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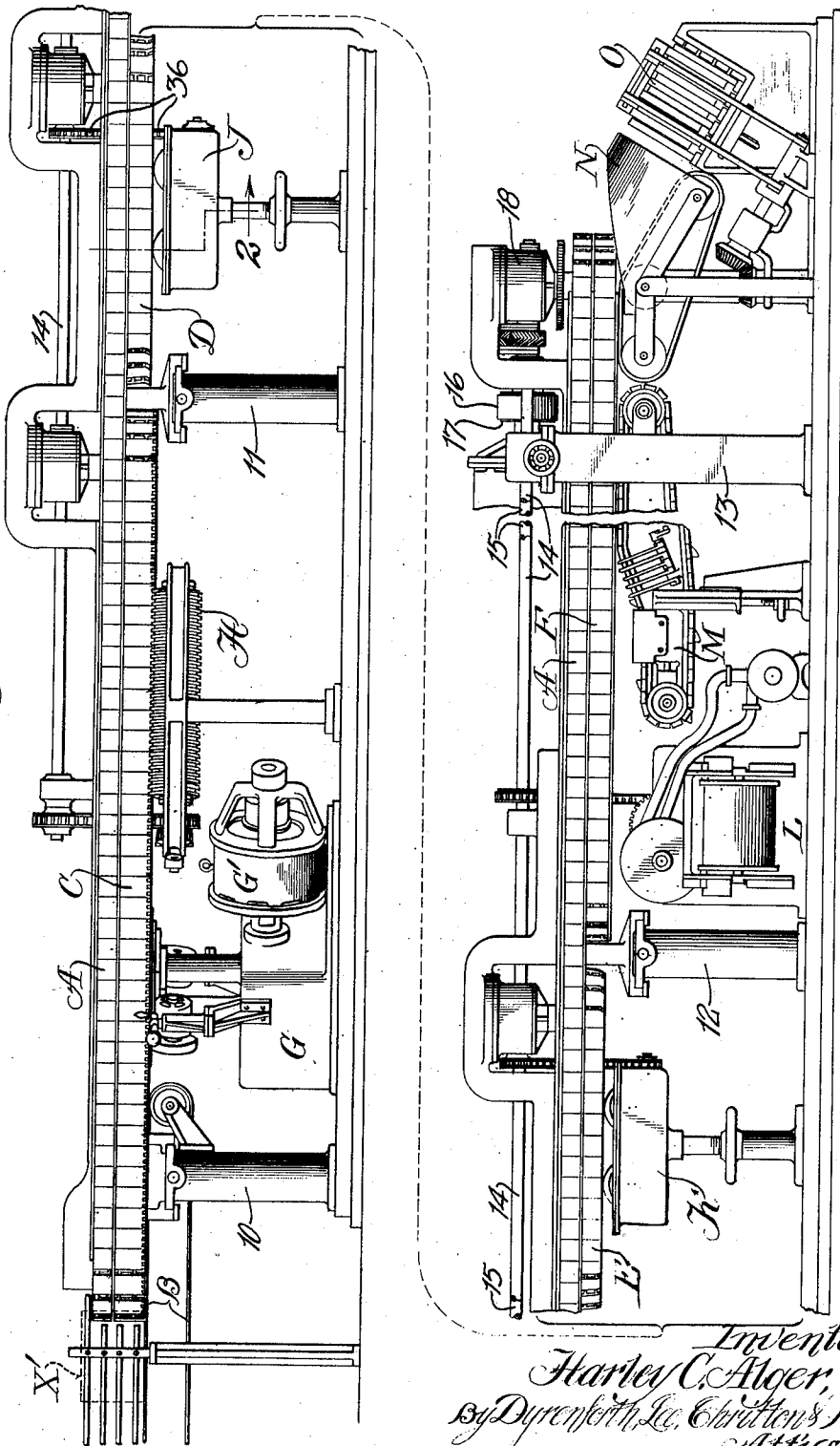
1,741,269

