May 24, 1932. L. FERENCI 1,859,962

STRIP REGISTERING DEVICE

Filed Jan. 7, 1931

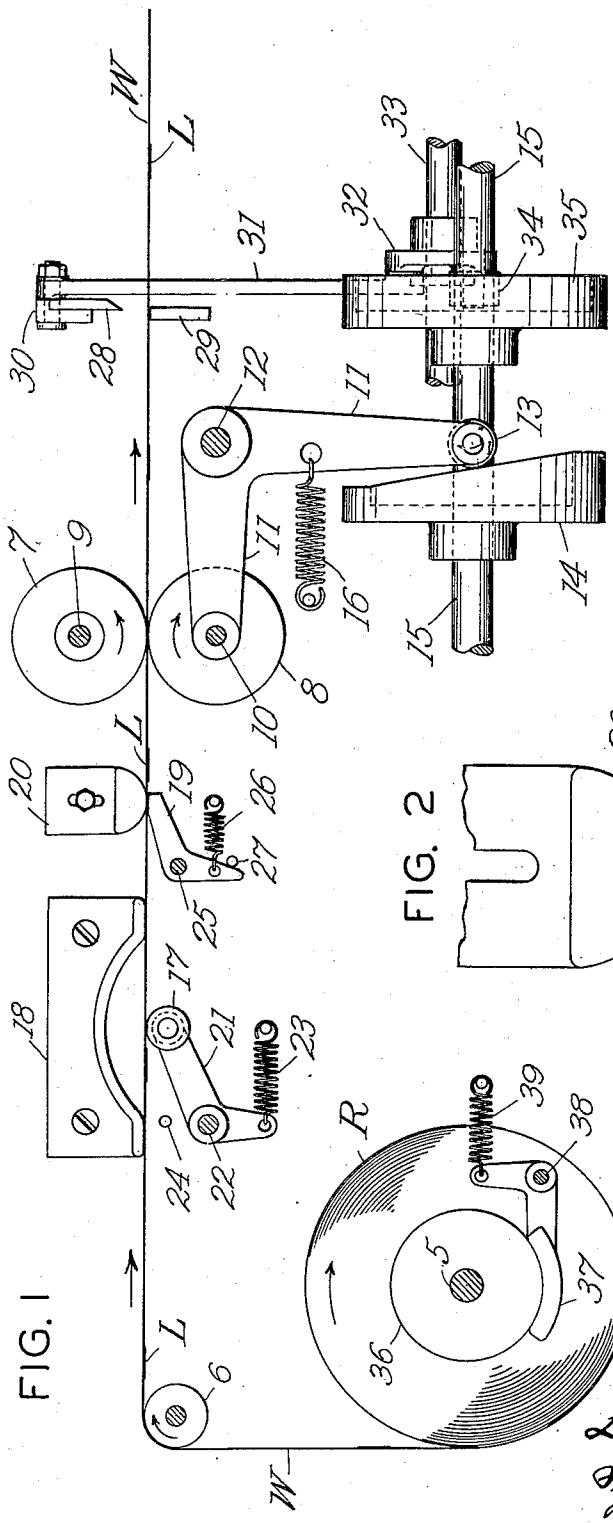

FIG. 1

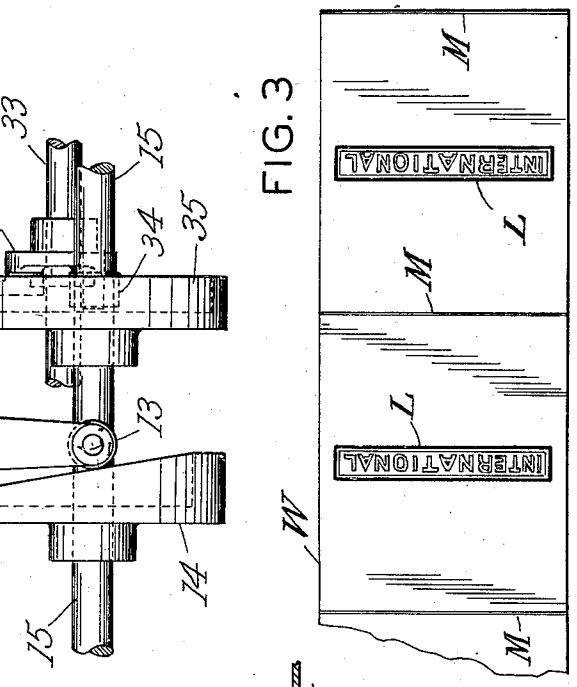

FIG. 3

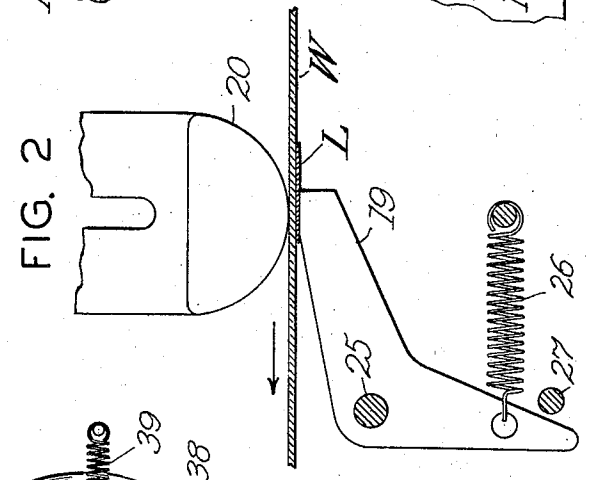

FIG. 2

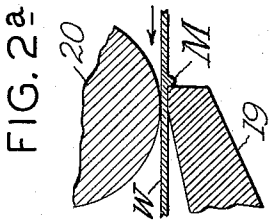

FIG. 2a

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UNITED STATES PATENT OFFICE

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STRIP REGISTERING DEVICE

Application filed January 7, 1931. Serial No. 507,235.

This invention relates to automatic strip registering devices for packaging machines and the like, its main object being to provide means for registering the continuous web or strip of wrapping material of a packaging machine with respect to the cutting knife so that a label or trade mark printed at equal intervals on the strip appears in the same position on every package wrapped by the individual sections cut from the strip. With this 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 present invention, which is particularly adapted for wrapping material having a very smooth surface, such as cellophane, glazed paper, etc., or for any material printed or embossed with a raised mark at regular intervals, this object is achieved by making use of the difference in thickness and friction between the printed and unprinted portions of the strip, the strip being stopped by a brake finger engaging with its printed surface. The strip feed is so arranged that a section of the strip somewhat longer than required for one package is advanced at each cycle of the packaging machine, the excess length being pulled back by suitable means until stopped by the aforesaid brake finger. The retracting means referred to preferably consists of a resilient take-up arm which pushes a portion of the strip out of alignment, the said portion being limited by a suitable guide, but may be devised in any other