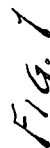


Filed Dec. 30, 1948

2,590,239

4 Sheets-Sheet 1



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J. L. ELSMAN
METHOD AND APPARATUS FOR PRINTING AND
APPLYING LABELS TO WRAPPING PAPER

4 Sheets-Sheet 2

FIG. 2

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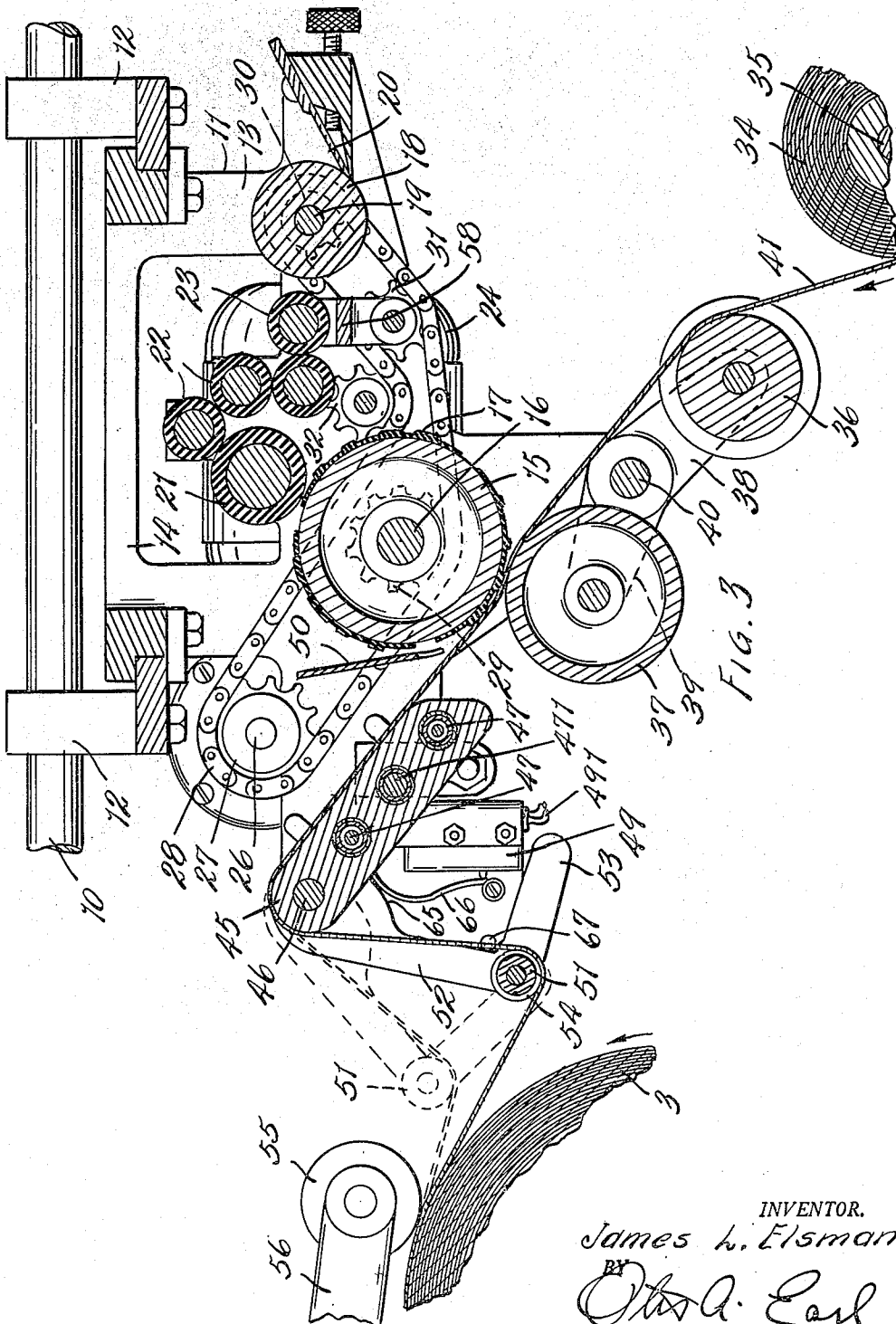
March 25, 1952

