# United States Patent

**Helm**

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## [54] ARRANGEMENT FOR ADJUSTABLE SPLIT SCORING OF SEAL AND BOTTOM SCORE OF AN ENVELOPE OF A BAG BLANK


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[52] **U.S. Cl.** .....**93/58.1,** 83/10, 83/12, 83/322, 83/911, 93/58.4, 93/59 CE, 93/62

[51] **Int. Cl.** .....**B31b 1/14,** B26d 3/08

[58] **Field of Search** .....83/10–12, 322, 83/323, 430, 433, 434, 417, 911; 93/58.1, 58.4, 59 CE, 62



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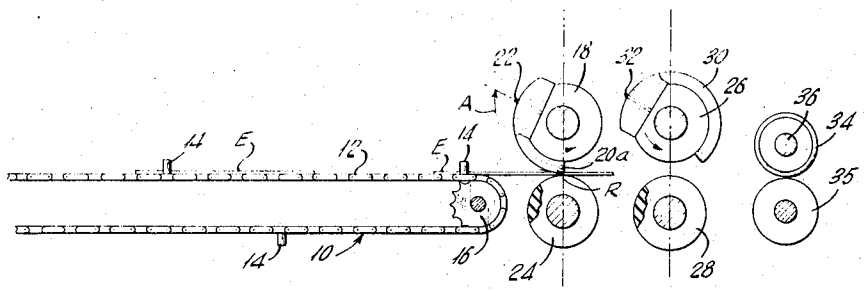
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[57] **ABSTRACT**

An apparatus whereby the seal score and bottom score is made on the seal and bottom flaps respectively of envelopes or bag blanks. The apparatus provides for split scoring and an adjustment for different size envelopes or bag blanks. Size changes are accomplished by a running adjustment of the one scorer, relative to the other scorer which remains fixed. The construction is such that the pull-out segment engages each envelope blank at a precise location so that the distance on the envelope blank for the first scoring operation thereon is always predetermined. Thus, a fine running adjustment is permitted along with quick size changes for envelopes or bag blanks. The scoring knives also may be mounted on a common cylinder.


**7 Claims, 5 Drawing Figures**



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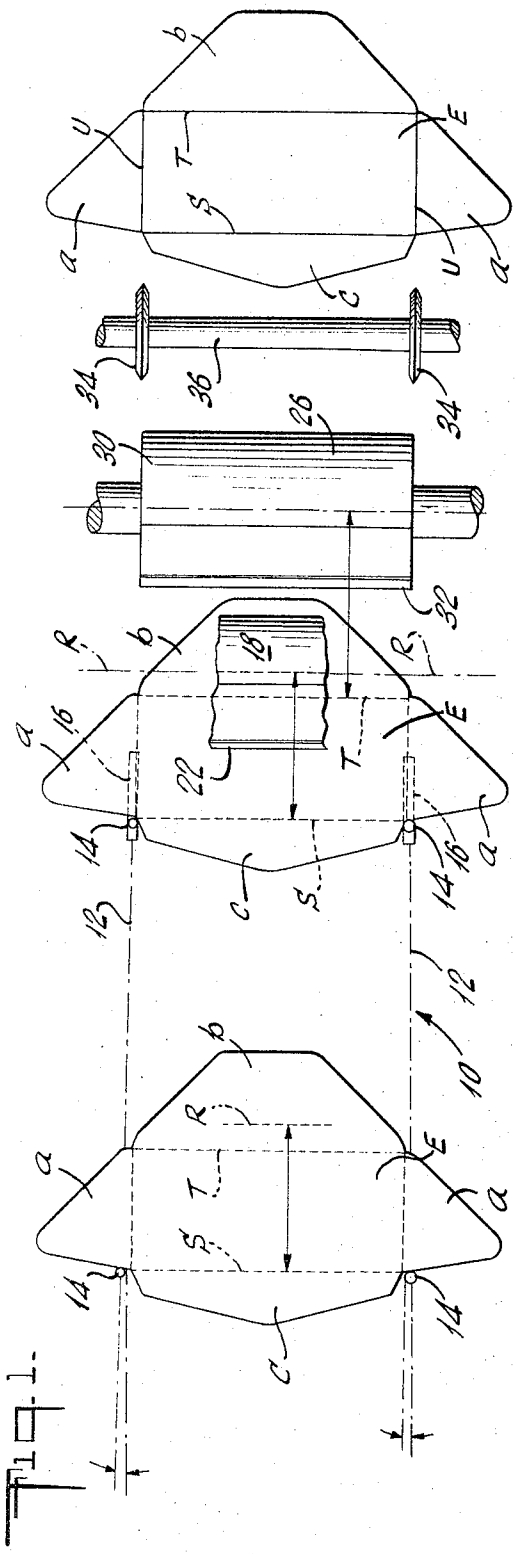


Fig. 1.

