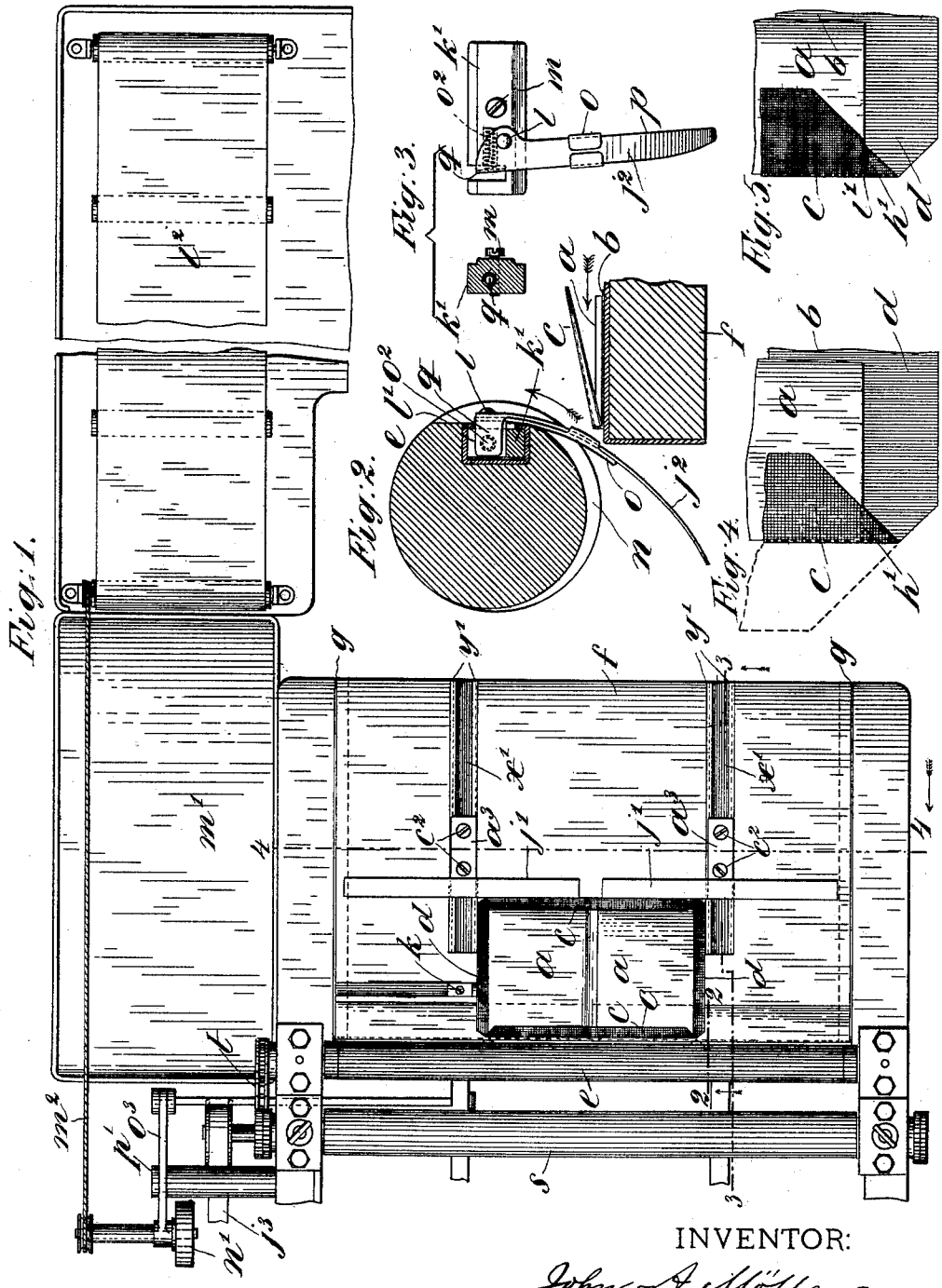
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J. A. MÖLLER.

BOOK COVER FOLDING AND PRESSING MACHINE.

No. 592,429. Patented Oct. 26, 1897.



