T. S. ETHERIDGE.

DEVICE FOR APPLYING GLUE TO BOOK COVERS.

APPLICATION FILED JUNE 4, 1913.

1,140,450.

Patented May 25, 1915.

2 SHEETS—SHEET 1.

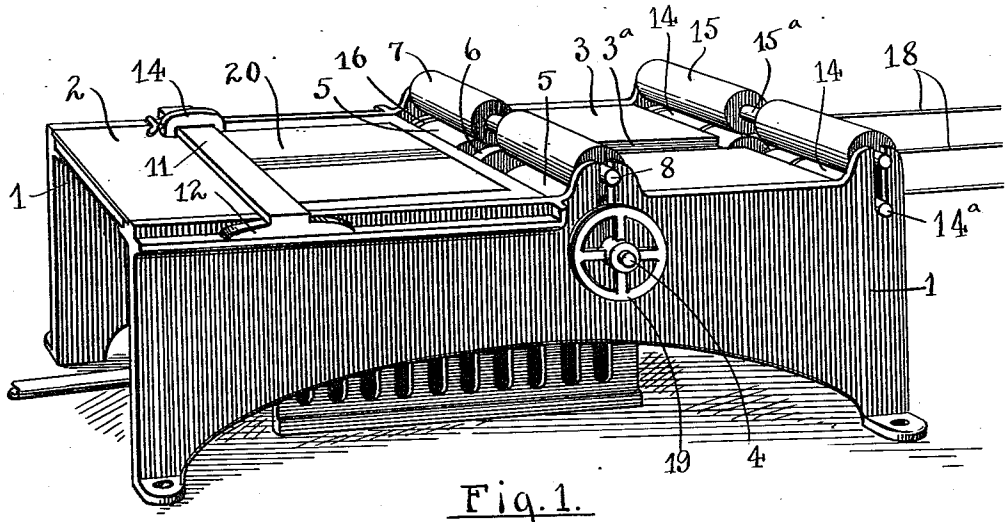


Fig. 1.

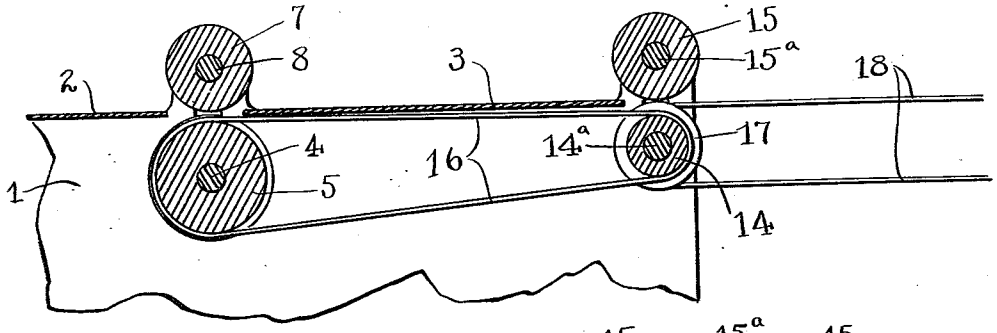


Fig. 5.

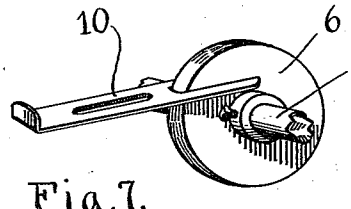


Fig. 7.

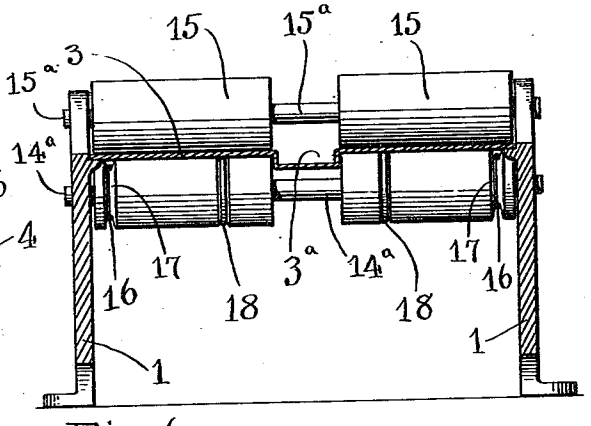


Fig. 6.

