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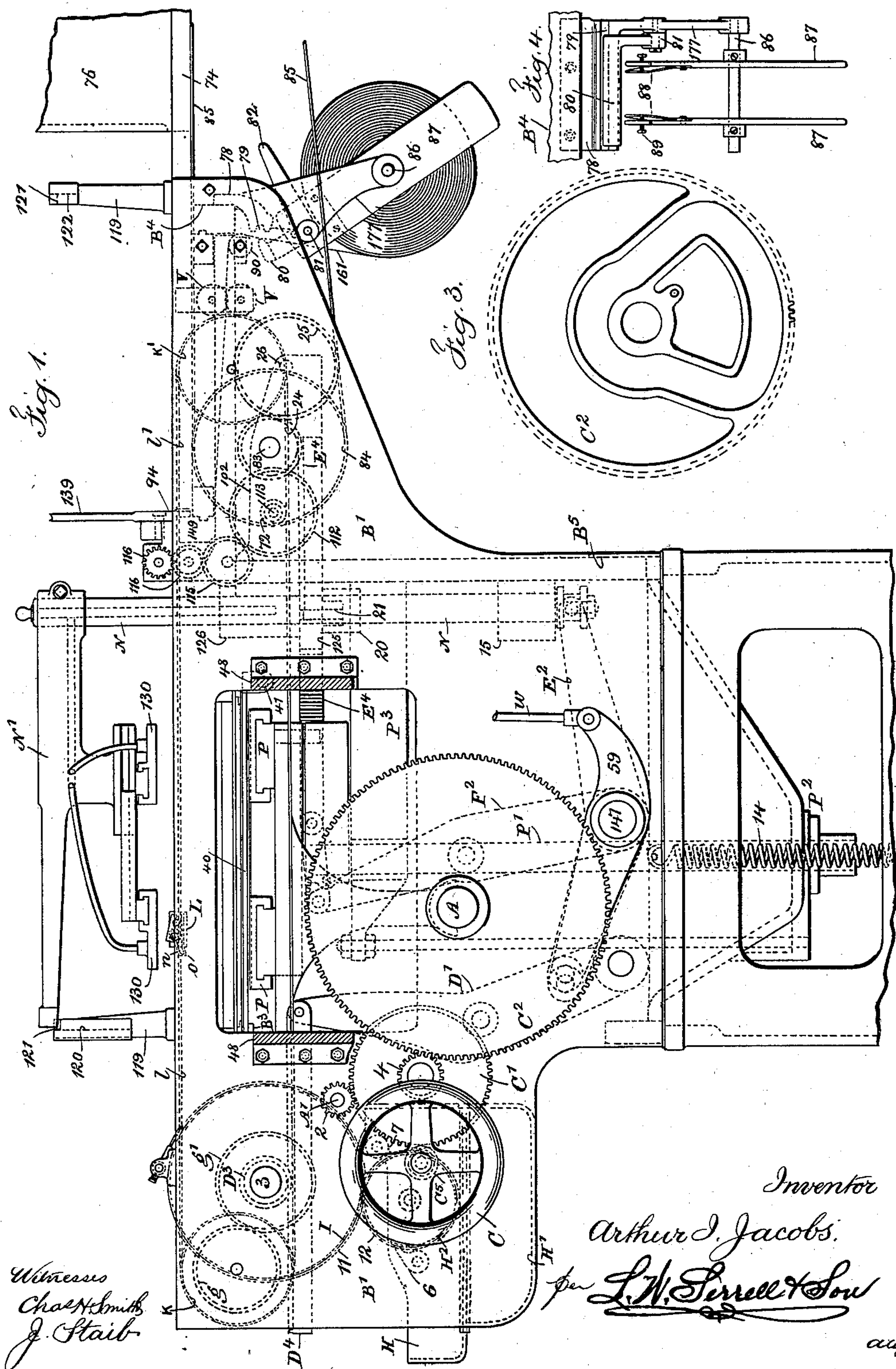
Patented Nov. 13, 1900.

A. I. JACOBS.
BOOK COVER MACHINE.

(Application filed Jan. 20, 1900.)

(No Model.)

6 Sheets—Sheet 1.



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6 Sheets—Sheet 2.

Fig. 2.

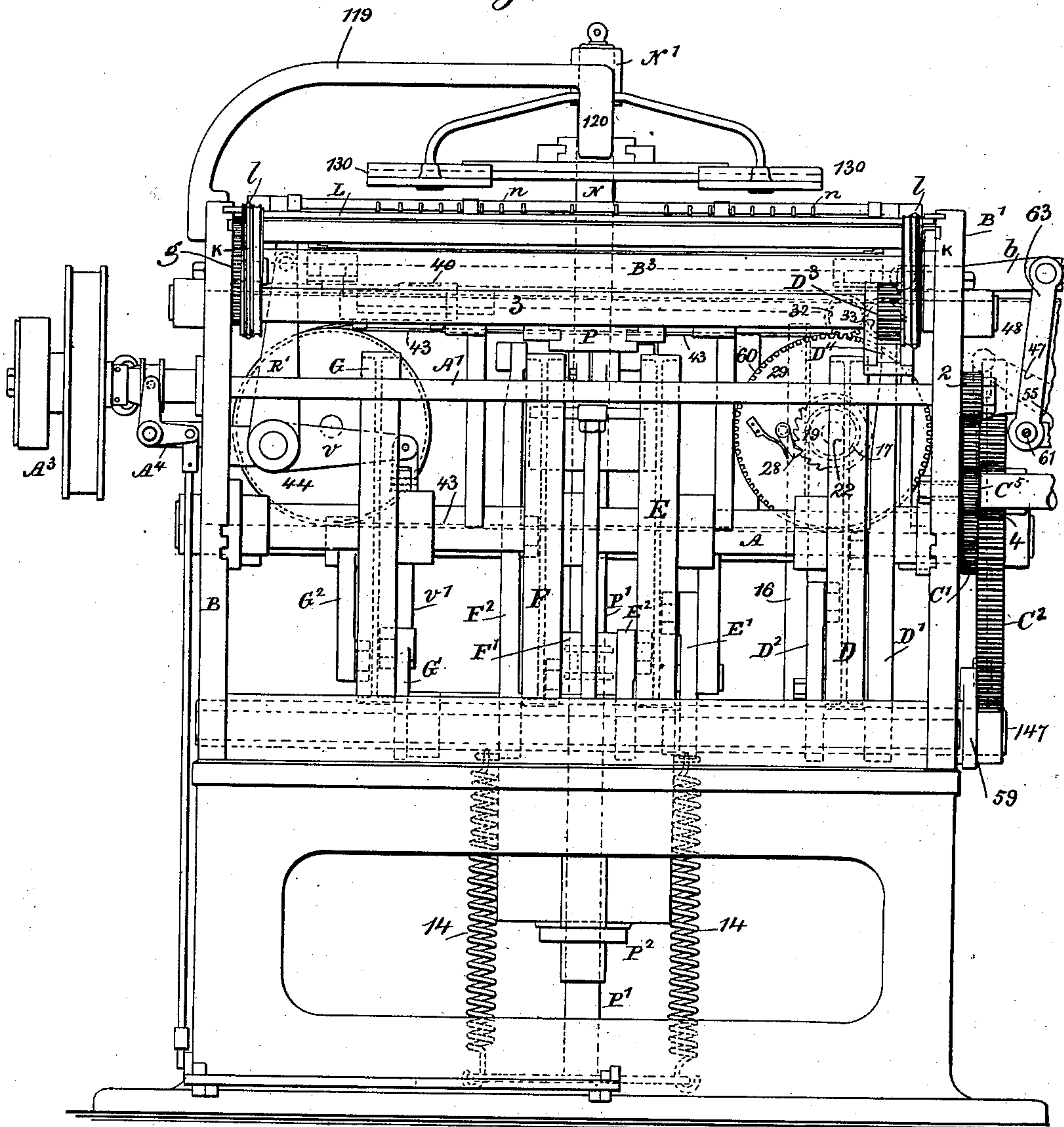
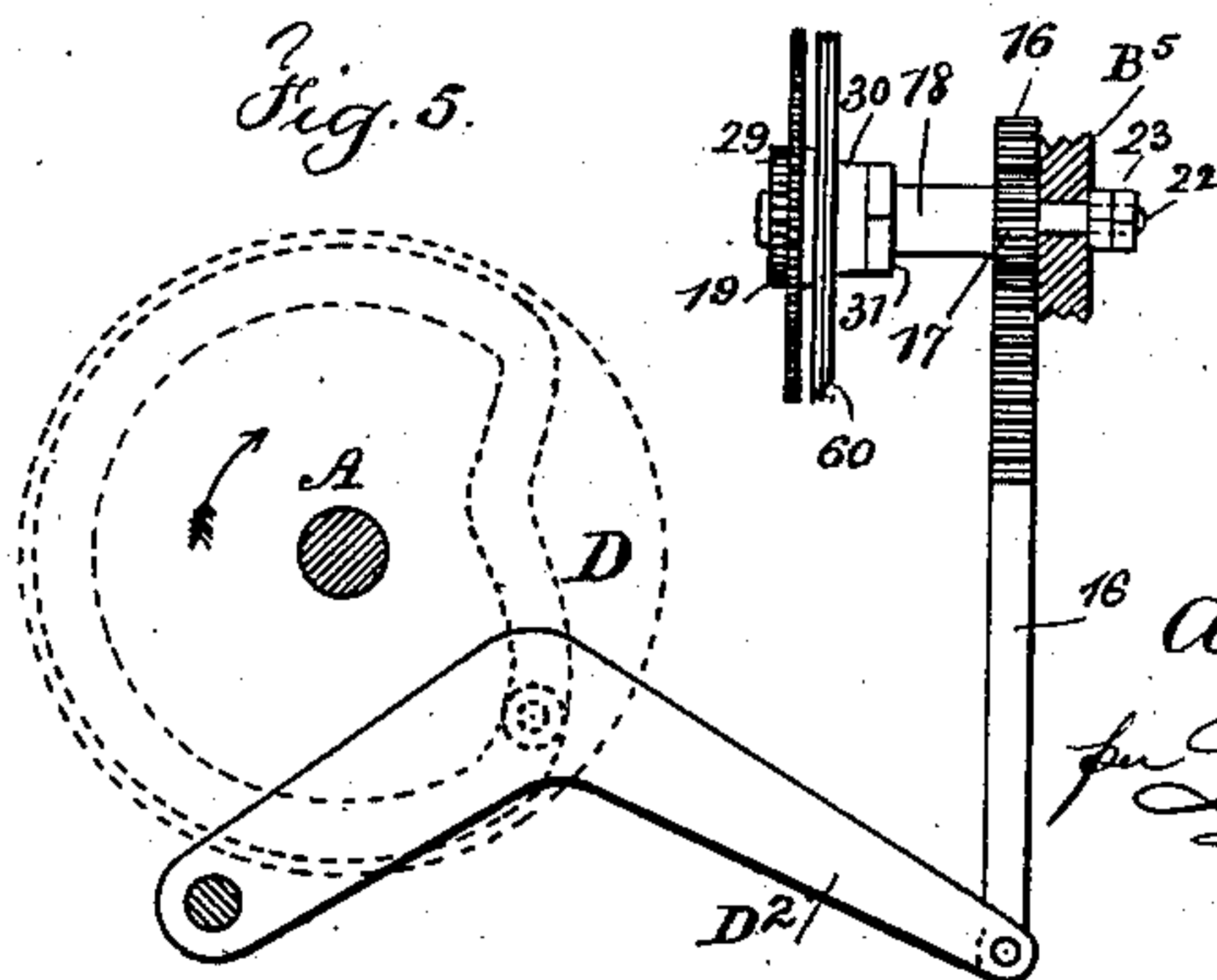


Fig. 5.