manner. The strip feed, after having been stopped for a sufficient length of time to permit the above described action of the registering device and the subsequent cutting of the strip, is automatically resumed by the drive mechanism of the packaging machine, the feed-operating and knife-actuating means being timed accordingly.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a side elevation showing the arrangement of a strip feed equipped with the improved registering device;

Figs. 2 and 2*a* are sectional details in enlarged scale, showing the action of the brake finger; and

Fig. 3 is a plan view of a portion of the wrapping strip, showing the printed labels and the marking lines.

In carrying the invention into effect, there is provided means for intermittently advancing a strip of wrapping material having a plurality of printed or embossed portions, means for retracting the strip, means for cutting the strip, and means for frictionally engaging the printed or embossed surface of one of said portions for stopping the retracting movement of the strip to bring it into predetermined position relative to said cutting means. In the best constructions contemplated, the strip advancing means includes a driven feed roller, an idle feed roller, and cam means for pressing the idle feed roller against the driven roller to intermittently feed the strip. In the preferred form of construction, the means for retracting the strip includes a yieldingly mounted arm arranged to engage a portion of the strip to displace it with respect to the strip, whereby to retract the strip, and a brake finger for frictionally engaging the printed or embossed portion of the strip to stop the retracting movement thereof. These various means and parts may be widely varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore, is not to be restricted to the specific construction shown and described.

