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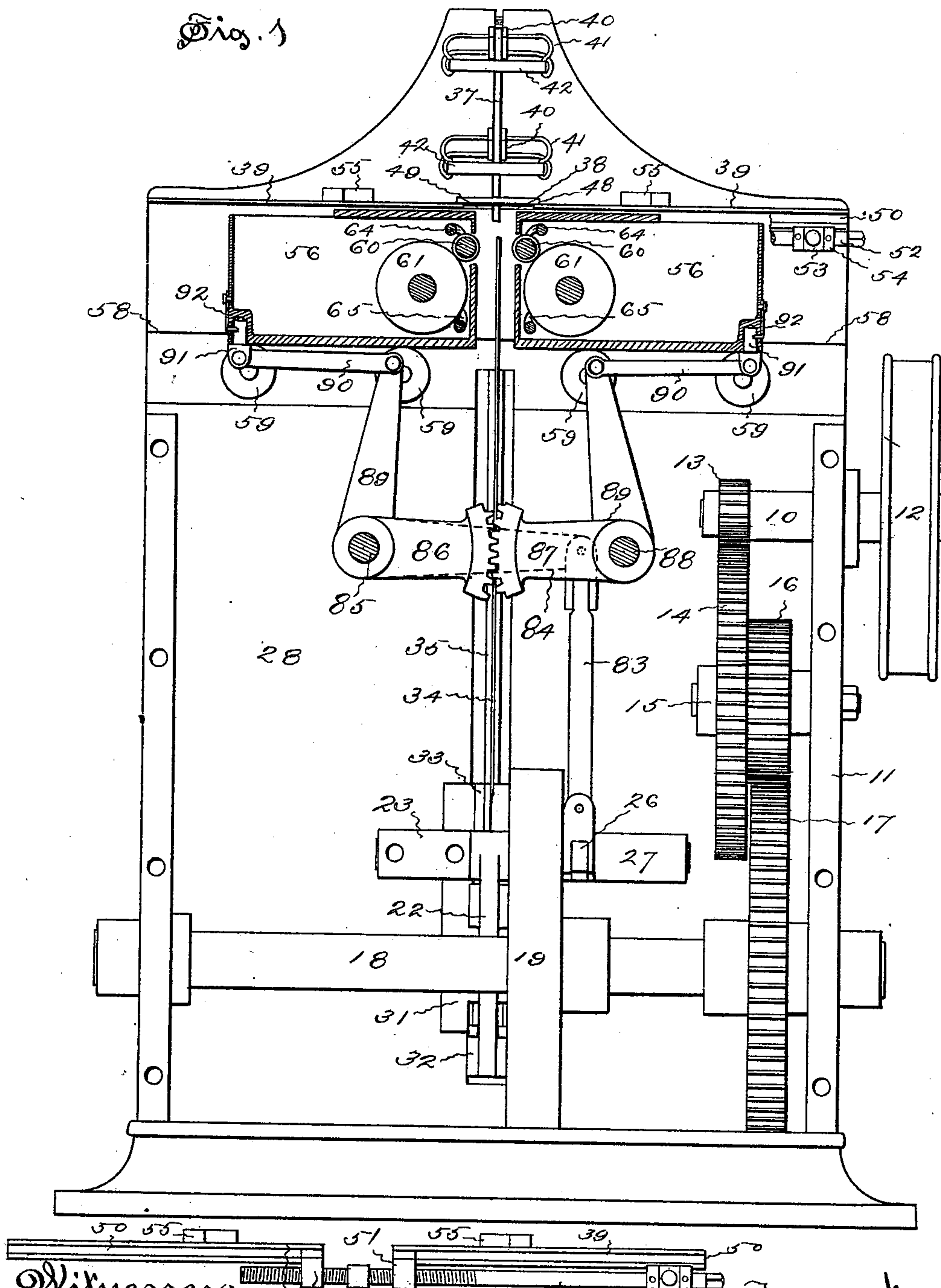
Patented Apr. 16, 1901.

