Sept. 27, 1932. R. P. KUSCH 1,879,757

BOOKBINDING MACHINE

Filed March 30, 1931

FIG. 1.

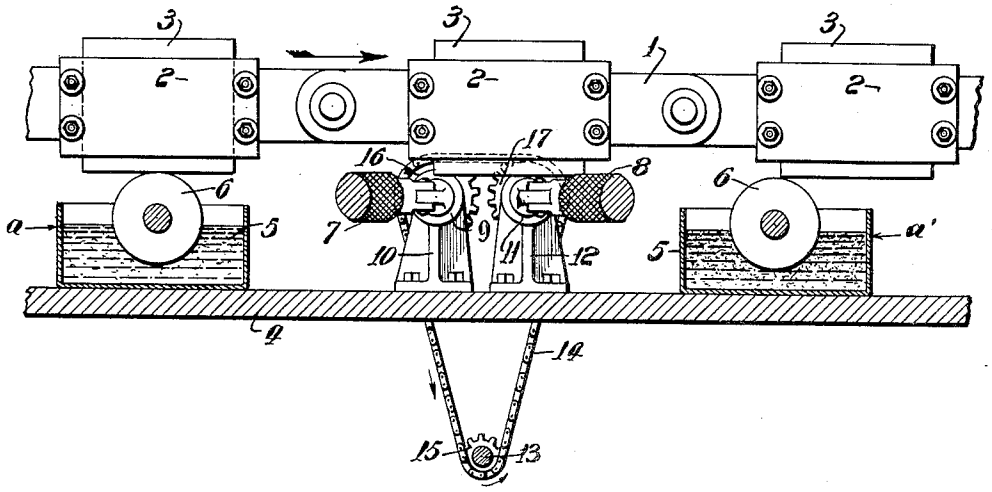


FIG. 2.

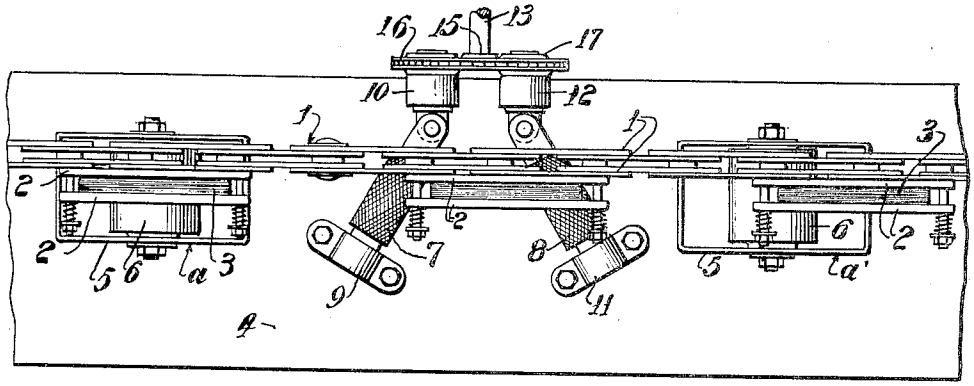


FIG. 3.

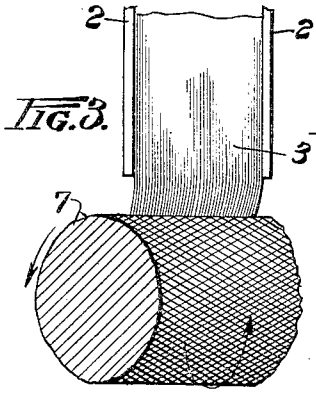
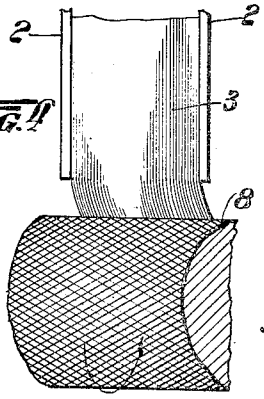


FIG. 4.



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UNITED STATES PATENT OFFICE

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BOOKBINDING MACHINE

Application filed March 30, 1931. Serial No. 526,435.

This invention relates to book binding machines and relates particularly to what are known to the trade as "perfect" binding machines, comprising conveying means for "gathered" book sections or signatures, including clamping means for holding said book sections or signatures in operative position, means for cutting the back edges of said gathered book sections or signatures to form packs of separate leaves, adhesive applying means, means for applying reinforcing strips thereto and means for applying the book covers.

The present invention has particular reference to the adhesive applying means of such machines.

A complete machine of the general type to which the present invention relates—but differing therefrom in detail—is shown and described in U. S. Letters Patent No. 1,244,861, dated October 30, 1917.

As is generally well known to persons familiar with the construction and operation of book binding machines of the type specified, the adhesive employed for securing the severed rear edges of the leaves of the book to the binding fabric is of such thick consistency and flows so sluggishly that the adhesive enters between the edges of the leaves but very slightly, if at all, and forms merely an edge contact therewith, the resulting binding being relatively weak and prone to become detached in handling and particularly when parts of the book are bent back on themselves.