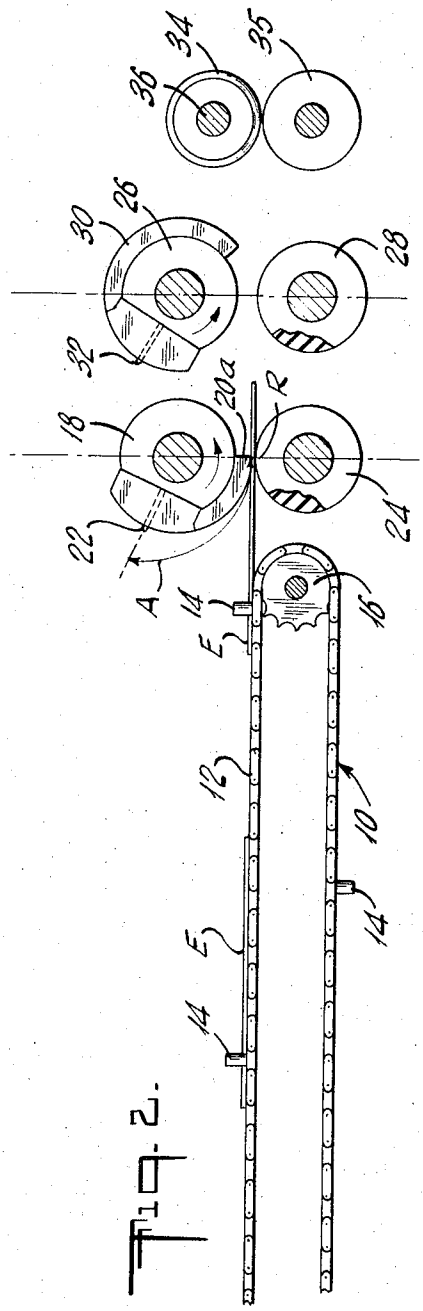


Fig. 2.

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Fig. 3.

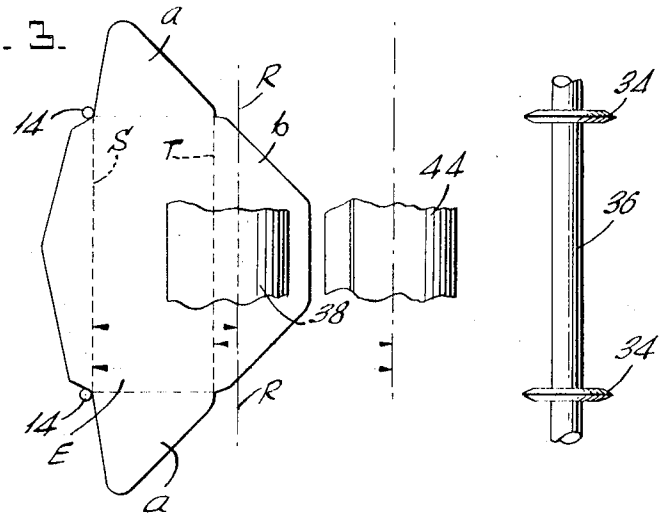



Fig. 4.

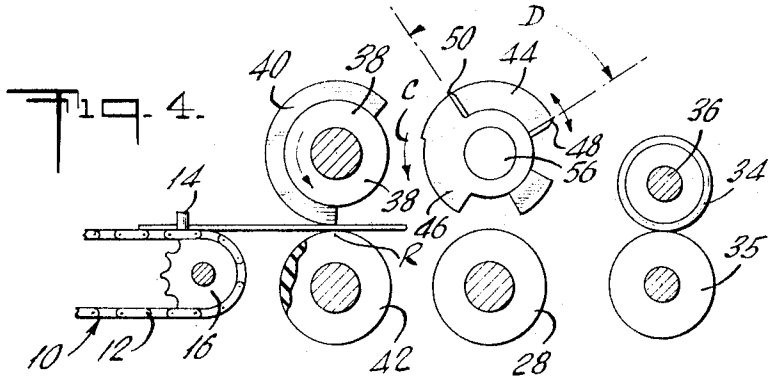
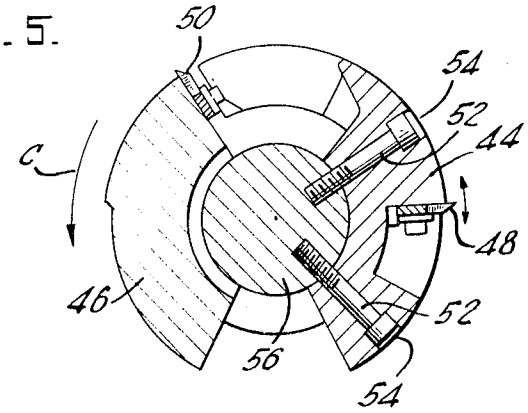



Fig. 5.