A. I. JACOBS.
MACHINE FOR CASING-IN BOOKS.

(Application filed Oct. 4, 1900.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses:
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Fig. 8

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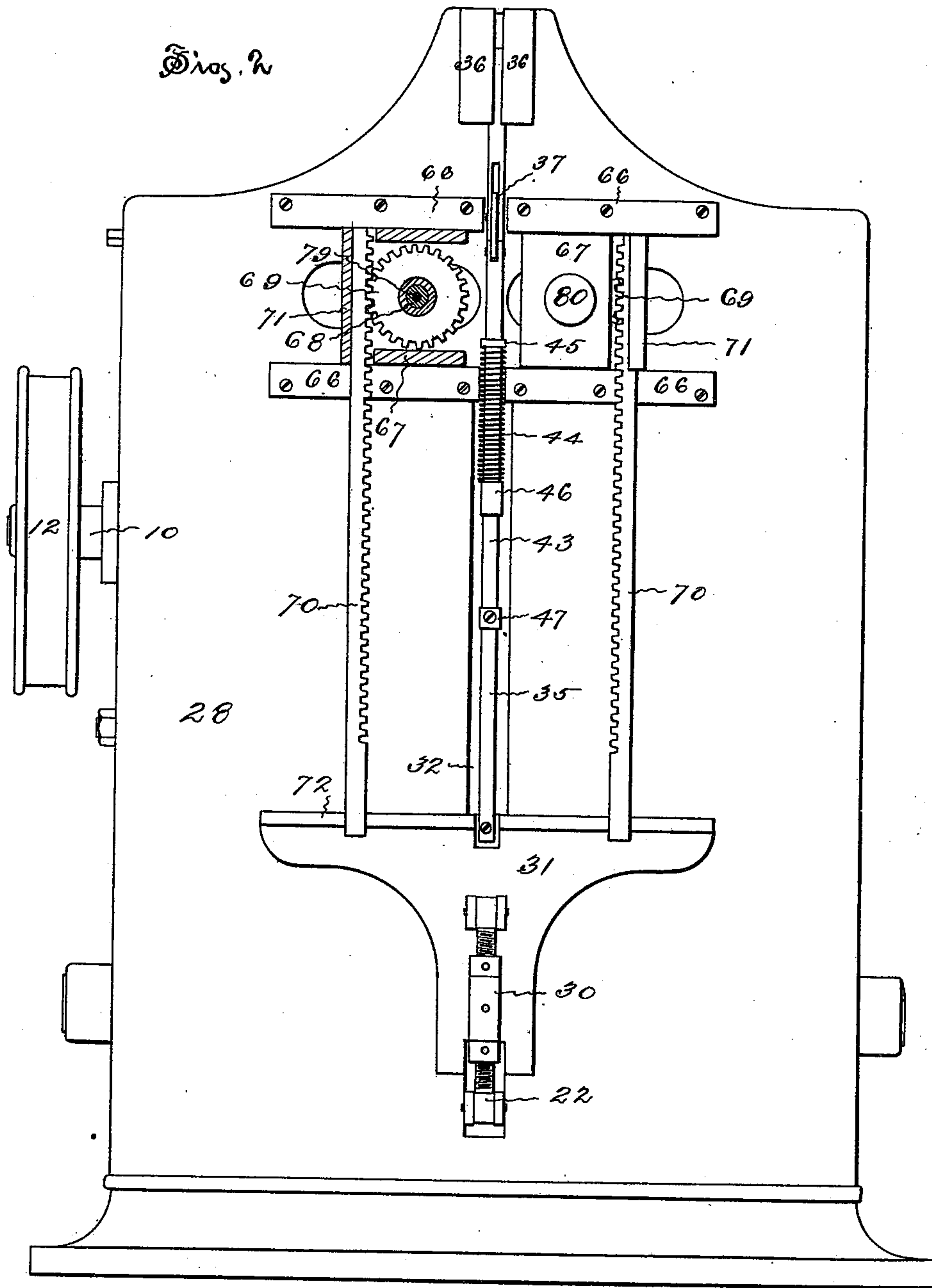
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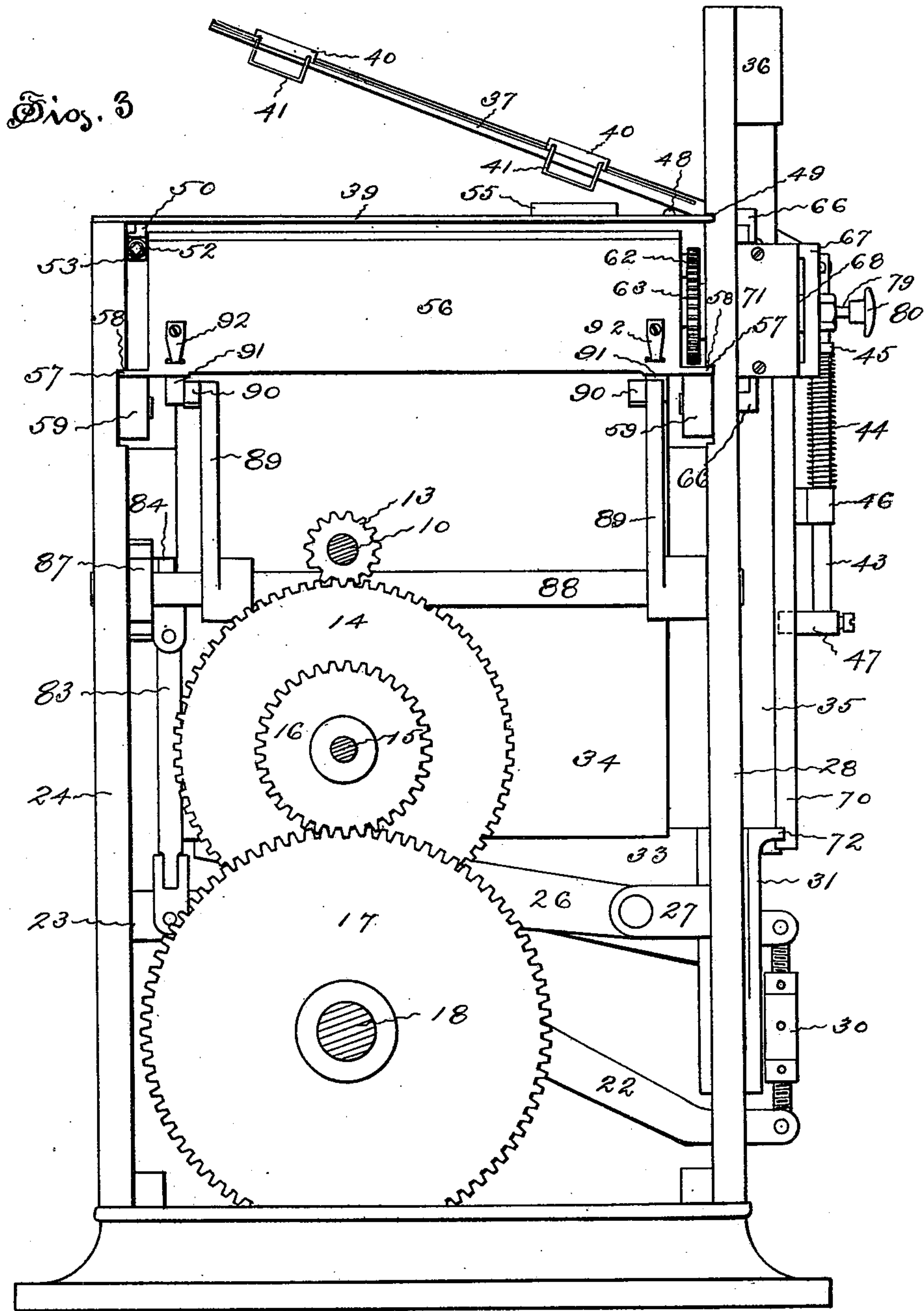
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5 Sheets—Sheet 5.

