METHOD AND MEANS FOR FORMING FROM AND SECURING TO THIN WRAPPER WEBS A REINFORCED TEAR STRIP

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9 Claims

ABSTRACT OF THE DISCLOSURE

Method and apparatus for forming a cellulose wrapper wherein at least two strips are cut from a substantially endless wrapper, superimposed on the other to form a composite tear tape and joined to the wrapper along the longitudinal axis.

This invention relates to the forming and securing of reinforced tear strips to impervious webs, preferably of thin cellulosic material (such as the material known under the registered trade name of cellophane) designed for wrapping packages or packets, such as cigarette packets, and aims to provide an improved method and means permitting of readily forming from and securing to said wrapper web a reinforced tear strip i.e. a tear strip having a thickness and strength which are greater than those of the wrapper web.

According to one of the known methods, the narrow tear strip is fed from a separate reel and secured to the packet wrapper. This method permits of employing tear strips of any thickness and strength, but it presents the drawback that a separate bobbin for the strip must be provided, from which the tear strip is to be secured onto the packet wrapper. This means a duplication of the wrapping and cutting means and a complication of the whole wrapping apparatus.

According to another method, the tear strip is obtained from a moving web of thin cellulosic material, having a width in excess of that needed for wrapping the packets. Said tear strip is severed from the wrapper web proper whereafter adhesive is applied to one face of said strip and the severed strip is superposed in a predetermined position of the said wrapper web, with the adhesive-coated face against the wrapper web and then secured thereto, whereafter the said wrapper web and superimposed tear strip are severed transversely of their lengths. This method presents some advantages over the above-outlined prior method, but presents the drawback that the tear strip has the same thickness as the wrapper web of thin cellulosic material. Usually however the tear strip thus produced is excessively thin and weak for guaranteeing a reliable and precise tear off of the packet wrapper made from the same cellulosic material; much more, it happens sometimes that the same tear strip is torn before tearing the whole wrapper.

In order to overcome this drawback, according to the invention means are provided for forming and securing a reinforced tear strip by cutting, gluing or welding together and securing to the wrapper web at least two strips cut from a margin of the said cellulose wrapper, thus providing a reinforced tear strip having a thickness which is at least double of that of the wrapper web, so that the packet wrapper may be securely torn in the desired position, along the edges of said reinforced tear strip.

As, in practice is desirable to render the reinforced tear strip readily visible on the wrapper, it is advisable to employ, for gluing together the single strips, a colored adhesive. The same effect may be obtained also, without having recourse to colored adhesives, by employing webs having a colored side margin. Anyway, if it is not required to render the whole tear strip well visible, it is advisable to make at least the grasping end of said strip of a different color than the wrapper web. The invention also provides means for coloring said grasping or tail ends of the tear strips, so as to render same readily visible.

The above and other characteristic features of the invention will be better understood from the following specification, reference being had to the accompanying drawings, in which the invention is particularly shown as applied to an automatic cigarette packet-wrapping machine, although it is apparent to those skilled in the art that the same means may be employed also on other packaging and package-wrapping machines.

In the drawings:

FIG. 1 is a dia of a packet-wrapping device provided with means for obtaining from a thin web a double-thickness tear strip and for securing said strip to the remaining wrapper web;

FIG. 2 shows in somewhat enlarged scale and in a diagrammatical perspective view the machine for producing packet wrapper blanks provided with a reinforced (or double-thickness) tear strip;

FIG. 3 is in still more enlarged scale two details of FIG. 2;

FIG. 4 shows a length of cellulosic web from which the packet wrapper and the reinforced tear strip are formed as well as the wrapper web after cutting of two strips, securing of the reinforced tear strip to the wrapper web and cutting from one end thereof a wrapper blank;

FIG. 5 is a perspective view like of another embodiment of a machine like that shown in FIG. 2;

FIG. 6 shows in enlarged scale two details of FIG. 5, which corresponds to those shown in FIG. 3; and

FIG. 7 shows a length of cellulosic web and a wrapper blank like those as shown in FIG. 4, but onto the wrapper web.

With particular reference to FIGS. 1 to 4, N is the web of thin, usually cellulosic, wrapping material which is drawn from reel 7 and is led onto supporting roller 9 where a pair of rotary disc knives 1 and 2 slit the web longitudinally along two parallel lines, which are also parallel to one of its margins, by forming two equal narrow continuous strips S1 and S2 and leaving a wrapper web proper N1. The strips S1 and S2 are led separately onto grooved leading rollers R4-11 and R1-13, respectively and are led onto a common grooved roller 14, where they are superposed. Anyway, prior to arriving onto roller 14, strip S1 is led into contact with a wick 3 which absorbs a liquid adhesive (which may be also a web solvent) from tank 4 and applies same under said strip S1. Thus, when this strip comes into contact, in correspondence of roller 14, with strip S2, the two strips come to be glued or welded together and form a reinforced strip S. Before reaching the position on roller 14, strip S2 is provided with preferably colored sections E at suitable intervals, in correspondence of the outer or grasping end of the tear strip S. This coloring of spaced strip sections may be performed
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by means of a revolving sector 6 to which the coloring substance is fed by means of a conventional feeding device 15. The reinforced strip S is then led over rollers 16–17, and over an applicator 5 of adhesive contained in tank 18, is subsequently passed in the groove of grooved roller 29, which rolls slightly inside of the outer edge of \textit{wrapping} web N1 led on roller 33, and fed from roller 32.

The web N1, after removal of the strips S1 and S2 in correspondence of roller 9, is led over roller 30 and between rollers 31 and 32 where a U-shaped notch 19 is cut from punch 20 mounted on roller 31, the line of notches 19 coming to be substantially in correspondence of the tear strip S.

