11** rotatably supporting a roll of tape **12**. Tape from the roll is fed forwardly through a throat **13** and between an upper idler roll **14** and a lower driving roll **15** which are exposed in the throat **13**. The driving roll **15** is driven as by the roll **16** on the drive shaft of the motor **17**. By these or equivalent means, a length of tape is pulled from the roll and projected forwardly under a knife **18** and under a backing plate **19** below which there are brushes **20** which provide a capillary feed of water from the tank **21** to the adhesive-coated undersurface of the tape. The adhesive coat of the tape **12** is water-activated. The tank **21** is also provided with a heater **22** to increase the rate of penetration of the adhesive coat, and it will be understood that where it is desired that tape be dispensed with its adhesive-coated surface upwardly disposed, the brushes and the water supply are located accordingly. It will also be understood that where thermo-adhesives are used, a heater is used by itself and that with pressure-sensitive adhesive, neither moistening nor heating means are provided.

The dispenser **10**, as thus far described, is conventional and enables length of tape to be projected and then severed by means of the knife **18** which is typically electrically operated. The knife **18** and the motor **17** are usually automatically controlled by means adjustable as to the length of tape that is to be projected and severed but as the means for so doing are not part of the present invention, they are not herein shown or detailed.

In accordance with the invention, a deforming unit, generally indicated at **23**, is attached to the outfeed end of the dispenser **10** and is shown, as may best be seen in FIGURE 4, as having idler rolls **24** and **25** supported on shafts **26** and **27**, respectively, disposed transversely of side walls **28**. The roll **24** is shown as having a V-shaped peripheral groove **29** entered by the similarly shaped peripheral crest **30** of the roll **25**. The deforming unit also has idler rolls **31** and **32** supported on shafts **33** and **34**, respectively, forwardly of the first pair of rolls **24** and **25** and disposed transversely of the end walls **28**. The roll **31**, like the roll **24**, has a V-shaped peripheral groove **35** entered by a similarly shaped, peripheral crest **36** of the roll **32**. The deforming unit **23** may be provided with a heater **37** to ensure that the tape is properly conditioned.

A length of tape is driven between the two pairs of deforming rolls as it is projected thereby to provide it with a lengthwise deformation shown as a channel **38** of angular section. In practice, the first pair of rolls is essentially guide means and is shown as being so shaped and dimensioned as to partially form the channel thereby ensuring the entry, without buckling, of the leading end of the projected tape length into the deforming means.

The pairs of rolls of the deforming means **23** provide support for the severed end portion of a projected length of tape which is rendered relatively inflexible by its de-

formation and held substantially horizontally thereby. When thus positioned, the projected length can easily be pulled free and held by one hand above a carton 39 with the other hand of the workman free to close the carton flaps 40 into butting relationship so that the tape length may be applied quickly, easily, and accurately to seal them together, see FIGURE 2.

If desired, the roll of tape may be precreased as shown at 41 or, in the case of a laminated tape, it may have a central, unlaminated zone 42, see FIGURE 7.

The deforming means, generally indicated at 23A, in FIGURE 6 include rolls 43 and 44 whose respective shafts 45 and 46 are mounted in end plates 47. The roll 43 has a peripheral, V-shaped channel 48 entered by the similarly shaped peripheral projection 49 of the roll 44 so that the rolls 43 and 44 coact in deforming a tape length but without the guiding and two stage deformation advantages of the unit 23.

The plates 47 each have a pivot 50 and these are transversely alined and supported by the side walls 28A of the deforming means 23A so that the position of the rolls 43 and 44 may be reversed by turning the handle 51 thus to enable the margins of the gummed surface of the deformed tape to be disposed towards or away from each other as desired in use. A detent for holding the rolls in either position is indicated at 52.

In order that this feature may be provided when the deforming unit has two pairs of rolls, deforming means, generally indicated at 23B are used and are identical to that shown in FIGURE 4 except that its side walls 28B include a circular end wall 53 caught under a circular flange 54 at the outfeed end of the tape dispenser.

From the foregoing, it will be apparent that the invention makes possible the dispensing of relatively inflexible tape lengths that enable tape to be used with increased ease, economy, convenience, and accuracy.