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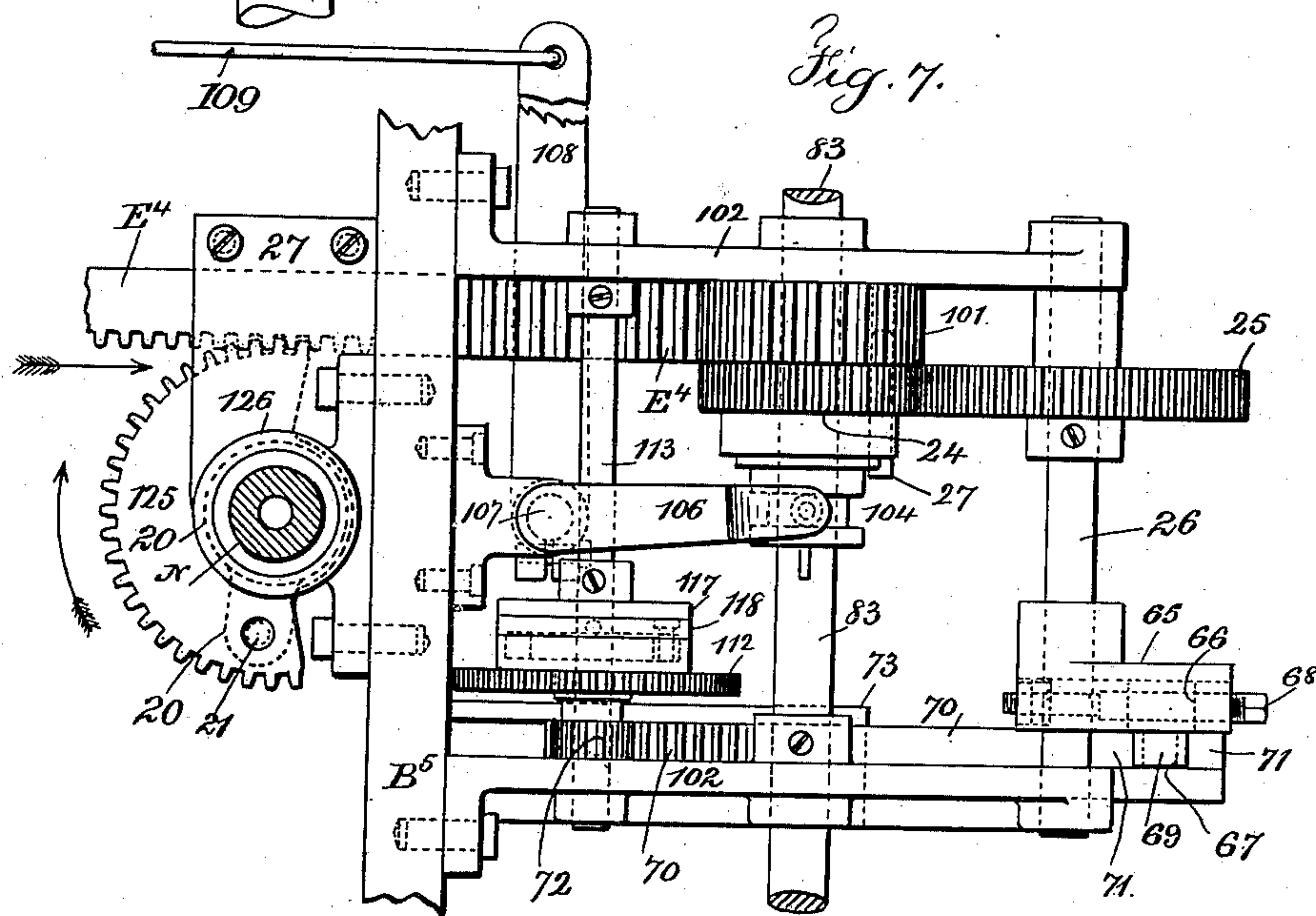
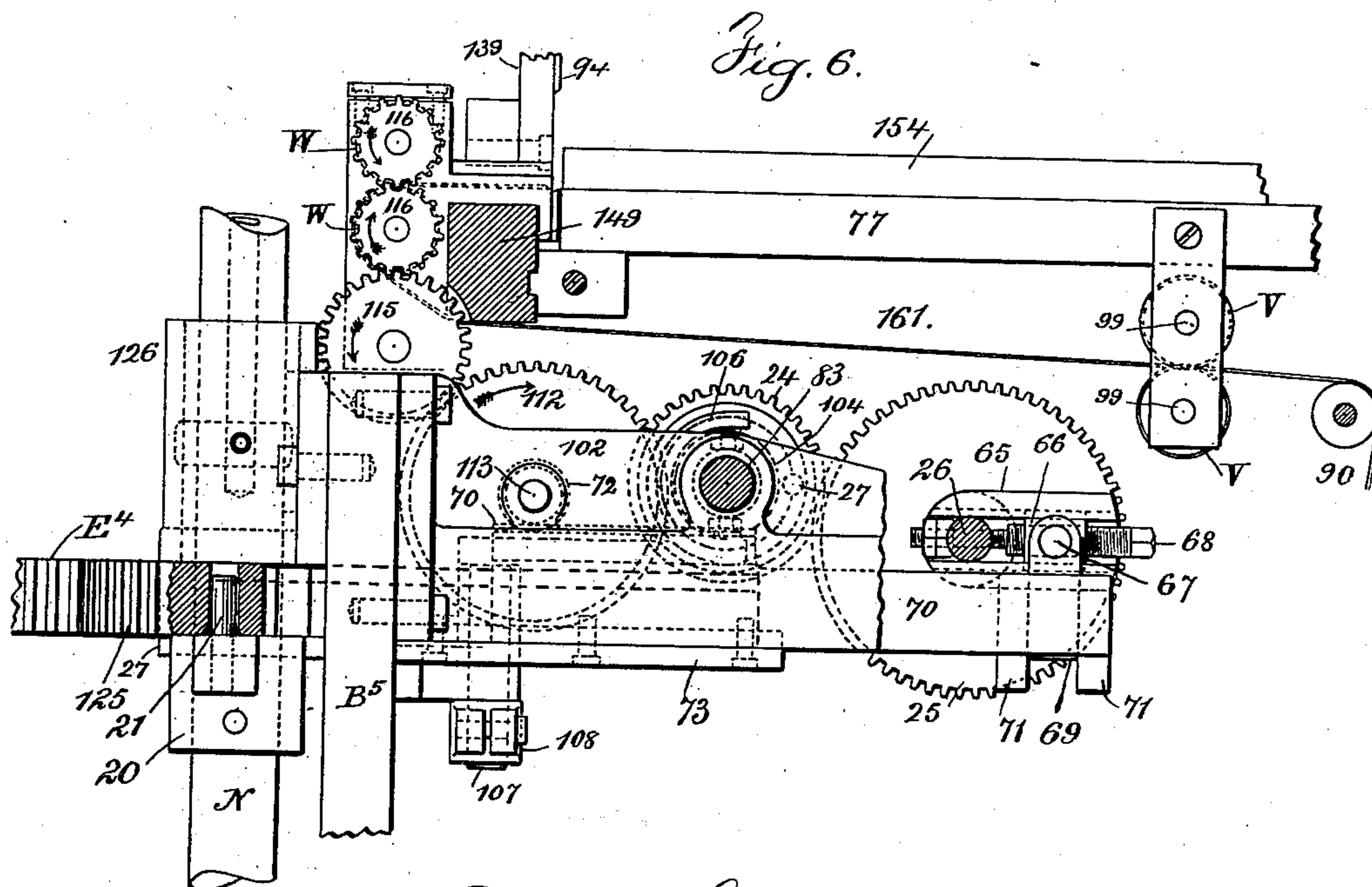
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(No Model.)

6 Sheets—Sheet 3.



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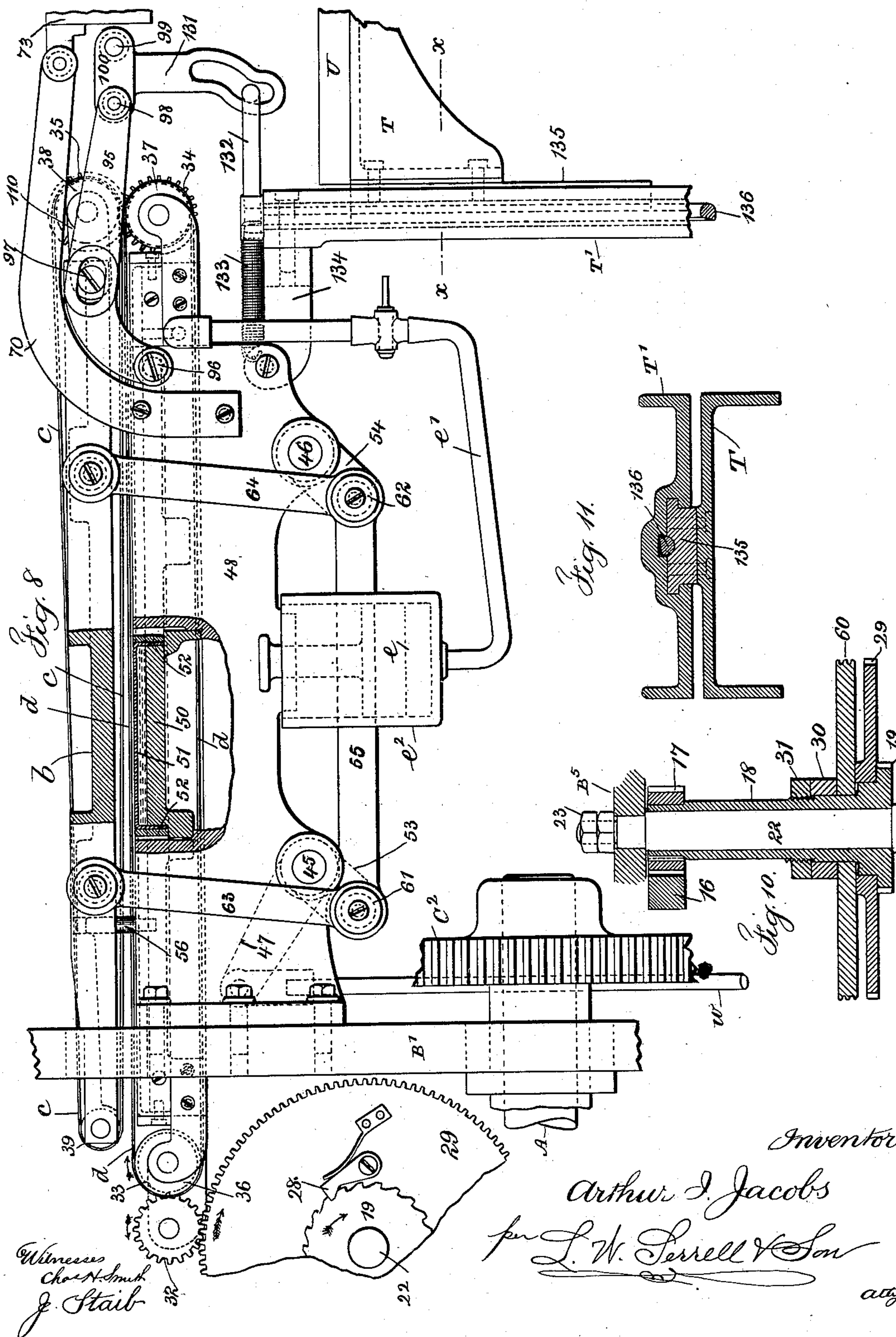
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(No Model.)

