



No. 621,965.

Patented Mar. 28, 1899.

G. W. JORDAN.  
MACHINE FOR SCORING CARDBOARD.

(Application filed May 18, 1896.)

(No Model.)

5 Sheets—Sheet 2.

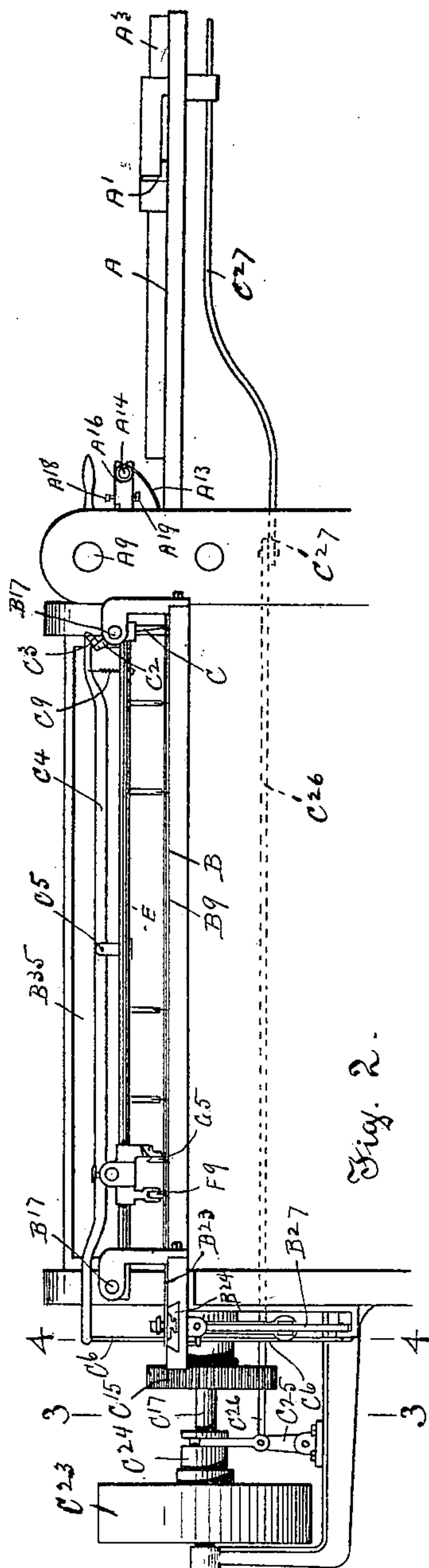


Fig. 2.

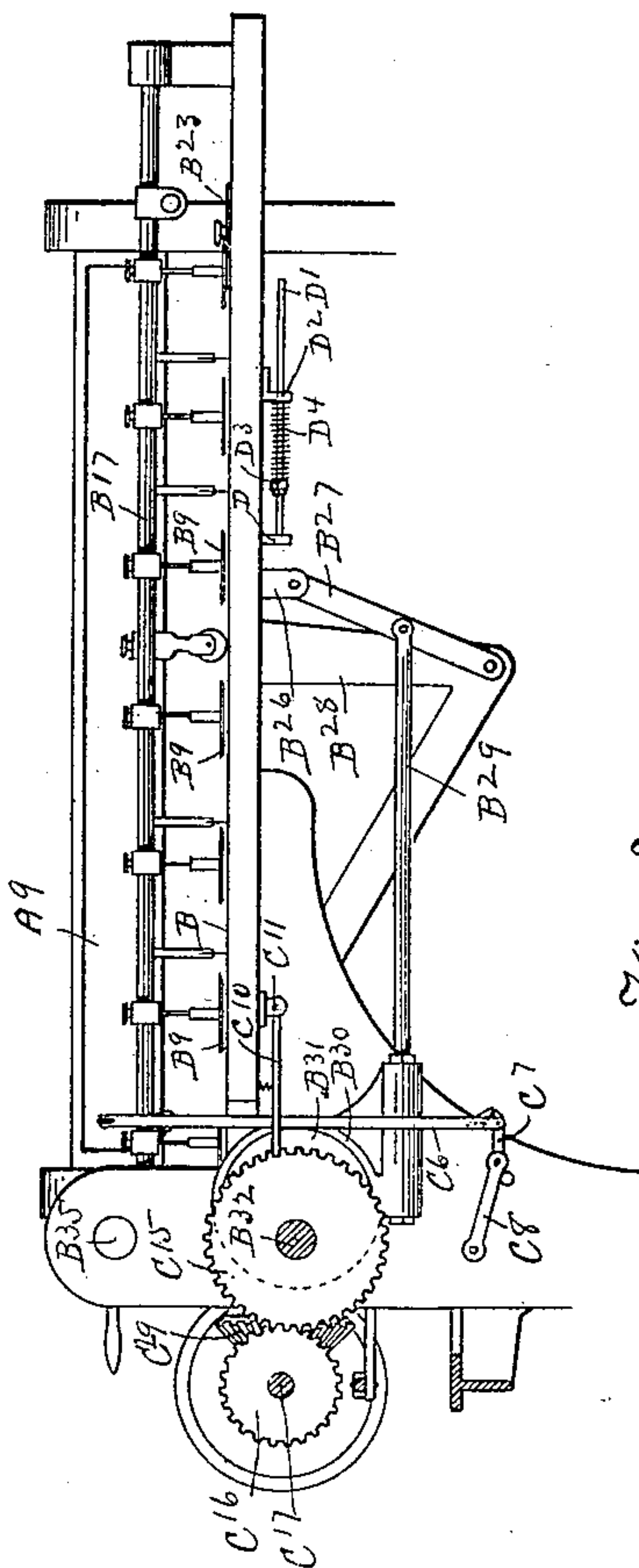


