Jan. 30, 1934. F. R. SCHMITT 1,945,086

HEAT SEALING PACKAGE

Filed Nov. 20, 1930

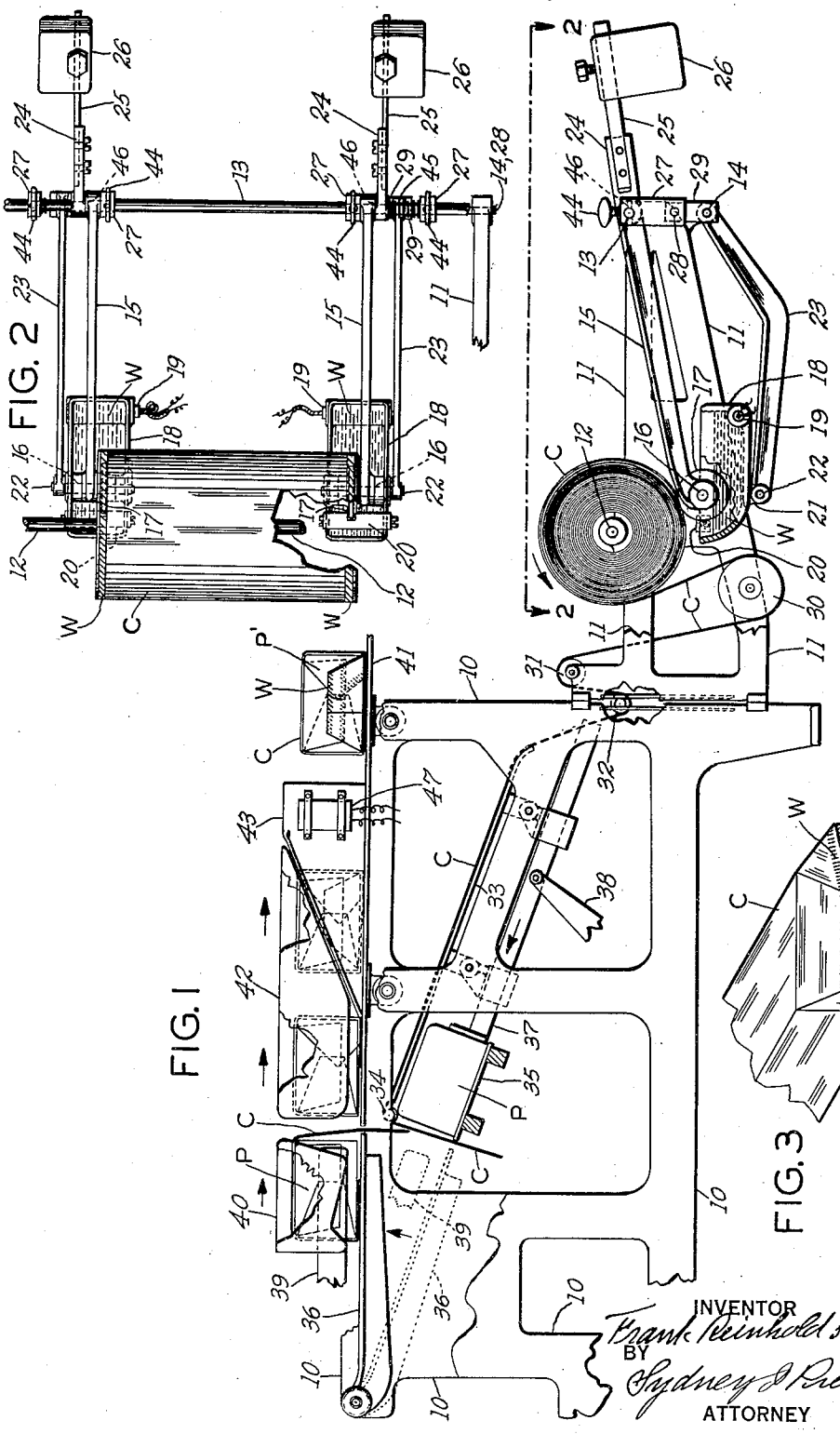


FIG. 2

FIG. 1

FIG. 3

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Patented Jan. 30, 1934 1,945,086