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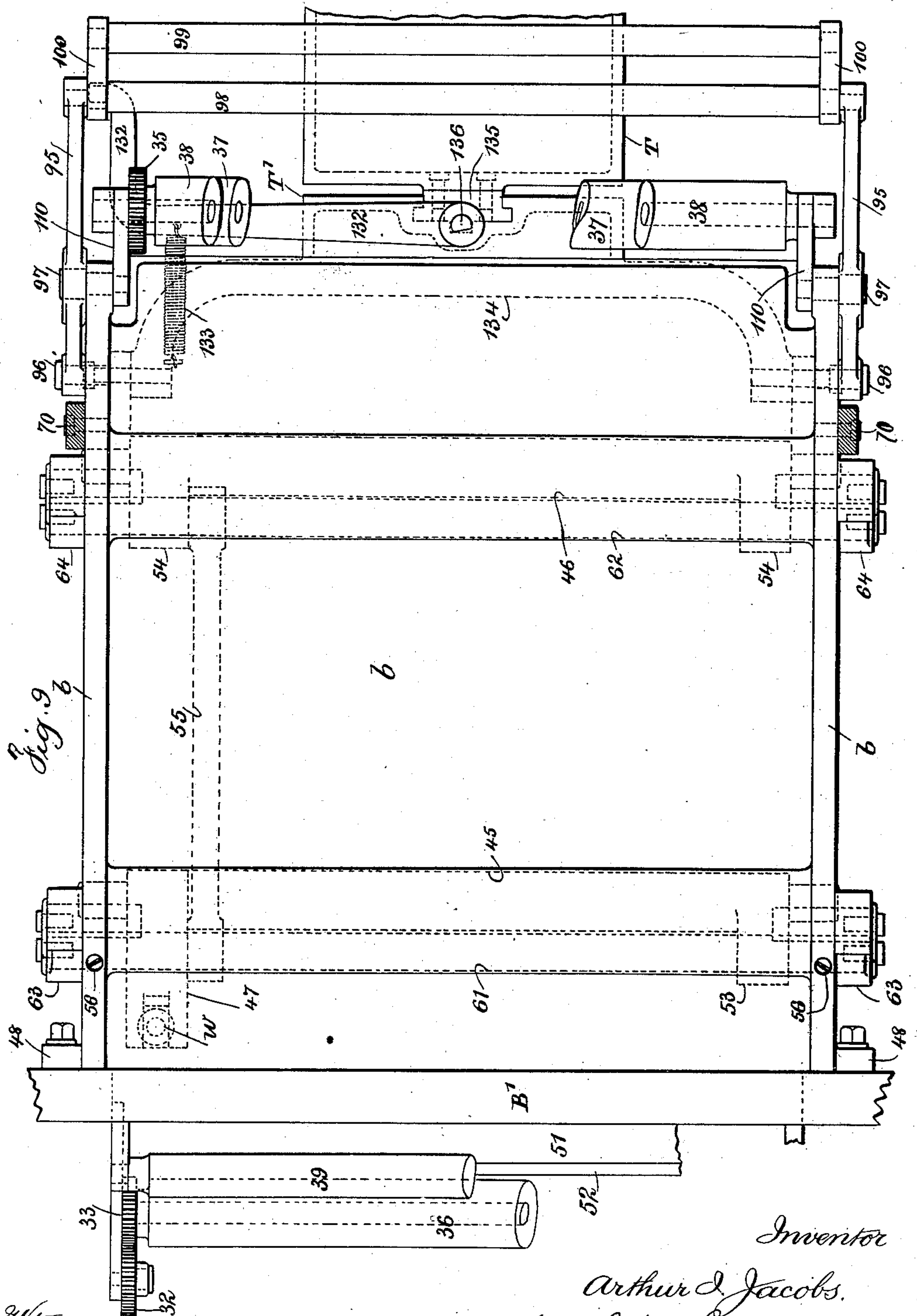
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(Application filed Jan. 20, 1900.)

(No Model.)

6 Sheets—Sheet 5.



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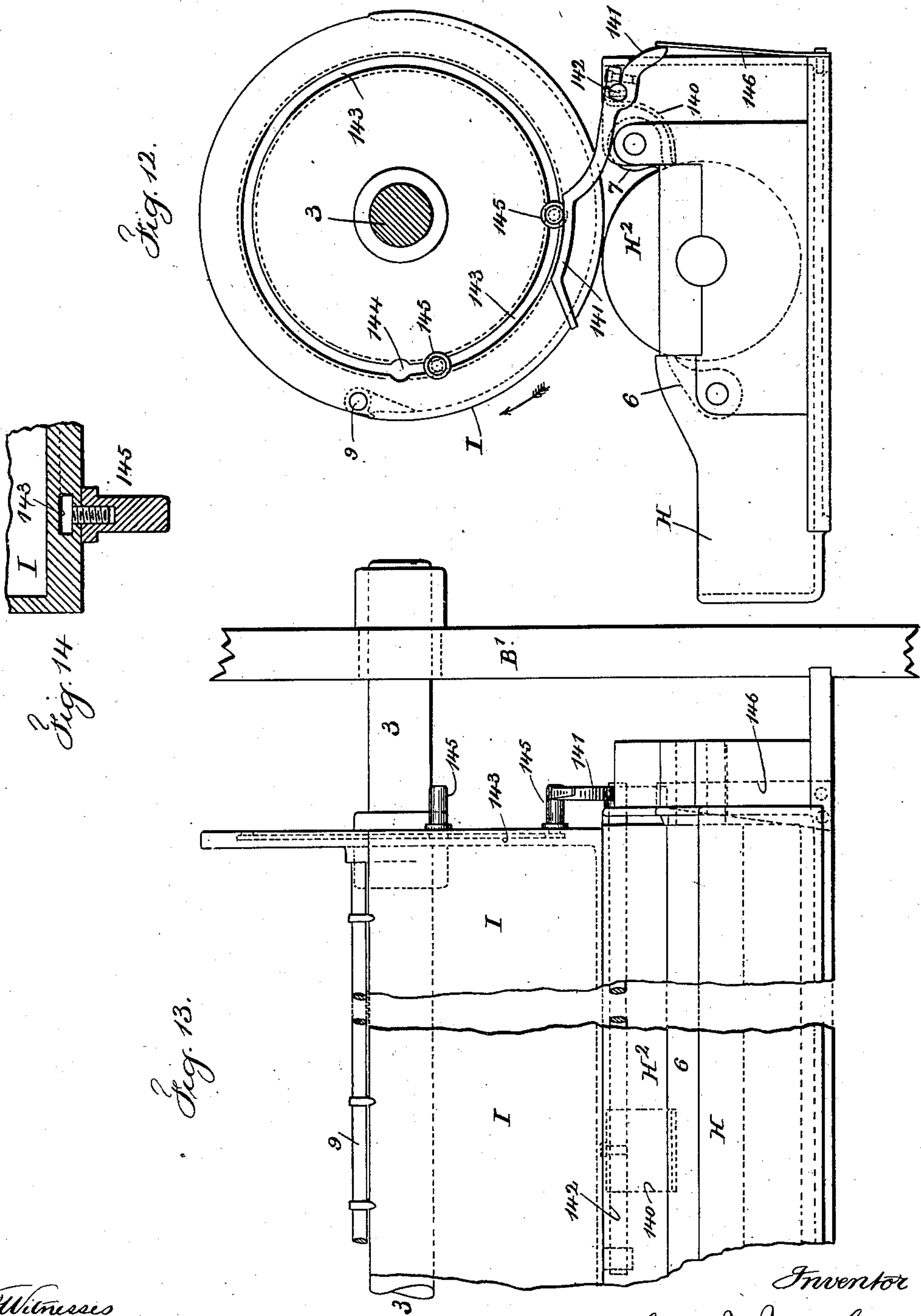
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BOOK COVER MACHINE.

(Application filed Jan. 20, 1900.)

(No Model.)

6 Sheets—Sheet 6.



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UNITED STATES PATENT OFFICE.

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

BOOK-COVER MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,763, dated November 13, 1900.

Application filed January 20, 1900. Serial No. 2,093. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR I. JACOBS, a citizen of the United States, residing in the city and county of Hartford, in the State of Connecticut, have invented an Improvement in Machines for Making Book-Covers, of which the following is a specification.

My present invention is designed as an improvement upon the devices shown and described in Letters Patent granted to me April 6, 1897, No. 580,111, as well as upon another and prior patent granted to The Smyth Manufacturing Company as assignee of myself and others.

In the device of Letters Patent No. 580,111 certain difficulties were experienced in regard to the vertically-moving picker-shaft and the proper alinement of the same in taking up and laying down the cover-boards and in the movement of the same between the taking up and the laying down of the boards, and difficulties were occasionally experienced in discharging the completed cover from the forming to the finishing part of the machine, because once in a while a cover was liable to catch and to be damaged in the said devices. Difficulties were also experienced in connection with the devices for feeding the cover into and out of the press, and difficulties were experienced in connection with the feed of the back-lining strip, and, further, in connection with the support for the pile of superposed and finished covers; and the object of my invention is to overcome these difficulties.

