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Taupin

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[54] **DEVICE FOR INSERTING BOOKMARKS INTO BOOKS**

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[52] **U.S. Cl.** **270/55,** 270/57

[51] **Int. Cl.** **B65h 5/30**

[58] **Field of Search** 270/54, 55, 57; 156/522

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Attorney, Agent, or Firm—Fleit, Gipple & Jacobson

[57] **ABSTRACT**

This device for inserting bookmarks into books travelling on a conveyor comprising spaced transverse lugs for driving the books separately is equipped with a blade for opening each book, which is disposed on the path of the travelling books, and, downstream of said blade, a channel delivering ribbon from a supply spool and a cutter disposed also downstream of said blade for severing each bookmark from the ribbon; means are provided in the form of spring-loaded clamps for picking up and pulling the ribbon in synchronism with the book conveyor, said clamps co-acting with cam means disposed on the one hand at the outlet of said channel and on the other hand at a point farther downstream, for opening and reclosing said clamps on the ribbon and release the bookmark in the book after it has been severed from the ribbon, respectively.

4 Claims, 3 Drawing Figures

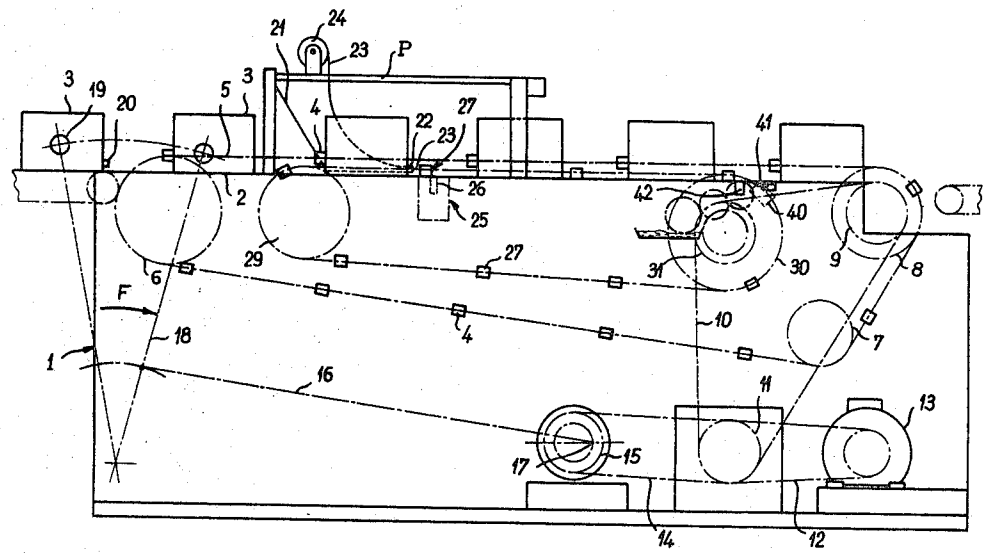
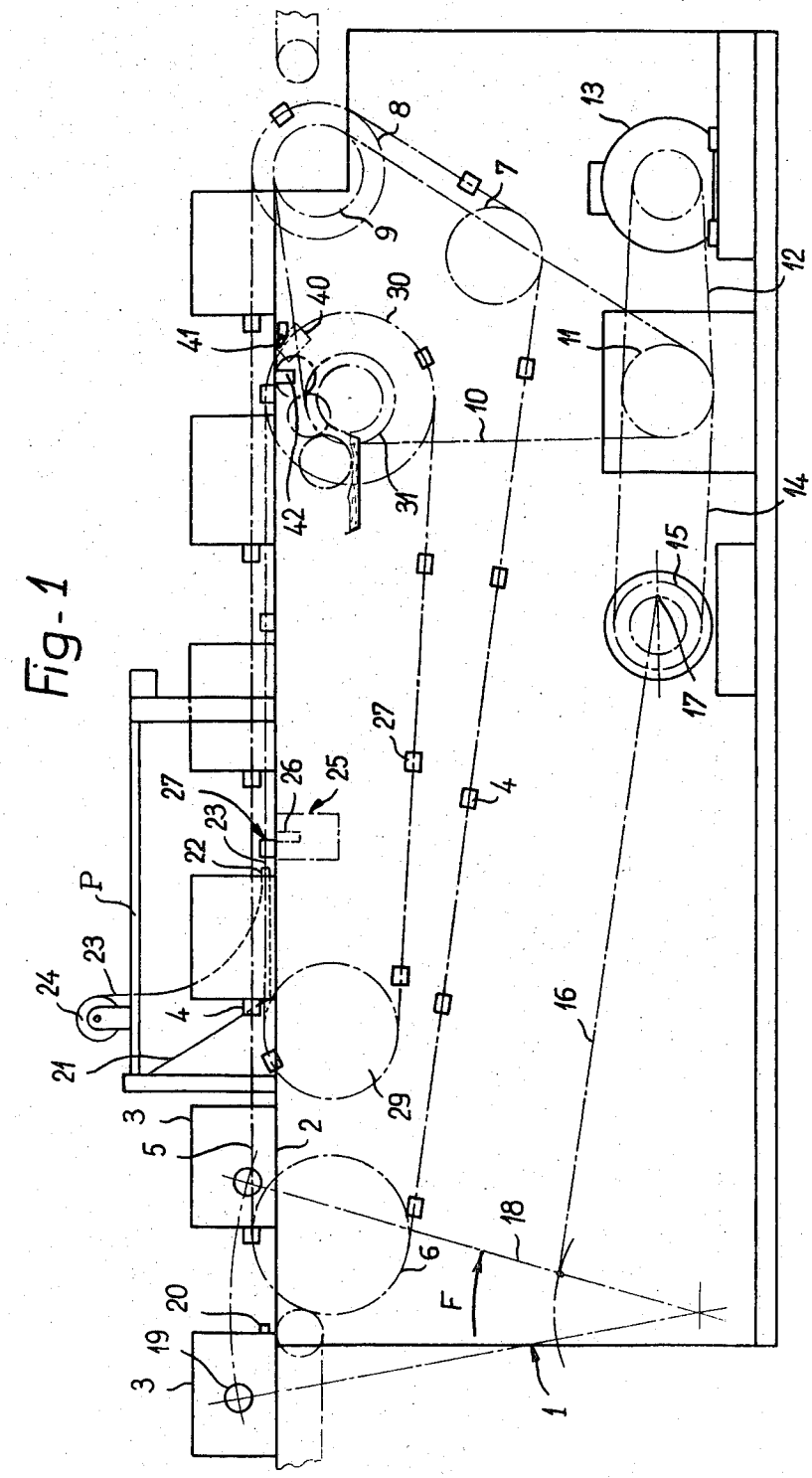


