

(No Model.)

2 Sheets—Sheet 1.

A. L. GARVER.

MACHINE FOR SECURING BACKING STRIPS TO AND FOLDING BOOKS.

No. 509,215.

Patented Nov. 21, 1893.

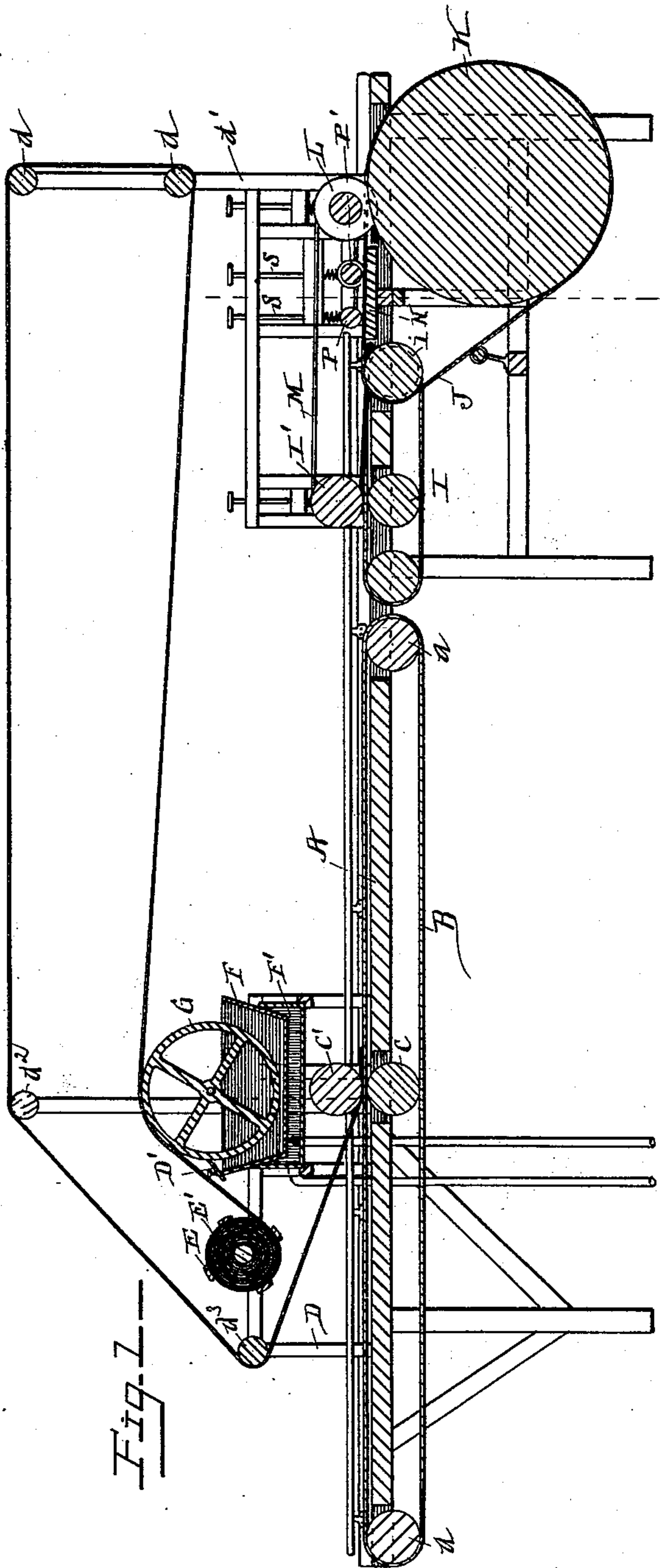


Fig. 1—

WITNESSES

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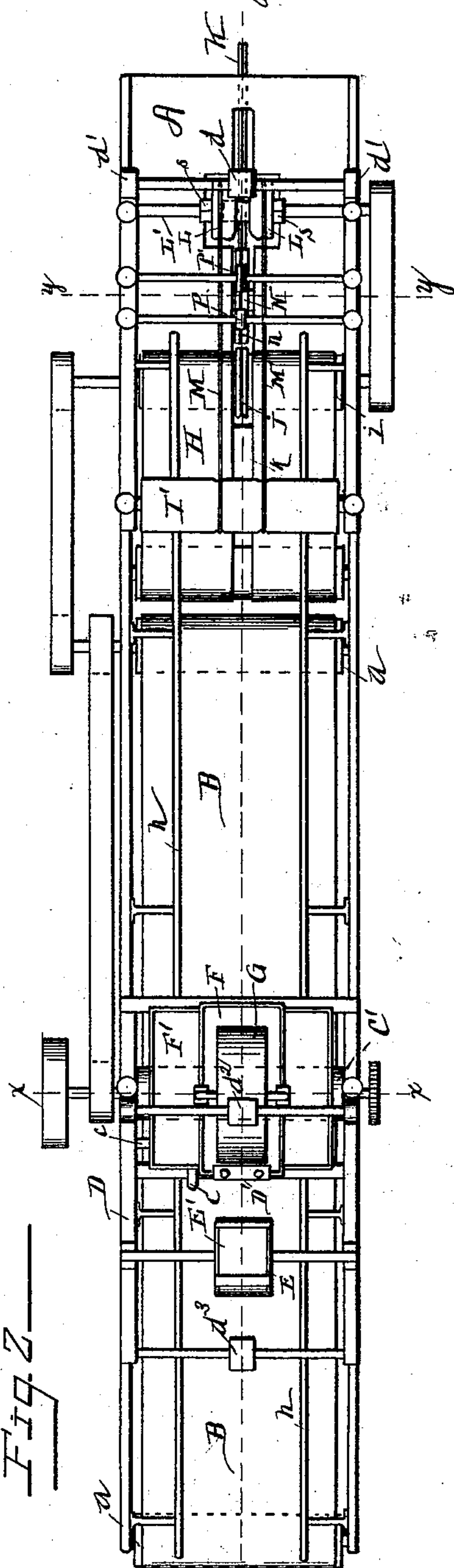


Fig. 2—

INVENTOR

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(No Model.)