UNITED STATES PATENT OFFICE

1,945,086

HEAT SEALING PACKAGE

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Application November 20, 1930
Serial No. 496,982

13 Claims. (Cl. 93—2)

This invention relates to waxing attachments for wrapping machines the main object of the invention being to make possible the heat sealing of packages wrapped in materials other than waxed paper or equivalent heat sealing wrapping material, and to provide such an attachment which is applicable to existing machines. For the latter purpose it is an object of the invention to produce such an attachment which will be applicable to the reel of the machine where attachment is easy and there is plenty of room, and to provide a heat sealing method which is applicable to existing wrapping machines without reconstruction of the wrapping and folding mechanisms, and in which there is no danger of fouling of the machine by the sealing material even though the same is applied to the wrapping material prior to the several operations on it of wrapping and folding. Another object is to provide for the secure heat sealing or transparent cellulosic wrapping materials such as cellophane and to do this without appreciably marring the attractive transparency of this type of wrapping material. Another object of the invention is to provide improved sealing compound applying mechanism. To this end applying means is provided which follows inequalities and variations of diameter of the reel and is driven by said reel.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawing which forms a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is a side elevation partly broken away of a wrapping machine equipped with a waxing attachment in accordance with the invention; Fig. 2 is a detailed plane view partly broken away of the waxing attachment shown in Fig. 1; Fig. 3 is a perspective view of a partially wrapped package illustrating the application of the new sealing method.

In carrying the invention into effect there is provided in combination with a wrapping machine having heat sealing means, a reel for supplying wrapping material to said wrapping machine, and means coacting with the reel to apply longitudinal stripes of heat sealing compound along the outer layer of the reel for coaction with the heat sealing means to seal the package even though the wrapping material used is not in itself heat sealable. In the best constructions said applying means include a movably mounted reservoir, a device receiving the compound from the reservoir and applying the same to the reel and movable as a unit with said reservoir, and means yieldingly urging said reservoir and applier toward the reel. The method employed in carrying out the invention consists in applying longitudinal stripes of fused sealing compound along the edges and preferably the edges only of a strip of wrapping material, then wrapping a length of the material circumferentially about the article with the edge portions overhanging the end of the article, folding in the overhanging end portion against the end of the article in overlapping folds and applying heat to the folded edge portions to melt the compound and seal the overlapping folds together. In the best method of carrying out the improved method the sealing compound is of a quick setting nature in order to permit hardening of the compound before the wrapping and folding operations and preferably the compound is applied at the reel.

The various means referred to may be varied widely in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention therefore is not to be restricted to the precise details of the structure shown and described.

Referring now to the drawing the new heat sealing method and the new heat sealing attachment are illustrated in connection with a wrapping machine of the general type described in Patent No. 1,626,379, April 26, 1927 to H. Y. Armstrong, but the present invention because it does not interfere with or require modification of the folding means, and because attached to the generally accessible paper reel and supports therefore, is applicable to most wrapping machines, and is particularly suited to converting machines for wrapping and sealing in waxed paper to use on materials not hitherto susceptible to satisfactory heat sealing.