Fig-1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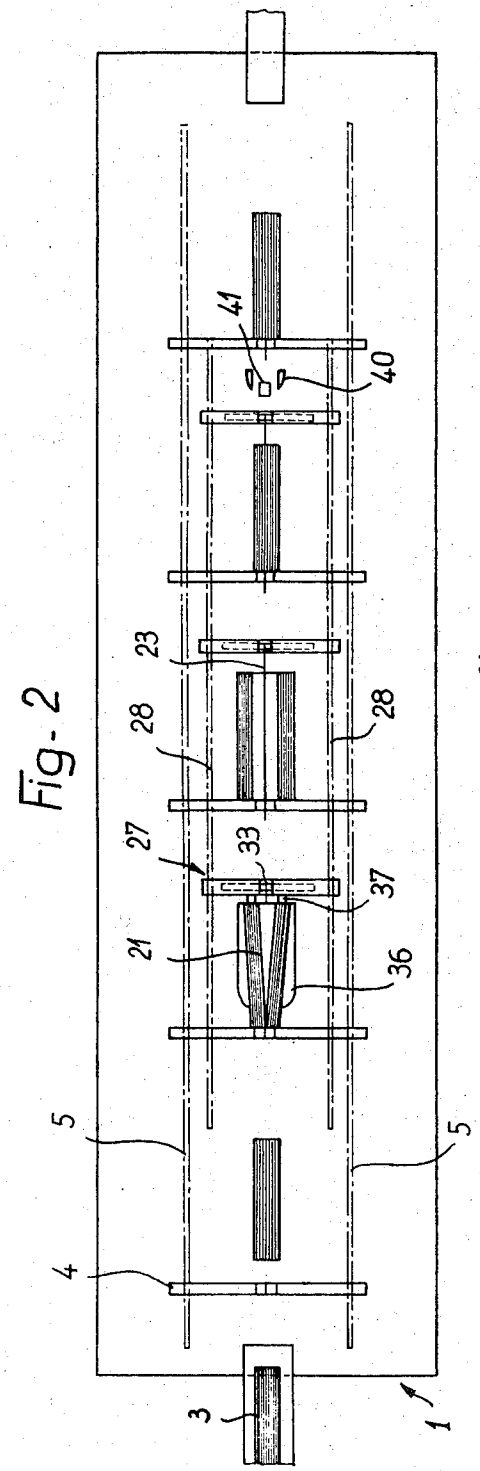
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Fig-2

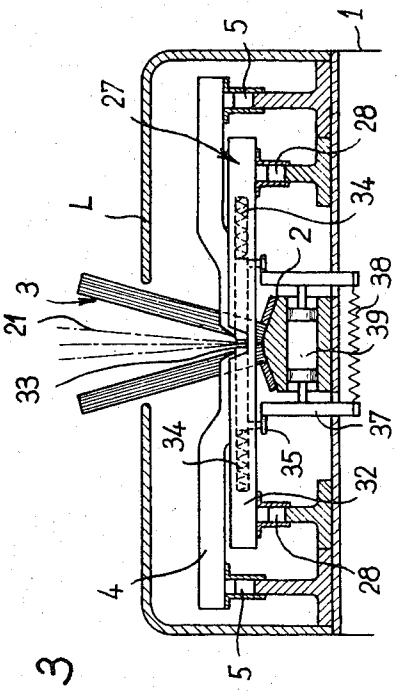
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Fig-3

DEVICE FOR INSERTING BOOKMARKS INTO BOOKS

The present invention relates to means for inserting bookmarks, such as ribbons or the like, for marking the page, into books.