Fig. 3.

Witnesses

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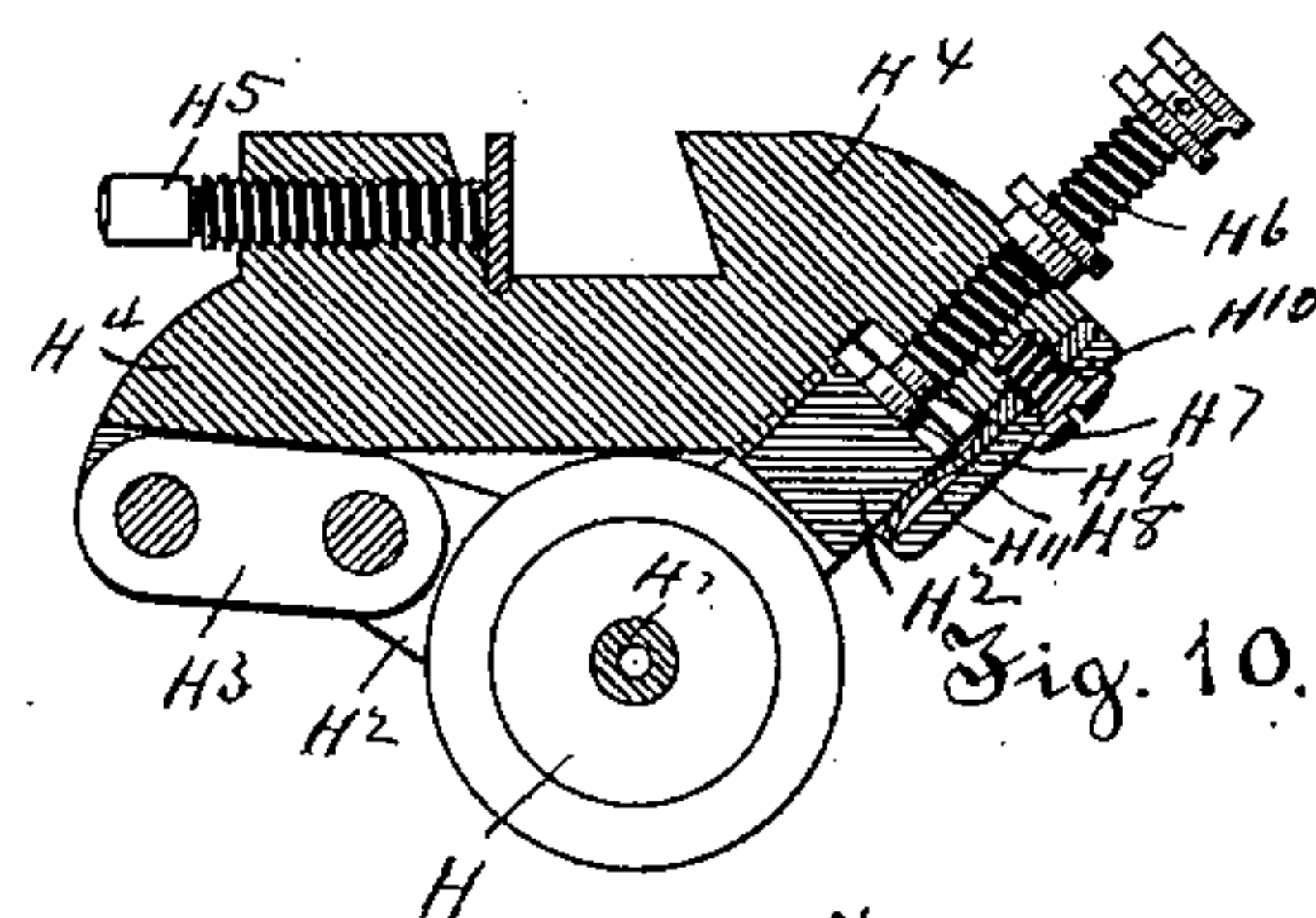
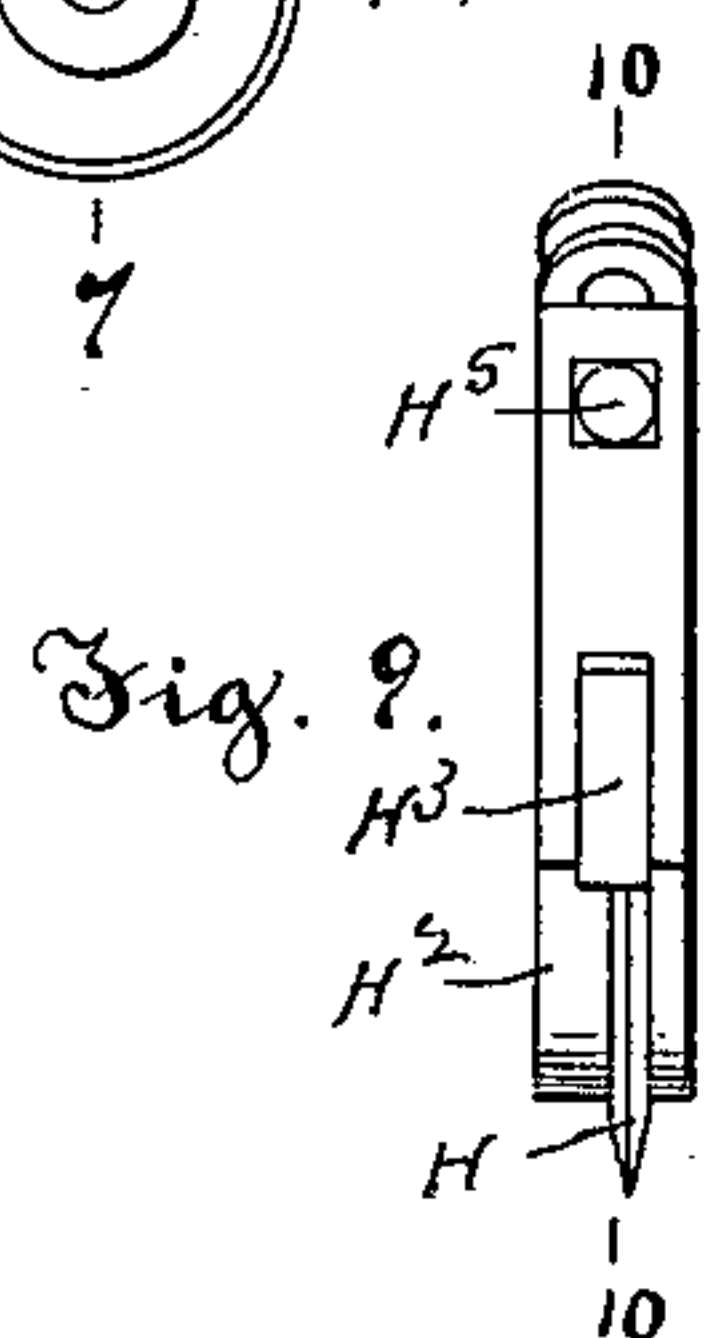