Referring to Figs. 1 and 2, the side frames 10 of the wrapping machine carry brackets 11 which support cross-shafts 12, 13 and 14 of the waxing attachment. The shaft 12 serves as support for a reel of wrapping material such as cellophane or other material not readily or securely sealable by heat. Loosely mounted on shaft 13 are arms 15 carrying studs 16 on which turn wheels 17 partly submerged in a quick setting heat sealing compound W placed in receptacles 18. A satisfactory compound for this purpose and for use with cellophane is one consisting of 50% paraffin and 50%

resin. This substantially transparent compound will cool and set hard before the paper is guided or folded. Receptacles 18 for the compound carry electric heaters 19 which melt the wax and keep it at the proper temperature. Fastened to the reservoirs 18 are scrapers 20 which remove the surplus wax from the wheels 17 as they move past the same. At the bottom of the receptacles 18 are lugs 21 carrying studs 22 on which are loosely fitted the arms 23 the other ends of which are carried by cross-shaft 14. Arms 24 attached to shaft 13 carry bars 25 on which are mounted the adjustable weights 26. The shaft 13 carries blocks 27 attached to which are the studs 28 passing through blocks 29, the other ends of which are connected to shaft 14. Thus the applier wheels 17 will be yieldingly urged against the lower side of the reel, and can readily follow inequalities and changes of size of the reel.

The wrapping material from reel C is threaded around the rollers 30, 31 and 32 and is then passed over plate 33 and hangs down from roller 34 in front of the delivery runway 35 of the packaging machine. By the time the wrapper reaches the roller 30 the sealing compound is hard and there will be no sticking to the roll. As the package P to be wrapped is advanced to the swinging table 36 in its downmost position (dotted lines) by a pusher 37 operated by a lever 38, the down-hanging wrapper web C is carried along by the package, thereby partly folding the same around the latter. The wrapper C, being carried forward in this manner, unwinds from the reel C a sufficient length of wrapping material for the next package. The reel, in unwinding, rotates the waxing wheels 17 whereby a longitudinal stripe of wax is deposited at each edge of the wrapper-web C. As the diameter of the reel C gradually decreases by unwinding, the weights 26 descend and thereby lift the waxing wheels 17 and the receptacles 18, and, with them, the arms 23 which hold them in a horizontal position.

Upon entering of the package in position on table 36, the plates 39 close upon the package, thereby tucking the forward side-flaps of the package and holding them in position while the table 36 ascends to its up-position as shown (full lines) in Fig. 1. In approaching the latter position, the flaps of the top-fold encounter the stationary folders 40 resiliently attached to adjustable arms carried by the wrapping machine frame 10, thereby causing the top-flaps of the wrapper to be folded against the package.

On being thereupon transferred onto runway 41 by any suitable conveyer mechanism such as pushers not shown, the side flaps of the package are clamped between stationary side-folding plates 42, also resiliently carried by adjustable arms. At this point the sheet of wrapping material has been wrapped completely about the circumference of the article with the stripes of sealing compound on the outside. As the package advances on runway 41, its still open bottom flap at each side enters a vertically inclined slot formed between the first side-folding plate 42 and a second side-folding plate 43, and is thereby gradually folded up. On leaving the folding-plates 43, the wrapping of the package is complete, the packing having the appearance seen at P'. In order to seal ends of the package already striped with hardened sealing compound, the side-folding plates 42 and 43 as well as the end-portion of runway 41 are heated by suitable heaters 47 so that the sealing operation is automatically performed as the package is delivered from the machine.

The arms 15 carrying the waxing rollers 17 are readily adjusted for different widths of wrapping material as required for different sizes of packages, by simply loosening the thumb-screws 44 carried by blocks 27 and sliding the latter on their shafts 13 and 14 to suit the width of the new wrapper web. The springs 45, pressing against the blocks 27 and the arms 24, hold the latter in place, the end surfaces of the hubs of arms 24 having axial projections 46 which interlock with corresponding depressions in the hubs of arms 15, thus automatically clutching the hubs together when the blocks 27 are in place. While the blocks 27 are out of position the weights 26 are disengaged, permitting the rollers 16 to drop out of the way of the new reel to be inserted.

The wax stripes W along the edges and outer surfaces of the end-flaps, as shown in Fig. 3, provide crisscrossed stripes of adhesive, at least one being located between each fold so that the heat employed during and after the folding operations effects a perfect sealing of the package.