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# ARRANGEMENT FOR ADJUSTABLE SPLIT SCORING OF SEAL AND BOTTOM SCORE OF AN ENVELOPE OF A BAG BLANK

## BACKGROUND OF THE INVENTION

In the art of envelope manufacturing, the seal and bottom scores for the seal and bottom flaps respectively are impressed by means of a scoring cylinder that also carries a pull-out segment which is adjustable with the bottom flap scoring blade. The pull-out segment advances the blank out of the aligner into the scoring station. As seen in the prior art construction shown in U.S. Pat. No. 3,153,533 to Novick the aligner pins for the envelope blanks travel at a slower rate of speed than the speed of the pull-out segment and the scorer blades. Thus, a size change of the envelopes or blanks requires retiming of the aligner pins with respect to the seal score impression, as well as a readjustment of the sidewise pin spacing. The aligner pins require readjustment of the sidewise pin spacing. The aligner pins require readjustment since the chains run at a taper in order to gradually align the blanks laterally whenever the blank size is changed. Accordingly, the point of final alignment by the aligner pins will also change. It should be clear that the known arrangement for changing the scoring of the seal and bottom flaps require a shut-down of the machinery and the adjustment of various interrelated component parts of the arrangement prior to restarting the mechanism.

It is an object of the present invention to provide an arrangement for split scoring of the seal and bottom score of an envelope or a bag blank, which eliminates a series of adjustments in order to provide for size change.

It is another object of the present invention to permit quick size change of envelope or bag blank and a fine running adjustment between the fixed seal score line and the adjustable bottom score line of an envelope, or the like.

It is a further object of the present invention to provide for an automatic adjustment for pre-programmed envelope size or feedback corrections of seal to bottom score distance from the actual envelope or bag to be manufactured.

Another object of the present invention is to provide an arrangement for split scoring the seal and bottom score of an envelope in which an additional shaft is provided which carries a pull-out segment and seal score for the envelope. This segment is timed to grip each and any size blank at a fixed distance from its determined seal score line thereby fixing the final line-up point and completely eliminating the adjustments required in the prior art constructions.

A further object of the present invention is to provide a seal scoring drum having pull-out segments together with a counter roll preferably of urethane, against which the seal score blade works.

The invention is illustrated by way of example in the accompanying drawings which form part of this application and in which:

FIG. 1 is a top plan view of the adjustable split scoring apparatus for envelopes constructed in accordance with the teachings of the present invention;

FIG. 2 is a side elevation view of the apparatus shown in FIG. 1;

FIG. 3 is a fragmentary top plan view of an alternate embodiment of the apparatus shown in FIG. 1 illustrating the various dimensions of the location of the initial engagement of the pull-out segment, the seal score line and the bottom score line, and in which both the bottom scoring knife and the seal scoring knife are mounted on a common cylinder;

FIG. 4 is a side elevation view of the apparatus shown in FIG. 3; and

FIG. 5 is an enlarged sectional view of the common cylinder mounting both the bottom scoring knife and the seal scoring knife.

Referring especially to FIGS. 1 and 2 of the drawings, a line of unfolded envelope blanks E are moved from an envelope making machine (not shown) to the apparatus for scoring said envelope blanks by means of a conveyor and an aligning



mechanism referred to generally by the numeral **10** constituting aligning chains **12** having aligning pins **14** secured thereto. The aligning chains **12** pass over sprockets **16** and the pins **14** constantly converge as they move in the right-hand direction towards the scoring apparatus. The foregoing structure is prior art and forms no part of the present invention, having been disclosed in the above-mentioned U.S. Pat. No. 3,153,533 to Novick. It is also within the scope of the present invention to utilize a rotary aligner apparatus with the novel scoring apparatus instead of the above-described chain aligning device.

The scoring apparatus of FIGS. **1** and **2** constitutes a rotatable roll **18** rotating in the direction of the arrow and having a pull-out segment **20** preferably of steel, and a knife **22** fixed a predetermined distance A from the leading edge **20***a* of the pull-out segment **20**. Thus, as seen in FIGS. **1** and **2**, the edge **20***a* engages the envelope blank at the point R and moves the same through the scoring apparatus until the fixed knife **22** rotates to a position to engage the envelope E at line S and make the seal score line. The rotatable roll **18** works against the backing urethane or metal roll **24** in a well known manner. Accordingly, it should be noted that there is no need to adjust the envelope aligning devices for different size envelopes inasmuch as the distance A between the pick-up of the pull-out segment and the first scoring operation is always the same.