Fig. 6

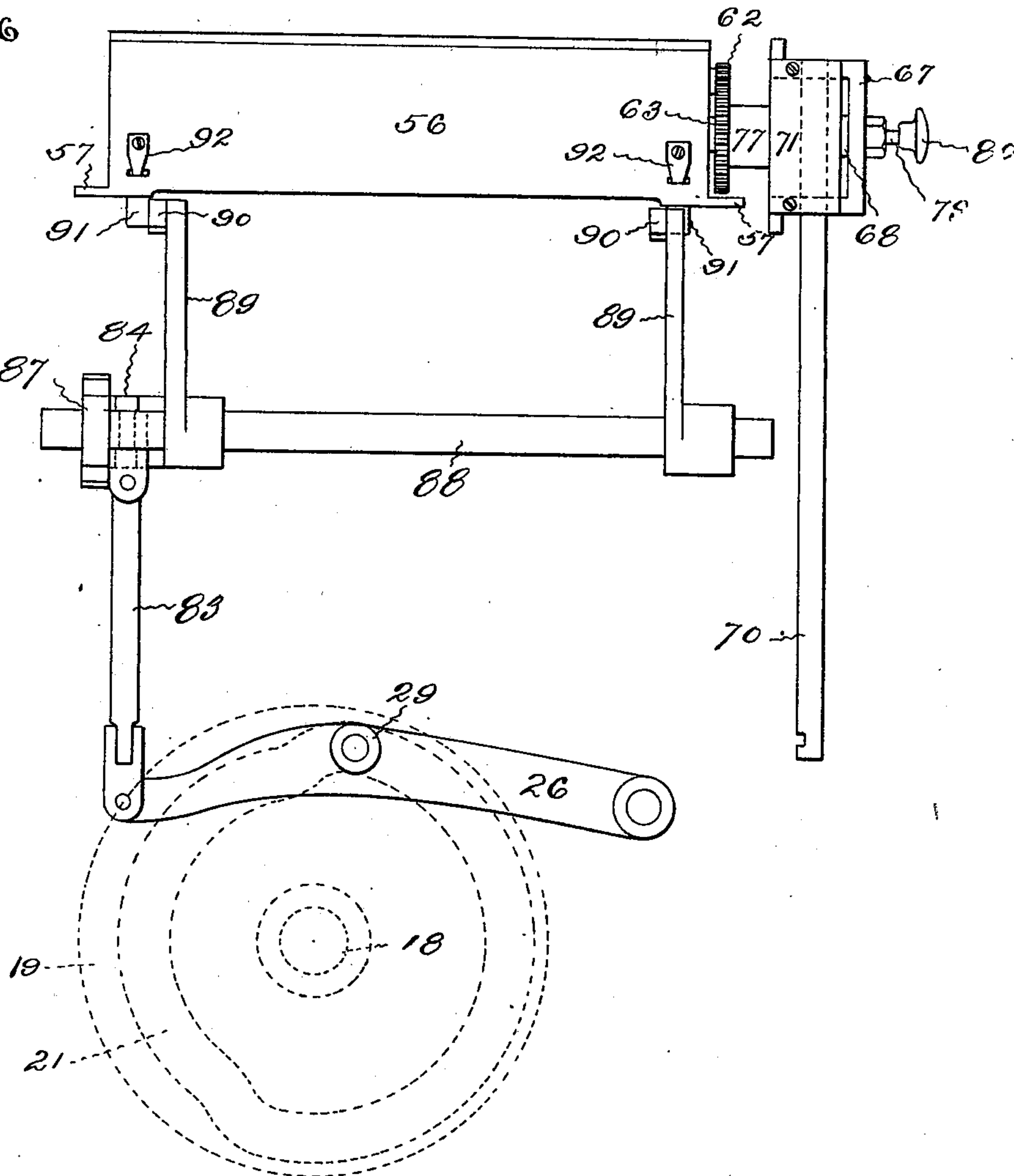
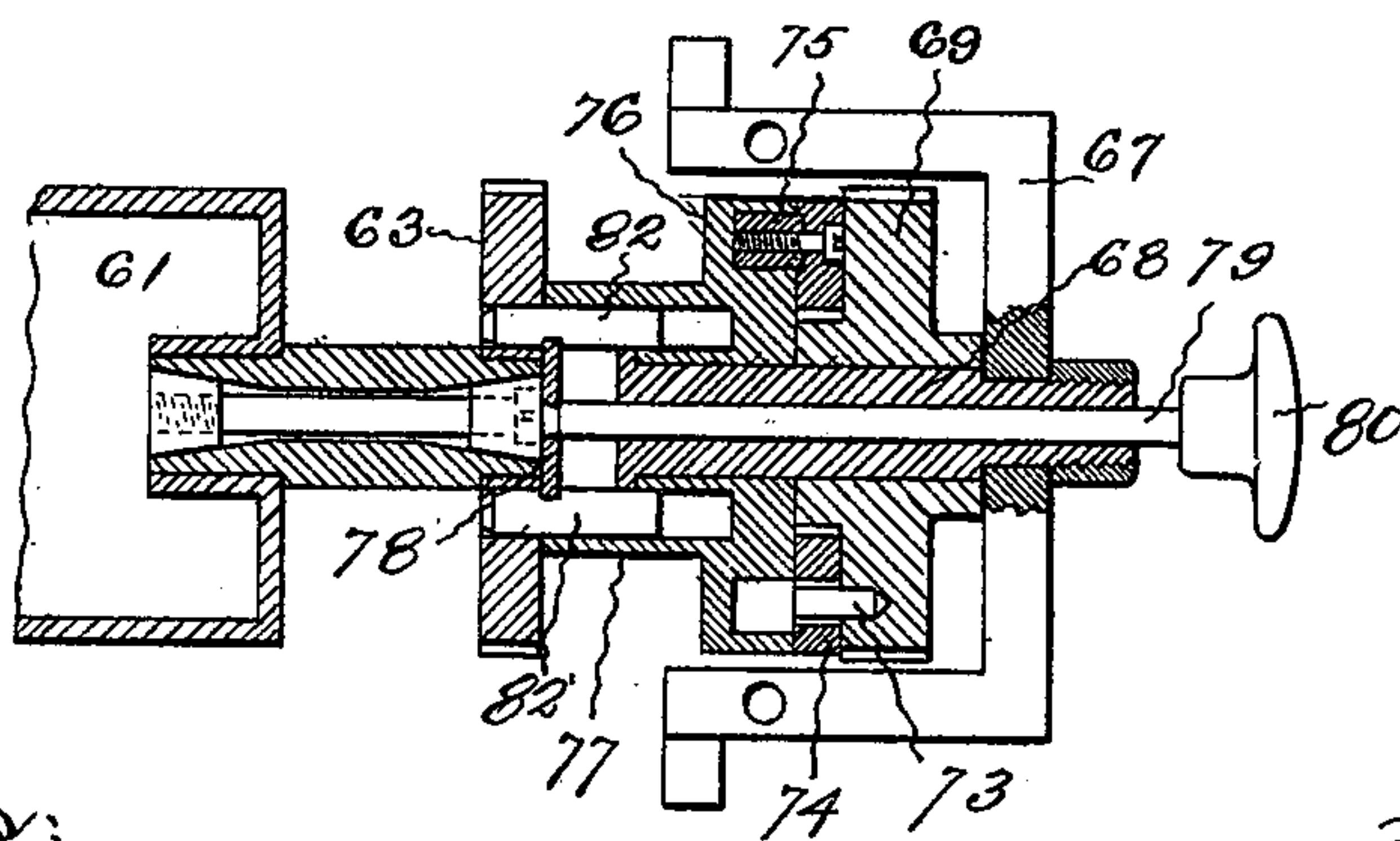