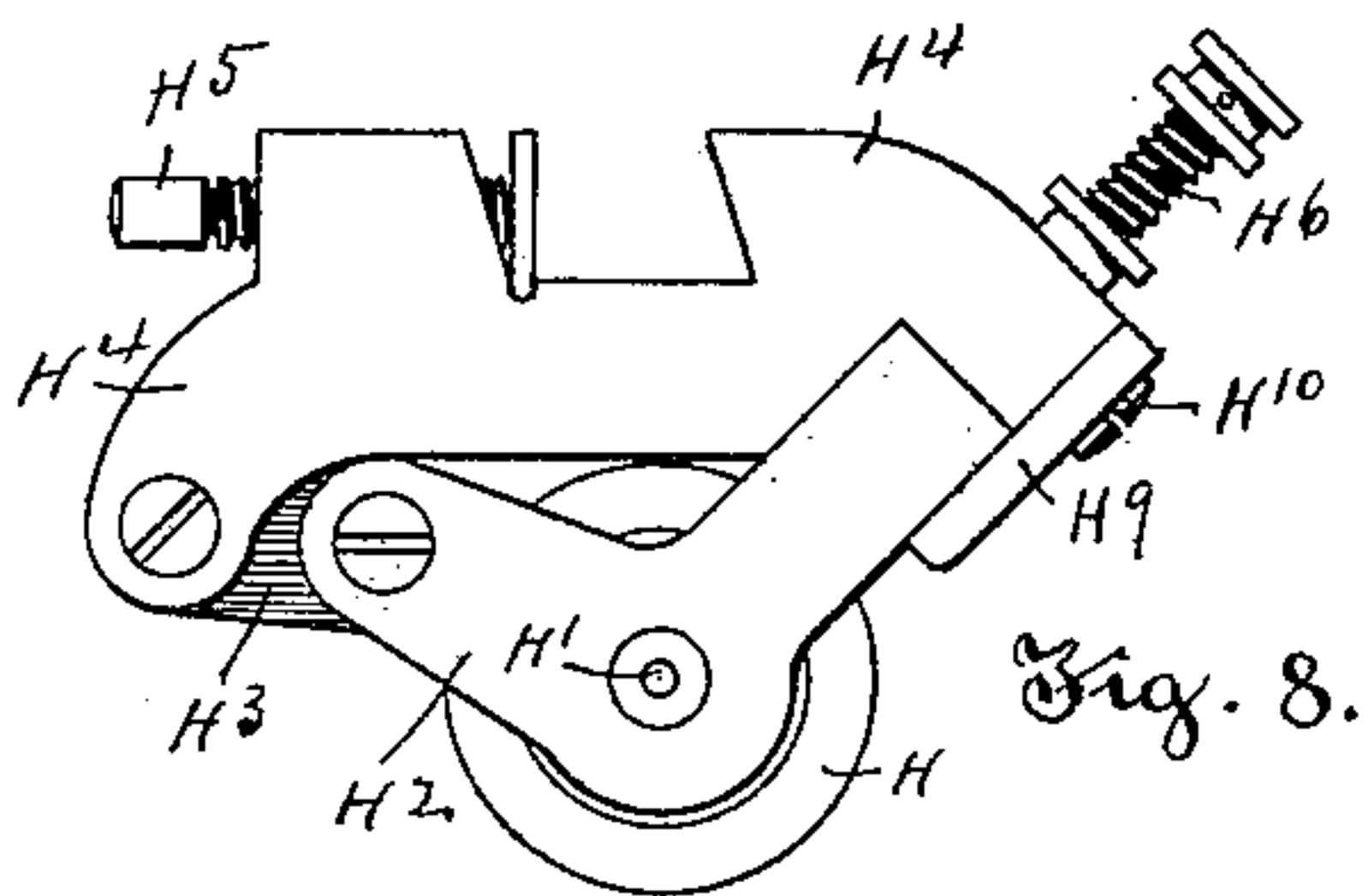
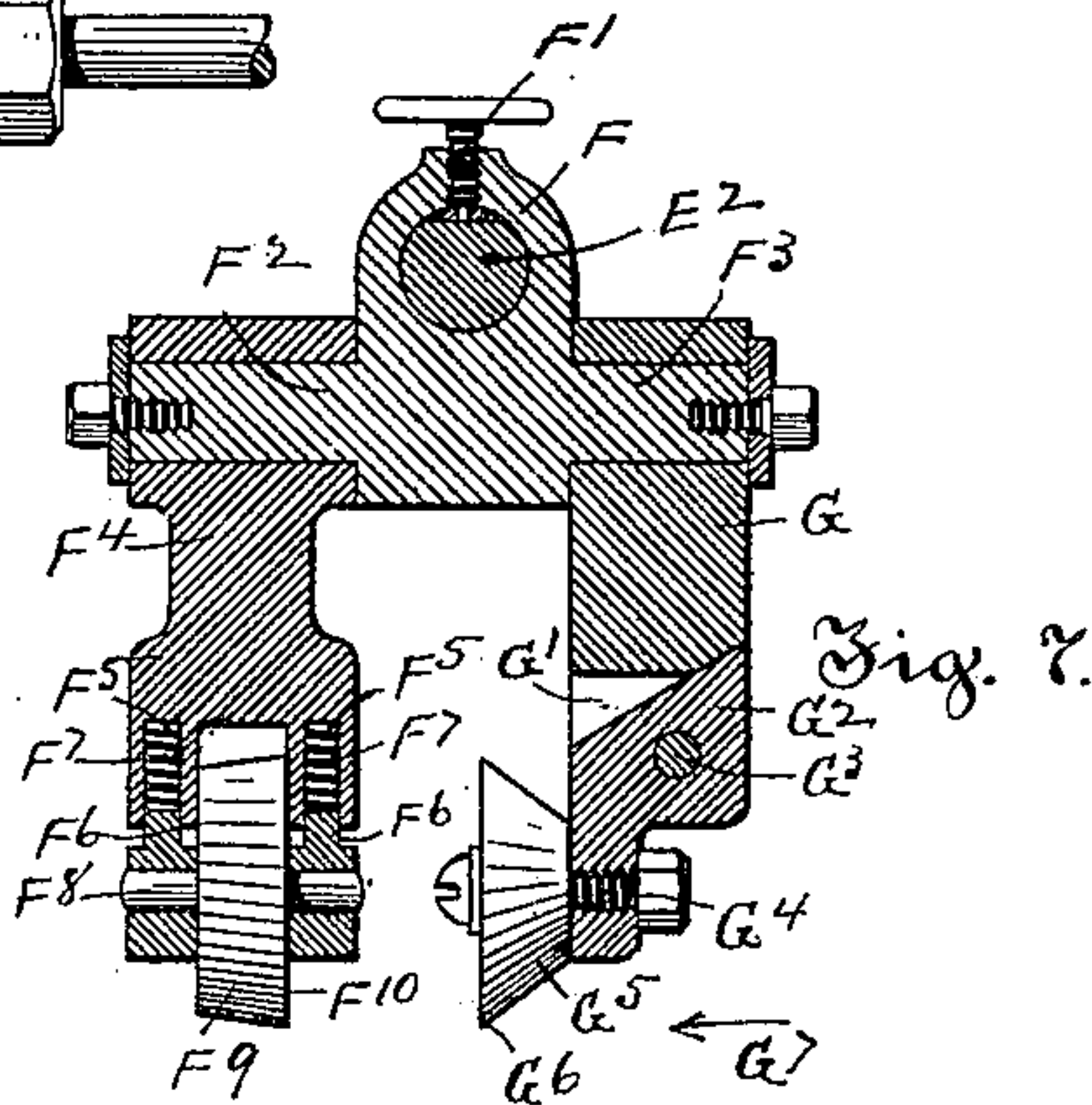
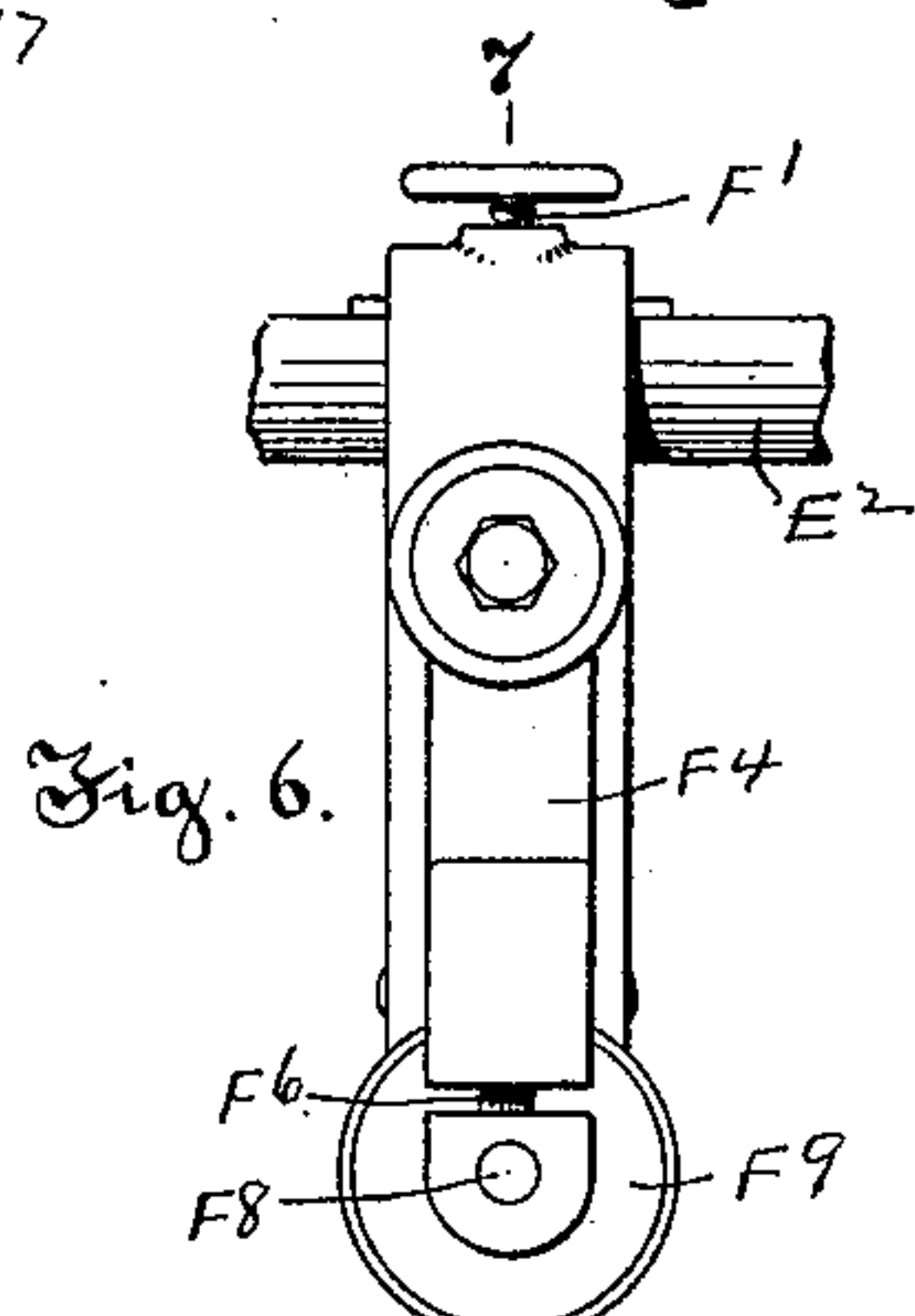
