Oct. 13, 1964 D. R. P. JACKSON 3,152,945

APPARATUS FOR APPLYING STRIPS TO PAPER AND LIKE BLANKS

Filed March 5, 1962 3 Sheets-Sheet 1

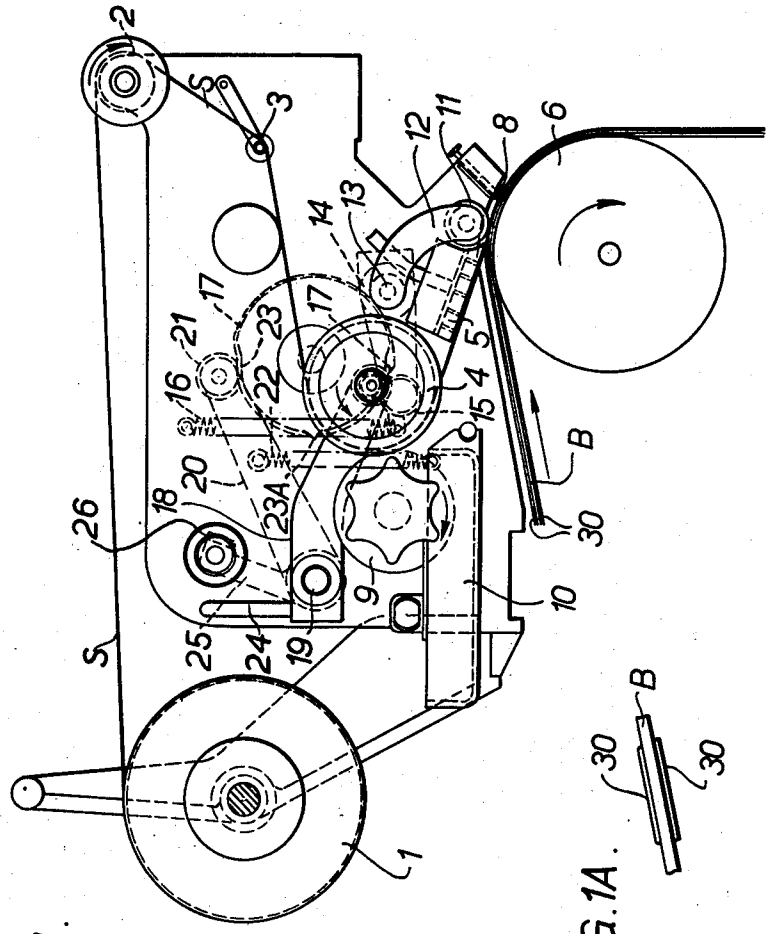


FIG. 1.

FIG. 1A.

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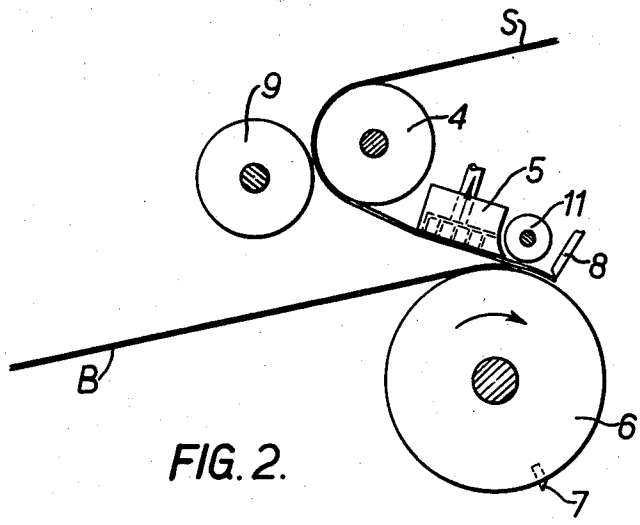


FIG. 2.

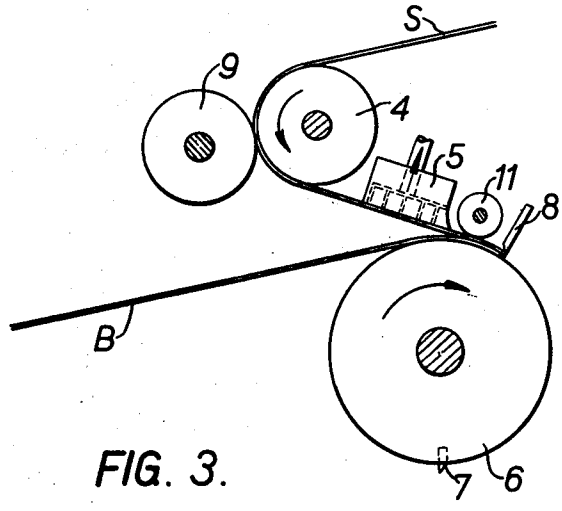


FIG. 3.