INVENTOR:
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By A. P. Thayer
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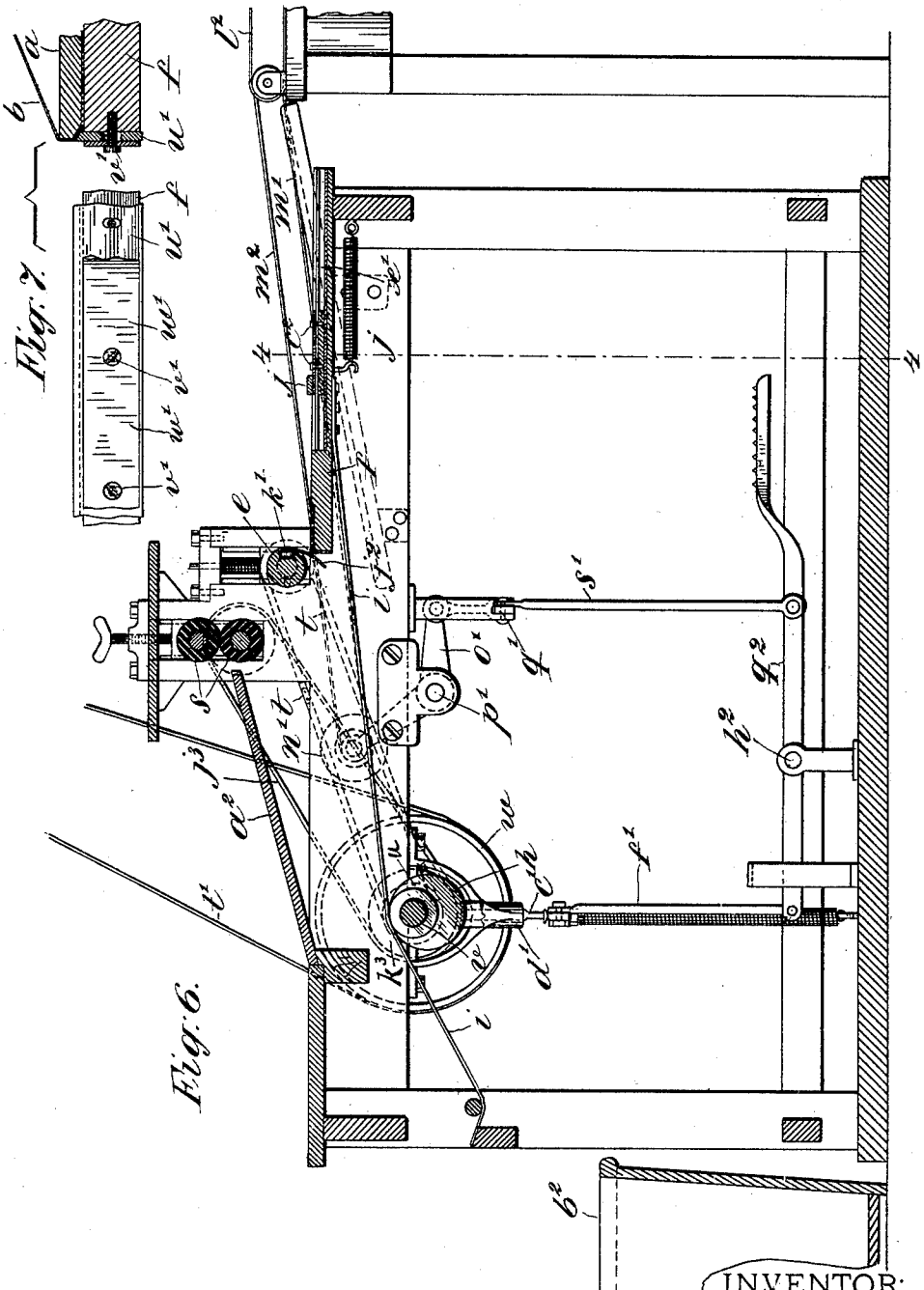


Fig. 7.

Fig. 6.