I claim:

1. In a tape dispenser, means to rotatably support a roll of adhesive-coated tape, means to pull tape from said roll and to project a length of it, and means through which the tape is passed as it is projected and by which its cross sectional shape is varied to provide the tape with a lengthwise deformation in the form of a channel stiffening it against collapse and dividing it into lengthwise portions, said deforming means being adjustable relative to the course of the projected tape length between two positions, in one the gummed faces of said portions being disposed towards each other and in the other, said gummed faces being disposed away from each other.

2. In a tape dispenser, means to rotatably support a roll of adhesive-coated tape, means to pull tape from said roll of tape and to project a length of it and a pair of outfeed, tape-deforming rolls between which the tape is passed as it is projected and by which its cross sectional shape is varied to provide the tape with a lengthwise deformation in the form of a channel stiffening it against collapse and dividing said length into lengthwise portions, and means to swing said rolls between a first position and a second position, in said first position, one roll being above the other with the gummed faces of said portions being disposed towards each other, and in said second position, said rolls being reversed and said portions being disposed away from each other.

3. The dispenser of claim 2 in which the deforming means is a pair of rolls mounted in end supports, each end support includes a pivot axially alined with the other, the axis of said pivots being in the zone of tangency of the rolls, one pivot including means facilitating the turning of the deforming means from one of said positions to the other.

4. In a tape dispenser, means to rotatably support a roll of adhesive-coated tape, means to pull tape from said roll and to project a length of it, and two pairs of rolls between which the tape is passed as it is projected and by which its cross sectional shape is varied to provide the tape length with a lengthwise deformation in the form of a channel stiffening it against collapse and dividing said length into lengthwise portions, and means to shift the position of said rolls between a first position in which said tape portions are disposed towards each other and a second position in which said tape portions are disposed away from each other.

5. The dispenser of claim 4 in which the rolls are carried by a frame including an end wall, and the dispenser includes structure rotatably supporting said end wall.

6. An attachment for a tape dispenser of the type having means to rotatably support a roll of adhesive-coated tape, and means to pull tape from said roll and to project a length of it, said attachment including means for attaching it to the outfeed end of said dispenser and means through which the tape is passed as it is projected and by which its cross sectional shape is varied to provide the tape with a lengthwise deformation in the form of a channel stiffening it against collapse, said means including two pairs of coacting members, said attaching means providing a support for said attachment enabling it to be turned between two positions, in one position, the margins of the gummed surfaces being disposed towards each other and, in the other, the margins being disposed away from each other.

7. In a tape dispenser, means to rotatably support a roll of adhesive-coated tape, means to pull tape from said roll and project it, two pairs of idler rolls through which the tape passes as it is projected, and tape severing means between said pulling means and said pairs of rolls, said two pairs of rolls being spaced from each other lengthwise of and in the path of the tape as it is projected, the rolls of each pair being disposed with the roll axes parallel to the plane of the tape and spaced apart in a plane at right angles thereto to receive the tape between them, a corresponding one of each pair of rolls having a peripheral channel and the other roll of each pair having a channel-entering crest, both pairs of rolls acting on the tape as it is projected to provide it with a lengthwise deformation in the form of a channel and cooperating to guide the tape against lateral movement while being so deformed, the height of the channel being such as to so stiffen said length that, when projected, said length is rigid and, when severed, it may be handled as a rigid member, the height of said channel being partly formed by the infeed pair of rolls and completed by the outfeed pair of rolls thereby to minimize resistance to the tape at the infeed side of said infeed pair of rolls as the tape is projected from said tape pulling means, and the two pairs of rolls providing support for the projected tape length.

References Cited by the Examiner

UNITED STATES PATENTS

1,218,249	3/1917	Englert	270—93
1,967,579	7/1934	Kruger	118—44 X
2,198,926	4/1940	Walden	225—104
2,235,532	3/1941	Reardon	83—15 X
2,252,733	8/1941	Sherman et al.	225—4
2,285,228	6/1942	Potdevin	225—4
2,626,588	1/1953	Klug	83—922 X
3,088,356	5/1963	Ortner	83—92 X
3,088,356	5/1963	Ortner	83—922 X

FOREIGN PATENTS

744,058	2/1956	Great Britain.

WILLIAM W. DYER, JR., *Primary Examiner.*

ANDREW R. JUHASZ, *Examiner.*