GLUING MECHANISM FOR BOOKBINDING MACHINES

Filed May 28, 1927

2 Sheets-Sheet 1

Fig. 1



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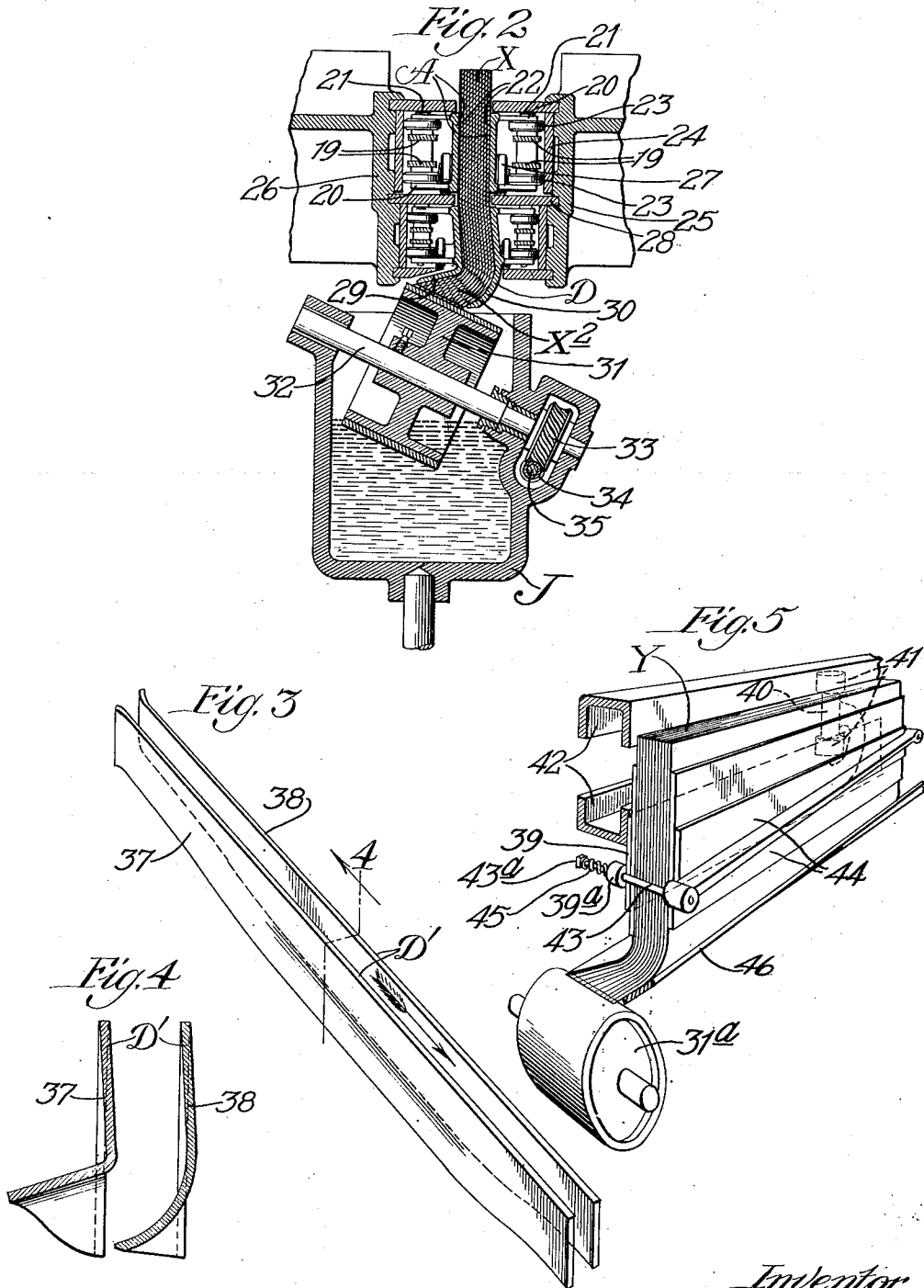
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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GLUING MECHANISM FOR BOOKBINDING MACHINES

Application filed May 28, 1927. Serial No. 195,008.

This invention relates to gluing mechanism for bookbinding machines and the like and is particularly adapted for use in connection with those bookbinding machines in which the book is gripped, the back of the book cut away so as to leave a series of leaf edges which are then glued, and a "super" and cover glued thereon.

An object of this invention is to provide means for "fanning" the cut edges of these sheets and while so "fanned" applying glue to the overlapping edges of the sheets so that when these edges are again brought into normal straight position, some of the glue applied to these overlapping edges will be carried for a short distance in between the sheets so as to provide a stronger bond tending to hold the sheets together.

This and other objects, as will hereinafter appear, are accomplished by this invention which is fully described in the following specification and shown in the accompanying drawings in which—

Figure 1 is a side elevation of a bookbinding machine embodying my invention;

Fig. 2 is a partial enlarged section on the line 2 of Fig. 1 showing a chain used to perform the "fanning" operation;

Fig. 3 is a perspective view of a flare which performs substantially the same operation;

Fig. 4 is an enlarged section on the line 4 of Fig. 3; and

Fig. 5 is a perspective view of a modified form of chain and flare.