Fig. 7



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UNITED STATES PATENT OFFICE.

ARTHUR I. JACOBS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
SMYTH MANUFACTURING COMPANY, OF SAME PLACE.

MACHINE FOR CASING-IN BOOKS.

SPECIFICATION forming part of Letters Patent No. 671,963, dated April 16, 1901.

Application filed October 4, 1900. Serial No. 32,049. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR I. JACOBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Casing-In Books, of which the following is a specification.

This invention relates to a machine that is designed to receive unbound books and apply paste to the outer surfaces of the outside leaves and then pass the unbound books, with the paste-coated outside leaves, between the leaves of the cases which are to form the covers and that are secured to the books by the adhesion of the paste.

The object of this invention is to produce a simple and comparatively inexpensive machine to which unbound books of various dimensions may be quickly fed and be rapidly delivered into cases with the outer surfaces of the outside leaves properly coated with paste for causing satisfactory adhesion between the pasted leaves and the leaves of the cases.

The machine illustrated in the accompanying drawings as embodying the invention has a vertical plate for supporting the unbound book, mechanism for vertically reciprocating the plate, receptacles with paste-applying rolls, mechanism for causing the receptacles to move transversely from each other to allow the unbound book placed upon the plate to descend between the rolls and for causing the receptacles to move transversely toward each other, so that the rolls will apply paste to the outer surfaces of the outside leaves as the unbound book is raised between them on the plate, and adjustable means for supporting the case and for holding the back of the case against the back of the book as the book is raised and is being inserted between the leaves of the case.