J. L. ELSMAN
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2,590,239

Filed Dec. 30, 1948

4 Sheets-Sheet 3



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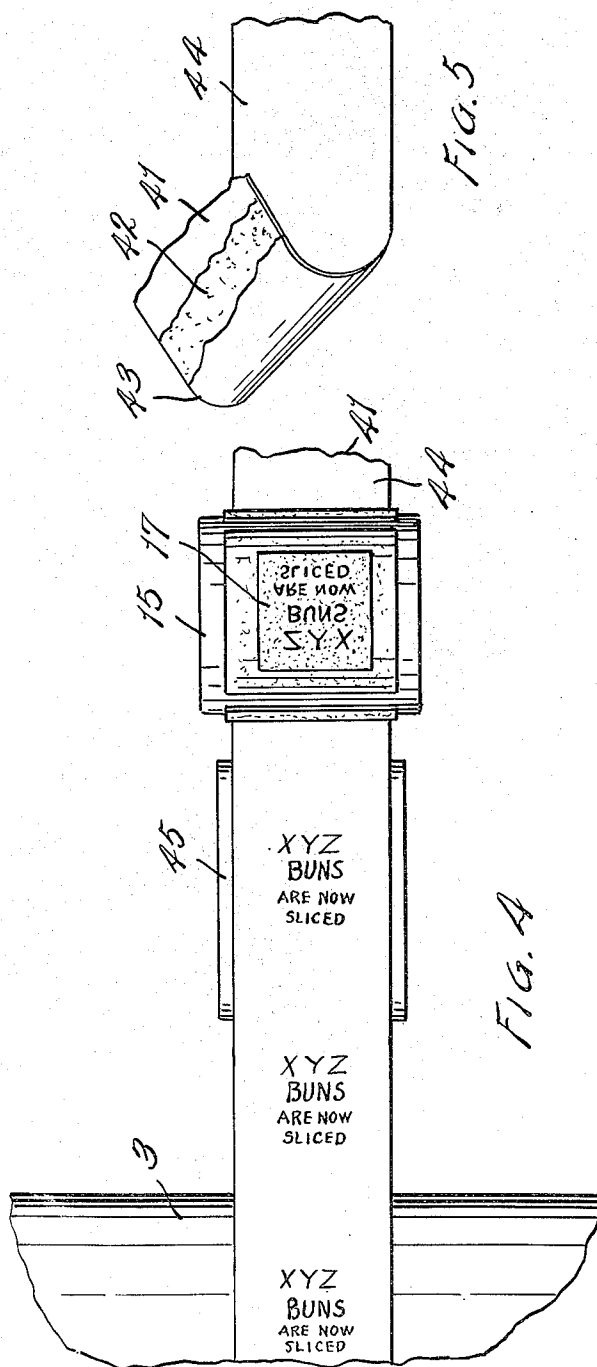
March 25, 1952

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2,590,239

Filed Dec. 30, 1948

4 Sheets-Sheet 4



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2,590,239

METHOD AND APPARATUS FOR PRINTING
AND APPLYING LABELS TO WRAPPING
PAPER

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Application December 30, 1948, Serial No. 68,156

19 Claims. (Cl. 154—1.6)

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This invention relates to improvements in method and apparatus for printing and applying labels to wrapping paper.

The main objects of this invention are:

First, to provide a method for printing and applying labels to wrapping paper.

Second, to provide a method for printing and applying labels to a web of wrapping paper as it is unwound for wrapping purposes.

Third, to provide a machine or apparatus as an attachment for a wrapping machine for printing and applying a label band or strip to a web of paper.

Fourth, to provide a machine or apparatus for the practice of the method of my present invention which is effective and at the same time comparatively simple and economical in structure.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevational view of the machine or apparatus of my invention in operative relation to a wrapping machine frame and the wrapping web roll supporting means thereof.

Fig. 2 is a fragmentary plan view.

Fig. 3 is a fragmentary view in mainly longitudinal section on a line corresponding to line 3—3 of Fig. 2.

Fig. 4 is a fragmentary plan view illustrating certain of the steps of the method of my invention.

Fig. 5 is a fragmentary perspective view of a label strip or band adapted for use in the practice of my invention.