My invention is embodied in a bookbinding machine which will now be briefly described in its entirety in order that the function and operation of my improvement may be fully understood.

This bookbinding machine comprises essentially an upper conveyor A consisting of two parallel chains, shown in cross-section in Fig. 2, which are adapted to grip a book α between them and to hold this book so gripped throughout the length of the machine. The conveyors A are carried upon suitable supports 10, 11, 12 and 13 and are driven at the same speed by means of shafts 14 and 15 which are driven by means of a belt 16 on the pulley 17 on the shaft 15. These shafts

operate by means of worms and worm wheels contained in the housing 18 at the tail end of the conveyor to drive the conveyor A.

Books, as α' , are fed to the head end of the conveyor by means of a feed conveyor B which is driven in timed relation to the conveyor A.

The conveyor A grips the upper portion of the book α , as is shown in Fig. 2, while conveyors C, D, E, and F engage the book at intervals to grip the lower portion of it and these conveyors are also driven at the same speed as the conveyor A. The chains of the conveyor A have links 19 and 20 which are pivotally secured together by means of pins 21. The links 20 carry plates 22 which engage the book α while the pins 21 have rollers 23 which roll upon a steel plate 24 which is carried by the main frame casting 25. The casting 26 on the other side is adjustably held so as to be movable back and forth to accommodate books of different thicknesses. This forms no part, however, of the present invention and is not shown. The weight of the chains of the conveyor A is carried by means of rollers 27 on the ledge 28.

The chains of the conveyors C and F are similar to those of the chain conveyor A. The chains of the conveyors D and E, however, are somewhat different and will later be described in connection with these conveyors.

And the various units forming the bookbinding machine will now be briefly described in order that the function and operation of my device may be better understood. As the book enters the conveyor, it is simultaneously gripped by the chains A and C and, as it passes along, is trimmed on the back by the rotatory trimming mechanism G which is driven by means of a motor G'. The book next encounters the backs of mechanism H which transversely slots the back of the book in order that when glue is applied thereto, it will fill the slots and provide a better bond.

As the book leaves the lower conveyor C, it enters the lower conveyor D, which will later be described in detail, where the book α is "fanned", as shown in Fig. 2, and while so "fanned" has a newly cut and grooved

edge α^2 pressed upon a gluing roll of the gluing mechanism J. Owing to the "fanning" action of the conveyor D, the glue thus applied attaches somewhat to the overlapping edges of the sheets. As the book leaves the conveyor D, it passes to a conveyor E which is similar to conveyor D but is reversed so as to reverse the direction in which the book is bent. While so held, it passes over the gluing mechanism K.

As the book leaves the conveyor E it is gripped by the conveyor F and passes over the "super" feeding mechanism L which applies a "super" to the glued edge of the book. The book then passes over the mechanism M which applies a cover and presses it firmly upon the back. As the book emerges from the conveyors E and F, it passes out through the flare N which folds the sides of the cover upon the book and thence to the packer box O. The novelty in the present invention consists in providing means which are operable on the lower portion of the book which extends down beneath the conveyor A to cause it to be "fanned" out, as shown in Fig. 2, so as to leave the edges of the various sheets in an overlapping position so that glue can be applied to these overlapping portions. This I have accomplished by two means, namely, chains D having curved plates, as shown in Fig. 2, and stationary flares D', as shown in Figs. 3 and 4.

The conveyor D, shown in section in Fig. 2, is made up of links substantially the same as those described in connection with the chain conveyor A but, as shown, are somewhat smaller and have curved plates 29 and 30, the plate 29 being bent at a sharp angle while the plate 30 is made rounding and has a radius struck from substantially the same center as that of the small radius about which the plate 29 is bent. All of the chain conveyors pass over equal sized sprockets so that these chains are all driven at the same speed.

Thus it will be seen that the book α has its lower edge, which has previously been trimmed, "fanned" so that the edges of the various sheets overlap at α^2 . While so held, these edges are pressed upon a gluing roller 31 which is carried upon a shaft 32, the latter being driven by means of a worm wheel 33 and worm 34 on the shaft 35. This shaft is driven by means of a sprocket and chain 36 from the shaft 14.

The conveyor E and the gluing mechanism K are duplicates of the conveyor D and mechanism J except for the fact that they are reversed.

