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BAND TO A WRAPPING STRIP

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 4

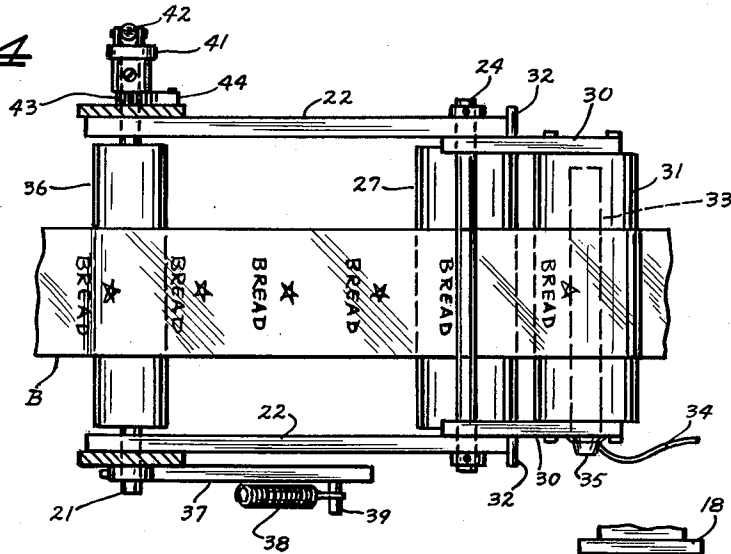
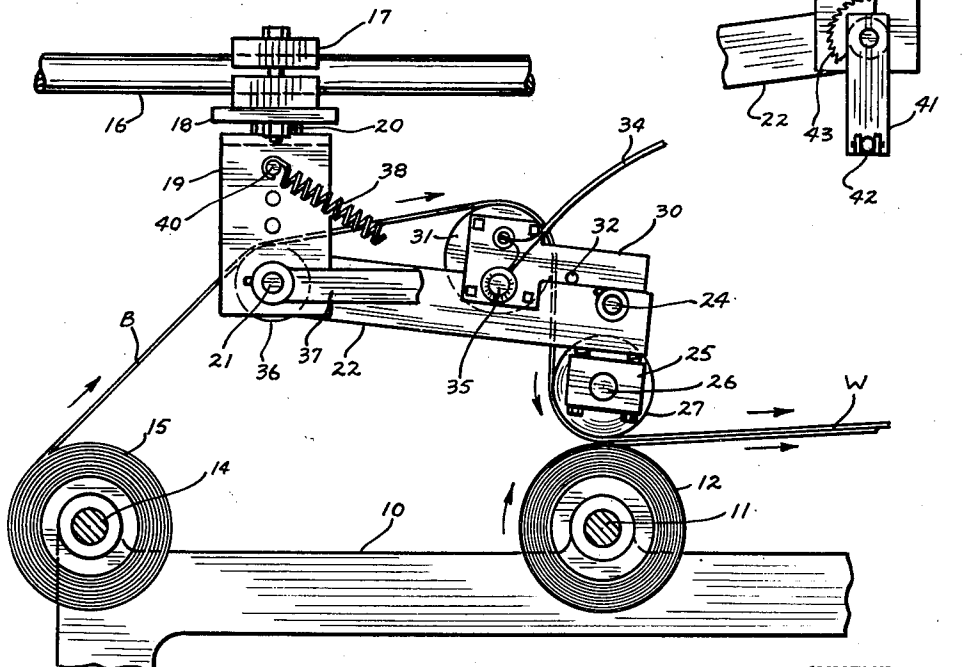


FIG. 5

FIG. 5



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1

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APPARATUS FOR HEAT SEALING A LABELING BAND TO A WRAPPING STRIP

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10 Claims. (Cl. 154—1.6)

This invention relates to an improved mechanism for applying a labeling band to a wrapping strip by the application of heat and pressure prior to feeding the wrapping strip to a conventional wrapping machine. More particularly this invention relates to an improved device for applying a paper reinforcing and labeling band to transparent bread wrapping strip before the wrapping strip is fed to a conventional bread wrapping machine.

In recent years it has become common practice in the manufacture and distribution of bakery products, particularly of bread, to wrap each article in a transparent wrapping material, such as cellophane. These transparent wrapping materials are non-porous and readily foldable adapting them for easy wrapping about each loaf of bread, for example, and easy folding of the package ends into closing and sealing engagement to provide a highly sanitary wrapper. The transparency of the wrapper has great sales appeal enabling the purchaser to view the merchandise before buying.

Because the transparent wrapper lacks the body and structural strength of waxed paper, it has been customary to reinforce and strengthen the transparent wrapper by wrapping a band of paper or the like around the bakery product along with the transparent wrapping material, either on the inside or the outside, and then seal this reinforcing band into the seam at the bottom of the wrapper. The band customarily carries the identification of the product and sometimes information as to price and the like.