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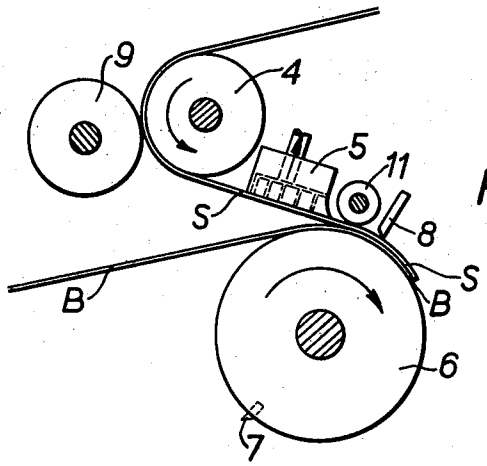


FIG. 4.

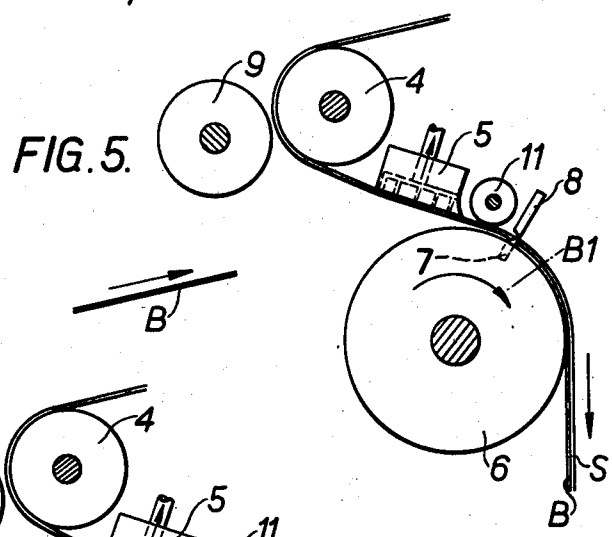


FIG. 5.

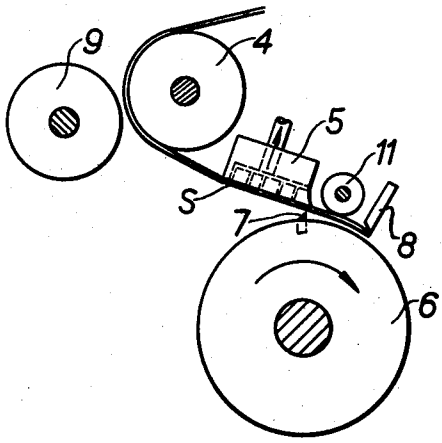


FIG. 6.

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APPARATUS FOR APPLYING STRIPS TO PAPER AND LIKE BLANKS

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2 Claims. (Cl. 156—522)

This invention relates to apparatus for applying strips to paper and like blanks. When outer wrappers are folded around and secured on an article or a batch of articles it is customary to provide a tab and a tear strip device whereby the wrapper may be removed from the article without trouble. The invention is for providing wrapper blanks with strips of this nature. Hitherto, it has been usual to feed the strips and the blanks in one operation by cutting blanks from a web of material in which case there is a cut-out at one side of the blank and a corresponding tab at the other so that when the parcel or packet is eventually wrapped the tab protrudes together with the tear strip material which is secured to the blank. It is not always possible nor desirable to work in this manner and in a particular example for which the invention is intended the outer wrapper is a printed blank of rectangular form and there would be no point in applying a tear strip to such a blank in the manner above described since the blank is already a finished product. Moreover in another example where the packet is of oblong cross-section the tab is approximately half-way up on one of the broad faces of the packet, unlike an ordinary packet where it is located on one edge, and because of this it is most difficult to pick up a tab which is lying flat.