Figure 1 of the views shows a front elevation of the machine with the front frame removed and the ends of the paste-receptacles cut away for the purpose of better showing the mechanisms. Fig. 2 shows a rear elevation of the machine with parts broken away in order to expose the mechanisms. Fig. 3 shows an elevation of the right-hand side

with the side frame removed. Fig. 4 shows a side elevation of the vertically-reciprocating book-supporting plate, the means for holding the back of the case against the back of the book, the pasting-rolls and the means for rotating them, and the mechanisms for actuating these parts. Fig. 5 shows a transverse section on the plane indicated by the broken line 5 of Fig. 4. Fig. 6 shows a side elevation of one of the paste-receptacles and the mechanism for reciprocating it. Fig. 7 is a sectional view, on a larger scale, showing the method of detachably connecting the paste-applying rolls and the mechanism for rotating the rolls; and Fig. 8 is a detail view showing the front edge of the case-supporting plates and their adjusting mechanism.

The shaft 10, held in suitable bearings supported by the side frame 11, carries a driving-pulley 12 on the outside and a pinion 13 on the inside of the frame. This pinion meshes with a gear 14, mounted on a stud 15, projecting inwardly from the side frame, and connected with this gear is a gear 16, that meshes with a gear 17, mounted on the cam-shaft 18, that extends across the machine and is supported at each end by bearings in the side frames, Fig. 1.

On the cam-shaft is a disk 19, having in one face a cam-groove 20, Fig. 4, and in the other face a cam-groove 21, Fig. 6. A lever 22, having one end pivotally connected with a bracket 23, that is attached to the front frame 24, bears a roll 25, that runs in the cam-groove 20, Figs. 1, 3, and 4. A lever 26, having one end pivotally connected with a bracket 27, that is attached to the back frame 28, bears a roll 29, that runs in the cam-groove 21, Figs. 1, 3, and 6. The free end of the lever 22, by an adjustable link 30 outside of the rear frame, is connected with a slide 31, that is free to be moved up and down the rear frame. An opening 32 is made through the rear frame, and the slide extends through this opening and has a part back of and a part front of the back frame, Figs. 1, 3, 4, and 5. An arm 33 is attached to the front part of the slide, so as to project toward the front of the machine, and a plate 34 is secured to this arm, so as to extend from front to rear in a vertical plane about the middle of the

machine. The book to be cased is opened at substantially its middle and placed, back up, on this plate when at the upper limit of movement of the slide, Figs. 1 and 4. A bar 35 is attached to the upper edge of the back part of the slide. The upper end of this bar, as it moves with the slide, is guided by gibs 36, that are secured to the back frame near the top, Figs. 2 and 3. Extending through and pivotally held in a mortise near the upper end of this bar is a presser-arm 37. The forward end of this presser-arm extends through a slot in the back frame and projects above the opening 38 between the table plates 39. Movable along the presser-arm are blocks 40, projecting from the sides of which are frames 41. The frames of each block are connected by a yielding web 42, Figs. 1 and 4. The rear end of the presser-arm 37 is loosely connected with a rod 43, that freely passes through a perforation in a block 46, that is fastened to and moves vertically with the bar 35. A spring 44 is placed on the rod 43 between the collar 45, that is fastened to the rod, and the guide-block 46, that is attached to the bar 35, so as to thrust upwardly the rod and rear end of the presser-arm that is connected with the rod. Adjustably fastened to and movable with the end of the rod 43 is a collar 47. This collar extends close to but is not fastened to the bar 35, Figs. 2 and 4. The bar, with the pivoted presser-arm and the rod, spring, guide, and collars, moves up and down with the slide and book supporting plate. The spring tends to push up the rear end of the presser-arm. When the bar is drawn down nearly to the lower limit of movement, the front end of the arm engages with a bar 48, that extends across the rear end of the opening between the table-plates. This obstruction as the bar descends farther causes the arm to oscillate against the pressure of the spring and the front to be lifted, as shown in the views, so that a case may be placed beneath it on the table-plates. When the bar is lifted, as the pivot of the arm is carried above the obstructing-bar the spring pushes up the rear end of the presser-arm and the front end moves downwardly until the presser-frames rest upon the back of the case that is placed upon the table-plates. The presser-frames continue to rest upon and hold the back of the case to the back of the unbound book as the book is lifted by the upward movement of the slide and plate. The flexible presser-frames and webs conform to the back and closely press the back of the case to the back of the book. The presser-frames are adjustable back and forth on the presser-arm, so as to engage cases of varying size near the front and rear edges. As the bar 35 approaches the upper limit of its movement the collar 47, fastened to the rod 43, that is attached to the back end of the presser-arm, engages with and is held from further upward movement by the bottom edges of the gibs 36, that are secured to the back frame, Figs. 2 and 3. The back end of the