In my present improvement, as in the machine of the former patent, the glue-cylinder is revolved first in one direction and then in the other, and there are scrapers acting in opposite directions, and any foreign materials, as well as nearly all the glue adhering to the surface of the cylinder, are scraped off by one of the scrapers. The other scraper allows the surface from which the glue is taken to the muslin to have the proper quantity of glue upon it, and it is kept free from foreign substances. The cloth or cover fabric for the sides or backs of the covers is cut out of the proper shape and is received upon a cloth-cylinder and is held by grippers at the advancing edge, and the cloth is brought into contact with the glue-roll as the cylinder

makes one revolution, and in this revolution the surface of the cloth receives the glue to the extent required. The cloth glued is taken by grippers upon a gripper-bar, that is moved laterally to carry the cloth over and leave it upon a platform that is moved up to position. As in the former patent, the cover-boards are piled in receptacles, and the bottom board from each pile is carried out into position to be taken by a picker device, and the parts are so constructed that the boards are guided at the outer and bottom edges and are brought accurately to position, so that the external measurements of the covers will be precisely alike, regardless of any inaccuracies in the sizes of the cover-boards themselves, and the back-lining is made from a strip of paper that is fed in progressively and of the proper length, corresponding to the height of the cover-boards, and there are cutters for determining the width of the lining, which cutters are adjusted simultaneously with the adjustment of the bars and parts that carry the cover-boards, so that the proper width of paper for the back-lining, according to the thickness of the book, is automatically insured. Hence a roll of paper of ample width adapted to the necessities of the back-lining strip is employed for various widths, because the surplus in the width is cut off automatically, and the back-lining after being cut to the desired width is projected into position between the two cover-boards and is cut off when the proper length has been projected and placed between the cover-boards. As in my former patent, pickers composed of hollow bars supported by an arm upon a vertical shaft are brought down upon the cover-boards and the back-lining and by a suction action these parts are picked up. The pickers and shaft receive a half-revolution, and the said parts are depressed and the cover-boards and back-lining brought down upon the glued muslin, and the pickers force the platform down, and side bars and edge-turners act upon the top and bottom edges of the muslin and fold the same over upon the board. The functions of folding the edges of the glued muslin over the cover-boards described in my aforesaid patent are also to be performed in the present machine; but they form no part of the illustration or de-

scription hereof. A discharge-slide carries the completed cover out laterally into a finishing-press and above a water-bag, as in the devices of the aforesaid patent, and there is a platen and toggle-bars that press down upon the cover, and the pressure is equalized by the action of the water-bag, so that the entire cover is not only held, but subjected to a pressure sufficient to cause the glue to firmly adhere, and the glue becoming chilled holds the cover firmly to the boards and back-lining. The platen is raised and the completed cover carried out by suitable devices, and the pile of covers is supported by a vertical rod and held by friction and allowed to descend progressively as the covers accumulate.

In my present invention there are novel features relating to the means for connecting the vertically-moving picker-shaft to the devices for actuating the same so as to insure a positive motion and to effect the periodical forward-and-backward swinging movement of the picker-shaft and pickers, so as to insure the parts positively taking their proper position. There are also novel devices connected to the discharger-slide, its pulleys and belts, and means for actuating the same, whereby as the completed cover is discharged from the machine provision is made for the operative devices to yield, so that no damage arises to the cover. There are also novel features for carrying the covers into the press and for discharging the same and for insuring the positive up-and-down movement of the platen and an endless band carried by it, so that the parts are kept in alinement and an even pressure is exerted. There are also novel means for regulating the feed of the back-lining strip automatically in proportion to the length of the same required for the height of the cover-boards and devices adapted to remove wrinkles or unevenness in the paper. There are also novel devices and means for actuating the same from the pile of superposed covers for progressively lowering the bracket carrying the covers and for frictionally holding the same in place, and further devices for scraping the glue from a portion of the glue-roll when the back-lining strips are not used, all of which are hereinafter more particularly described.

In the drawings, Figure 1 is an elevation at the right side of the machine with the press and adjacent connected parts removed, and the supports therefor are shown in section. Fig. 2 is an elevation of the machine with the glue vessel, roller, cylinder-roll, the hand-wheel, and the platen devices removed. Fig. 3 is an elevation of the press-cam. Fig. 4 is an elevation of the devices for supporting the roll of paper forming the back-lining strip. Fig. 5 is a diagrammatic view showing the devices for operating the discharger-slide. Fig. 6 is a sectional elevation of the devices for actuating the back-lining strip and governing the extent of feed of the same, and Fig. 7 is a plan view of the operative devices shown

in Fig. 6. Fig. 8 is an elevation and partial section of the devices for imparting to the platen and the upper band an up-and-down movement. Fig. 9 is a plan view of the parts shown in Fig. 8. Fig. 10 is a horizontal section of the friction devices employed in connection with the discharger-slide. Fig. 11 is a horizontal section at $x x$ of Fig. 8, showing the friction devices connected with the bracket supporting the pile of superposed covers and by which the same are progressively lowered. Fig. 12 is a side elevation; Fig. 13, a partial elevation of the parts for operating the scraper that entirely removes the glue from a portion of the glue-cylinder when the back-linings are not applied to the covers; and Fig. 14 is a section, in larger size, representing the manner of connecting the removable pins to the cloth-cylinder.

Where there are parts shown and described in the present application that correspond with parts shown and described in my former patent hereinbefore referred to, these parts have been given the same characters of reference for identification, and only in this particular have corresponding characters of reference been employed.

The cam-shaft A is supported by the frames B B', and it is driven in the present device from a motor-shaft A' by pulleys A³, which are controlled by a clutch mechanism A⁴, the said motor-shaft having thereon a pinion 2, meshing with the gear C', on the shaft of which a pinion 4 meshes with the teeth of the gear C². In this way the cam-shaft A can be driven with the necessary power, and the same can be stopped when necessary by operating the clutch A⁴, Fig. 2; and in order to move the cam-shaft A when said clutch is disconnected a hand-wheel C may be operated, and upon the shaft of the same is a pinion C⁵, meshing with the teeth of the gear C', so as to communicate movement to the gear C² upon the said cam-shaft. These various gears are outside of the frame B' of the machine and are shown particularly in Figs. 1 and 2.

Upon the cam-shaft A (see Fig. 2) the cam D is shown, and the same is grooved upon the right side to act upon the rack-lever D', that gives motion to the cloth-cylinder I. The groove on the left side of the cam D acts upon the rack-lever D², that gives motion to the discharger-slide. The cam E is grooved on its right side to operate the lever E' to the exhaust-pump of the machine, and the groove on the left side of the cam E acts upon the lever E² for raising and lowering the picker-shaft N. The cam F is grooved upon its right side to act upon the lever F', that raises and lowers a platform, and the groove upon its left side acts upon the lever F² to revolve the picker and give motion to the rack E⁴. The cam G is grooved on its right side and acts upon the lever G', that gives motion to the turners at the top and bottom of the cover, the operation of which is particularly described in my aforesaid patent, and the lever

G^2 is acted upon by the groove at the left side of the cam, and the same actuates the second turners, also fully described in said patent. The grooves in these cams are laid out with reference to giving the proper motion to the respective levers and performing the various operations required.

The glue-holding vessel H, Fig. 1, is provided with flanges that extend out at its ends, which flanges are received in recesses in the frames B B' of the machine, so that the said glue-holding vessel is removable, and beneath this glue-holding vessel is a vessel H' to hold hot water for heating the glue, and it is advantageous to provide a suitable heater for the water vessel, or in place thereof steam may be led into the water to maintain the proper temperature. Within the glue vessel H is a glue-roller H^2 , supported in bearings at the ends of the glue vessel H, and this glue-roller H^2 is advantageously made as a copper cylinder, with heads connecting the same to the shafts at the ends of the glue-roller, and there are scrapers 6 and 7, that are supported by pivots at their ends, and they are adjusted by suitable devices, so that the edges of the scrapers are maintained in the desired proximity to the surface of the glue-roll, and this glue-roll is rotated first in one direction and then in the other by a gear 12, and the operations are the same as described in my aforesaid patent. The scraper 6, Figs. 1, 12, and 13, is advantageously set in such a manner as to scrape almost all the glue off the surface of the glue-roller, and the scraper 7 is set with reference to allowing the proper amount of glue to remain upon the surface of the roller for properly gluing the muslin or covering fabric by coming into contact with the same, and it will be observed that the glue and other material adhering to the surface of the roller H^2 as it is removed by the scraper 6 slides down upon the convex surface of such scraper 6 and returns to the glue vessel H at a short distance from the roller. Hence foreign substances will be in the glue at the side nearest the operator, where they can be observed and removed, and the clean glue will be at the back portion of the glue vessel, ready to pass up on the surface of the roller H^2 as the same is brought into contact with the covering fabric upon the cloth-cylinder I. This cloth-cylinder I is preferably loose upon the shaft 3; but it is connected therewith at the proper time and in the manner described in the aforesaid patent. This shaft 3 is rotated first in one direction and then in the other at the proper time by the pinion D^3 and the rack D^4 , engaging the same, the said rack being connected to the free end of the lever D' , which lever is provided with a roller that is operated by the cam D. This rack D^4 is shown by the dotted lines, Fig. 1, and the gear-wheel 11 upon the shaft 3 gears into the wheel 12 upon the shaft of the glue-roller. Thus the glue-roller is moved backward and forward constantly while the machine is in mo-

tion; but the cloth-cylinder I is entirely under the control of the attendant, so that the same may be stopped, and it remains without being moved until the attendant again brings in the actuating mechanism by the action of his hand, as particularly described in the aforesaid patent. The supply of the covering fabric or muslin can thus be stopped and a partially-finished cover completed and the movements of the parts arrested with the machine substantially empty, there being no incomplete book-cover in the machine. This is of great advantage, because if the machine is stopped after a fabric cover has been glued and before the cover-boards and back-lining are applied to the same and the edges turned over and completed, such cover is valueless, because it cannot be finished after the glue has cooled or set, and in consequence of the supply of the covering fabric being entirely under the control of the attendant and independent of the other operations of the machine there is no risk of the covering fabric being carried in until after it has been properly placed upon the cloth-cylinder I, and it is to be understood that a complete cover is produced at each revolution of the cam-shaft A; but should the covering material not be in position the automatic movement of the cloth-cylinder at the proper time is suspended by the attendant until the parts come around to give motion to the cloth-cylinder at the proper time. Therefore, the cloth is fed in in harmony with the movements of the other parts of the machine, it being understood that the fabric or cloth is cut out to shape in any desired manner, and the same is laid upon the cloth-cylinder by hand. This cloth-cylinder I is preferably made of metal and is rather more than half a cylinder, and there are heads to the same by which it is supported upon the shaft 3, and between the said heads the gripper-shaft 9 (see Figs. 12 and 13) extends adjacent to one edge of the cloth-cylinder, and the grippers upon this shaft are made in the form of short hooks, so that when the gripper-shaft is partially rotated these hooks swing over and catch the edge of the cloth as it is laid upon the cloth-cylinder, and these grippers are operated in any desired manner.