The wrapper web or strip W, which has labels L printed on it at regular intervals and which also may have marking lines M printed or embossed between labels, is fed from the reel R on shaft 5 over roller 6 by the feed rollers 7 and 8 on shafts 9 and 10, respectively. Shaft 9 is stationarily held by the frame of the packaging machine and has a timed intermittent motion imparted to it from the drive of the machine, and shaft 10 is loosely mounted in one arm of the bell

crank lever 11 on shaft 12 which has a roller 13 held in engagement with a cam 14 on shaft 15 by a spring 16. The cam shaft 15 is interconnected in timed relation with the drive of the packaging machine, making one revolution for each cycle of the machine.

The strip W, between rollers 6 and 7, passes over a roller 17 held in juxtaposition with a suitable strip guide 18 which has a recess adjacent the strip, and over a brake finger 19 bearing against a support 20. The roller 17 is carried by an arm 21 pivoted on stud 22 and held in tension against the strip by a spring 23 which tends to move the arm 21 upwardly but is quite weak so as to permit the arm to be depressed by the strip when in tension during the operation of the feed rollers 7 and 8. The upward motion of arm 21 which pushes a portion of the strip into the recess in the strip guide, when not otherwise stopped, is limited by a stop 24. The finger 19 which is pivoted on a stud 25 has a flat end surface with a sharp edge and is tensioned by a spring 26 which holds the finger against a stop 27 while its flat end surface gently presses the strip which at this point is bearing against the adjustable support 20. The spring 26 is so adjusted that the finger 19 bears against stop 27 only when an unprinted portion of the strip W passes over the finger, but is lifted off the stop by the strip when a printed portion thereof passes over the same in the forward direction.

The cutoff knife 28, which at timed intervals cuts sections of the strip W along the ledger plate 29, is carried by a pivoted bar 30 swung by a rod 31 actuated by a cam lever 32 fulcrumed on shaft 33 and having roller 34 in engagement with a cam 35 on cam shaft 15.

The reel shaft 5 has a brake wheel 36 engaging with a shoe 37 pivoted on shaft 38 and held against wheel 36 by the tension of a spring 39.

The strip W, in each cycle of the packaging machine, is intermittently advanced through the feed rollers 7 and 8 by a length somewhat greater than that required for wrapping one of the packages, the cam 14, after the strip feed is stopped, turning the arm 11 against the tension of spring 16, thereby separating the rollers 7 and 8 and releasing the feed tension of the strip. The latter, thereupon, loses its power to depress the arm 21 which is thus enabled to push out of alignment the portion of the strip limited by the guide 18, thereby retracting the strip to take up the excessively advanced length, the retracting movement of the web being stopped by the friction of the printing of one of the labels L as the latter passes backwards over finger 19, thereby jamming the printed portion of the web between the finger 19 and support 20, as shown in Fig. 2. In the case of separate marking lines M, the take-up motion of the web is stopped by the thickness of the mark registering with the contact edge of finger 19 which by the rearward motion of the web is jammed tightly against the unmarked portion of the latter, as shown in Fig. 2*a*. After sufficient time has elapsed for this rearward movement and its stopping to take place, the cam 14 releases arm 11, permitting the spring 16 to pull feed roller 8 into engagement with roller 7 which at that time is at rest, whereupon the knife 28 is actuated by cam 35. The web W having been stopped by the engagement of finger 19 with the printing of one of the labels L, or with the edge of one of the spaced marks M, the cuts made by the knife 28 are always at the same distance from the labels, and the latter therefore can be made to occupy any desired position on the finished package by suitably spacing the knife 28 from the edge of finger 19.

When the labels L are so narrow as to occupy only a comparatively small portion of the width of the strip W, and particularly in case of very thin wrapping material where the thickness of the printing is relatively large, difficulty may be encountered in rolling up the wrapping web as then the printed portion of the width will bulge and thus form a reel of curved or uneven surface. In this case, it will be expedient to print or emboss raised marks M all the way across the width of the web, as shown in Fig. 3, thereby securing an even support of the web over its entire width between the printed spots, thus preventing the aforesaid bulging. These marks may then be made use of to register the web in the manner explained above.