presser-arm is thus held by the engagement of the collar 47 on the rod with the bottom edges of the gibs, so that the continued upward movement of the bar 35, carrying the pivot of the presser-arm, causes the front end of the presser-arm to swing upwardly away from the top edge of the vertical book-supporting plate. The shank of the guide-block 46 is shaped so as to freely pass through the opening between the gibs. This lifting of the front portion of the presser-arm at the upper limit of movement of the bar which carries it clears the vertical book-supporting plate, allowing the free removal of a book that has been inclosed in a case and the placing of an unbound book which is to be pasted and inclosed in a case.

The table-plates are supported at the back by a groove 49 in the rear frame and at the front by the upper edge of the front frame. Gibs 50 are secured to the under sides of the table-plates for holding the front edges in position, Fig. 3. Projecting from the bottoms of the plates are perforated lugs 51, one having a right-hand thread and the other a left-hand thread. A shaft 52, having corresponding right and left threads, turns in these lugs and extends loosely through a retaining-block 53, secured to the back side of the front frame. Each side of the block the shaft bears a collar 54. At one side of the machine this shaft is squared for the application of a wrench or handle, which when turned causes the plates to be moved toward or from each other, according to the direction of rotation, to adjust the width of the opening between them, Figs. 1 and 8.

Movably attached to the tops of the table-plates are registering-blocks 55. The registering-blocks are set so that the cases put on the plates and moved up to them will rest properly over the opening between the plates.

The paste-receptacles 56 have flanges 57 along their lower front and rear corners. These flanges extend beneath shoulders 58, formed on the inside walls of the front and back frames, and rest upon rolls 59, that are mounted upon studs projecting from the frames, Figs. 1 and 3. Each receptacle is provided with a paste-applying roll 60 and a roll 61 for spreading the paste upon the applying-roll. The shaft of each applying-roll has a pinion 62, that meshes with a gear 63 upon the shaft of each spreading-roll, so that the rolls will rotate together. A scraper 64 is located adjacent to each applying-roll, and a scraper 65 is located adjacent to each spreading-roll to keep the surfaces of those rolls in proper condition for best applying the paste, Figs. 1 and 3.

Secured to the back side of the rear frame near the top are horizontally-arranged gibs 66. Yokes 67 are held by these gibs, so as to move horizontally toward and from the middle of the machine across the back of the rear frame, Figs. 2 and 3. Each of these yokes supports a hollow stud 68, mounted

upon which is a gear 69. Meshing with each of these gears is a rack 70, that is held by a plate 71, attached to the yoke, so that while it is free to move vertically it will move transversely with the yoke. The lower end of each of the rack-bars is mortised, and extending into these mortises is a rib 72, that projects rearwardly from the back part of the slide 31. This method of attachment permits the rack-bars to slide transversely with the yokes and keep in mesh with the gears, and yet be raised and lowered by means of the slide, Figs. 2 and 4.

Loosely surrounding a hub extending from each gear 69 and loosely connected with the gear by a pin 73 is a pawl-ring 74, that has a common friction-pawl 75, adapted to engage the walls of the groove of the driving-ring 76. This driving-ring has a hollow hub 77, in which is a disk 78, attached to the end of a rod 79, that extends through the supporting-stud, and is provided on the outside with a handle 80. The disk engages two loose pins 82 in the hub of the driving-ring. When the handle is pushed inwardly, the pins pass into perforations in the gear 63, that is attached to the shaft of the paste-spreading roll, Fig. 7. With these parts thus connected the vertical reciprocation of the rack-bars through the driving-gears and pawl mechanisms will cause the paste spreading and applying rolls to rotate. When the handle is pulled outwardly, the pins are disengaged from the perforations in the spreading-roll gears, leaving the mechanisms so disconnected that the paste-receptacles may be withdrawn from the machine, Figs. 3 and 7.