The principal object of the present invention is to overcome the foregoing objectionable feature by providing adhesive applying means arranged to apply adhesive not only to the rear edges but also to the faces of the leaves adjacent their rear edges whereby the leaves will be secured together by a strong adhesive bond.

To attain the objects thereof, adhesive applying means embodying my invention and improvements, comprises the various features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawing, in which the invention is fully illustrated,

Fig. 1 is a fragmentary, sectional elevation of a binding machine of the general type to which the invention relates;

Fig. 2 is a fragmentary, top-plan view of the parts shown in Fig. 1; and

Figs. 3 and 4 are enlarged, fragmentary views illustrating the construction and operation of glue applying means of my invention.

Describing the invention with reference to the drawing, 1 indicates, diagrammatically, the flexible conveyor of a binding machine of the general type to which the present invention relates, 2 clamping means mounted on said conveyor, 3 a pack of gathered book sections or signatures supported by the clamping means 2, and 4 is a support or table on which certain operative parts of the machine are mounted, as will presently appear.

In accordance with usual practice, the backs or rear edges of the gathered book sections or signatures 3 held in the clamps 2 are severed to separate said sections or signatures into separate leaves by means, not shown, but which readily can be supplied by persons familiar with the art without a description thereof in detail.

For present purposes we will assume that the book sections or signatures 3 supported in the clamps 2 have been thus cut or severed and that the packs shown consist of separate leaves.

In accordance with my invention, I attain the objects thereof by employing separate adhesive applying means designated, respectively, as a whole a, a' each comprising a pan 5 adapted to contain the liquid adhesive, rotatably mounted in which is an adhesive applying roller 6 which is mounted in such position that its underside will be immersed in the adhesive contained in a pan 5.

To effect the object of the invention as it relates to applying adhesive to the faces of the leaves adjacent to the severed rear edges thereof, the adhesive contained in the apparatus a is relatively very thin and fluid so that it will flow readily and positioned between the adhesive applying devices a, a', are rollers 7 and 8 rotatably mounted in bearings formed in supports or pedestals 9 and

10 and 11 and 12 secured in proper position on the base or table 4, rotation being imparted to said rollers from a shaft 13 rotatably mounted in suitable bearings and driven from a suitable source of power, not shown, rotation of the shaft 13 being imparted to the rollers 7 and 8 by a chain belt 14 adjusted to a sprocket wheel 15 on the shaft 13 and also to sprocket wheels 16 and 17 secured to rotate with the shafts of the rollers 7 and 8, respectively, the relation being such that the top sides of said rollers which contact with the severed rear edges of the packs of leaves 3 will move in a direction counter to the direction of movement of the edges of the packs 3 which contact therewith.

In accordance with my invention, also, the rollers 7 and 8 are mounted in such position that their axes will extend diagonally to the direction of movement of the packs 3, said rollers being preferably inclined in opposite directions as best shown in Fig. 2. Also, the rollers 7 and 8 are mounted in such relation to the packs of leaves 3 that the edges of the leaves forming said packs will be subjected to more or less pressure, whereby they will be bent or buckled first in one direction by one roller, and then in the other direction by the other roller, the relation being such that a narrow strip of adhesive will be applied to both faces of the leaves of the packs adjacent the edges thereof which contact with said rollers as they pass over the same. Said rollers will also operate to remove surplus adhesive applied to the severed edges of the leaves of said packs.

After passing over the rollers 7 and 8, the packs of leaves 3 are presented to the adhesive applying apparatus a' which corresponds to the single glue applying apparatus usually employed in machines of this character, the adhesive being of much greater consistency and correspondingly less fluid than that contained in the apparatus a.

Having passed the glue applying devices a, a', binding of the leaves forming the packs 3 is effected in accordance with present usual practice, as will be readily understood and may readily be performed by persons skilled in the art without a description thereof in detail.

I claim:

1. In book binding machinery of the type specified, the combination of conveying means comprising clamping means for supporting gathered book sections or signatures in the form of separate leaves, means for applying adhesive to the rear edges of said packs comprising means for applying an initial coating of relatively thin, fluid adhesive thereto, a driven roller arranged diagonally to the path of movement of said packs of leaves for bending or buckling the rear edges of said leaves to separate the same, thereby operating to apply adhesive to the faces of the leaves adjacent the edges thereof to which adhesive is applied, means for applying a second coating of relatively thick adhesive to the severed rear edges of said packs preparatory to applying the binding, said driven diagonal roller being arranged between and outside of said glue applying means.

2. Book binding machinery as specified in claim 1, which comprises a plurality of angularly disposed rollers the axes of which are inclined in opposite direction, whereby they will act upon the packs in succession and will bend or buckle the edges of leaves passing over them in opposite directions, both of said diagonal rollers being arranged between and outside of said glue applying means.

In witness that I claim the foregoing as my invention, I affix my signature this 24th day of March, 1931.

ROY P. KUSCH.