When the band is adhered to the inside of a bread wrapper only at the seam, difficulty is encountered by the ultimate consumer, usually the housewife, when she attempts to reinsert slices of bread into the package after one-third to one-half of the loaf has been used. The band tends to collapse making reinsertion difficult. If the least bit of pressure is exerted in an attempt to realign the band, often the bottom seam opens and the package comes apart.

It has previously been proposed to overcome this objection to the use of reinforcing bands in transparent wrapped packages by adhering the banding material to the wrapping strip along its entire length, either across the entire width of the band or at least along its edges. Some difficulty has been encountered in adapting these proposed solutions to the problem since waxed paper, which is usually used as the banding material, and cellophane, which is usually used as the wrapping material, are somewhat incompatible and do not readily adhere to one another. When pressed together under the effects of heat and applied pressure the wax from the waxed paper band tends to exude and then re-coalesce in areas which vary from translucent to opaque and detract from the appearance of the labeling band.

There has now been discovered a new adhesive material which when applied to a paper band permits that band to be readily and securely bonded to a transparent wrapping strip, such as cellophane, while at the same time producing a transparent adhesive bond which de-

2

tracts not at all from the attractiveness of the printed indicia on the labeling band. The apparatus of this invention is especially adapted to the lamination of banding material coated with this new adhesive to transparent wrappers but is likewise suitable for laminating bands coated with any of the usual heat sensitive adhesives.

The principal object of this invention is to provide a laminating device for attachment to a conventional wrapping machine for adhesively applying an adhesive-coated reinforcing band to a wrapping strip by the application of heat and pressure.

A further object of this invention is to provide a laminating device for attachment to a conventional wrapping machine for applying a reinforcing band to a wrapping strip adaptable for applying the band to either side of the wrapping strip.

Other objects of the invention will become apparent as the description proceeds.

To the accomplishment of the foregoing and related ends, this invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

The invention is illustrated by the drawings in which the same numerals refer to corresponding parts and in which:

Figure 1 is a side elevation of the laminating device of this invention showing the unit with the elements positioned for applying a band to wrapping strip which will ultimately be on the inside of the finished wrapper;

Figure 2 is an end elevation, partly in section, taken along the line 2—2 of Figure 1 and in the direction of the arrows;

Figure 3 is an enlarged fragmentary sectional view of the pressure roll mounting taken along the line 3—3 of Figure 1 and in the direction of the arrows;

Figure 4 is a top plan view taken on the line 4—4 of Figure 1 and in the direction of the arrows;

Figure 5 is a side elevation showing a pawl and ratchet arrangement for lifting the pressure roll from the wrapper supply roll, taken along the line 5—5 of Figure 3 and in the direction of the arrows; and

Figure 6 is a side elevation, similar to Figure 1 but showing the unit with the elements positioned for producing a finished wrapper with the band on the outside of the package.

The apparatus of this invention comprises an attachment for conventional breadwrapping machines adapted to be positioned on the wrapping machine adjacent the supply roll of wrapping material. The device is positioned in such a way that a pressure roll of the device rests upon and rides the topmost portion of the supply roll. As a continuous paper web or band of reinforcing and label material is fed from a supply roll, it is first heated and then fed into direct engagement with the web or strip of wrapping material as it is fed into the wrapping machine.

Referring now to the drawings, base 10 is the base of the wrapping machine to which the device is to be attached. Base 10 is provided with means 11 for mounting a supply roll 12 of wrapping material for free rotation for feeding into the wrapping machine and with means 14 for mounting a reserve roll of wrapping material, but in this instance for mounting a supply roll 15 of banding material B coated on both sides with a heat sensitive adhesive material. The supply roll mounts are of a conventional type having conical chucks for centering the supply rolls and are freely rotatable to enable the feeding means

of the wrapping machine (not shown) to readily draw the needed material from the supply rolls.

The wrapping machine is also provided with parallel horizontal bars or rods 16 positioned above supply rolls. The banding device of this invention is suspended from and supported by bars 16. If the wrapping machine to which the bending unit is to be attached is not provided with bars or equivalent support means, it will be apparent from the simplicity of the attachment that suitable support means can readily be provided.

A pair of split mounting blocks 17 are bolted to rods 16 rearwardly of the wrapping supply roll 12 and a transverse horizontal bar 18 is bolted to the mounting blocks. A hanger or yoke 19 is pivotally supported at 20 below the center of horizontal bar 18. A horizontal shaft 21 is journaled for rotation in the outer ends of the open arms of yoke 19. A pair of spaced apart parallel supporting arms 22 are keyed to rotate with shaft 21. Arms 22 extend forward in the direction of supply roll 12 and pivot with shaft 21. Arms 22 are held spaced apart and aligned at their outer ends by a guide bar or roll 24 journaled in the ends of the arms.