According to the invention there is provided apparatus for applying a strip bearing adhesive to a paper or like blank so that one end of a strip overhangs the blank, comprising means for supplying strip material as a web, a web feeding roller having at least part of its circumference arranged to feed a portion of web of the desired strip length and a web cutting knife on the roller at the rear end of said part, a presser roller arranged intermittently to co-operate with the feeding roller to draw web from the supply means, means for feeding a blank which is shorter than a strip to the feed roller so that the leading edge of the blank coincides substantially with the leading edge of the strip web at the fixed knife, means movable in timed relationship with the feed roller to cause the presser roller to co-operate with the feeding roller as a blank reaches the fixed knife whereby the web is pressed on to the blank, and both are fed forward, a fixed knife adapted to co-operate with the said knife on the feed roller to cut a strip from the web, and means whereby a succeeding blank may be fed to the roller after an interval following the time when the rear end of the said strip leaves the fixed knife. For example, there may be two or more knives on the feeding roller but the distance between them is sufficiently in excess of the strip length to enable an interval to occur between the cut of one strip and the feeding of the next.

However, in a preferred embodiment of the invention there is provided apparatus for applying a strip bearing adhesive to a paper or like blank so that one end of a strip overhangs the blank, comprising means for supplying strip material as a web, a web feeding roller and a presser roller arranged intermittently to co-operate with the web feeding roller to draw web from the supplying means, means for feeding a blank which is shorter than a strip to the feed roller at every second revolution thereof and so that the leading edge of the blank approximately

coincides with the leading edge of the strip web at the fixed knife, means movable in timed relationship with the feed roller to cause the presser roller to co-operate with the feeding roller as the blank reaches the fixed knife whereby the web is pressed onto the blank, and both are fed forwards, a fixed knife and a knife on the feed roller arranged to co-operate therewith and cut a strip from the web. The leading edge of the web may be held in position adjacent the fixed knife of the rollers during the idle revolution of the feed roller by a suction head which exerts suction sufficient to hold the web in position but not enough to hinder web feeding by the rollers.

Normally the web is a bare strip and adhesive is applied to it in transit to the feeding roller. In such case devices may be provided for moving the web out of contact with the adhesive applier (usually a wheel or roller) when the web is not moving, during idle revolution of the feed roller. Further, manually operated means may be provided for the same purpose so as to hold the web away from the adhesive applier during times when the apparatus is not working. Naturally the adhesive applier could be moved instead but it is easier to move the web.

One construction according to the invention will now be described with reference to the accompanying drawings, in which:

FIGURE 1 is a front elevation of the apparatus, and

FIGURE 1A is an enlarged fragment of FIGURE 1, and

FIGURES 2 to 6 are diagrams showing successive stages in the web feeding and strip applying operation.

Referring to FIGURE 1, 1 is a reel of web material S which is to be cut into strips and applied to blanks B. The web is carried round a flanged guide roller 2 and over a swinging pin 3 which keeps the web taut and eliminates slack and then around another flanged roller 4 where adhesive is applied as will be explained later, and past a suction head 5 to a feeding roller 6 having a knife 7 which co-operates with a fixed knife 8 as will be hereafter described. The roller 6 is a feeding roller both for the web and for the blank B which is conveyed to the roller by bands 30.

Where adhesive is to be applied to the web there is provided a gum pot 10 in which a gum wheel 9 rotates so as to apply a strip of adhesive to the web as the latter is presented for adhesive application by the roller 4. Above the roller 6 is a presser roller 11 which is mounted on an arm 12 pivoted at 13, a cam lever 14 being fixed to the arm 12 and having a roller 15 at its free end, the lever 14 being drawn upward by a spring 16. The roller 15 engages a cam 17 which is rotatable at such rate that the roller 11 is drawn into contact by the spring with the feeding roller 6 at each second revolution of the roller 6. It will be seen from this that the strip material is only fed by the rollers 6 and 11 at every second revolution of the feeding roller 6 and thus for each second revolution the web remains stationary. It is therefore desirable to withdraw the web from the gumwheel 9 while the web is stationary in order to prevent a surplus of gum on the web. For this purpose the roller 4 is freely rotatable on an arm 18 which is pivoted at 19 and a cam lever 20 is fixed to the pivot to move with the arm 18 and has a roller 21 on its free end, a spring 22 being provided to draw the lever 20 downward. A cam 23 which is mounted on the same shaft as the cam 17 and naturally rotates at the same rate engages the roller 21 and lifts the roller 4 out of contact with the gumwheel 9 during such times as the feed roller 6 is not drawing web from the supply. The roller 4 is also lifted by projection 23A of the cam so as to leave an ungummed portion of web where the cut is to be made and to provide an adhesive free extension tab to the wrapper. At