In Figs. 3 and 4 I have shown a modification of the device in which the conveyor D is omitted and a stationary flare D' is inserted in its place. The means for supporting this flare are not shown but it will be understood that the two portions 37 and 38 of sheet metal or the like are suitably supported by the cast-

ings 26 and 25 respectively so that these flares assume substantially the position shown in Fig. 2 which is occupied by the conveyor plates 29 and 30. Thus it will be seen that the book α , forced through the flare D' by means of the upper conveyor A, takes substantially the same position as that shown in Fig. 2 and the lower edge α^2 is firmly pressed upon the gluing roller 31. Fig. 5 shows still another modification in which a single chain of the type shown in Bredenberg Patent No. 1,073,324, granted September 16, 1913, is made up of links 39 which are jointed by vertical pins 40 which have rollers 41 journalled thereon which are adapted to roll in the channel members 42. The links 39 are provided with a lug 39^a at each end through which pass pins 43. These pins are carried by the plates 44 and are held by springs 45 which act upon beads 43^a on the pins 43. The books γ are inserted between the links 39 and the plates 44 while the latter are held out by mechanism not shown. These links are continuously driven and grip the books near the top so as to leave the bottoms free.

A single flare 46 is so placed as to engage this free bottom portion and force it to one side, as shown. At this point is located a gluing roller 31^a similar to the roller 31 of Fig. 2 which applies glue to the sheets while they are thus "fanned".

Thus it will be understood that the thin line of glue is firmly pressed upon the overlapping edge of each sheet of the book and, by reversing the "fanning" as by means of the two conveyors D and E or by means of two reversed flares, this line of glue is applied to both sides of the sheets.

While I have shown and described a few embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made which do not depart from the spirit or scope of the invention as defined by the appended claims.

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

1. In a bookbinding machine, means for gripping and carrying forward books to be bound, means for fanning an edge of said books as they pass through said machine, and means for applying an adhesive to said edges while so fanned.

2. In a bookbinding machine, a chain for gripping books, means for propelling said chain, means for fanning an edge of said books as they pass through said machine, and means for applying an adhesive to said edges while so fanned.

3. In a bookbinding machine, a chain for gripping books near one edge, means for propelling said chain, means near the other edge for fanning said last mentioned edge of said books as they pass through said machine, and

means for applying an adhesive to said edges while so fanned.

4. In a bookbinding machine, a chain for gripping books near one edge, means for propelling said chain, a second chain driven in timed relation to the first mentioned chain near the other edge having means for fanning said last mentioned edge of said books as they pass through said machine, and means for applying an adhesive to said edges while so fanned.

5. In a bookbinding machine, a chain for gripping books near one edge, means for propelling said chain, a second chain driven in timed relation to the first mentioned chain near the other edge having reversely curved plates for binding said book for fanning said last mentioned edge of said books as they pass through said machine, and means for applying an adhesive to said edges while so fanned.

6. In a bookbinding machine, means for gripping and carrying forward books to be bound, means for fanning an edge of said books as they pass through said machine, and a roller for applying an adhesive to said edges while so fanned.

7. The method of gluing the backs of books consisting of gripping the book near the opposite edge, applying pressure to one side of the book to cause it to be deflected so as to cause the back edges of the leaves to fan, and applying glue to said back while so fanned.

8. The method of gluing the edges of books consisting of bending the edges of the sheets in one direction to cause them to fan, in which condition the sheets assume overlapping position relative to adjacent sheets, applying glue to said overlapping edges while in said overlapping position, and permitting said sheets to return to normal position before the glue has set, whereby the glue will cause the overlapping portions to adhere to adjacent sheets when the sheets return to the normal position.

9. The method of gluing the edges of books consisting of deflecting the edges of the sheets in one direction to cause them to fan, in which condition the sheets assume overlapping position relative to adjacent sheets, applying glue to said overlapping edges while in said overlapping position whereby the glue will cause the overlapping portions to adhere to adjacent sheets when the sheets return to the normal position, and before the glue has set deflecting said edges in the opposite direction out of normal position, and applying glue to the other faces of said overlapping edges.

10. The method of gluing the edges of books consisting of bending the edges of the sheets in one direction, while rigidly clamping them adjacent their opposite edges, to cause them to fan, in which condition the sheets assume overlapping position relative to adjacent sheets, applying glue to said overlapping edges while in said overlapping position and permitting said sheets to return

to normal position before the glue has set, whereby the glue will cause the overlapping portions to adhere to adjacent sheets when the sheets return to the normal position.

In witness whereof, I have hereunto set my hand this 21st day of May, 1927.

HARLEY C. ALGER.

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