Mechanisms are already known which have been developed for inserting marks into books by using reciprocating-motion systems.

It is the chief object of the present invention to provide a device for inserting bookmarks into books travelling on a conveyor, which is advantageous in that it eliminates the use of reciprocating mechanisms and that it can easily be incorporated in the treatment of books on a conveyor before fitting the book cover.

Basically, the device of this invention is adapted to insert bookmarks into books travelling with the back underneath and at a predetermined relative spacing on a conveyor, this device being characterized in that it comprises a book opening blade disposed on the path of said books, and, downstream of said blade, with respect to the direction of travel of the book, a feed channel for delivering stock ribbon from which the marks are to be cut; a cutter disposed downstream of said blade for separating each bookmark from the main ribbon; and a device for picking up and pulling the ribbon, which comprises spring-loaded clamps driven in synchronism with the book conveyor and co-acting with cam means on the one hand at the level of said channel so as to be opened for subsequently clamping the ribbon end between the main ribbon and the cutting station, and on the other hand at a point located further downstream for releasing the bookmark in the book after the cutting of said bookmark from the main ribbon.

A typical form of embodiment of a device according to this invention for inserting bookmarks into books will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a diagrammatic side elevational view of a machine for inserting bookmarks;

FIG. 2 is a diagrammatic plan view of the same machine; and

FIG. 3 is a cross section taken in the vicinity of one of the clamps of the ribbon pick up means.

The machine illustrated in FIG. 1 comprises a conveyor frame structure supporting a slide- and guideway 2 along which the books 3 are driven at predetermined intervals by means of transverse lugs 4 carried by a pair of parallel endless chains extending on either side of said slideway. These chains pass over sprocket wheels 6, 7 and 8, one of these wheels being rigid with another sprocket wheel 9 engaged by another driving chain 10 passing over another sprocket wheel 11 driven in turn through a belt-type variable-speed device 12 from a motor 13. Sprocket 9 is also operatively connected through a corresponding sprocket and another transmission chain 14 to a wheel 15 driving a connecting-rod and crankpin mechanism 16, 17 connected in turn to a swinging arm 18 carrying at its free end a book clamping member 19, this handling arm being of a type well known in the art for feeding books to a conveyor. The handling arm 18 is used in this example for supplying books to the slideway 2 of the conveyor in synchronism with the linear motion of chains 5 carrying the book driving lugs 4; thus, the books are picked up from a feed conveyor on which the first or leading book is

waiting by abuting against stop means 20 retractable when the books are pressed or clamped by the means 19 which remain clamped or operative during the stroke of arm 18 in the direction of the arrow F and released or inoperative during the opposite stroke.

Downstream of the point where the books are released by the handling arm is a book opening blade 21 suspended from a bridge structure P straddling the conveyor and provided with lateral book-guiding means L.

Downstream of this blade 21 with respect to the direction of travel of the books is a channel 22 for delivering bookmark-forming stock ribbon 23; this channel 22 may consist of a tubular member forming an insert on the rear edge of said blade and through which ribbon delivered from a suitable supply such as a spool 24 is fed, the outlet of said channel being substantially horizontal and disposed at a level slightly higher than the plane of contact between the book backs and the slideway 2. Just downstream of this channel 22 is a ribbon cutter 25 of which the blades 26 are normally retracted during the passage of each book. Between the outlet of channel 22 and the ribbon cutting line a gap is provided to permit the clamping of the ribbon end by means of spring-loaded clamps designated generally by the reference numeral 27 and arranged as follows: These clamps are secured between a pair of parallel endless chains 28 disposed within the pair of main chains 5 carrying the transverse lugs 4; said other chains 28 pass over sprockets 29 and 30, of which sprocket 30 is driven through another sprocket 31 rigid therewith and engaged by the above-mentioned transmission chain 10, whereby the clamps 27 are driven in synchronism with the book driving lugs 4. These lugs 4 and the clamps 27 have a V-shaped central portion as shown in FIG. 3 to permit their passage between the book opening blade 21 and the slideway 2.