Witnesses

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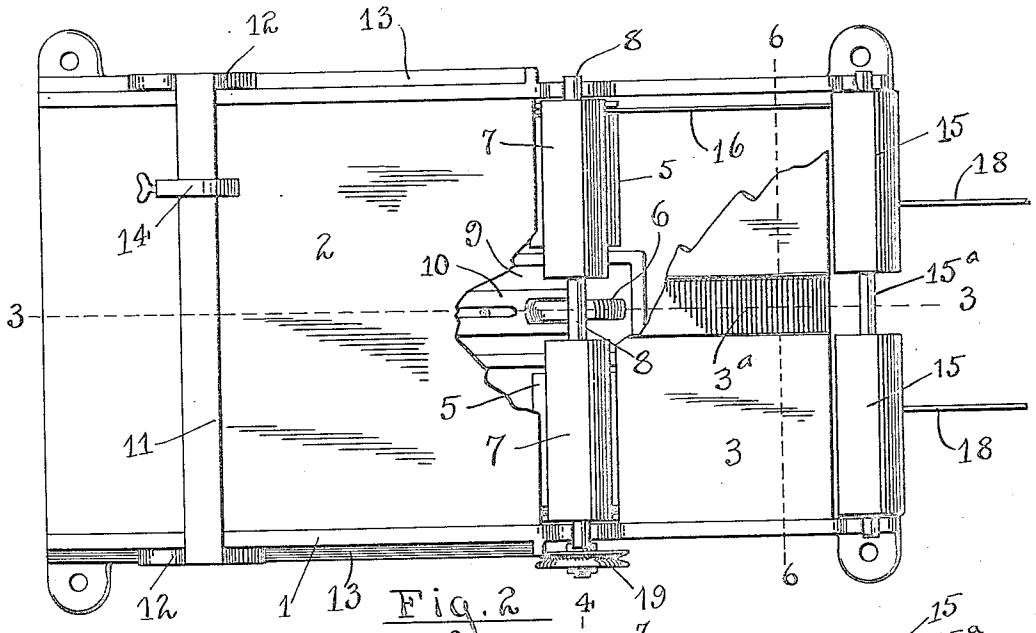


Fig. 2.

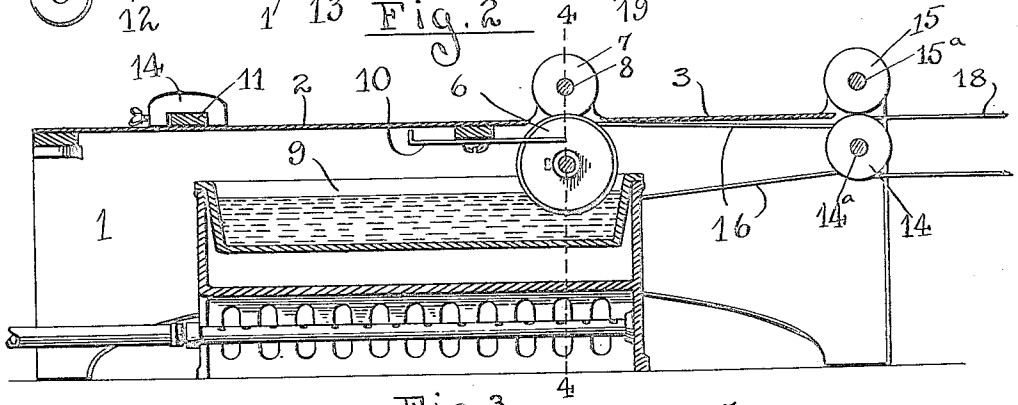


Fig. 3.

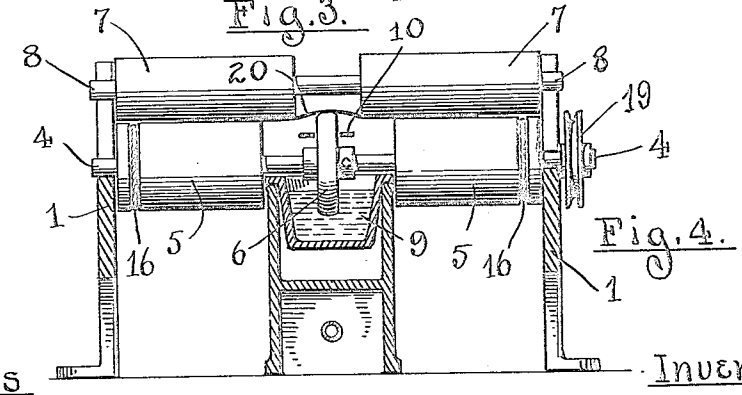


Fig. 4.

Witnesses

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DEVICE FOR APPLYING GLUE TO BOOK-COVERS.

1,140,450. Specification of Letters Patent. Patented May 25, 1915.

Application filed June 4, 1913. Serial No. 771,745.