In the accompanying drawing 1 represents the frame of the wrapping machine. The details of the wrapping machine form no part of my invention and are therefore not illustrated with the exception that the machine is provided with a support 2 for the roll of wrapping paper 3, the web 4 being guided over suitable guide rolls 5, 6, 7 and 8 to the wrapping mechanism. 9 designates a conveyor for material to be wrapped and 10 one of the supporting members for the conveyor which also serves as a support for the machine or apparatus of my invention.

This machine or apparatus in the embodiment of my invention illustrated comprises a frame designated generally by the numeral 11 which is suspended from the part 10 by hangers 12. The

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frame comprises side members 13 and a top cross member 14 connecting the same. The printing cylinder 15 is mounted between the side members on the shaft 16 and is adapted to receive suitable printing plates 17. The ink feed roll 18 is mounted on the shaft 19 in cooperative relation to the fountain 20. The cylinder inking roller 21 is provided with ink through an inking couple designated generally by the numeral 22 and including the shiftable transfer roller 23. Inking couples of this character are known in the art and therefore it is not described in further detail.

A motor 24 is mounted on a bracket 25 carried by the frame and suitably geared to the driving shaft 26 having a sprocket 27. The sprocket 27 is connected by the sprocket chain 28 to the sprocket 29 on the shaft of the printing roller and to a sprocket 30 on the fountain or ink feed roller shaft. The chain is guided by the guide sprockets 31 and 32. The label strip or band 41 is desirably supplied in the form of a roll 34 mounted upon the spindle or shaft 35 in suitable relation to the other parts. This label strip or band is made of paper and is passed over the guide roller 36 and between the pressure or contact roller 37 and the printing cylinder. These rollers are carried by arms 38 and 39 respectively on the shaft 40, they coact to tension and direct the band to the printing roller. The label band or strip 41 is provided with a barrier 42 on one side and a thermoplastic coating 43 on the barrier side. The other side 44 of the strip 41 is ink receptive, however, the barrier may be in the form of a coating applied to the paper or barrier material may be incorporated in the paper. The thermoplastic coating may desirably be paraffin wax as that is effective for the economical practice of the method and is also suitable in forming an adhesive bond with the wrapping paper. The ink used is desirably an ink which dries quite quickly and the drying of which is facilitated by heat. Suitable inks are commercially available.

At the rear of the printing cylinder and closely adjacent thereto is a heating plate 45 this being supported at its rear end by the rod 46 and is provided with a plurality of electrical heating elements 47 arranged transversely therethrough. The motor 24 is controlled by the switch designated generally by the numeral 49 connected to the motor 24 as by the wiring 491. The heating plate 45 is so positioned that the band or strip 41 passes over it and in supported relation thereto as it leaves the printing cylinder. A guard 50

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is arranged in advance of the heating plate to protect the printing cylinder from the heat and prevent setting or drying of the ink thereon. In passing over the heating plate or element the thermoplastic on the label strip is rendered adhesively plastic and the ink is dried or its drying facilitated. The heating element is controlled by the thermostat 471. The wiring for the heating element 47 and the thermostat is not shown. It is understood that the source of current can be connected with the wrapping machine or independent thereof. The fused thermoplastic serves as an effective heat conductor facilitating the quick drying of the ink and provides a uniform contact distribution of heat to the label strip.

While the thermoplastic adhesive is in adhesively plastic condition it is directed to and pressed upon the outer convolution of the roll of wrapping paper as is best shown in Figs. 1 and 3. The label strip or band is directed tangentially to the outer convolution of paper on the roll by means of the guide roller 51 which is swingably supported on the arm 52 having a weight 53. This roller engages the printed side of the label strip and is desirably provided with peripheral longitudinally spaced ribs 54 which minimize any drag or scraper action on the printing. The label strip as is shown is guided substantially tangentially upon the outer convolution of the wrapper paper and is pressed thereon by the press roller 55 carried by the swinging arm 56. This results in an effective application of the label to the wrapping paper as it is unrolled from the roll 3. The label strip is pulled over the heating element by the web to which it is adhered. The roller 51 serves as a take-up and tensioning roller and compensates for irregularities of feed in the wrapping machine and in the event that the withdrawal of paper from the roller is interrupted for a substantial period or pause, or in the event of the exhausting or breaking of the label strip 41, the cam 65 on the arm 52 engages the switch control 66 and opens the switch 49 and thereby stops the motor 24. A stop 67 limits the rearward swing of the arm 52.