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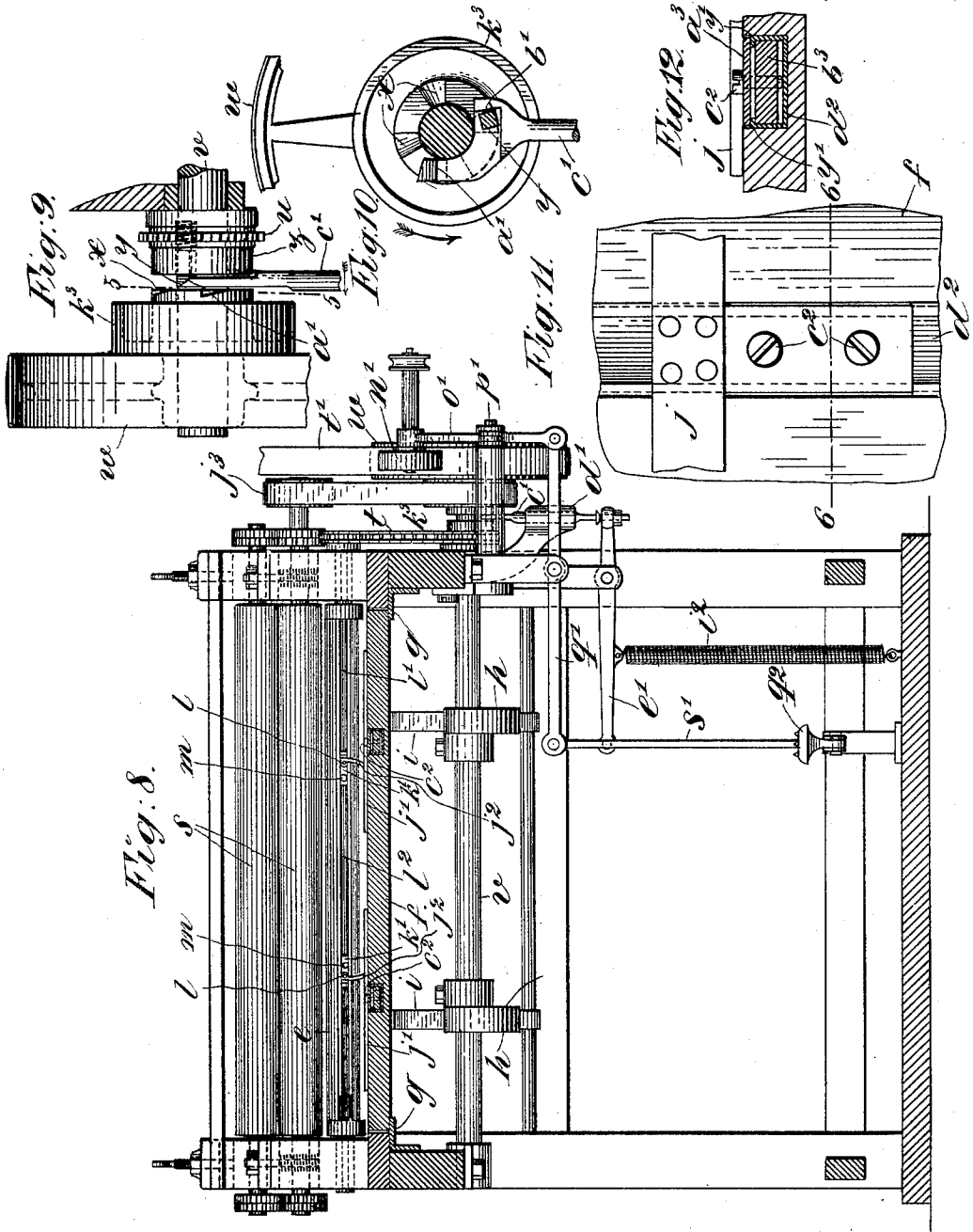
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INVENTOR:
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UNITED STATES PATENT OFFICE.

JOHN A. MÖLLER, OF NEW YORK, N. Y.

BOOK-COVER FOLDING AND PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 592,429, dated October 26, 1897.

Application filed December 18, 1896. Serial No. 616,117. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. MÖLLER, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Book-Cover Folding and Pressing Machines, of which the following is a specification.

My invention consists of improvements in machinery for folding the margins of the cloth or like covers on the board bodies of the covers, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of my improved machine in part. Fig. 2 is a detail in section on line 2 2, Fig. 1, on a larger scale. Fig. 3 is a side view and transverse section of a crimping device carried by the folding-roller as shown in Fig. 2. Fig. 4 represents part of a cover to be folded, in plan view. Fig. 5 represents the same part of a cover after the first operation of the machine. Fig. 6 is a longitudinal sectional elevation of the entire machine on line 3 3, Fig. 1. Fig. 7 is a side view and transverse section of an attachment for use when the bodies to be covered are made with bevel edges. Fig. 8 is a transverse section of the machine on line 4 4 of Figs. 1 and 6. Fig. 9 is a detail of the clutch mechanism of the driving-gear on an enlarged scale. Fig. 10 is a detail of the clutch mechanism on the section indicated by line 5 5, Fig. 9. Fig. 11 is an enlarged detail of the feeding-table and a guide in plan view, and Fig. 12 is a section of Fig. 11 on line 6 6.

In Figs. 1, 2, 4, and 5, *a* represents the body portions of stiff board, and *b* the leather, paper, cloth, or other sheet constituting the cover to be applied to the body by applying it to one side of the body and folding the margins *c c* and *d d* over the edges, the covers being first pasted for sticking to the body.