To all whom it may concern:

Be it known that I, THEODORE S. ETHERIDGE, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Devices for Applying Glue to Book-Covers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in devices for applying glue to book covers, and more particularly to applying glue to a narrow surface of paper covers so that they may be glued to the backs of the books, and its object is to provide a device of this character which will effectually perform the above operation, will accommodate and operate upon book covers of various sizes, to provide means for conveying the book covers from the machine to a position where they may be applied to the books and to provide the device with various new and useful features hereinafter more fully described and particularly pointed out in the claims.

In the art of book binding, and especially in binding paper covered books, such as pamphlets, catalogues, etc., it is customary to affix the paper cover to the book by gluing it thereto along the back edge of the book, and sometimes a narrow portion of the outer leaf adjacent the back of the book is also glued to the cover and the cover provided with "score lines" so that it may be folded outward at the termination of the glued surface. It has been common practice in affixing the book covers, to manually apply the glue to the back edge of the book and to such surface of the outer leaf as desired, by means of an ordinary brush. This method has been unsatisfactory, in that, it was exceedingly slow and the glue could not be spread evenly, etc.

This invention provides means by which the glue may be applied in a strip the desired width directly upon the paper cover, and this cover is then affixed to the book which completes the operation. The device is adapted to automatically apply the glue to the book cover by causing the said cover to pass over and engage a wheel, the periphery of which is of a width equal to the desired width of the surface to be coated with glue, and the lower edge of this wheel runs in glue contained in a glue pot beneath the wheel which supplies the necessary glue.

The preferred construction and arrangement of the device will more fully appear by reference to the accompanying drawings in which:—

Figure 1 is a perspective view of a device embodying my invention; Fig. 2 is a plan view of the same with parts broken away; Fig. 3 is a vertical section on the line 3—3 of Fig. 2; Fig. 4 is a transverse vertical section on the line 4—4 of Fig. 3; Fig. 5 is an enlarged sectional elevation of a portion of the device showing the feed rollers and conveying rollers; Fig. 6 is a transverse section on the line 6—6 of Fig. 2; and Fig. 7 is a perspective view of the glue wheel and glue scraper.

Like numbers refer to like parts in all of the figures.

1 represents the frame which comprises essentially two upright side members spaced apart and joined at their upper edges by flat plates 2 and 3, which form table surfaces. A shaft 4 extends transversely across the frame near its middle portion, and on this shaft are mounted two feed rollers 5, the upper surfaces of which are approximately level with the table 2. These rollers are spaced apart upon the shaft leaving a gap between them near the center of the device, and in this gap and on the shaft 4 is mounted a gluing wheel 6 slightly larger in diameter than the said feed rollers. Pressure rollers 7 are located directly above the feeding rollers and are mounted on a shaft 8 and spaced apart thereon, leaving a gap between them opposite the gluing wheel 6. The shaft 8 has a free vertical movement and the rollers 7 are sufficiently heavy to cause enough frictional engagement of the cover with the rollers 5 to feed the cover forward in contact with the gluing wheel. A glue pot 9, preferably provided as shown with a water boiler and gas heater, by which the glue may be kept at the desired temperature, is located beneath the gluing wheel 6, and the lower part of this wheel is constantly immersed in the glue. As the wheel is rotated a considerable quantity of the glue will adhere to its surface, and a glue scraper 10 in the form of a bifurcated plate straddles the wheel and removes the surplus glue therefrom leaving only a sufficient quantity to be properly applied to the cover. This glue

scraper is adjustable, being fastened by a screw, which passes through a slot in the scraper so that it may be adjusted to permit more or less of the glue to remain on the wheel.

A slidable feed bar 11 extends transversely across the table surface 2 and is provided at each end with shoes 12 which traverse ways 13 provided on the side members of the frame whereby the bar is maintained parallel with the feeding rollers and enables the operator to feed the book covers squarely between the same by sliding the bar in contact with the rear edge of the cover. On this bar an adjustable stop 14 is provided which locates the cover laterally in the device.

The covers are taken from the feeding rollers by the conveying rollers 14 and 15. The lower pair of rollers 14 are affixed on a shaft 14ª journaled in the frame and are driven by endless belts 16, which engage over the feed rollers 5. The upper conveying rollers 15 are mounted on a shaft 15ª, which is vertically movable in the frame, and these upper rollers serve as pressure rollers to maintain a frictional engagement between the lower rollers and the cover as it passes between them. Both of the rollers in each set are spaced apart leaving a gap at the middle of the machine so that the freshly glued surface will not be engaged as the cover passes between the rollers.