times the apparatus will not be required, for instance, during mealtimes and, for reasons given above, means are provided for lifting the roller 4 away from the gumwheel and holding it away so that gum is not applied to the web during such times. These means consist of a rod 24 which is fixed to the lever 18 and can be moved to the left in FIGURE 1 so as to raise the roller 4. At the back of the apparatus there is a lever 25 attached to the pivot 19 and when the rod 24 has been moved as described, a stud 26 is pressed in so as to cause a pin to project from the back of the machine and prevent the arm 25 from moving back.

The operation of the apparatus will now be described referring also to FIGURES 2 to 6 which show stages in the operation.

The web is drawn from the supply as previously mentioned and after a strip has been cut from it, its leading end is held in position at the fixed knife by the suction head 5, as best seen in FIGURE 2. The web is then held away from the gumwheel 9. At this stage a blank B is shown approaching the web and when its leading edge is approximately level with the end of the web, that is, adjacent the fixed knife as in FIGURE 3, the roller 11 moves down and both the web and the blank move together as in FIGURE 4, meanwhile the gumwheel engages the web. As previously mentioned, the force exerted by the suction head 5 is relatively small and it is quite easy for the feeding rollers 6 and 11 to draw the web along in spite of the drag exerted by the suction head. In FIGURE 3 the web and blank are shown with their leading ends level and it is at this instant that feeding the web and the blank together starts to take place. Further movement is as shown in FIGURE 4, and in FIGURE 5 the blank has passed beyond the position of the cutting knife and a suitable length of web has been fed extending beyond the rear end B1 of the blank to provide a tab and the cut is then made. The web is withdrawn from the gumwheel at this stage. The roller 11 is then raised as shown in FIGURE 6 and the web is held by the suction head and remains in the position shown and away from the gumwheel until it is necessary to feed more web, after the roller 6 has made an idle revolution, when a further blank is coming along in the manner shown in FIGURES 2 and 3.

Two short cuts in the trailing end of the blank one either side and adjacent to the extending strip are made previously on the machine to facilitate and start an easy tearing of the blank during the opening of the parcel or like.

What I claim as my invention and desire to secure by Letters Patent is:

1. Apparatus for applying a strip bearing adhesive to a paper blank so that one end of a strip overhangs the blank comprising means for supplying strip material as a web, a web feeding roller and a presser roller arranged intermittently to cooperate with the web feeding roller to draw web from the supplying means, means for feeding a blank which is shorter than a strip to the feed roller at every second revolution thereof and so that the leading edge of the blank approximately coincides with the leading edge of the strip web at the fixed knife, means movable in timed relationship with the feed roller to cause the presser roller to cooperate with the feeding roller as the blank reaches the fixed knife whereby the web is pressed onto the blank, and both are fed forward, a fixed knife and a knife on the feed roller arranged to cooperate therewith and cut a strip from the web, means for holding the leading edge of the strip web in a position adjacent the nip of the rollers during the idle revolution of the feed roller, said means consisting of a suction head which exerts suction sufficient to hold the web in position but not enough to hinder web feeding by the feed and presser rollers.

2. In apparatus for applying a tear strip provided with adhesive to a blank for a package wrapper, so that one end of the strip overhangs the blank, and of the kind having a blank feeder and a pair of feeding rollers arranged in the level of the blanks for joining strip and blank, and a severing device consisting of a rotating knife and a fixed knife for cutting the tear strip from the web, an arrangement wherein one roller of the pair of feeding rollers carries the rotating knife and the other roller is provided with means for moving it toward and away from the first said roller and is intermittently pressed by said means toward the first said roller to feed strip web and blank through the rollers at the moment the blank reaches the free end of the strip web, which is positioned at the fixed knife, and a suction head for holding the strip web in said position at the fixed knife ready to be engaged by the rollers when the second said roller is pressed toward the roller carrying the knife, whereupon the web is pulled from the suction head as the blank and web pass between the rollers and the knife on the feeding roller cuts the strip web after the rear end of the blank has passed between the rollers to provide the strip overhang.

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EARL M. BERGERT, *Primary Examiner.*