A link 83 connects the front end of the lever 26 with a rocker-arm 84 on the shaft 85, which has a rocker-arm 86, with a segmental rack that meshes with a segmental rack on the rocker-arm 87, extending from a shaft 88. Near the front and back frames the shafts 85 88 have rocker-arms 89, and the upper ends of these vertical rocker-arms are connected by links 90 with studs 91, that extend into perforations in the bottom walls of the paste-receptacles. Springs 92, attached to the outer walls of the paste-receptacles, have their ends bent to pass through openings in the walls into slots in the studs and hold the studs from dropping downwardly, Figs. 1, 3, and 6. The rotation of the cam-disk through these levers, links, and rocker-arms causes the paste-boxes to reciprocate on the rolls toward and from each other. By pulling out the springs 92 the studs 91 are free to be withdrawn from the sockets in the paste-receptacles, thus disconnecting the mechanisms, so that the receptacles may be withdrawn for cleaning.

When the cam has caused the mechanisms to carry the book-supporting plate to the upper limit of movement, the presser-arm is raised, allowing a book to be placed upon the plate. The continued movement of the cam then causes the mechanisms to draw down

the book-supporting plate, the presser-arm bar, and the pasting-roll racks. While the book-support, with the unbound book, is coming down, the other cam causes the mechanisms to draw the paste-receptacles apart, leaving free space between the pasting-rolls for the book to descend. When the support carrying an unbound book is down and the presser-arm is lifted, a case is laid upon the table-plates, with the middle of its back over the opening between them and above the back of the book. Continued movement of the cams causes the mechanisms to first move the paste-receptacles toward each other, so that the paste-applying rolls will press against the outer surfaces of the outside leaves of the book. Then as the book-support is raised the outer leaves being borne upon by the rotating pasting-rolls are coated with paste. As the book-support rises the presser-arm comes down and its frames hold the back of the case against the back of the book, and when the book, with the outer surfaces of the outside leaves coated with paste, emerges through the opening between the table-plates and lifts the back of the case the sides of the case are pressed against the pasted surfaces, so that they will adhere. The book, with the case in position, is taken from the support and placed in any ordinary press until the adhesive material becomes set.

The unbound books are quickly slipped upon the supporting-plate of this machine, which first carries the books downwardly between the open paste-receptacles and then carries the book upwardly with the receptacles closed, so that the rolls bear against the sides of the book. The cases are easily placed on the table and are accurately located on the book. The mechanisms are simple, and by simply detaching the studs which connect the reciprocating mechanisms with the paste-receptacles and by drawing out the rods which connect the rotating mechanisms with the paste-spreading rolls the paste-receptacles are free to be withdrawn from the machine for cleaning.

I claim as my invention—

1. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

2. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls and paste-spreading rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, and a case-support extending each side of the plane of the book-

support and above the receptacles, substantially as specified.

3. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls and paste-spreading rolls carried by the receptacles, scrapers engaging the peripheries of the rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

4. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls and paste-spreading rolls carried by the receptacles, mechanism for rotating the rolls, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

5. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for rotating the rolls, means for connecting and disconnecting the rolls and the roll-rotating mechanism, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

6. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, means for connecting and disconnecting the receptacles and the receptacle-reciprocating mechanism, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

7. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, a case-support extending each side of the plane of the book-support and above the receptacles, and means for adjusting the case-supports

toward and from each other, substantially as specified.

8. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, a case-support extending each side of the plane of the book-support and above the receptacles, an arm for pressing the back of the case to the back of the book, and mechanism for moving the arm, substantially as specified.

9. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, a case-support extending each side of the plane of the book-support and above the receptacles, an arm for pressing the back of the case to the back of the book, mechanism for moving the arm, and yielding frames carried by the arm, substantially as specified.

10. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, a case-support extending each side of the plane of the book-support and above the receptacles, an arm for pressing the back of the case to the back of the book, mechanism for raising and lowering the arm, means for causing the arm to oscillate at its upper limit and means for causing the arm to oscillate at its lower limit, substantially as specified.

11. In a book-casing machine in combination, a vertical book-support, mechanism for reciprocating the support vertically, movable paste-receptacles, paste-applying rolls carried by the receptacles, mechanism for rotating the rolls, means for connecting and disconnecting the rolls and the roll-rotating mechanism, mechanism for reciprocating the receptacles transversely toward and from the plane of the book-support, means for connecting and disconnecting the receptacles from the receptacle-reciprocating mechanism, and a case-support extending each side of the plane of the book-support and above the receptacles, substantially as specified.

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