It will be noted by reference to Fig. 5 that the driving belt 16, which rotates the conveyer roller 14, engages a groove 17 in the said roller and this groove is deeply cut into the surface of the roller, whereas the corresponding groove in the feeding roller 5 is only deep enough to let the driving belt flush with the periphery of the said roller. The result of this construction is that the peripheral speed of the conveying roller 14 is greater than that of the feeding roller 5, and the cover, after being released by the said feeding rollers, is drawn away from them by the conveying rollers at a speed greater than that of the feeding rollers. This prevents the glue wheel from scraping the edge of the cover and depositing an excess of glue thereon.

The table 3 between the feeding and conveying rollers is provided with a longitudinal depression 3ª opposite the gluing wheel so that the freshly glued surface of the book cover will not engage the table as it passes over the same. After leaving the conveying rollers the cover is carried from the machine upon a pair of conveying belts 18, which pass over the lower conveying roller and are supported at their opposite ends by suitable pulleys (not shown).

The driving pulley 19, on the feed roller shaft 4, may be removed and substituted by a crank, so that the device may be manually operated if so desired.

It will be noted that the gluing wheel 6 is slightly larger in diameter than the feeding rollers 5, which insures a positive engagement between the wheel and the cover. This enlargement in diameter of the wheel causes the cover to curve upward at the point where it passes over the wheel and the periphery of the same is transversely convex to conform to the curvature assumed by the cover. The width of the gluing wheel governs the width of the glued surface, and the wheel may be removed and replaced by others of various widths to accommodate work requiring various widths of glued surface.

In using the device, the operator first places the book cover upon the table 2 with the rear edge against the feed bar 11, and laterally adjusted by the stop 14. The feed bar is then moved forward which forces the forward edge of the book cover between the feeding rollers which grip the cover and carry it forward over the gluing wheel and in contact therewith. After leaving the feeding rollers, the cover passes over the table 3 and is gripped by the conveying rollers, which carry it from the device and deposit it upon the conveying belts 18, which carry it to the desired location.

What I claim is:—

1. A device for applying glue to book covers, comprising a pair of superimposed feeding rollers, a wheel in axial alinement with the lower roller and rotating with the same, and a glue pot beneath the glue wheel.

2. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers, spaced apart, a wheel in axial alinement with the lower rollers and in the space between them, and a glue pot beneath the glue wheel.

3. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers spaced apart, a wheel between the lower rollers and in axial alinement therewith, two pair of superimposed conveying rollers spaced apart and arranged less than the length of a book cover from said feeding rollers, and a glue pot beneath said wheel.

4. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers spaced apart, a wheel between the lower feeding rollers and in axial alinement therewith, a glue pot beneath the glue wheel, two pair of superimposed conveying rollers spaced apart and arranged less than the length of a book cover from the feeding rollers, and means for rotating the conveying rollers at a greater peripheral speed than that of the feeding rollers.

5. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers spaced apart, a wheel

between the lower feeding rollers and in axial alinement therewith, a glue pot beneath the wheel, two pair of superimposed conveying rollers spaced apart and arranged less than the length of a book cover from the feeding rollers, a belt running in a shallow groove in one of the lower feeding rollers and in a deeper groove in one of the lower conveying rollers to drive the latter, and means for rotating the feeding rollers.

6. A device for applying glue to book covers, comprising feeding rollers and conveying rollers spaced apart a less distance than the length of a book cover, a wheel adapted to rotate with its lower edge immersed in glue and a table between the feeding rollers and the conveying rollers, said table having a longitudinal depression opposite the said wheel.

7. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers spaced apart, a wheel centrally located in the space between the lower feeding rollers and in axial alinement therewith and larger in diameter than the same, to curve a cover upward, the periphery of the wheel being convex to conform to the curvature of the cover.

8. A device for applying glue to book covers, comprising two pair of superimposed feeding rollers spaced apart, a wheel in the space between the lower feeding rollers and in axial alinement therewith and also larger in diameter than the same, to curve the cover, the periphery of the wheel being convex to conform to the curvature of the cover, a glue pot beneath the wheel, a table in advance of the feeding rollers, a bar slidable upon said table, a stop adjustable upon the bar, two pair of superimposed conveying rollers spaced apart and arranged less than the length of the cover from the feeding rollers, belts engaging shallow grooves in the lower feeding rollers, and deeper grooves in the lower conveying rollers, a table between the feeding rollers and conveying rollers having a longitudinal depression opposite the wheel, and belts engaging the lower conveying rollers to take the book covers from the device.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE S. ETHERIDGE.

Witnesses:
O. E. MUNN,
HAROLD O. VAN ANTWERP.