The practice of my method avoids the necessity of purchasing a large stock of pre-printed labels. I am aware that pre-printed labels have been applied to wrapping webs as the web is unwound from a roller in a wrapping operation. In my method I am able to completely print a label strip or band carrying a thermoplastic adhesive and immediately dry the ink and simultaneously plasticize the thermoplastic and apply the label or label strip as a continuous operation. The machine or apparatus of my invention as illustrated is very efficient for that purpose.

The printing plates may be readily changed and thereby quickly adapt the machine for different runs, for example one run might be "XYZ buns are now sliced" as indicated in the drawing and quickly changed as desired. To facilitate such manipulation the shaft 16 of the printing cylinder is provided with a hand wheel 57 to facilitate the manipulation of the cylinder in removing and applying the printing plates. The ink transfer roller 23 is carried by the arms 58 on the rock shaft 59 which is operated in timed relation with other driven parts by the chain of gears 60, the cams 61 and the connecting rod 62. These details, however, and the details of the ink roller reciprocating means designated generally by the numeral 63 are not

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illustrated or described in detail as they are known to the art. It is desired to point out that the spring 64 acts to yieldingly urge or bias the ink transfer roller 23 to the fountain roller 18.

I have described the steps of my method and one apparatus by which the same may be successfully practiced. I have not attempted to illustrate or describe various modifications and adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In the art of applying a printed band or label strip to the web of a roll of wrapping paper as it is unwound for use comprising, the steps of providing a label strip of paper having a wax penetration barrier on one side thereof and a paraffin wax coating over the barrier, the other side of the strip being without wax and receptive to printing, translating the printing receptive side across a printing cylinder to receive printing therefrom, immediately thereafter translating the strip across a heating element with the waxed side contacting therewith and whereby the wax is fused and rendered adhesive and the ink is dried, and while the wax remains in adhesively fused condition guiding the strip by means coacting with the printed side thereof to and pressing it upon the peripheral convolution of the roll of wrapping paper by pressure applied to the printed side of the strip and as the wrapping web is being unwound from the roll.

2. In the art of applying a printed band or label strip to the web of a roll of wrapping paper as it is unwound comprising, the steps of providing a label strip of paper having a wax penetration barrier on one side thereof and a fusible wax coating over the barrier, the other side of the strip being receptive to ink, printing upon the ink receptive side, immediately thereafter passing the strip across a heating element with the waxed side contacting therewith whereby the wax is fused and rendered adhesive and the ink is dried, and while the wax remains in adhesively fused condition guiding the strip by means coacting with the printed side thereof to and pressing it upon the peripheral convolution of the roll of wrapping paper by pressure applied to the printed side of the strip as the wrapping web is being unwound from the roll.

3. The method of printing and applying a label to a web of wrapping paper as it is unwound from a roll comprising, the steps of providing a label strip provided with a wax penetration resist and having a fusible wax coating on one side thereof, the other side being receptive to ink, printing upon the ink receptive side while the strip is being translated across a rotating printing element, translating the strip across a heating element in such proximity to the printing element as to facilitate the drying of the ink and to simultaneously fuse the wax to render it adhesive, and while the wax remains in adhesive condition guiding the strip by means coacting with the printed side thereof to and pressing the fused wax side upon the peripheral convolution of the roll of wrapping paper by pressure applied to the printed side of the strip and as the wrapping web is being unwound from the roll, the strip being translated by the pull

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of the wrapping web through its adherence thereto as the web is unwound.

4. The method of printing and applying a label strip or band having a fusible wax adhesive on one side and being receptive to ink on the other side to a rolled web of wrapping paper comprising, the steps of printing on the ink receptive side of the strip while it is being translated endwise, heating the strip to soften the wax while the strip is being translated from the printing point and in such a relation thereto that the heat facilitates the drying of the ink, and while the wax remains in adhesive condition applying it to the peripheral convolution of the roll of wrapping paper as the wrapping paper is unwound from the roll and thereby translate the strip relative to the heating means by its adherence to the web of paper as it is unrolled.