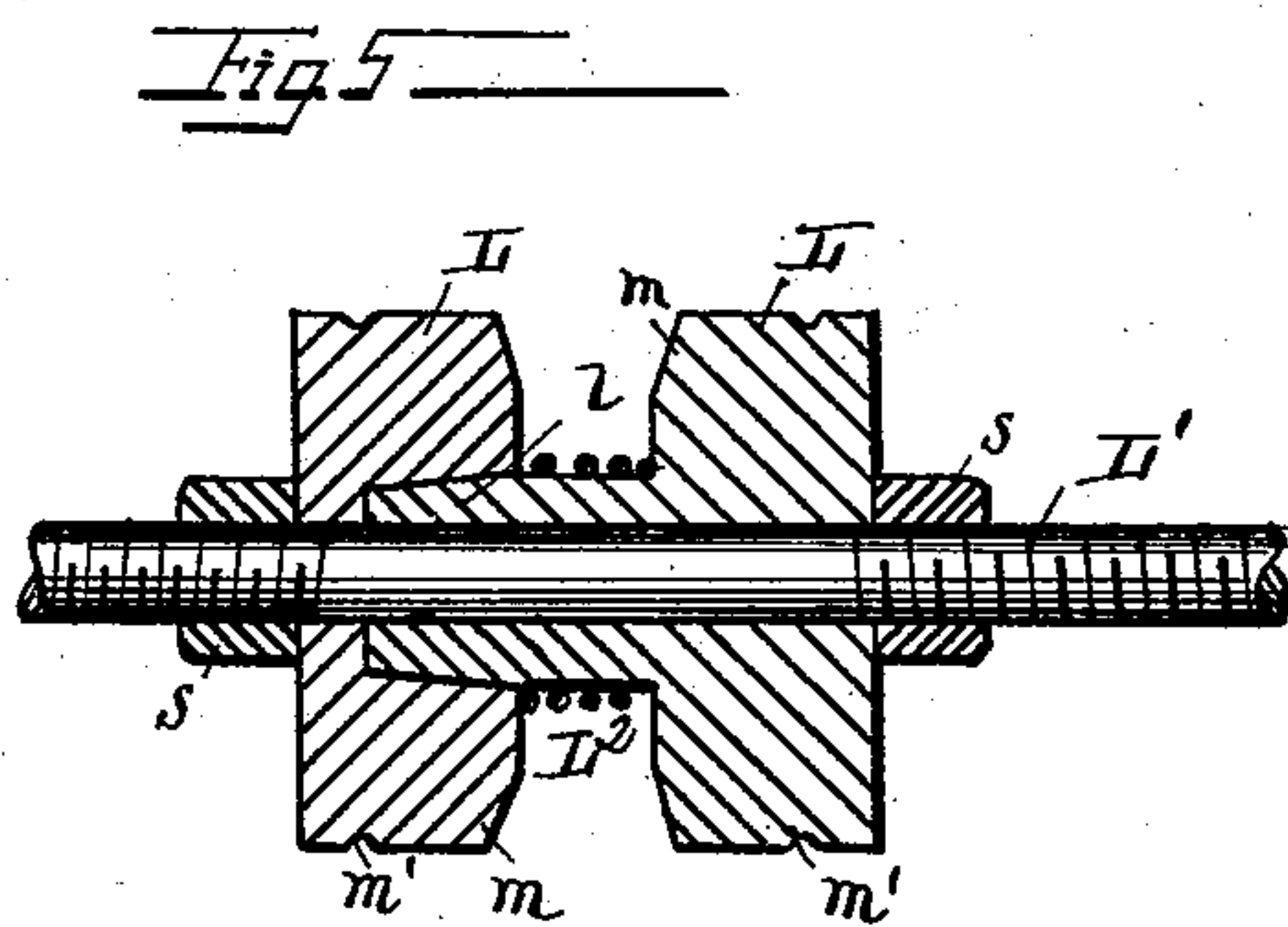