In my improved apparatus I provide a roll *e* in about the relation to a feeding and holding table *f*, as shown in the drawings, said roll being mounted and geared to be rotated in the direction indicated in Fig. 2 and the table being arranged to slide forward and backward relatively to the roll on the ways *g*, the forward movement to be effected by the cams *h* and straps *i* and the backward movement by the springs *j*, said straps being attached at one end to a fixed object and at the other end to the table. On the table *f* are adjustable gages *j'* and *k*, by which the covers are properly placed and confined while being acted upon by the roll *e*.

In Fig. 2 it will be seen that forward movement of the table will carry the cover under the roll, so as to be pressed thereby to such extent that margin *c* being first partly folded by hand will be pressed down and drawn smooth on part *a* and being pasted on its under side will be stuck fast on the upper side of body *a*. When a margin of one side of the cover has been so folded and pasted, the table is withdrawn and the cover is turned suitably for presenting another margin to be folded. In practice the two margins *c* are first folded and the margins *d* afterward.

In Figs. 4 and 5 it is seen that a small part *h'* of margin *c* overlaps a corresponding part of margin *d*, to be folded over with it for more effectually inclosing the corner of the body *a*. To insure the folding of this lap neatly, it is necessary to crimp it down along the edge of body *a* and stick it fast, as shown at *i'*, Fig. 5, which is commonly done by hand with a steel blade of some kind. I propose to effect it by the roll *e* and so as to crimp the laps of both ends of a margin *c* at the same time, and I accomplish it by means of a pair of crimping-blades, as j^2, attached to the roll, said crimpers being long, narrow, and curved springy steel blades, substantially as shown, and pivoted at *l* to adjusting-blocks *k*, adapted to be shifted along in a longitudinal groove *l'* in the face of the roll and be set in different positions by set-screws *m* and so that the crimpers trail backward lengthwise relatively to the direction in which the roll turns, but tangent to the roll and with yielding capacity, permitting them to be pressed back by the resistance of the work flush with the surface of the roll, or nearly so, the roll being grooved circumferentially at *n* for the requisite space.

The crimper is reinforced along its shank with a spring-plate *o* for powerful pressure on the work. It is adjusted with its crimping edge *p* in such oblique direction that on first contact of the face with the overlap *h'* said edge will fall slightly short of the edge of body *a*, but will draw directly against and

crimp the intervening part of overlap h' closely into the angle, where the said edge p will continue to bear until the crimper escapes, it being adapted to yield against the spring o^2, which keeps edge p in contact until its end escapes from the angle of the crimp. The powerful pressure of the face of the crimper on the lap h' causes much friction, which resists the lateral movement that must take place for enabling the oblique edge p to pass the edge of the body a, so that the crimp is more definite and the pasting more effective than can be done by hand.

The spring o^2, located in a socket in the block k', bears against a flange q at the head of the crimper to reset it preparatory for operation again, and said spring has some effect in holding the crimper to its work, but it is mainly the friction before stated that insures the requisite resistance of the crimper for effective crimps. When the crimps are thus made, the cover is turned and presented to the folding and pressing roll to fold the margins d, respectively, which completes the folding operation.

The covers being drawn under the folding-roll contrary to its direction of motion are thereby stretched smoothly on the body, and when the pull of the straps i on the table is relaxed by the recession of the cams the push of the roll on the covers aids the springs j in returning the table with the covers after the completion of the operation. The pasted covers are then passed between a pair of presser-rolls s to more effectually stick the pasted parts together and are discharged over table a^2 into a receptacle b^2. Each operation is to be performed during one rotation of the folding-roll, which then stops at the moment the table returns to normal position and with the crimpers in the proper relation for coaction in the next operation, which relations are represented in Fig. 2. For this purpose the folding-roll is geared by a pitch-chain t with a chain-pulley u on the driving-shaft v to turn synchronously therewith. The driving-pulley w turns loosely on the shaft v and is provided with a clutch device consisting of the notches x in the side of its hub and the sliding spring-actuated key y in the hub z of the chain-pulley u with a wedge a' and a stop b' on the staff c' for disconnecting the clutch and stopping the shaft in the desired position. The staff of the disconnecting device is fitted in the vertical slideway d' and is connected to the lever e', which is connected by rod f' with the foot-lever q^2, pivoted at h^2, suitably for withdrawing the wedge to allow the clutch to connect when the machine is required to work, and a spring i^2 is connected to lever e' to thrust the wedge forward ready to disconnect the clutch when the key comes around to the wedge, but the clutch device is in common use and I do not claim it as of my invention.