Each clamp (FIG. 3) comprises a hollow body 32 secured to said pair of chains 28 and enclosing a pair of opposite studs 33 adapted to clamp the ribbon therebetween; said studs 33 are slidably mounted in the body 32 and urged against each other by spring means 34. These clamping studs 33 co-act with cam means adapted to move them away from each other for depositing the mark in the book and release them for clamping the ribbon and driving same.

To this end, the studs 33 are each provided with a roller follower 35 projecting from the underside of body 32. At the ribbon feeding station a pair of stationary cams 36, formed with faces adapted to move the rollers 35 and therefore the studs 33 away from each other, are provided.

Between the outlet of channel 22 and the ribbon cutting station there are provided, downstream of said cams 36, another pair of cams 37 retractable towards each other under the control of a traction spring 38 and adapted to be moved positively towards each other by a single-acting fluid-pressure actuator 39 interposed between said cams; this actuator 39 is adapted, when supplied with fluid under pressure, to move said other cams 37 against the force of spring 38 to a position of alignment with respect to the first cams 36. The purpose of this arrangement is to prevent the picking up of the ribbon 23 by the corresponding clamp 27 which is reclosed beyond the ribbon cutting station, in case no book were driven by one of said lugs 4. To this end the actuator 39 is responsive to means (not shown) for de-

tecting the presence of a book, said means comprising for example an electrical switch co-acting with a solenoid-operated valve for supplying pressure fluid to the actuator or exhausting same. More particularly, this detector may be so arranged that if no book is present with any lug the actuator is actuated in the extension direction, and that if a book is present the actuator is connected to the exhaust. A similar result may be obtained without using cams **37**, for example by shifting the cams **36** longitudinally so that the clamps **27** are closed or not on the ribbon according as the presence of a book is sensed or not.

Similarly, the cutter **25** may be responsive to a switch or like means (not shown) for sensing the presence of a book, downstream of the cutter, at a point selected as a function of the desired length of the bookmark. The ribbon is picked up with a certain extra length projecting from the leading edge of the book and this projecting portion is adapted to be folded back and glued to the back of the book, the latter being reclosed beforehand, if desired, by means of lateral guide means. To this end there is provided, downstream of the cutter, on the book conveyor, cam means **40** for re-opening the clamps, which are disposed at the beginning of the downstream arc of the chains **28** passing over sprockets **30**, so that the clamps will carry along the projecting portion of the bookmark during their downward travel, and curve same downwards before engaging a member **41** adapted to fold said portion and glue same to the book back, previous application of glue to this back by means of a suitable pasting member **42**.

Furthermore this device is easily adjustable to adapt it to the length of the book back by producing the shifting of clamps **27** bodily with respect to the lugs **4**, or vice versa, an adjustable angular coupling being provided to this end either between sprockets **30** and **31** for shifting the clamps **27** or between sprockets **8** and **9** for shifting lugs **4**.

Although a single form of embodiment has been described and illustrated herein, it will readily occur to those conversant with the art that various modifications and variations may be brought to this form of embodiment without departing from the basic principles of the invention as set forth in the appended claims.

What is claimed as new is:

1. A bookmark inserting device for inserting bookmarks into books, the device comprising: a book conveyor for transporting books with the backs underneath and at spaced intervals; means for driving said book conveyor; a book opening blade disposed in the path of said books; a channel disposed downstream of said opening blade for guiding bookmark ribbon to the device and into the opened book from a source of ribbon; spring-loaded clamp means driven in synchronism with said conveyor for clamping and drawing ribbon from said source; cam means disposed downstream of said channel for opening said clamp means and for subsequently reclosing the same to clamp the ribbon guided through said channel; cutter means disposed downstream of said opening blade and said channel for cutting said bookmark ribbon from the source of ribbon and to the desired length of said bookmark while the ribbon is held by said clamp means; and means for opening said clamp means, thereby releasing the bookmark in the book, after said bookmark is severed from said source of ribbon.

2. Bookmark inserting device according to claim **1**, and further comprising an auxiliary conveyor driven concomitantly with said book conveyor; and means for mounting said spring-loaded clamp means on said auxiliary conveyor.

3. Bookmark inserting device according to claim **2**, and further comprising gluing means for gluing one end of the severed bookmark to the book back; wherein said auxiliary conveyor is of the type comprising chain means supporting said clamps and passing over sprockets; and wherein said cam means for controlling the release of said bookmark are located at the beginning of the downward arc of the auxiliary chains over the corresponding end sprockets, so that said clamp means carry along the bookmark portion projecting from the book during their downward travel so as to curve said bookmark portion downwards before its engagement by said gluing means.

4. Device according to claim **1**, and further comprising sensing means adapted to detect the presence of a book on said book conveyor for preventing the picking up of ribbon by said clamp means when no book is present at the outlet end of said channel; and wherein said cam means include cams adapted to be shifted under the control of said sensing means.

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