The band-pulleys K K, Figs. 1 and 2, are adjacent to and are connected with the gear-wheels g at each side of the machine and within the frames, and the bands $l l'$ are fastened at their ends in any desired manner to these pulleys, each pulley being grooved, and the bands extending around the pulleys in opposite directions pass off horizontally above and below these pulleys, and the bands l are connected at their back ends with the cross-bar L, that slides at its ends in grooves in the upper portions of the frames B B', and the bands l' extend around the back-band pulleys K' and are connected at their ends with the said cross-bar L, so that the same may be moved bodily toward and from the

cloth-cylinder I. This cross-bar L carries a gripper-shaft, with fingers *n o*, that are adapted to close down upon the edge of the covering fabric and to remove the same from the cloth-cylinder I and in the movement of the said parts to deposit the said cloth upon the platform P. These grippers are operated and the parts are timed in the manner described in my aforesaid patent, these parts forming no part of the present invention and being fully described in the aforesaid patent.

All the parts before described are substantially the same as in my aforesaid patent and are only herein described in order that the improvements herein may be more clearly understood.

The platform P is supported upon the platform-post P'. This is guided at the lower end by a cross-bearer P² upon the frame of the machine, and the upper part of the post P' slides in a suitable bearing P³, extending out from the back frame B⁵, and there are springs 14 adjacent to the lower end of the said platform-post connected at their upper ends to pins projecting from the bearer P² and at their lower ends to a cross-bar secured to the lower end of the post P', which springs are sufficient to counterpoise the weight of the platform and the parts carried by it, or nearly so, in order that the platform-cam F may through the arm F' readily move the platform up and down and arrest the movements of the same at the proper points without being obliged to lift the weight of the platform and parts carried with it. The back end of the said arm F' slides in a guide upon the frame B⁵, and this arm F' is provided with a roller or pin entering the grooved cam F, by which the movements are given to the platform. The discharger-slide 40, which is in the form of a bar, is moved progressively across the said platform P and carries the cover bodily into the finishing-press, and this discharger-slide 40 is supported and slides in a manner corresponding to that described in my aforesaid patent, and the same is connected to the belt 43, passing around pulleys 44 and 60. The parts for operating this discharger-slide and the said pulleys so as to deliver the finished cover are more particularly hereinafter described. The side frames 48 of the finishing-press are bolted to the side frames B' of the machine, and they extend out as supports for the platen, bands, and the operating devices hereinafter set forth.

As in my former patent, so in the present case the cover-boards are received between plates 76, where they are piled one upon the other. These plates are supported by hopper extension-bars 74, and bands 85, passing around band-wheels 84 and the devices connected therewith, bring two cover-boards at a time forward from their respective hoppers into position to be taken by the picker-blocks 130 as the same are brought down upon the cover-boards, the said picker-blocks being

connected to the picker-arm N' upon the picker-shaft N.

Means for actuating and connecting the vertically-moving picker-shaft and devices for imparting a swinging movement to the same in opposite directions.—In my aforesaid patent the picker-shaft was provided with a groove receiving a rib upon the pinion-sleeve to connect the two parts; but in consequence of the wear of the parts there was in time a slight play between the picker-shaft and the pinion-sleeve which caused an unequal movement to be given to the picker-arms and blocks, and the cover-boards and back-lining were not always laid upon the covering material in exactly the proper position, and the devices hereinafter set forth are provided for overcoming said difficulty. These devices comprise the lever E², to which motion is imparted by the cam E. (See especially Figs. 1, 2, 6, and 7.) The free end of said lever acts upon the lower end of the picker-shaft N, and said shaft is guided in the bearing-blocks 15 and 126, secured to the frames of the machine, and at the upper end of the said picker-shaft is connected the picker-arm N', carrying the picker-blocks 130. Secured to this picker-shaft N is a hub 20, carrying a pin 21, and these parts move vertically with the said picker-shaft. A segment 125 is made with a tubular prolongation fitting and turning in the bearing 126, and through the said tubular portion the picker-shaft N moves vertically. This bearing 126 is secured to the frame B⁵, and these parts are especially illustrated in Figs. 5 and 7. This segment 125 is engaged by the teeth of the rack E⁴, and this rack is connected by a link to the lever F². The rack E⁴ is provided with both edge and upper surface teeth, the edge teeth, Fig. 7, acting upon the segment 125 and the surface-teeth upon a pinion 101, hereinafter more particularly described with reference to the operation of the other parts of the machine. The bearing 126 has connected to it a slideway 27 for the said rack E⁴. In the said segment 125 is a hole for the reception of the pin 21 as the picker-shaft rises to its highest position, and when in its lowest position the said shaft carries the hub 20 and pin 21 down with it out of engagement with the segment 125. In Figs. 6 and 7 the pin 21 is shown in engagement with the segment 125, and it will be seen that in this position when the rack E⁴ is moved by the lever F² the segment will be turned and with it a partial rotation will be imparted to the picker-shaft N and the picker-arm N', so as to swing the picker-blocks 130 from one position to the other, or, in other words, from the position where the cover-boards and back-lining strip have been engaged by the suction of the said picker-blocks to the position where the said parts are placed upon the glued sheets and released by the said picker-blocks, or vice versa, for the return movement. In the posi-

tion shown in Fig. 7 the arrows indicate the direction of the next movement. The parts are so timed that the lever F^2 and the rack E^4 are only operated to impart a half-rotation to the segment 125 when the picker-shaft N is in its elevated position and the pin 21 in engagement with the segment 125. In this way the vertically-moving picker-shaft is connected to its actuating-gear and its periodical forward and backward swinging movement is effected.

I provide curved arms 119, connected to the side frame B of the machine and extending over toward the center of the machine and terminating in vertical slideways 120 and 122, and at the upper end of each of these slideways I provide notches 121. These slideways are not only in line with each other, but in line with the picker-shaft N, and the free end of the picker-arm N' is formed so as to fit in the said slideways, and with the forward and backward movements of the said picker-arm the said free end passes over the notches 121 into the upper end of the said slideways, these slideways serving the purpose of positive guides for the free end of the said picker-arm with the vertical movement of the picker-shaft, both when the picker-blocks 130 take up the cover-boards and back-lining strip and when the said cover-boards and back-lining strip are deposited upon the glued cloth forming the back. The slideway 120 is longer vertically than the slideway 122, because a greater movement is imparted to the picker-shaft and its arm when the cover is formed than when the picker-blocks simply engage the cover-boards and the back-lining strip. Figs. 1 and 2 show these parts particularly.

In the machine of my aforesaid patent a cover occasionally became caught and damaged in its movement by the discharger-slide from the platform P to the finishing-press. The devices next described relate to means for preventing injury to the cover in case the movement of the same in its passage from the platform to the finishing-press becomes obstructed.

The discharger-slide 40 is similar to the one shown and described in my aforesaid patent, and it is supported also by similar devices to those shown in the said patent—namely, by a bar 41 extending through the machine and on which is the slide-block to which the discharger-slide 40 is secured, while the other end of the discharger-slide 40 is guided in the frame B^3 of the machine. This discharger-slide 40 is connected to and actuated by the belt 43, which passes around pulleys 44 and 60. Motion is imparted to these devices by the cam D on the shaft A operating the lever D^2 , to which is connected a rack-bar 16, the teeth of which engage a driving-pinion 17 on the hollow shaft 18, which hollow shaft 18 surrounds a stud 22, supported in the frame B^3 and secured by the nuts 23. (See Figs. 5 and 10.) The pulley 44 is of ordinary grooved form,

mounted on a suitable shaft; but the pulley 60 is loose upon the hollow shaft 18, which extends around the stud 22, the said pulley being located between the toothed wheel 29 and a friction-collar 30, held in place by the clamping-nut 31, which is screwed upon the outer surface of the hollow shaft 18. This hollow shaft 18 carries the pinion 17, meshing with the rack-bar 16, and the outer end of the hollow shaft 18 carries a ratchet-wheel 19, and it is stepped sectionally, as will be seen by reference to Fig. 10, and on the same, between the ratchet 19 and the pulley 60, is the toothed wheel 29, which toothed wheel carries the pawl 28. (See Figs. 2 and 8.) In the operation of these parts the rack-bar 16 rotates the pulley 17 and the hollow shaft 18 and also the ratchet 19 positively in both directions. When the ratchet 19 is turning in the direction shown by the arrow, Fig. 8, it positively turns the toothed wheel 29 through the pawl 28, so as to rotate the same to operate the endless bands and devices hereinafter described at the same time the pulley 60 is operated, moving the belt 43 and also rotating the pulley 44 and operating the discharger-slide to remove the finished cover from off the platform P and into the finishing-press. The pulley 60, it will be seen, is moved entirely by friction, more or less of which is applied through the collar 30 by the nut 31, and this friction is sufficient under all ordinary circumstances to operate the discharger-slide and remove the cover bodily from the platform P and into the finishing-press; but should the cover in any way become stopped in its movement the pulley 60 will be at once arrested, while the shaft 18 and the other parts continue their movement, so that the cover will not be damaged by being stopped. As soon as the cover is released the friction will again act between the parts to rotate the pulley 60 and continue the movement of the cover from the machine. These devices for actuating the discharger-slide also impart a movement to the upper and lower bands which receive and continue the movement of the finished cover into the finishing-press, so that while one cover is being made in the machine beneath the picker-blocks 130 the previously-made cover is being pressed, while the glue is consolidating previous to its final discharge, so that the finished covers follow one another in rotation.

The platen b is supported and operated by devices hereinafter described, and the same is located above the bed 50, to which is connected a sheet of rubber 51 by clamping-bars 52, there being water between the bed 50 and the sheet of rubber 51 at the point where the finished cover is finally pressed by the platen, the water device being the same as employed and shown in the machine of my former patent.

The wheel 29 meshes with a pinion 32 in bearings supported with the gears and rollers, hereinafter described, by the frame 48 of the

machine, which is bolted to the main frame B'. (See Fig. 8.) The gear 32 meshes with the gear 33, and the gear 33 and the roller 36 are on the same shaft, and the under endless band *d* passes around this roller 36 and extends over the water-bag device and around a roller 37, at one end of the shaft of which is the gear 34. This gear 34 meshes with the gear 35 on the same shaft as the roller 38, and around this roller 38 passes the upper endless band *c*, the said band *c* also passing around a roller 39, the rollers 38 and 39 being in bearings at the respective ends of the platen *b*. The said wheel 29 is inoperative and remains still except when positively driven by the ratchet 19, turning in the direction of the arrow to actuate the pulleys 60 and 44 and belt 43 to move the discharger-slide and deliver the cover off the platform P and between the bands *c d*. The said wheel 29 simultaneously operates the gears 32 and 33, driving the under band *d*, the roller 37, gears 34 and 35, the rollers 38 and 39, and the upper band *c*. The movement of the parts is so timed that the bands *c* and *d* are arrested when the cover occupies the proper position over the water-bag. Then the pressure is given to the cover, as hereinafter explained, and while such pressure is being given the belt 43 and the discharger-slide return to their original position to carry forward from the platform P the next cover. While the next cover is being delivered from the platform P to its place above the water-bag, the first or previous cover is delivered by the movement of the said bands *c d* out of the machine and upon a bracket or table U. The water-bag below the platen *b* is supplied with water from the cylinder *e*² by the piston *e* through the pipe *e*'. It is to be understood that the belt 43 and discharger-slide 40 are carried forward during the upward movement of the rack 16 and that during the downward movement of said rack the belt 43 and discharger-slide are carried back to their first position by the reverse movement given to the pulley 60; but the wheel 29 does not turn backward, because the pawl 28 rides over the teeth of the wheel 29 and, further, because the resistance offered by the power required to move the gears 32 33 and endless belts prevents the wheel 29 being rotated during the backward movement of the belt 43.