A pair of bearing blocks 25 are resiliently mounted on the lower sides of the outer ends of supporting arms 22. A shaft 26 carrying a pressure roll 27 is journaled for rotation between bearing blocks 25. As shown in Figure 3, bearing blocks 25 are bolted to the supporting arms 22 by means of bolts 28 which are somewhat longer than would be required to fasten the blocks securely against the edges of arms 22. In the resulting space between the supporting arms and bearing blocks a coil spring 29 is interposed around bolts 28 and seated in suitable cavities in the adjoining members. Coil springs 29 act to push the bearing blocks 25, and accordingly shaft 26 and pressure roll 27, downwardly, urging pressure roll 27 against wrapping supply roll 12. At the same time springs 29 provide resiliency in the mounting to permit pressure roll 27 to readily adjust itself to irregularities in the surface of wrapping supply roll 12.

Pivotally mounted on guide bar 24 is a pair of parallel spaced apart movable generally L-shaped arms 30 which carry a heated roller 31 between their outer extremities. Arms 30 and heated roller 31 are adapted to assume two positions depending upon whether the banding material is desired to be on the inside or outside of the finished wrapper. The heating unit is shown in its forward position in Figure 1, being held in this position by pins which serve as stops 32 resting against the end edges of supporting arms 22. In Figure 6 it is shown in its rearward position, stops 32 in this instance resting upon the top surfaces of arms 22.

The heated roll 31 is fitted with any suitable resistance heating elements (shown in broken lines at 33) positioned within the roll and supplied with electric current through lines 34. Preferably a rheostat control 35 is installed in the circuit to permit adjustment of the temperature of the heated roll to meet varying operating conditions. Alternatively, control 35 may be replaced with a suitable thermostatic control for maintaining the temperature of the heated roll at some predetermined constant. Although shown here as a stationary roller, heated roll 31 may desirably be rotatable.

Shaft 21 between the arms of yoke 19 carries a freely rotatable guide roll 36. To relieve part of the full weight of the pressure roll 27 and heated roll 31 and the accessory supporting means from resting on the wrapping supply roll 12 a counterweight spring is provided. A spring arm 37 is keyed to rotate with shaft 21. A coil spring 38 is tensioned between one of several pins 39 extending outward from the side of arm 37 adjacent the forward end thereof and one of several pins 40 extending outward from the side arm of yoke 19. The tension can readily be adjusted by changing the position of spring 38 or alternatively by changing the alignment of spring arm 37 relative to supporting arms 22.

A crank arm 41 is preferably keyed to shaft 21 to provide means for lifting the heater roll and pressure roll and their accessory supporting arms. A folding handle 42 enables the crank to be easily rotated sufficiently to lift the pressure roll off wrapping supply roll 12. To hold the pressure roll in this position away from the supply roll there is provided a ratchet 43 keyed to rotate with shaft 21 and crank 41 and a pawl 44 pivotally mounted on the side of the arm of yoke 19 for engagement with the teeth of the ratchet locks the elements in their raised position.

When it is desired to produce a wrapper having a reinforcing and labeling band on the inside of the finished package, the banding strip B is unrolled from its supply source 15 and threaded, as shown in Figure 1, over guide roll 36, under guide bar 24, over and around heater roll 31, between pressure roll 27 and wrapper supply roll 12, which is supported in its mounting 11 to delivery wrapper strip from the bottom, and then around the wrapper supply roll to be delivered with the wrapping strip to the feeder of the wrapping machine as a composite banded wrapper W. For applying the band to the inside of the wrapper the heater roll 31 is positioned in its forward position.

The banding strip B is coated on both sides with a transparent heat sensitive adhesive material having an affinity for the transparent wrapping material. As the band B passes in contact with the heated surfaces of roll 31 the adhesive is softened and immediately passes into the nip between the pressure roll 27 and the wrapper supply roll 12 where it is pressed into intimate bonding contact across its entire width with the wrapper strip. At the same time the pressure roll cools and sets the adhesive material.

No independent drive means need be provided for the banding device of this invention. The feeding mechanism of the wrapping machine pulls the wrapper strip from its supply roll, and along with it the band adhered thereto.