5. The method of printing and applying a label strip or band having a fusible wax adhesive on one side and being receptive to ink on the other side to a rolled web of wrapping paper comprising, the steps of printing on the ink receptive side of the strip while it is being translated endwise, heating the strip to soften the wax while the strip is being translated from the printing point and in such a relation thereto that the heat facilitates the drying of the ink, and while the wax remains in adhesive condition applying it to the peripheral convolution of the roll of wrapping paper as the wrapping paper is unwound from the roll.

6. The method of printing and applying a label to a web of wrapping paper comprising the steps of, providing a label strip having a thermoplastic coating on one side, the other side being receptive to ink, printing on the ink receptive side, subjecting the strip to heat while it is being translated and in such timed relation to the printing as to facilitate the drying of the ink and simultaneously render the thermoplastic coating adhesive, and while the thermoplastic coating material remains in adhesive condition applying the coated side to a web of paper while the web and strip are traveling at the same speed.

7. The method of printing and applying a label which is ink receptive on one side and provided with a thermoplastic adhesive on the other side to a traveling web of paper comprising the steps of, printing on the ink receptive side, and heating the label while it is being translated to fuse the adhesive and in such timed relation to the printing as to facilitate the drying of the ink, and while the adhesive remains in fused condition adhering the label to the web.

8. The method of applying a label receptive to ink on one side and having a thermoplastic adhesive coating on the other side comprising the steps of, printing on the ink receptive side, and heating the label to render the thermoplastic adhesive and in such timed relation to the printing as to facilitate the drying of the ink, and while the adhesive remains in fused condition applying it.

9. The method of printing and applying a label strip or band having a fusible adhesive on one side and being receptive to ink on the other to a web of wrapping paper comprising, the steps of printing on the ink receptive side of the strip, heating the strip to fuse the adhesive and in such timed relation to the printing that the heat facilitates the drying of the ink, and while adhesive remains in adhesive condition applying it to the peripheral convolution of a roll of wrapping paper as the wrapping paper is being unwound

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from the roll, the label strip being translated while being heated by its adherence to the web of paper.

10. The method of printing and applying a label strip or band having a fusible adhesive on one side and being receptive to ink on the other to a web of wrapping paper comprising, the steps of printing on the ink receptive side of the strip, heating the strip to fuse the adhesive and in such timed relation to the printing that the heat facilitates the drying of the ink, and while adhesive remains in adhesive condition applying it to the peripheral convolution of a roll of wrapping paper as the wrapping paper is being unwound from the roll.

11. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of wrapping paper, comprising in combination a supporting frame adapted for attachment to a wrapping machine provided with means for supporting a roll of wrapping paper, a printing cylinder, means for inking said cylinder operatively associated therewith, a contact roller operatively associated with the printing cylinder, means for guiding the strip or band between the printing cylinder and the contact roller with the ink receptive side toward the printing cylinder, a heating plate over which the strip or band is passed subsequently to said printing cylinder with its thermoplastic bearing side in supported contacting relation therewith for fusing the thermoplastic to plastic condition and facilitating the drying of the ink, a guide roller for the band disposed at the rear of the heating plate and coacting with the printed side of the band to guide the band tangentially upon the roll of wrapping paper, and a pressure roll coacting with the printed side of the band to press the band upon the peripheral convolution of the roll of wrapping paper as the paper is unwound therefrom, the band being translated relative to the printing and heating means by the wrapping paper to which it has been adhered as the wrapping paper is drawn from the roll.

12. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of wrapping paper, comprising in combination a supporting frame adapted for attachment to a wrapping machine provided with means for supporting a roll of wrapping paper, a printing cylinder, means for inking said cylinder operatively associated therewith, means for guiding the strip or band to the printing cylinder and the contact roller with the ink receptive side toward the printing cylinder, a heating element over which the strip or band is passed subsequently to said printing cylinder with its thermoplastic bearing side opposed therewith for fusing the thermoplastic to plastic condition and facilitating the drying of the ink, a guide roller for the band disposed at the rear of the heating element and coacting with the printed side of the band to guide the band tangentially upon the roll of wrapping paper, and a pressure roll coacting with the printed side of the band to press the band upon the peripheral convolution of the roll of wrapping paper as the paper is unwound therefrom.

13. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of wrapping paper com-

prising in combination a supporting frame adapted for attachment to a wrapping machine provided with means for supporting a roll of wrapping paper, a printing cylinder, and means for inking said cylinder operatively associated therewith, a contact roller operatively associated with the printing cylinder, means for guiding the strip or band between the printing cylinder and the contact roller with the ink receptive side toward the printing cylinder, a heating plate over which the strip or band is passed subsequently to said printing cylinder with its thermoplastic bearing side in supported contacting relation thereto for fusing the thermoplastic to adhesive condition and facilitating the drying of the ink, and means for applying the band while the thermoplastic is in adhesively fused condition to the peripheral convolution of the roll.

14. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of wrapping paper comprising in combination a supporting frame adapted for attachment to a wrapping machine provided with means for supporting a roll of wrapping paper, a printing cylinder, and means for inking said cylinder operatively associated therewith, means for guiding the strip or band between the printing cylinder and the contact roller with the ink receptive side toward the printing cylinder, a heating element over which the strip or band is passed subsequently to said printing cylinder with its thermoplastic bearing side opposed thereto for fusing the thermoplastic to adhesive condition and facilitating the drying of the ink, and means for applying the band while the thermoplastic is in adhesively fused condition to the peripheral convolution of the roll.

15. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of paper comprising, a printing unit, means for guiding the band to the printing unit for printing on the ink receptive side thereof, a heating plate at the rear of the printing unit over which the band is passed with its thermoplastic bearing side in supported contacting relation therewith for fusing the thermoplastic to plastic adhesive condition and facilitating the drying of the ink, a guide for the band disposed at the rear of the heating plate and coacting with the printed side of the band to guide the band to a moving web of wrapping paper, and a pressure element coacting with the printed side of the band to press the band upon the web while the thermoplastic is in adhesively plastic condition.

16. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to a web of paper comprising, a printing unit, means for guiding the band to the printing unit for printing on the ink receptive side thereof, a heating plate at the rear of the

printing unit over which the band is passed with its thermoplastic bearing side in supported contacting relation therewith for fusing the thermoplastic to plastic adhesive condition and facilitating the drying of the ink, and means spaced substantially behind said plate for applying the band to a web while the adhesive is in adhesively plastic condition.

17. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to wrapping paper or the like comprising, a printing unit, means for guiding the band to the printing unit for printing on the ink receptive side thereof, a heating means at the rear of the printing unit acting to fuse the thermoplastic to plastic adhesive condition and facilitating the drying of the ink, a guide for the band disposed at the rear of the heating means and coacting with the printed side of the band to guide the band to the paper, and a pressure element coacting with the printed side of the band to press the band upon the paper while the thermoplastic is in adhesively plastic condition.

18. An apparatus for printing and applying a label strip or band having a thermoplastic adhesive coating on one side, the other side being receptive to ink to wrapping paper or the like comprising, a printing unit, means for guiding the band to the printing unit for printing on the ink receptive side thereof, a heating means at the rear of the printing unit acting to fuse the thermoplastic to plastic adhesive condition and facilitating the drying of the ink, and means for applying the band to the paper while the thermoplastic is in adhesively plastic condition.

19. An apparatus for printing and applying a label having a thermoplastic adhesive coating on one side, the other side being receptive to ink comprising, a printing unit, means for guiding the label to the printing unit for printing on the ink receptive side thereof, a heating plate at the rear of the printing unit over which the label is passed with its thermoplastic bearing side in supported contacting relation therewith for fusing the thermoplastic to plastic adhesive condition and facilitating the drying of the ink, and means spaced substantially behind said plate for applying the label to an object while the thermoplastic is still in adhesively plastic condition.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,226,243	O'Connor	May 15, 1917
1,792,414	Cole	Feb. 10, 1931
2,040,564	Rapley	May 12, 1936
2,082,114	Littlefield	June 1, 1937
2,129,277	Jeuck	Sept. 6, 1938
2,224,370	Wescott	Dec. 10, 1940