The devices for imparting an up-and-down movement to the platen and the endless band *c* carried thereby comprise the following: The lever 59 is pivoted at 147 to the main side frame B' of the machine and on one end it has a roller in a cam-groove in the gear-wheel C², and on the other end of said lever is a connecting-rod *w*, extending upward and pivoted to the crank 47. Extending through the frame 48, which is bolted to the frame 41, are the shafts 45 and 46, and the said crank 47 is connected at one end of the shaft 45, and shafts 61 and 62 are connected to the shafts 45 46 by cranks 53 and 54, and a link

55 connects the shafts 61 and 62 together at one end. Links 63 and 64 are pivotally connected at their upper ends to opposite sides of the platen *b*, and at their lower ends said links are connected to the shafts 61 and 62. In the movement of these devices the said lever 59 is swung by the cam on the gear-wheel C² and the connecting-rod *w* is lowered, thus swinging the crank 47, turning the shaft 45, and swinging the cranks 53 and the shaft 61, and by the said parts and the link 55 also swinging the shaft 62, cranks 54, and shaft 46 to simultaneously draw down the links 63 and 64 and the platen *b* and give the desired pressure to the book-cover between the bands *d c*, and when the rod *w* is raised by the cam on the gear-wheel C² the platen *b* and the belt *c* are raised and the parts are brought to the position shown in Fig. 8 and the cover is free to be carried out of the press by the next movement given to the bands *d c*. A pin 56 is secured in the upper surface of each frame 78, and the pins pass into holes in the under surface of the platen *b*. The said pins form guides to prevent any shifting of the platen in its relation to the frame 48.

By reference to Fig. 8, which shows the parts of the press in position to receive a cover carried into the press and for a cover in the press to be carried out, it will be seen that the belts *d* and *c* come closely together at the rollers 37 and 38, while said belts are much farther apart at the rollers 36 and 39. The object of this is to allow ample space between the belts for the cover to enter the press, while at the delivery end the cover is slightly pinched by the belts, so as to insure the cover being carried out of the press by said belts when they receive their forward movement. The roller 38 is in bearing-arms 110, pivoted at 97, and the said roller and belt *c* are by their weight kept almost in contact with the belt *d* at the roller 37, and the roller 38 and belt *c* slightly lift as the cover is passed out between said rollers 37 and 38, and the teeth of the wheels 34 and 35 are made sufficiently long to prevent their separation when the finished cover passes through between them.

Devices for regulating the feed of the back-lining strip.—The rack E⁴ as it moves back and forth, operating the segment 125, also actuates the gear 101. This gear 101 is loose upon the shaft 83, which shaft is in suitable bearings in the frame 102. Upon the shaft 83 is a gear 24 and adjacent clutch 104, which gear and clutch are fitted to slide upon a spline on the said shaft 83. The clutch 104 carries a pin 27, a hole being provided through the wheel 24 and into the wheel 101 to receive said pin 27 when the gears 101 and 24 are side by side. The clutch 104 and its pin 27 are moved longitudinally of the shaft 83 by a clutch-arm 106, mounted on a pivot-shaft 107 in bearings in a bracket secured to the frame B⁵, and to which pivot-shaft 107 a lever 108 is connected for swinging the said clutch-arm 106 and operating the clutch 104 and its pin

27 to cause the said pin to move through the gear 24 into engagement with the gear 101. The shaft 83, as in the machine of my former patent, actuates the devices for bringing forward the cover-boards from their receptacles, and when this clutch 104 is operated and the pin 27 withdrawn from the wheel 101 the shaft 83 is brought to a state of rest, in which the machine can be operated without feeding in the cover-boards and the back-lining. The lever 108, pivot-shaft 107, and clutch-arm 106 are the same as correspondingly-lettered parts in my said Patent No. 580,111, and a rod 109 is connected to said lever 108 and extends to the front of the machine within reach of the operator, and by moving this rod in one direction or the other the lever 108 is operated to connect or disconnect the clutch 104, as aforesaid. In the position shown in Fig. 7 these parts are in engagement and the gear 24 meshes with the gear 25 on the shaft 26, which shaft is also provided with bearings in the frames 102, and it will be noticed that as the rack E⁴ moves in first one direction and then in the other it rotates the gears 101, 24, and 25 and the shaft 26 in first one direction and then in the other, and the parts are so proportioned that a half-revolution is given to the gear 25 and shaft 26 at one time. Upon the shaft 26, Figs. 6 and 7, is a crank 65, having in one face a slotted slideway, and in said slideway is a crank-pin and block, and a screw 68 passes through the crank-pin and block 66 and also through the shaft 26, the said screw having at its free end a squared portion by which it may be turned by a wrench 26, and adjacent to the shaft 26 there are lock-nuts upon the threaded end of the screw 68. This screw 68 is to be turned to bring the crank-pin 67 and block 66 either nearer to or farther from the shaft 26, so that thereby as the shaft 26 turns a greater or less movement is imparted to the crank-pin 67 and block 66. A slide-block 69 is pivoted upon the said crank-pin 67, and it moves between ribs 71, placed vertically on one surface of the rack 70, the said ribs forming slideways for the said block 69. This rack 70 is guided by ways 73, connected to the under side of the frame 102, and upon the upper surface of the said rack are teeth engaging with a pinion 72 upon one end of the shaft 113. This shaft 113 is provided with suitable bearings in the frames 102, and the same carries a gear-wheel 112, loose thereon, and friction devices 117 and 118, similar to those shown and described in my aforesaid patent, the part 117 being fast upon the shaft 113 and the part 118 being connected to the gear 112. As the shaft 26 turns and carries the crank 67 with it the block 69 moves down in the way provided between the ribs 71 and moves the rack 70 toward the left hand of Figs. 6 and 7, turning the pinion 72, its shaft 113, and the wheel 112, and the said friction devices 117 and 118 are so made that when the parts turn in the direction just described they are in engagement, so as to move the

loose wheel 112; but when the crank 66 returns with the half-movement of the gear 25 in the reverse direction the said wheel 112 remains stationary. It will thus be seen that the extent of movement imparted to the rack 70 is entirely controlled by the relation of the crank-pin 67 to the shaft 26, because when the said crank-pin is nearer to the shaft there is less throw, and consequently less motion to the rack 70, and when the said crank-pin is farther from the shaft there is more throw and a greater motion. In this manner the length of paper or other material forming the back-lining is determined or, in other words, the feed of the back-lining strip controlled, the said gear 112 meshing with the gear 115 and the gear 115 meshing with the gear 116, and there being two similar gears 116 and rollers W, between which the back-lining strip 161 passes as the same is moved forward toward the back-lining cutter 94, which is supported by the cutter-stock 139, the said strip moving over the frame 77 and between the guides 154 upon the frame 77, which frame is supported by the cross-bar 149, the latter parts from the gear 115, inclusive, being similar to those shown and described in my aforesaid patent.

Devices for supporting, trimming, and removing unevenness from the back-lining strip.—In these devices a bracket-arm 177 is bolted to the cross-bar B⁴, (see Figs. 1 and 4,) the bracket-head 78 being the portion secured by the bolts or rivets to the said bar. In this part 78 there is a groove 79, occupying a horizontal position, the said bracket-head being curved between the said groove and its point of connection to the bar B⁴, as will appear by the dotted lines in Fig. 1. An arm 80 is pivoted at its hub 81 to the said bracket-arm 177, and the said arm 80 is provided with a handle 82, by which the horizontal edge of the arm is swung nearer to or farther from the groove 79. The said bracket-arm 177 carries a shaft 86, and upon said shaft are plates 87, the upper ends of the plates being provided with guides 88, riveted to the said disks and projecting toward one another and regulated by the set-screws 89. (See Fig. 4.) The roll of back-lining 161 is upon the shaft 86 between the disks 87, and as the said back-lining strip extends upward it passes between the arm 80 and the groove 79 and over a roller 90 forward toward the circular cutters V, which cutters are in pairs spaced apart at the distance required for the proper width of the back-lining strip, so that the edges of the strip as the same is fed along are automatically cut off, leaving the strip that passes between the rollers W of the required width for the book-cover. If the back-lining strip is wrinkled or uneven, the attendant grasps the handle 82 and, bearing down upon the same, brings the arm 80 toward and into the groove 79, so that the back-lining strip is compelled to pass around the edge of the arm 80 in the groove to remove unevenness or wrinkles in

the paper. Any requisite pressure may be applied by the attendant at the handle 82 for this purpose.

Where the back-lining strip from the roller 5 passes off toward the arm 80, it passes between the guides 88, which are set to correspond to the width of the back-lining strip in the roll, so that the said back-lining strip passes off even and true toward the roll 90.

10 *Devices actuated by the pile of superposed covers for progressively lowering the bracket upon which the cover-boards are delivered and for frictionally holding the said bracket in place.*—In these devices arms 95 are piv-
15 oted at 96 upon opposite sides of the press-frame 48, and these arms 95 are slotted to receive the pins 97, projecting from the sides of the platen *b*. The outer ends of the arms 95 support the bar 98, and a bar 99 is supported
20 from the bar 98 by the links 100. One of these links 100 is made with a depending slotted bar 131, the lower end of which is a compound curve, as will appear from Fig. 8. A frame or slide bar *T'* is at its upper end
25 connected by a bracket 134 to the press-frame 48, and in this slide-bar *T'* is a slide-block 135, connected to the bracket *T*, which bracket supports the table *U*, receiving the finished covers in superposed order. Between the
30 slide-block 135 and the slide-bar *T'* is a rod 136, a portion of which is round and a vertical side of which is flattened, there being in the slide-bar *T'* and also partially in the slide-block 135 grooves which correspond with but
35 are slightly larger than the said rod. To the upper end of this rod 136 is rigidly connected the crank-arm 132, (see Figs. 8 and 9,) the free end of the said crank-arm entering the slot of the bar 131, and I employ a spring 133
40 with one end fastened to the bracket 134 and the other end fastened to the crank-arm 132. These parts are shown in their normal position in Figs. 8, 9, and 11, where the said spring 133 holds the crank-arm in a position ap-
45 proximately at right angles to the side frames of the machine and parallel with the rollers 98 and 99 and with the rod 136 in the position shown, so as to frictionally hold the slide-block 135 and the bracket *T* in a fixed position in
50 relation to the slide-bar *T'*. These parts operate as follows: The covers are delivered from between the endless belts *c d* upon the table *U*, and with each downward movement of the platen *b* the arms 95 swing on their
55 pivots 96, because of the action of the pins 97 in the slots of said arms. The outer ends of said arms 95, together with the bars 98 and 99, the links 100, and the slotted bar 131, are thus given a downward-swinging movement,
60 and during said movement the slotted portion of the bar rides over the free end of the crank-arm 132, and in so doing the links 100, the bar 99, and the slotted bar 131 swing on the bar 98 as a pivot, and thereby the said
65 bar 99 is brought considerably lower than the bar 98. It is to be understood that during said movement of the parts the crank-arm

132 is not moved, because the spring 133 is of sufficient strength to hold said crank-arm im-
movably in place. As soon as the bar 99 70 comes in contact with the top cover of the pile of covers the movement of the bar 99 is arrested, while the arms 95 and the bar 98 continue the movement with the platen. Con-
sequently the slotted bar 131 swings on the 75 bar 99 as a pivot, and this motion swings the crank-arm 132 and turns the rod 136, bringing the flat surface of the rod and the adjacent flat surface of its recess into parallel
80 planes, releasing the grip of the bar and allowing the bracket *T* and the table *U* to descend an extent sufficient to release the pressure on the rod 99 and allow the spring 133 to draw back the crank-arm 132 to its normal
85 position, when the rod 136 will again frictionally hold the said bracket and table. These movements are progressive as the cover-boards are piled upon the table, each move-
ment being approximately about the thick- 90 ness of the cover-boards when they reach a certain height.