It will be noted that by applying the adhesive during unreeling and at the reel instead before reeling the unevenness of the reel (and consequent unevenness of feeding) which would result from the extra thickness of the adhesive is avoided. Cellophane, for example, is so thin that a stripe of adhesive would form a substantial fraction of the total thickness.

What is claimed is:

1. The combination with a wrapping machine having heat sealing means, of a reel for supplying wrapping material to said machine, and means coacting with the reel to apply longitudinal stripes of a heat sealing compound along the outer layer on the reel for coaction with said heat sealing means.

2. The combination with a wrapping machine having heat sealing means, of a reel for supplying wrapping material to said machine, and means coacting with the reel to apply longitudinal stripes of a heat sealing compound along the outer layer on the reel for coaction with said heat sealing means, said applying means including a movably mounted receptacle for the compound, a device for receiving the compound from the receptacle and applying the same to the reel and movable as a unit with said receptacle and means yieldingly urging said receptacle and applier toward the reel.

3. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, means for applying a stripe of heat sealable adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel.

4. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, means for applying a stripe of heat sealable adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism for supporting said re-

ceptacle and reel as a unit for movement toward and away from the reel, and devices coating with said mechanism to yieldingly urge the receptacle and wheel toward the reel, said mechanism having means for maintaining the receptacle horizontal during movement thereof.

5. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, means for applying a stripe of heat sealable adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, said mechanism comprising a pivoted arm supporting at one end the receptacle and counterbalanced at the other end, and linkage for maintaining said receptacle horizontal as the arm changes position.

6. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, means for applying a stripe of heat sealable adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, and a heater secured in operative relation to said receptacle for keeping the adhesive in fused condition.

7. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, means for applying a stripe of heat sealabe adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, said mechanism comprising a counter balanced arm extending under the reel, a shaft on the end of said arm, the adhesive receptacle being swung on said shaft and the adhesive applying wheel being rotatably carried on said shaft and dipping in the receptacle, and a pivoted link connected to said receptacle and having an anchorage for maintaining the receptacle horizontal.

8. The combination with a reel for supplying wrapping material, of means for applying a stripe of adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel.

9. The combination with a reel for supplying wrapping material, of means for applying a stripe of adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, said mechanism having means for maintaining the receptacle horizontal during movement thereof.

10. The combination with a reel for supplying wrapping material, of means for applying a stripe of adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, said mechanism comprising a pivoted arm supporting at one end the receptacle and counter balanced at the other end and linkage for maintaining said receptacle horizontal as the arm changes position.

11. The combination with a reel for supplying wrapping material, of means for applying a stripe of adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel, and a heater secured in operative relation to said receptacle for keeping the adhesive in fused condition.

12. The combination with a reel for supplying wrapping material, of means for applying a stripe of adhesive to the material while on the reel, including a receptacle for the adhesive and an adhesive applying wheel dipping in said receptacle and adapted to engage the outer layer of wrapping material on said reel, mechanism supporting said receptacle and wheel as a unit for movement toward and away from the reel, and devices coacting with said mechanism to yieldingly urge the receptacle and wheel toward the reel said mechanism comprising a counter balanced arm extending under the reel, a shaft on the end of said arm, the adhesive receptacle being swung on said shaft and the adhesive applying wheel being rotatably carried on said shaft and dipping in the receptacle and a pivoted link connected to said receptacle and having an anchorage for maintaining the receptacle horizontal.

13. The combination with a wrapping machine having heat sealing devices, of a reel for supplying wrapping material to said machine, a reservoir for providing a supply of heat sealing compound and compound applying means receiving the compound from said reservoir and applying stripes thereof to the wrapping material on said reel, said applying means including an applying wheel dipping in the reservoir, and means for yieldingly urging said wheel against the reel to cause said wheel to be driven thereby.

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