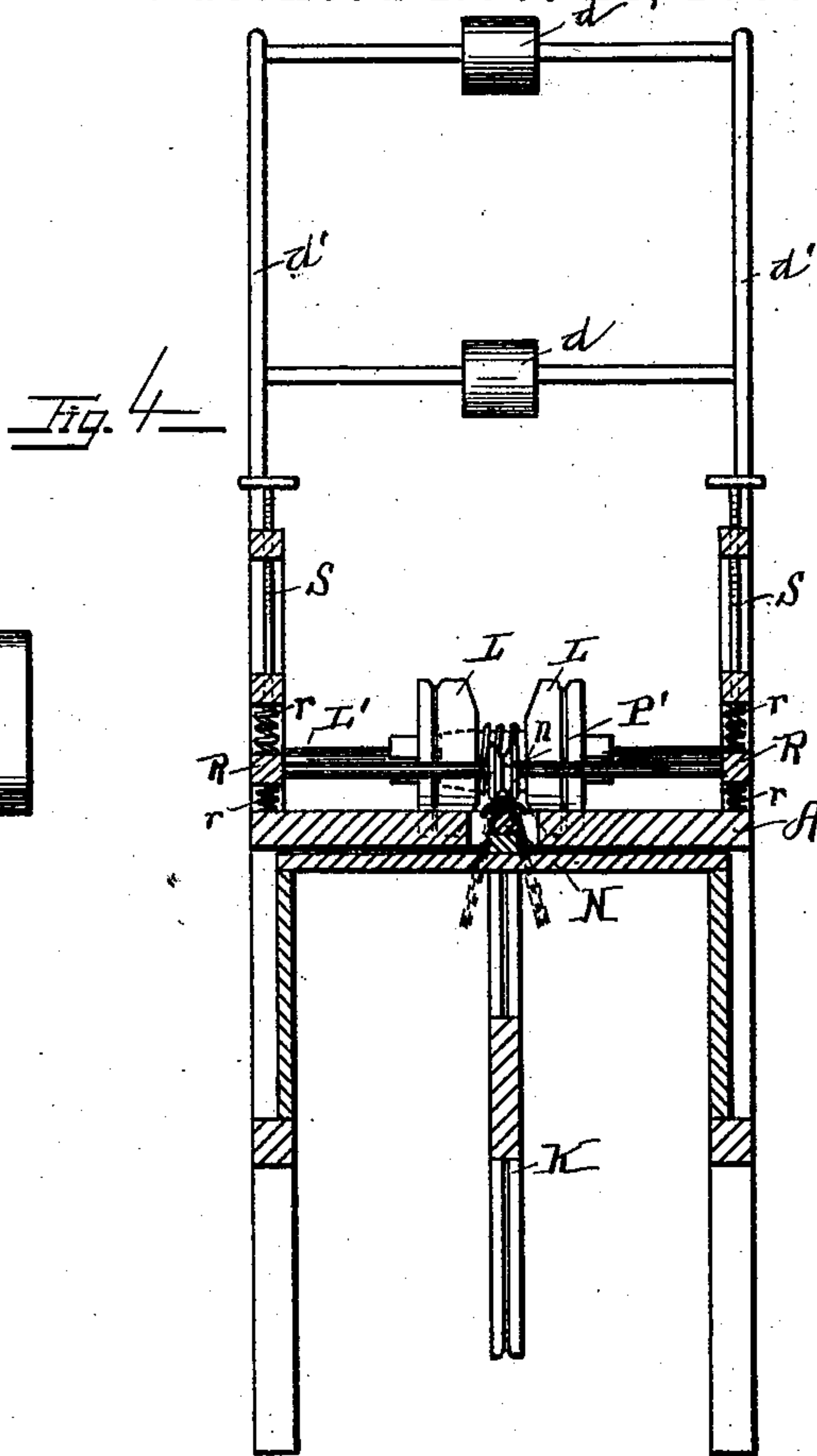