Spaced from the rotatable roll **18** is another rotatable roll **26** which similarly works against urethane or metal backing roll **28**. Roll **26** is provided with a feed **30** and a knife **32**. The knife **32** is adjustable for different envelope or bag sizes and a position thereof is selected so that the knife **32** is timed to rotate to a precise position determined by A′ whereby the bottom score line T is made after or before the seal score line S has been impressed on the envelope blank E. It should again be noted that the seal score line on the envelope blank is always fixed with relation to the point R on the envelope blank while the bottom score line T may be adjusted for different lengths between score lines S and T. The fixed distance A between point R and seal score line S is determined by the specific circumference of the roll **18**. This distance A′ between T and the axis of roll **26** determines the bottom score line T and is adjustable. The well-known side scoring rolls **34** are mounted on rotatable shaft **36** whereby side scores U are impressed on the envelope blank E against the backing roll **35**. Consequently, the scoring of the side flaps *a*, bottom flap *b* and seal flap *c* are made by the present apparatus.

Thus, as shown in FIGS. **1** and **2**, the seal scoring blade **22** is fixed, but a running adjustment of the bottom scoring blade **32** can be accomplished by the present apparatus. The split scoring operation constructed in accordance with the present invention permits not only quick size changes and the fine running adjustment between the bottom and seal score lines, but also lends itself to automatic adjustment for pre-programmed envelope size, or feedback corrections of seal to bottom score distance from the actual envelope or bag being produced.

FIGS. **3–5** disclose another embodiment of the present invention in which like parts shown in FIGS. **1** and **2** bear the same reference numerals. In this embodiment a rotatable roll **38** is provided having a pull-out segment **40**. The roll **38** rotates in a counter-clockwise direction against urethane or metal backing roll **42** in the well-known manner. Spaced from the roll **38** is a rotatable roll **44** which is a common cylinder mounting a feed part **46**, and spatially located on the periphery of the roll **44** is a seal scoring blade **48** and an adjustable bottom scoring blade **50**, both mounted on shaft **56**. As seen in FIG. **5**, the blade **48** is fixed along the circumferential periphery of the roll **44** in any well-known manner, for example by means of screws **52** in countersunk holes **54**. Thus, the dimension D shown in FIG. **4** may be selectively changed in order to alter the distance between the seal score line and the bottom score line when a size adjustment to accommodate different size envelopes must be made.

It should also be observed that roll **44** rotates in the direction C as seen in FIGS. **4** and **5**. In this embodiment, the

bottom scoring blade **50** will make the initial score on the envelope and thereafter the seal scoring blade scores the envelope at the desired precise location thereon. However, as stated above, the pull-out segment **40** engages each envelope at a predetermined location and the distance between the initial contact of the segment **40** and the seal scoring operation on each of the envelopes is always the same.

I claim:

**1**. An adjustable split scoring apparatus for envelope or bag blank seal and bottom scoring comprising means for conveying envelope blanks, a pair of spaced rotating rolls, one of said rolls being provided with a pull-out segment for each of said envelopes, a pair of spaced scoring blades, means mounting said scoring blades for rotation, said scoring blades being adjustable relative to each other, said pull-out segment being mounted relative to one of said scoring blades whereby a fixed distance is continually maintained between the point of initial contact of said segment with said envelope and one of the scoring lines on the envelope, and said scoring blades making the spaced seal and bottom scores on each of said envelopes.

**2**. An apparatus as claimed in claim **1**, wherein said pull-out segment has at least an outer surface thereof constituted of a resilient material.

**3**. An apparatus as claimed in claim **2**, wherein said outer surface of said pull-out segment is urethane.

**4**. An adjustable scoring apparatus for envelope or bag blank seal and bottom scores comprising means for conveying envelope blanks, at least one rotating roll having a pair of spaced scoring blades adjustable relative to each other, said conveying means comprising a rotatable pull-out segment being mounted relative to one of said scoring blades whereby a fixed distance is continually maintained between the point of initial contact of said segment with said envelope and one of the scoring lines, said blades making the spaced seal and bottom scores on each of said envelopes.

**5**. An apparatus as claimed in claim **1**, further comprising a urethane backing roll for each of said spaced rotating rolls, said backing roll positioned opposing said rotating roll having said fixed blade.

**6**. An apparatus as claimed in claim **1**, wherein the distance between the point of initial engagement of said pull-out segment and the seal score on said envelope is fixed and constant.

**7**. An adjustable split scoring apparatus for envelope or bag blank seal and bottom scoring comprising means for conveying a multiplicity of envelopes in a linear path, a pair of spaced rotating rolls, one of said rolls being provided with a pull-out segment for each of said envelopes and having a fixed blade, and the other of said rolls being provided with an adjustable blade for different envelope sizes, one of said blades making said bottom score and the other of said blades making said seal score on each envelope.

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