70 represents arms secured to the side frames 48, and to said arms are connected hanging aprons 73, that form guides for the
covers to slide upon as delivered from the 95 belts *c d*, the same as in my aforesaid patent. Only a portion of one apron is shown in Fig. 8.

Devices for scraping the glue from the glue-roller.—With the present machine it is possi-
ble not only to cover the entire surface of 100 cloth for the cover-boards with glue, but also to cover a strip just wide enough to join the two cover-boards for the back of the book. In this latter case the cover-boards are usu-
ally surfaced with paper by hand, or they may 105 instead be surfaced with leather. A back-lining strip may be employed both with the cloth for the entire cover or the cloth simply joining the cover-boards for the back, or the
back-lining may be omitted, and when the 110 back-lining is omitted it is preferable not to glue the surface of the cloth coming between the cover-boards, but to glue the edges of the cloth where the edge is folded over. To ac-
115 complish this latter object, I employ a dry-back scraper 140. (See Figs. 12 and 13.) This is secured to a pivot-shaft 142, to one end of which is secured a lever 141. A spring 146
acts against the short end of the lever to swing 120 the long end of the lever up toward the cloth-cylinder *I* and to keep the edges of the dry-back scraper against the surface of the glue-roll *H*², so as to scrape off the glue at the place where the said dry-back scraper comes in con-
125 tact therewith, and I would remark that this dry-back scraper may be of any desired width, according to the work to be accomplished, or, in other words, to the distance between the covers and the thickness of the book pro-
posed. One end of the cloth-cylinder *I* is 130 provided with an annular undercut groove 143, and said groove is provided with a notch or enlargement at 144, through which the bases of the pins 145 are passed into the un-

derent groove, as will be seen from Figs. 12 and 14. The long end of the lever 141 is preferably made with a portion curved to correspond with the arc of the groove 143, with the free end of the said lever, and with the portion thereof adjacent to said curved end tapering away from the said curved portion, so that with the rotation of the cloth-cylinder I the pins 145 come in contact with the said lever 141 and swing the same upon the pivot-shaft 142 against the action of the spring 146 to remove the edge of the dry-back scraper 140 from the surface of the glue-cylinder, so that for the period removed the glue remains upon the surface of the glue-roll. The pins 145 are so located and secured in the undercut groove 143 in connection with the timing of the parts that glue is left upon the surface of the glue-roller to come in contact with the cloth at the places where the edges are folded, which places come at the opposite edges of the back. When the glue is to be applied to the entire surface of the cloth for the cover, the pins 145 are to be removed, and by placing the free end of the spring at the opposite side of the lever 141 said lever will rest upon the frame of the glue-pot and the scraper 140 will be away from the glue-roll.

The special features hereinbefore described form valuable additions for the successful operation of the machine described and shown in my aforesaid patent.

I claim as my invention—

1. In a machine for making book-covers, the combination with a picker-shaft and picker-arm connected therewith, of means for imparting a vertical periodical movement to the said picker shaft and arm, bearings for the said picker-shaft in which the same is moved vertically, a toothed segment surrounding the picker-shaft and supported at one of the said bearings, a rack engaging the said segment and means for periodically moving the said rack to swing the said segment and means projecting from the picker-shaft below the toothed segment for periodically engaging the said segment and locking the two parts together, whereby a forward-and-backward movement to the extent of a half-revolution is imparted to the said picker-shaft, substantially as set forth.

2. In a machine for making book-covers, the combination with the picker-shaft and picker-arm connected therewith, of means for imparting a vertical periodical movement to the said picker shaft and arm, bearings for the said picker-shaft in which the same is moved vertically, a toothed segment surrounding the picker-shaft and supported at one of the said bearings, a rack engaging the said segment, and means for periodically moving the said rack to swing the said segment, and means connected with the picker-shaft for engaging the said segment and locking the two parts together, whereby a forward-and-backward movement to the extent of a half-revolution is imparted to the said picker-shaft, and guides

upon the frame of the machine receiving the free ends of the picker-arm which also act as stops to limit the movement of the said picker-arm and determine its respective positions, substantially as set forth.

3. In a machine for making book-covers, the combination with a vertical picker-shaft and horizontal arm at the upper end of the same and bearings in the frame of the machine for the said picker-shaft, of a lever and means for actuating the same for raising and lowering the said picker-shaft, a toothed segment surrounding the said picker-shaft and supported adjacent to the upper bearing of the said shaft, a rack engaging the said toothed segment and a lever and means for operating the same for imparting a half forward-and-backward rotation to the said toothed segment, and means projecting from the said picker-shaft below the toothed segment for engaging the said toothed segment only when the picker-shaft is in its elevated position, whereby the toothed segment and picker-shaft are then locked to insure the rotation of the picker-shaft and the parts are disengaged when the picker-shaft is moved downward, substantially as set forth.

4. In a machine for making book-covers, the combination with a vertical picker-shaft and horizontal arm at the upper end of the same and bearings in the frame of the machine for the said picker-shaft, of a lever and means for actuating the same for raising and lowering the said picker-shaft, a toothed segment surrounding the said picker-shaft and supported adjacent to the upper bearing of the said shaft, a rack engaging the said toothed segment and a lever and means for operating the same for imparting a half forward-and-backward rotation to the said toothed segment, and a hub upon the picker-shaft, and a vertical pin connected to the said hub and adapted to be received in an opening therefor in the toothed segment, the said hub and pin moving vertically with the said shaft and coming into locking engagement when the picker-shaft is in its elevated position, substantially as and for the purposes set forth.

5. In a machine for making book-covers, the combination with a discharger-slide, the belt connected therewith and the pulleys around which said belt passes, of a stud fastened to and supported by one of the frames of the machine, a hollow shaft around the said stud and on which one of the discharger-slide pulleys is loose, a pinion mounted on said hollow shaft and a rack and means for moving the same in first one direction and then in the other, a friction-sleeve coming against the said loose pulley and a nut for applying a regulatable tension to the said sleeve and loose pulley, substantially as and for the purposes set forth.

6. In a machine for making book-covers, the combination with the discharger-slide, the belt connected therewith and the pulleys

around which such belt passes, of a stud connected to and supported by one of the frames of the machine, a hollow shaft surrounding the same, a pinion upon one end of said hollow shaft, and a rack for rotating the said shaft first in one direction and then in the opposite direction, a ratchet formed on the outer face of the said hollow shaft and a loose toothed wheel coming between the ratchet and the loose pulley of the discharger-slide, a pawl on the face of the toothed wheel engaging the said ratchet, a means for applying friction to the opposite surface of the discharger-slide pulley to clamp the same against the said toothed wheel to hold the said toothed wheel with a regulatable friction, substantially as and for the purposes set forth.

7. In a machine for making book-covers, the combination with the discharger-slide, the belt connected therewith and the pulleys around which such belt passes, of a stud connected to and supported by one of the frames of the machine, a hollow shaft surrounding the same, a pinion upon one end of said hollow shaft and a rack for rotating the said shaft first in one direction and then in the opposite direction, a ratchet formed on the outer face of the said hollow shaft, and a loose toothed wheel coming between the said ratchet and the loose pulley of the discharger-slide, a pawl on the face of the toothed wheel engaging the said ratchet, a means for applying friction to the opposite surface of the discharger-slide pulley to clamp the same against the said toothed wheel to hold the said toothed wheel with a regulatable friction, a wheel engaging the toothed wheel and a connection therefrom and endless belts driven thereby for continuing the movement of the finished cover from the discharger-slide, substantially as set forth.

8. In a machine for making book-covers, the combination with a rack and pinion and a lever and cam for actuating the same, of a hollow shaft operated by the said pinion, a ratchet on the opposite end of the said hollow shaft, a loose toothed wheel surrounding the said shaft adjacent to the said ratchet, and a pawl on the face of the toothed wheel engaging the ratchet, a gear meshing with the said toothed wheel, and a second gear meshing with the first gear, a roller on which the second gear is mounted and an endless belt passing around said roller, whereby the belt is driven from the toothed wheel by the said gears, a second roller around which the said endless belt passes, and a gear thereon, the said rollers being supported by the main frame of the machine and a platen and rollers and a belt carried thereby and actuated by the first-named belt, substantially as set forth.

9. In a machine for making book-covers, the combination with a rack and pinion and a lever and cam for actuating the same, of a hollow shaft operated by the said pinion, a ratchet on the opposite end of the said hollow shaft, a loose toothed wheel surrounding the

said shaft adjacent to the said ratchet, and a pawl on the face of the toothed wheel engaging the ratchet, a gear 32 meshing with the said toothed wheel and a gear 33 meshing with the gear 32, a roller 36 on the shaft of the gear 33 and supports therefor from the main frame of the machine, a roller 37, a gear 34 on the shaft of the said roller and supports therefor from the frame of the machine, an endless band *d* passing around rollers 36 and 37, a gear 35 meshing with the gear 34 and a roller 38 on the same shaft as the gear 34, and a platen to which the roller 35 and gear 38 are connected, a roller 39 on the opposite end of the said platen and bearings therefor in the platen and an endless band *c* passing around the rollers 38 and 39, the said endless bands conveying and delivering from the machine the finished cover, substantially as set forth.

10. In a machine for making book-covers, the combination with a supporting-frame, a bed and a yielding surface thereon, of a platen above the same, a guide for the said platen, links pivoted to opposite sides of the platen, shafts connecting the lower ends of the said links, a link connecting the said shafts, shafts pivoted in the frame and cranks connecting the pairs of shafts, and means substantially as specified, for actuating the shafts of the frame and swinging the links of the platen to impart an up-and-down movement to the platen, substantially as set forth.