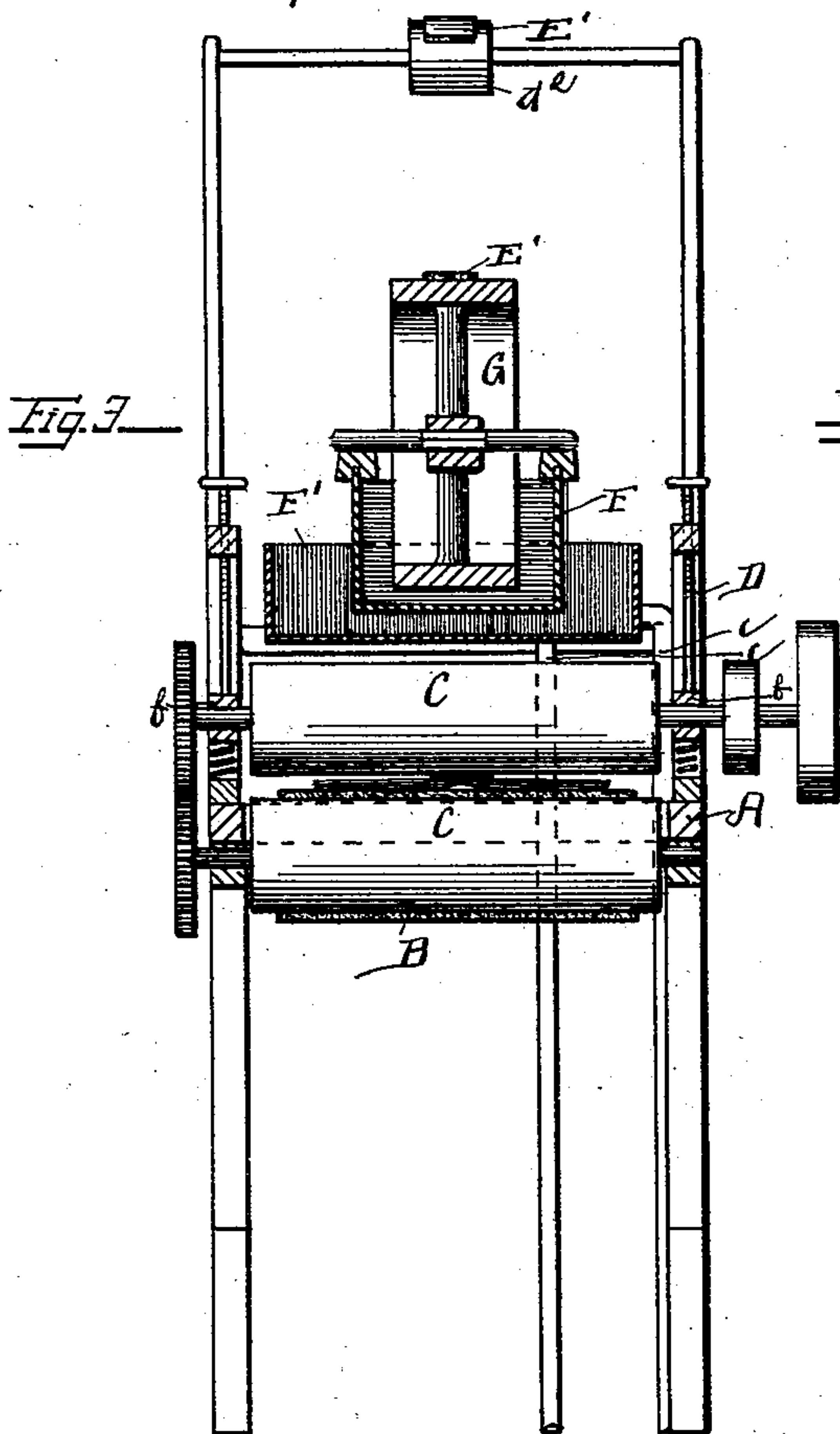
2 Sheets—Sheet 2.