When it is desired to produce a wrapper having the band adhered to the outside, the pressure roll is lifted from the wrapper supply roll by means of crank 41 and locked in this elevated position by pawl 44 engaging ratchet 43. Wrapper supply roll 12 is then turned end for end to deliver the wrapping strip from the top of the roll. Heater roll 31 and its movable supporting arms 30 are pivoted rearwardly around shaft 24 until stops 32 rest against the top edges of supporting arms 22. The pressure roll is lowered into contact with the wrapper supply roll, the banding strip now being threaded over the guide roll 36, over and around heater roll 31, down and around pressure roll 27 into the nip between pressure roll 27 and wrapper supply roll 12 and then to the wrapping machine as composite strip W with band B firmly adhered thereto.

The pivotal mount 20 permits the entire banding unit to be easily swung out of the way to provide access for changing supply roll, for cleaning and repairing. The two-position heater roll permits production of wrappers banded either on the inside or the outside. A particular advantage of the unit of this invention over units having a heated pressure roll is the elimination of "blocking" due to the heated roll causing several of the outside plies of the wrapper supply roll to stick together. It will be readily apparent that this unit is adapted to using bands of varying widths as demanded by particular wrapping requirements.

Although the invention has been described with particular reference to cellophane (regenerated cellulose) transparent wrapping material it is to be understood that any similar transparent wrapping material may be used. Among these may be mentioned "saran" (vinylidene chloride resins), "Pliofilm" (rubber hydrochloride), polyethylene, vinyl chloride-vinyl acetate copolymers, ethyl cellulose, cellulose acetate, and the like as well as con-

5

ventional waxed papers, parchments, glassine, and the like.

It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited only by the terms of the appended claims.

I claim:

1. A banding device for attachment to a wrapping machine having means for supporting a supply roll of wrapping material in web form, means for drawing the web from said roll and delivering it to the wrapping mechanism of said machine and reserve supply roll support means adaptable to support a supply roll of narrower reinforcing banding material, said banding device comprising a resiliently mounted pressure roll positioned above the wrapping material supply roll support means and adapted to rest on top of said supply roll and a heated roll mounted adjacent to said pressure roll in the path of travel of said banding material between the band material supply roll and the pressure roll.

2. A banding device according to claim 1 further characterized in that said pressure roll mounting comprises a hanger adapted to be suspended from the wrapping machine, a pair of arms supporting said pressure roll at their outer ends, the inner ends of said arms being pivotally mounted in said hanger.

3. A banding device according to claim 2 further characterized in that said hanger comprises a yoke pivotally mounted on said wrapping machine for movement transverse to the axis of the path of the wrapping web.

4. A banding device according to claim 2 further characterized in that said supporting arms are keyed to a shaft journaled for pivotal rotation in said hanger, said shaft having crank and ratchet means keyed thereto and said hanger including a pawl for engagement with the teeth of the ratchet for elevating the pressure roll.

5. A banding device according to claim 1 further characterized in that said heated roll is carried by two supporting arms pivotally mounted above said pressure roll.

6. A banding device for attachment to a wrapping machine having means for supporting a supply roll of wrapping material in web form, means for drawing the web from said roll and delivering it to the wrapping mechanism of said machine and reserve supply roll support means adaptable to support a supply roll of narrow reinforcing banding material, said banding device comprising a yoke hanger adapted to be suspended from

6

the wrapping machine, said yoke being pivotally mounted on said wrapping machine for movement transverse to the axis of the path of the wrapping web, a pair of arms mounted at one end of a shaft journaled for pivotal rotation in the arms of said yoke and carrying a pressure roll between their opposite ends, said pressure roll being positioned above the wrapping material supply roll support means and adapted to rest on top of said supply roll, two supporting arms pivotally mounted at one end adjacent to said pressure roll, a heater roll carried between the opposite ends of said arms and stop means to hold said heater roll adjacent to but spaced apart from said pressure roll.

7. A banding device according to claim 6 further characterized in that said shaft journaled for pivotal rotation in the arms of said yoke has a crank and ratchet keyed thereto and a pawl on said yoke adapted to engage said ratchet.

8. The combination in a wrapping machine of means for supporting a supply roll of wrapping material in web form, means rearwardly thereof for supporting a supply roll of narrower reinforcing banding material, a resiliently mounted pressure roll positioned above the wrapping material supply roll support means and adapted to rest on top of said supply roll, a heated roll carried between two supporting arms pivotally mounted above said pressure roll and means for drawing the banding material into contact with said heated roll and between the pressure roll and wrapping material supply roll and for drawing the resulting banded wrapping material from the supply roll.

9. The combination according to claim 8 further characterized in that said pressure roll mounting comprises a hanger suspended from the wrapping machine, a pair of arms supporting said pressure roll at their outer ends, the inner ends of said arms being pivotally mounted in said hanger.

10. The combination according to claim 9 further characterized in that said hanger comprises a yoke pivotally mounted on said wrapping machine for movement transverse to the axis of the machine.

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