What is claimed is:

1. In a strip-registering device, the combination with means for intermittently advancing a strip of material having a plurality of equally spaced printed or embossed portions, of mechanism for retracting the strip, means for subsequently cutting the strip to sever the leading printed or embossed portion therefrom, and yieldable means for frictionally engaging the printed or embossed surface only of one of said portions for stopping the retracting movement of the strip to bring the leading printed or embossed portion into predetermined position relative to said cutting means, said yieldable means yielding to permit passage of the printed or embossed portions of the strip under the tension of said strip advancing means.

2. In a strip-registering device, the combination with means for intermittently advancing a strip of material having a plurality of equally spaced printed or embossed portions, of mechanism for retracting the strip, means for subsequently cutting the strip to sever the leading printed or embossed portion therefrom, and yieldable means for friction-

ally engaging the printed or embossed surface only of one of said portions for stopping the retracting movement of the strip to bring the leading printed or embossed portion into predetermined position relative to said cutting means, said yieldable means yielding to permit passage of the printed or embossed portions of the strip under the tension of said strip advancing means, said advancing means including a positively driven feed roller above said strip, a lever below said strip, a feed roller loosely mounted on said lever, and cam means for actuating said lever to press said strip between said rollers, whereby to intermittently advance said strip.

3. In a strip-registering device, the combination with means for intermittently advancing a strip of material having a plurality of equally spaced printed or embossed portions, of mechanism for retracting the strip, means for subsequently cutting the strip to sever the leading printed or embossed portion therefrom, and yieldable means for frictionally engaging the printed or embossed surface only of one of said portions for stopping the retracting movement of the strip to bring the leading printed or embossed portion into predetermined position relative to said cutting means, said yieldable means yielding to permit passage of the printed or embossed portions of the strip under the tension of said strip advancing means, said mechanism including a strip guide arranged above said strip and provided with a recess adjacent said strip, a pivoted arm arranged below said strip, a roller loosely mounted on said arm to engage said strip, a spring connected to said arm to yieldingly press said strip into said recess, whereby to retract said strip.

4. In a strip-registering device, the combination with means for intermittently advancing a strip of material having a plurality of equally spaced printed or embossed portions, of mechanism for retracting the strip, means for subsequently cutting the strip to sever the leading printed or embossed portion therefrom, and means for frictionally engaging the printed or embossed surface of one of said portions for stopping the retracting movement of the strip to bring the leading printed or embossed portion into predetermined position relative to said cutting means, said means for frictionally engaging said strip including a brake finger arranged adjacent the printed or embossed surface of said strip, and a spring urging said finger toward said strip, and a stop holding said finger in position to engage only the printed or embossed portions of the strip, whereby to stop the retracting movement of said strip when said finger engages the printing or embossing thereon.

5. In a strip registering device, the combination with means for intermittently advancing and then retracting a strip of material having a plurality of equally spaced, printed or embossed portions of greater total thickness than that of the unprinted or unembossed portion of the strip, of means for subsequently cutting the strip to sever the same between printed portions, and elements on opposite sides of the strip having opposed strip engaging surfaces spaced apart a distance greater than the thickness of the strip alone, but less than the thickness of the strip plus the additional thickness of the print or embossing to stop the strip in predetermined position, and means yieldingly mounting one of said elements to release the strip when it is advanced and catch on the printed or embossed portion when it is retracted.

6. In a strip registering device, the combination with means for intermittently advancing a strip of material having a plurality of equally spaced printed or embossed portions of greater total thickness than that of the unprinted or unembossed portion of the strip, of means for subsequently cutting the strip to sever the same between printed portions, and elements on opposite sides of the strip having opposed strip engaging surfaces spaced apart a distance greater than the thickness of the strip alone, but less than the thickness of the strip plus the additional thickness of the print or embossing to stop the strip in predetermined positions, means mounting one of said elements for retracting movement to release the strip, one of said elements having an abutment adjacent its strip engaging surface, said means supporting said last mentioned element at an acute angle to the length of the strip to permit movement of printed or embossed portions past the abutment when moved in one direction while causing the same to catch on the embossed or printed portion when moved in the opposite direction, and mechanism for slightly overfeeding the strip in the one direction and then retracting it in said opposite direction.

In testimony whereof, I have signed my name to this specification.

LESTER FERENCI.