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WITNESSES

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SECURING BACKING-STRIPS TO AND FOLDING BOOKS.

SPECIFICATION forming part of Letters Patent No. 509,215, dated November 21, 1893.

Application filed August 12, 1893. Serial No. 482,962. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. GARVER, a citizen of the United States, and a resident of Roaring Spring, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Securing Backing-Strips to and Folding Books; and I do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a vertical longitudinal section. Fig. 2 is a top plan view. Fig. 3 is a vertical transverse section taken on line *x x*, Fig. 2. Fig. 4 is a vertical transverse section taken on line *y y*, Fig. 2 and Fig. 5 is a sectional detail of the disks, &c.

This invention is designed to provide a simple, practical and efficient machine by means of which tape, or other suitable backing strips may be secured to books, such as memorandum, pass, blank, account, and other books having flexible covers; and which will also after the back or strip has been secured in place, neatly fold the book into its finished form.

With these objects in view, the invention consists in the novel construction and combination of parts all as hereinafter described and pointed out in the accompanying claims.

Referring to the accompanying drawings, illustrating the invention, the letter A designates an extended horizontal table supported in any suitable manner. Working upon said table is an endless feed apron B, carried by rollers *a, a*, driven by suitable gear, as indicated.

C, C' designate a pair of transverse rollers journaled in proper relation to the table A, and between which the upper, or working portion of the apron B passes. The upper roller *C'* is made capable of a vertical adjustment in its bearings toward and away from the lower stationary roller *C*, as indicated at *b* in order to allow the proper adjustment for books of different thicknesses.

D is a frame supported on the table A, over the apron B, and *E* is a reel journaled in said

frame transversely of the table, said reel carrying the tape or other suitable material *E'* from which the backing strips are made. Also supported on said frame *D* is a glue pot *F*, which is heated by steam or hot water in a tank *F'*, the steam or water entering and leaving said tank by the pipes *c, c*; or other suitable means may be employed to heat the glue pot. Turning in said glue pot is a wheel *G* having a broad periphery over which passes the tape *E'* from the reel *E*, receiving therefrom in its passage a sufficient coating of the glue, or other adhesive material. The tape then passes over the table to a point near the farther end thereof, where it passes over pulleys *d, d*, carried by standards *d'*, and thence back and over a pulley *d²* supported by an arm of the frame *D*, thence rearwardly and downwardly over a pulley *d³* at the rear of the reel *E*, and thence downwardly and forwardly and between the rollers *C, C'*, at the central portion thereof. The pulleys *d, d', d²*, and *d³* are so arranged that only the unglued surface of the tape contacts therewith.

D' is an adjustable scraper for removing excess of glue from the glue wheel *G*. The books in their flattened condition, as seen in Fig. 3 are placed on the apron B underneath the tape *E'*, and are successively fed through between the rollers *C, C'*, which press the tape down thereon and cause it to firmly adhere. As the books leave these rollers the tape is cut at the proper point by an operator, or by suitable mechanical cutting devices, not shown, and are carried along and onto a second endless, traveling apron *H*, guides *h* being provided all along the table to prevent any lateral travel of the books from the time they are fed onto the apron until they reach the folding mechanism presently to be described.

I, I' are a second pair of transverse rollers between which the books are carried by the apron *H*, and which act to again set the tape to the book should it have been loosened somewhat at the end by the cutting, which is frequently the case. Shortly after leaving these rollers, the books pass from the forward portion of the apron *H*, onto an endless traveling cord *J*, which passes around the forward carrying roll *i* of the apron *H*, in a grooved

boss *j* at the central portion thereof, and also around the grooved periphery of a large rotary disk K journaled near the forward end of the table. In order not to interfere with this cord, the apron H is divided longitudinally into two parts whose inner edges are separated from each other a short distance, as seen at *k*.

Journalled transversely over the disk K is a shaft L' which at its central portion carries two disks L, L, an axial projection *l* of one of said disks engaging a corresponding socket *l'* in the other, and forming between said disks an annular space L² which receives the peripheral portion of the disk K. The adjacent edges of said disks are beveled outwardly as shown at *m*, and each disk has in its periphery a groove *m'*. Running around in said grooves *m'*, and around the upper rollers I' are two endless cords or belts M, M', one a short distance to each side of and a little above the cord J, and acting to hold the book down upon said cord so that it will be carried along thereby, while at the same time leaving the lateral portions of the book unsupported from below so that it may readily fold. The cord J is supported by a longitudinal bar N, having therein a groove *n* sufficiently deep to receive about one-half the diameter of the said cord.