11. In a machine for making book-covers, the combination with a supporting-frame, a bed and a yielding surface thereon, of a platen above the same, a guide for the said platen, links pivoted to opposite sides of the platen, shafts connecting the lower ends of the said links, a link connecting the said shafts, shafts pivoted in the frame and cranks connecting the pairs of shafts, a crank connected to one end of one shaft in the frame, a connecting-rod secured to said crank and a lever and cam for actuating the said connecting-rod and crank to impart thereto an up-and-down movement for swinging the cranks and links and actuating the platen, substantially as set forth.

12. In a machine for making book-covers, the combination with a supporting-frame, a bed and a yielding surface thereon and a platen above the same and means for imparting an up-and-down movement to the platen, of a roller 37 and a gear 34 at the end of the press-frame, and a band surrounding the roller 37, a roller 38 and a gear 35 at the end of the platen, the gears 34 and 35 meshing with one another, a band passing around the platen and around the roller 38, and bearing-arms pivoted to the ends of the platen and supporting the ends of the shaft of the roller 38, substantially as and for the purposes set forth.

13. In a machine for making book-covers, the combination with the supporting-frame, the bed and a water-bag forming a yielding surface above the bed, of an endless belt around said bed and water-bag, a platen above

the water-bag and belt and an endless belt around said platen, rollers supporting said belts and around which they are moved and means for imparting an up-and-down movement to the platen and the upper belt, substantially as specified.

14. In a machine for making book-covers, the combination with the supporting-frame, the bed and a water-bag forming a yielding surface above the bed, of an endless belt around said bed, and water-bag, a platen above the water-bag and belt and an endless belt around said platen, rollers supporting said belts and around which they are moved and means for imparting an up-and-down movement to the platen and the upper belt, means for moving said belts and simultaneously bringing the cover from the platform P to and beneath the platen and discharging a cover therefrom, substantially as set forth.

15. In a machine for making book-covers, the combination with the supporting-frame, the bed and a water-bag forming a yielding surface above the bed, of a platen above the bed, rollers at the ends of the bed and platen, and endless belts around said rollers, gears connecting the belts, and means for actuating the lower belt and for simultaneously bringing the cover from the platform P to and beneath the platen and for discharging a cover therefrom, substantially as specified.

16. In a machine for making book-covers, the combination with rollers and gears for feeding the back-lining strip into the machine, and a loose gear, its shaft and friction devices for engaging the same in one direction for actuating the said rollers and gears, of a pinion on the shaft of the loose gear, a rack for revolving the pinion, shaft and loose gear, and adjustable and regulatable devices actuating the rack for imparting the desired longitudinal movement thereto, substantially as set forth.

17. In a machine for making book-covers, the combination with rollers and gears for feeding the back-lining strip into the machine, and a loose gear, its shaft and friction devices for engaging the same in one direction for actuating the said rollers and gears, of a pinion on the shaft of the loose gear, a rack for revolving the pinion, shaft and loose gear, and adjustable and regulatable devices actuating the rack for imparting the desired longitudinal movement thereto, devices actuated by the source of power for operating the said adjustable and regulatable devices and means for disconnecting the same when desired from the said power devices, substantially as set forth.

18. In a machine for making book-covers, the combination with rollers and gears for feeding the back-lining strip into the machine, and a loose gear, its shaft, and friction devices for engaging the same in one direction for actuating the said rollers and gears, of a pinion on the shaft of the loose gear, a rack for

revolving the pinion, shaft and loose gear, and adjustable and regulatable devices actuating the rack for imparting the desired longitudinal movement thereto, and by which the relation of the parts may be altered for effecting a variation in the length of feed of the back-lining strip, substantially as set forth.

19. In a machine for making book-covers, the combination with rollers for feeding the back-lining strip into the machine, gears for operating said rollers and friction devices for moving said gears in one direction, of a rack and pinion for actuating said gears and friction devices, a crank and connections therefrom for actuating the said rack, an adjustable connection between the said crank and rack for shortening or lengthening the throw of the crank and imparting greater or less movement to the said rack, and means for actuating the said crank, substantially as set forth.

20. In a machine for making book-covers, the combination with rollers for feeding the back-lining strip into the machine, gears for operating said rollers and friction devices for moving said gears in one direction, of a rack and pinion for actuating said gears and friction devices, a slotted crank, gears and a rack for imparting a backward-and-forward movement to said slotted crank, and means for disconnecting the same, a crank-pin movable longitudinally in the said slotted crank, means for determining the position of the said crank-pin and a connection from the same to the rack for actuating the back-lining feed, substantially as set forth.

21. In a machine for making book-covers, the combination with rollers for feeding the back-lining strip into the machine, gears for operating said rollers and friction devices for moving said gears in one direction, of a rack and pinion for actuating said gears and friction devices, a slotted crank, gears and a rack for imparting a backward-and-forward movement to said slotted crank and means for disconnecting the same, a crank-pin and block movable lengthwise of the said slotted crank, a screw passing through the slotted crank-pin and also through the shaft of the crank for moving the crank-pin nearer to or farther from the crank-shaft and for securing the position of the said crank-pin, a block upon the said crank-pin and ribs upon the surface of the rack forming slideways for said block, whereby the said crank imparts a forward-and-backward movement to the said rack and the extent of movement of the said rack and consequently the extent of feed of the back-lining strip are determined and regulated, substantially as set forth.

22. In a machine for making book-covers, the combination with means for progressively feeding the back-lining strip to the machine, of a support for the said roll of back-lining strip, plates for holding the roll of back-lining strip in place upon the support and adjust-

able guides upon said plates and between which the said strip unwinds as it passes to the feeding devices, substantially as set forth.

23. In a machine for making book-covers, the combination with means for feeding the back-lining strip into the machine, of a bracket-arm and a headpiece connected to the frame of the machine, the said headpiece having a curved portion and a groove, an arm pivoted to the said bracket and a handle connected to the said arm, the back-lining strip passing between the said arm and the said groove, whereby the handle is brought into action to force the back-lining strip between the said arm and into the groove of the bracket-head to remove inequalities and straighten out the strip, substantially as set forth.

24. In a machine for making book-covers, the combination with the frame, of a bracket-head and bracket-arm connected to and supported thereby, a shaft 86 carried by the bracket-arm for supporting the roll of back-lining strip, plates upon the said shaft at either side of the roll of back-lining strip for keeping the same in place and guides 88 connected to the upper ends of said plates, and means for regulating the position of said guides to the width of the back-lining strip, substantially as set forth.

25. In a machine for making book-covers, the combination with a table and supporting-bracket for receiving the book-covers as delivered from the machine, of a support to which the said bracket is connected, friction devices maintaining the position of the said bracket in relation to the support, and means substantially as specified and adapted to come in contact with the pile of superposed finished covers for periodically releasing the said friction devices for allowing the bracket and table to descend, substantially as set forth.

26. In a machine for making book-covers, the combination with the frame and a substantially vertical slide-bar connected therewith, of a slide-block in the said slide-bar, a table connected to the said slide-block, and means for frictionally maintaining the relation of the said slide-block to the said slide-bar, devices operated by the vertical movement of the platen and means connected therewith and adapted to come in contact with the pile of superposed finished covers, and means actuated by the movement of said parts for actuating the said friction devices for progressively releasing and lowering and again engaging the support for the covers, substantially as set forth.

27. In a machine for making book-covers, the combination with a substantially vertical slide-bar and connections therefrom to the frame of the machine, of a slide-block movable in said slide-bar, a table for the pile of superposed covers connected to the said slide-block, a friction-rod placed substantially vertical between the said slide-bar and slide-block, a crank-arm connected to the upper

end of the said bar and adapted to impart a slight turning movement thereto, a spring for holding the said bar in a normal position and causing the said rod to bear frictionally against the slide-block for maintaining the same and the table in position, and means adapted to come in contact with the pile of superposed book-covers for moving the said bent lever and releasing the friction to allow the table to descend, substantially as set forth.

28. In a machine for making book-covers, the combination with a substantially vertical slide-bar and connections therefrom to the frame of the machine, of a slide-block movable in said slide-bar, a table for the pile of superposed covers connected to the said slide-block, a friction-rod placed substantially vertical between the said slide-bar and slide-block, a crank-arm connected to the upper end of the said rod and adapted to impart a slight turning movement thereto, a spring for holding the said rod in a normal position and causing the said rod to bear frictionally against the slide-block for maintaining the same and the table in position, a vertically-movable platen and pivoted arms actuated thereby, and means pivotally connected to said arms and adapted to come in contact with the pile of superposed book-covers for moving the said crank-arm and releasing the friction-rod to allow the table to descend by gravity, substantially as set forth.

29. In a machine for making book-covers, the combination with a substantially vertical slide-bar and connections therefrom to the frame of the machine, of a slide-block movable in said slide-bar, a table for the pile of superposed covers connected to the said slide-block, a friction-rod placed substantially vertical between the said slide-bar and slide-block, a crank-arm connected to the upper end of the said friction-rod and adapted to impart a slight turning movement thereto, a spring for holding the said friction-rod in a normal position and causing the said rod to bear frictionally against the slide-block for maintaining the same and the table in position, a vertically-movable platen, arms pivoted to the frame of the machine and connections therefrom to the said platen whereby a swinging movement is imparted to said arms, a cross-bar connecting the free ends of said arms, links pivoted to the said arms and connected at their free ends by another cross-bar, a bar connected to one of the said links and depending therefrom and slotted at its lower end and receiving in said slot the free end of the aforesaid crank-arm, substantially as and for the purposes set forth.

30. In a machine for making book-covers, the combination with the glue-roll and the cloth-cylinder, of a pivoted shaft and supports therefor, a lever secured to said shaft, a dry-back scraper connected to said shaft, a spring for actuating said lever in one direc-

tion, and means connected to the cloth-cylinder for swinging the said lever periodically, substantially as set forth.

5 31. In a machine for making book-covers the combination with the glue-roller, of the cloth-cylinder having an annular groove at one end and a notch or enlargement in the said groove, pins adjustably secured in said groove and a spring-actuated lever and
10 scraper operated by the rotation of the cloth-cylinder and contact with the said pins, substantially as set forth.

32. In a machine for making book-covers, the combination with the glue-roller, of the
15 cloth-cylinder having an annular groove at one end and a notch or enlargement in the said groove, pins adjustably secured in said groove, a pivot-shaft connected to the frame of the glue-cylinder, a lever pivoted to said
20 shaft, a spring for actuating the short end of

said lever, the long end of said lever having a curved portion coinciding with the arc of the annular groove in the end of the cloth-cylinder and having inclined ways at opposite sides of the said curved portion for en- 25 gagement with the said pins of the cloth-cylinder, and a dry-back scraper secured to the said pivot-shaft, whereby the said spring acting upon the lever brings the dry-back scraper into contact with the glue-cylinder and the
30 pins in the cloth-cylinder acting upon the long end of the lever periodically swing the lever and remove the dry-back scraper from contact with the surface of the glue-cylinder, substantially as set forth. 35

Signed by me this 8th day of January, 1900.

ARTHUR I. JACOBS.

Witnesses:

S. M. GLADWIN,

ROBERT H. SCHUTZ.