The reinforced tear strip S coated with adhesive, by being brought into contact with web N1 on roller 33 sticks to said web and the adhesion is improved by compressing the strip S on web N1 by causing same to pass between a supporting brush 21 and a heated plate 22. To this effect the web N1 and overlying strip S are pulled by roller pair 34–35.

The U-shaped notches 19 on N1 and the colored sections E on strip S are equally spaced, and the various parts of the just-described device are so mounted that the strip grasping sections E come to be always in corres- 15 ondence of notches 19.

Past the roller pair 34–35 the wrapper web N1 with the tear strip S secured in proximity of one of its margins, pass first between a pair of rollers 36–37 to one of which a rotary cutter 23 is so mounted as to cut at intervals the strip S in correspondence of the colored section E lying on the basis of the U-punching 19, as clearly shown in the lower part of FIGS. 2 and 4.

The wrapper web N1 and tear strip S pass between a pair of holding rollers 38–39 and past these rollers are subject to the action of a rotary cutter 24 having a blade made of two spaced sections: A longer section for cutting the web N1 on one side (designed by the reference num- 25 27 in FIG. 4) and a very small cutter section for cutting the narrow strip 127 on the opposite side of notch 19.

The resulting wrapper blank N2 has the exact dimensions which are needed for completely wrapping the packets or packages to be wrapped, whereby the tear strip S comes to lie just under the (tucked) top end, while the colored tear strip section E glued on the projecting tongue L, FIG. 4 serves as grasping member for the tear strip end E.

Whenever it is desired to render the whole strip S well visible, by coloring same, in another embodiment a colored adhesive may be employed either for gluing the strips S1 and S2 together before applying same to wrapper web N1, or for gluing the double-thickness tear strip S to the wrapper web N1.

In an alternative embodiment, which has been shown in FIGS. 5, 6 and 7, the web N is provided with a colored margin NC having the width of one or two tear strips S1–S2 of the embodiment as shown in FIGS. 2 to 4.

In FIGS. 5, 6 and 7 it is assumed that the colored margin NC has the width of one of the strips and when severed by means of the rotary cutter 1 form a colored strip S1C which is glued or welded to the ad- 30 jecting usually transparent strip S2 and form together a reinforced or double-thickness colored tear strip SC which is secured onto the web N1 as in the previous embodi- 40 ment.

These two latter embodiments render the whole reinforced tear strip SC well visible and, at the same time, permit simplifying the apparatus for obtaining the wrapper blanks N2 provided with a colored tear strip SC by eliminating the unit indicated in FIGS. 1 and 2 by the reference numerals 15 and 6, which serves for coloring sections E of the strip S2 at predetermined intervals.

Of course, the invention may undergo numerous changes, without departing from the basic principles there- of which consists in forming reinforcing tear strips by slitting at least two strips from a web edge and gluing same together in superimposed relationship to the remaining web part, before forming a wrapper blank. Anyway, it may be remarked that, in the fore- going specification and appended claims, whenever an adhesive is mentioned, it will be understood that instead of an adhesive, a solvent of the wrapper and/or strap material may be employed, which by dissolving part of the material, forms an adhesive.

I claim:

1. A method of obtaining from continuous webs of cellulosic wrapper material reinforced strips and of securing said strips to said wrapper webs so as to form reinforced tear strips, said method consisting in cutting from said continuous wrapper web a plurality of adjoining parallel longitudinal strips, while still leaving a web of a width which is sufficient to wrap a packet thereto; leading at least one of said strips onto an adhesive-applying device so as to coat one face thereof with adhesive; leading said strip with its adhesive-coated face into contact with another of said strips, so as to cause same to stick together by forming a composite reinforced strip; applying adhesive to one face of said reinforced strip, guiding said reinforced strip with its adhesive-coated face against the web and pressing said web and superimposed strip while moving same between heating bars until said reinforced strips is firmly adhering to said web and may function as tear strip when a section of said web forming a wrapper blank is wrapped about a packet.

2. A method according to claim 1, in which means are provided for coloring said strip at intervals correspond- ing to about a web length of one wrapper blank employed for wrapping a packet.

3. A method according to claim 1, in which the web is substantially transparent and the adhesive employed for making a reinforced composite strip is colored.

4. A method according to claim 1, in which the web and strips are substantially transparent and the adhesive for securing the strip to said web is colored.

5. A method according to claim 1, in which one of the web edges from which the strips are cut, has a colored margin.

6. A method according to claim 1, in which the web is cut into wrapper blanks transversally to its length and to the tear strip secured thereto, the cut being made so as to leave a short projecting tongue on one of its end and a corresponding U-shaped notch on its opposite end.

7. Apparatus for forming wrapper blanks provided with a reinforced tear strip, from a continuous web of thin cellulosic material, designed for wrapping packets and having a width in excess of the height of the packets to be wrapped, and comprising a reel of web having a width of the wrapper blanks to be formed plus a margin whose width is substantially equal to the width of two tear strips; means for slitting said margin and forming two parallel strips; means for coating at least one side of one of said strips with a substance capable of imparting to said coated side an adhesive capacity; means for super- posing to said adhesive-coated strip side the other of said two strips, and forming a single double-thickness strip; means for coating one side of said reinforced strip with a substance capable of imparting to the said coated side an adhesive capacity; means for securing said reinforced strip longitudinally onto the web from which the said reinforced strip-forming strips were cut, said secured re- 75inforced strip being adapted to act as a reinforced tear strip and means for first notching and then cutting said web and reinforced tear strip at predetermined intervals, so as to form wrapper blanks provided with a projecting tongue in correspondence of one end of the wrapper blank.

8. Apparatus according to claim 7, in which at least one of the strips forming the said reinforced tear strip is colored.
9. Apparatus according to claim 7, comprising means for coloring at intervals a part of the tear strip.

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