Between the rollers I, I' and the disk K are two small central wheels P and P', situated directly over the cord J, which press the book down onto the said cord, and hold it in the proper position to enter between the disk K, and the folding disks L, L. The first wheel P has a plain periphery, but the second wheel P' has a V-shaped groove therein which presses against the central part of the book, and commences the fold, which is completed by the disks L, L and K as will be readily seen.

The bar N, which supports the cord J, is of somewhat inverted V-shape in cross-section, the groove *n* being in the angle thereof. This form is preferred as it offers no resistance to the folding.

The wheels P, P' are carried by transverse shafts journaled in bearings R which are capable of a vertical adjustment toward and away from the table, springs *r* being provided in connection therewith to render them sufficiently yielding. The adjustment is effected by means of screws S acting on the said bearings. The upper roll I is also made capable of a vertical adjustment as indicated, and the two disks L, L are capable of a lateral adjustment toward and away from each other on the shaft by means of nuts *s*.

It will be observed that the tape carrying devices before described are so arranged that a considerable length of tape is constantly kept unwound, so that some time elapses after any portion of the tape leaves the reel before it is applied to the book. The purpose of this arrangement is to give the glue time to set somewhat so that it will firmly adhere to the

book and not be stripped therefrom by the rolls as would otherwise occur.

Suitable gear connections are provided for driving the various parts.

Having thus described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. In a machine for the purpose herein described, the combination of the endless feeding apron, the rolls C, C' between which said belt passes, the tape carrying devices arranged to guide the tape between said rolls, means for applying adhesive material to the tape, and means for folding the book subsequent to its passage between said rolls, substantially as specified.

2. In a machine for the purpose herein described, the combination of an endless traveling belt arranged to carry the books, a pair of rolls through which said belt passes, the tape carrying devices arranged to guide the tape between said rolls above said belt, and means for applying glue to said tape previous to its passage between said rollers, substantially as specified.

3. In a machine for the purpose herein described, the combination with the table, the apron A, the rolls C, C', the tape carrying reel and pulleys, means for applying adhesive material to the tape, the second apron H, the second pair of rollers I, I', the traveling cord, means for guiding and holding the book on said cord, and the folding devices, substantially as described.

4. In a machine for the purpose herein described, the endless, traveling apron A, the rollers C, C', the tape carrying reel, the tape carrying pulleys so arranged as to support a considerable length of tape, the glue pot, its heating devices, the wheel turning in said pot and over which the tape passes, and the folding mechanism, substantially as described.

5. The combination with the apron A, and the means for applying the tape to the book, of the divided apron H, the rollers I, I', the cord J, the cords or belts M, M', the disk K, and the disks L, L over said disk K and receiving its periphery between them, substantially as described.

6. The combination of the divided apron H, its carrying rollers, the disk K, the endless cord passing around the forward apron carrying roller and around said disk, the rollers I, I', the disks L, L, the cords or belts passing over the rollers I' and the disks L, L, and the rollers P, P', substantially as described.

7. The combination of the apron H, the cord J, the cords or belts M, M', the disks L, L, and K, and the wheels P, P', substantially as described.

8. The combination of the tape carrying and glue applying devices, the apron A, the rollers C, C', one of which has a vertical adjustment toward and away from the other, the divided apron H, its carrying rollers, the roll-

ers I, I', one of which has means for its vertical adjustment, the peripherally grooved disk K, the cord passing around the central portion of the forward carrying roller of said apron H, the grooved guide bar therefor, the cords or belts M, M', the folding disks L, L, around which pass said cords or belts M, M', and the driving gear, substantially as described.

10 9. A machine for the purpose herein described, comprising a traveling apron onto which the books are fed, a pair of rollers between which the books pass, the tape carrying devices arranged to guide the tape between
15 said rollers, means for applying glue to said tape before it passes through said rollers, a second pair of rollers through which the

books subsequently pass before folding, folding disks arranged to fold the book into its completed form, and means for feeding and
20 guiding the books through the second pair of disks and the folding disks, substantially as described.

10. The combination of the cord J, the belts M, M', the wheels P, P', the adjustable and
25 yielding support for said wheels, the disk K, and the laterally adjustable folding disks L, L, substantially as described.

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

ABRAHAM I. GARVER.

Witnesses:

GEORGE H. PARMELEE,
PHILIP C. MASI.