The presser-rolls s, between which the covers are passed after the folding and sticking of the margins, are geared by a belt j^3 with a pulley k^3 on the hub of the driving-pulley w, by which they run continuously. An endless carrier l^2 is employed for fetching the covers and the bodies from an attendant, who first pastes the covers and sticks them to the sides of the bodies, and delivering them onto a table m', where it is convenient for the attendant of the machine to receive them preparatory to treating them therein. This carrier l^2 is geared by a belt m^2 with a pulley n', carried on one end of a rock-lever o', pivoted at p' and connected by another lever q' and a rod s' with the foot-lever q^2, so that when said foot-lever is pressed down to start the folding-roll pulley n' will be brought in contact with main driving-belt t' to operate the carrier.

In Fig. 7 I represent an attachment for application to the edge of the table for use when the covers are to be made with bevel edges, the said attachment consisting of a bevel-edged plate u', bolted to the edge of the table f next to the roll e, with its bevel edge upward and in the relation to the table, whereby when the work is placed on the table the bevel edge of the plate will press the cover hard on the bevel edge of the body and stick it fast thereto. The plate u' is adjustable vertically for setting it relatively to the work as desired, being secured by screws v' and a washer-plate w'.

In the contrivance of the gages j I have provided a metal-lined groove x' for each in the table with inwardly-projecting flanges y' below the surface of the table, on the top of which flanges a tongue-piece a^3 of the gage is fitted to rest and to slide accurately, the upper surface being flush with the surface of the table, and under said flanges is a clamping-block b^3, into which binding-screws c^3, inserted through the tongue, engage to clamp the tongue firmly on the flanges to hold the gage in position, said tongue and clamping-block being of suitable length for two or more screws which are necessary for resisting the great thrusts to which the gages are exposed in forcing the work under the roll e. The binding-screws are also gaged suitably in length for taking effect on the bottom part of the metal lining d^2.

I claim as my invention—

1. In a cover folding and pressing machine, the combination with the folding-roll arranged in fixed bearings, of the work-carrying table arranged in a slideway in the relation to the roll that movement of the table forward and backward under the roll exposes the work to folding and pressing action of the roll in both forward and backward movements, and means to thus actuate the table relatively to the roll substantially as described.

2. In a cover folding and pressing machine, the combination with the folding-roll arranged in fixed bearings, of the work-carrying table arranged in a slideway in the relation to the roll that movement of the table forward

and backward under the roll exposes the work to folding and pressing action of the rolls in both forward and backward movements, tangential crimping-blades of the roll adapted to crimp the folded margins at the ends of the cover, and means to effect the forward and backward movements of the table substantially as described.

3. In a cover folding and pressing machine, the combination with the folding-roll, of the tangential crimping-blades, work-table, and means to cause the advance of the table under the roll in opposition to the surface movement of the roll and crimping-blades, said crimping-blades having the oblique relation for drawing against the edges of the body and adapted to yield to the resistance of the body substantially as described.

4. In a cover folding and pressing machine, the combination with the folding-roll, of the tangential crimping-blades, work-table, means to cause the advance of the table under the roll in opposition to the surface movement of the roll and crimping-blades, and the bevel-edged attachment to the table substantially as described.

5. In a cover folding and pressing machine, the combination with the folding-roll arranged in fixed bearings, of the work-carrying table arranged in a slideway in the relation to the roll that movement of the table forward and backward under the roll exposes the work to folding and pressing action of the roll in both forward and backward movements, means to actuate the table in both directions, and a pair of finishing-rolls located and adapted for receiving the folded and pressed covers over the pressing-roll substantially as described.

6. The combination with the pressing and folding roll, and table, of the crimping-blades pivoted to the adjustable blocks in the groove of the roll, and the controlling-springs for said blade substantially as described.

7. The combination of the pressing and folding roll, driving-shaft geared with said roll for synchronous action, sliding work-carrying table, table-actuating straps, cams on the driving-shaft for actuating the strips, and the retracting-springs connected with the table substantially as described.

8. The combination of the table having the guide-grooves for the gages, flanges in said grooves located below the surface of the table, tongues of the gages resting on said flanges flush with the surface of the table, and the clamping-blocks and screws, whereby the tongues are clamped on the upper sides and the blocks against the under sides of the flanges, substantially as described.

9. The combination of the flanges in the guide-grooves, of the table, of the guide-tongues resting on said flanges, the clamping-blocks under the flanges, and the clamping-screws, said clamping-screws adapted to impinge on the bottom plates of the grooves substantially as described.

Signed at New York city, in the county and State of New York, this 26th day of June, A. D. 1896.

JOHN A. MOLLER.

Witnesses:
W. J. MORGAN,
A. P. THAYER.