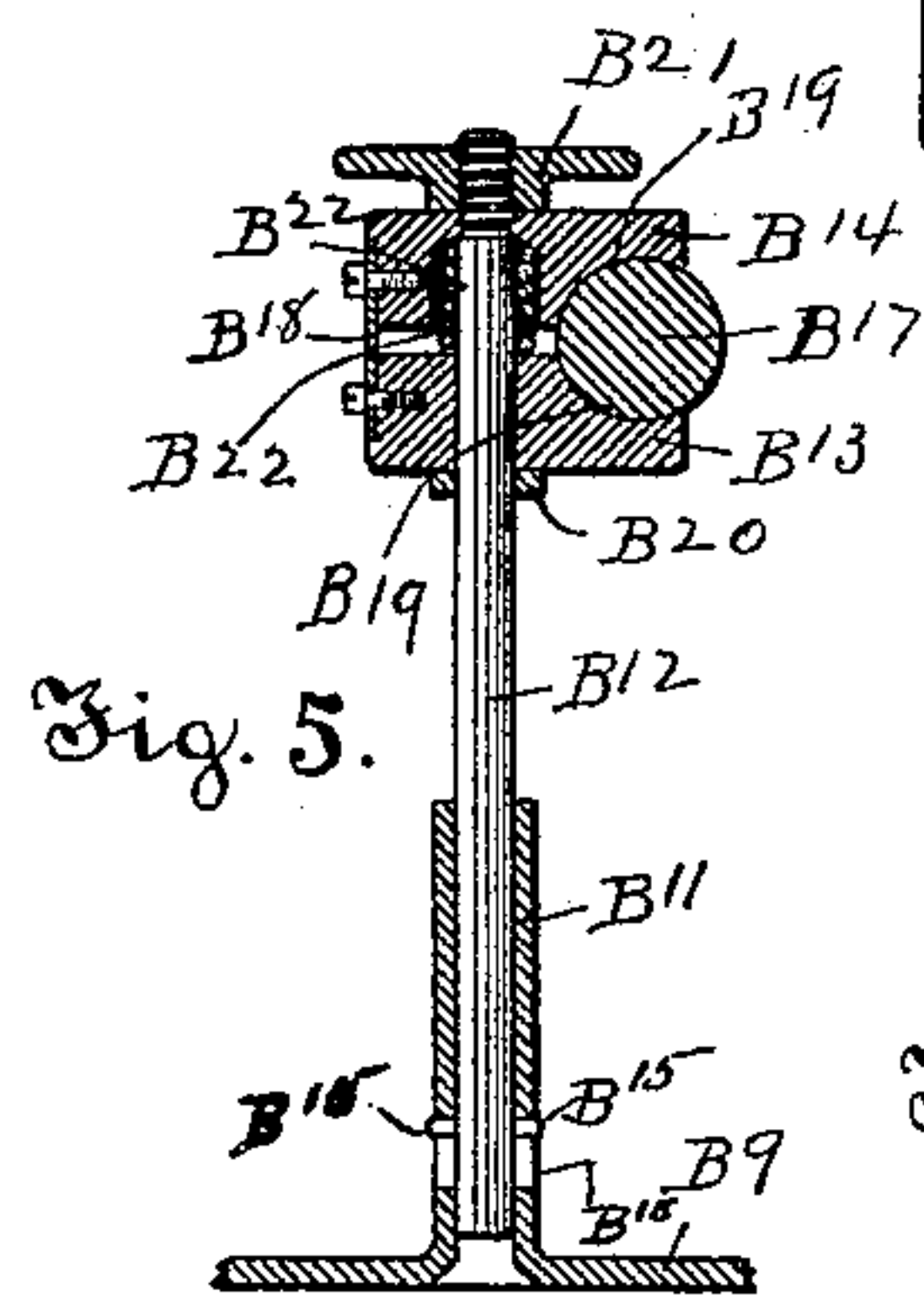
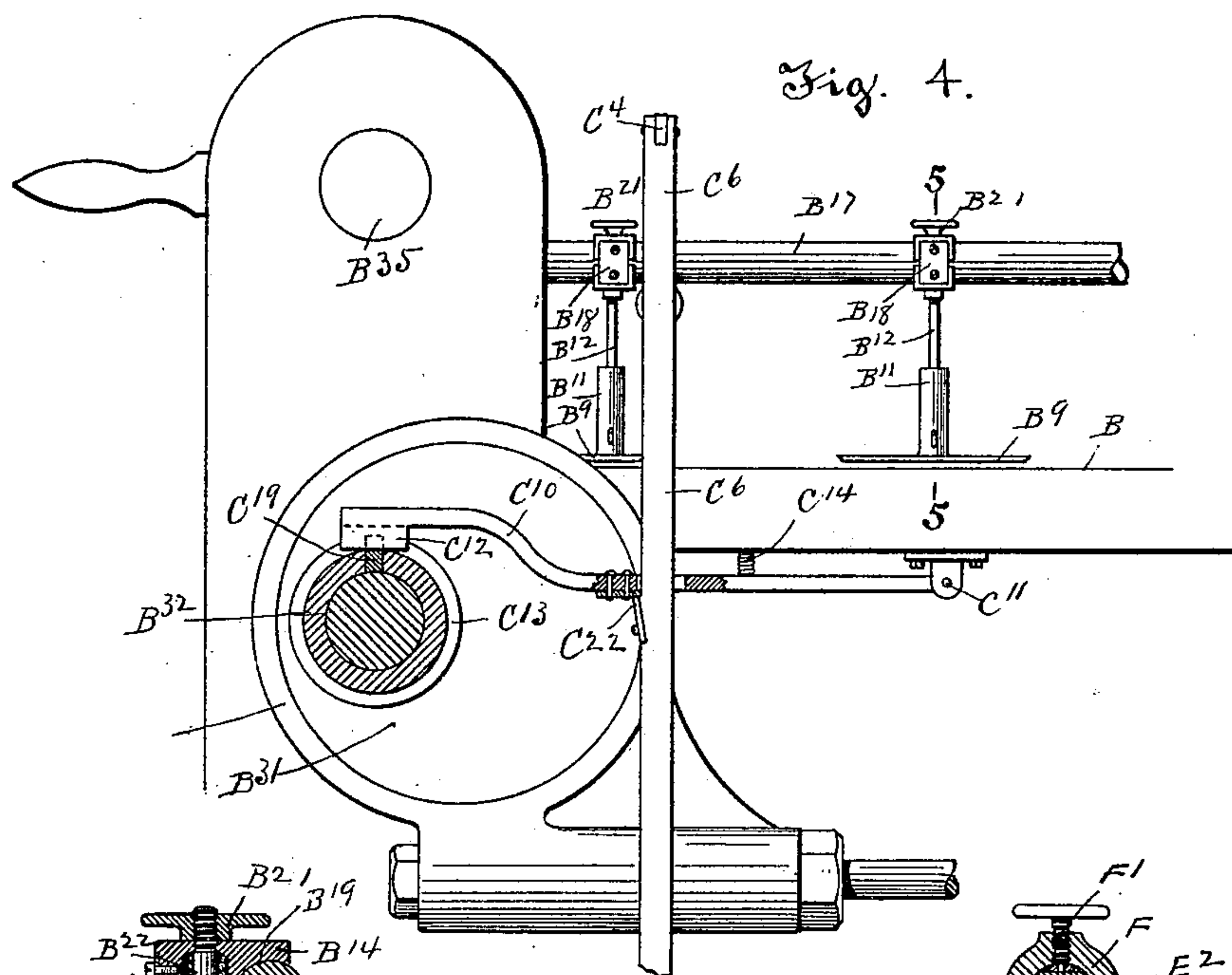
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5 Sheets—Sheet 4.

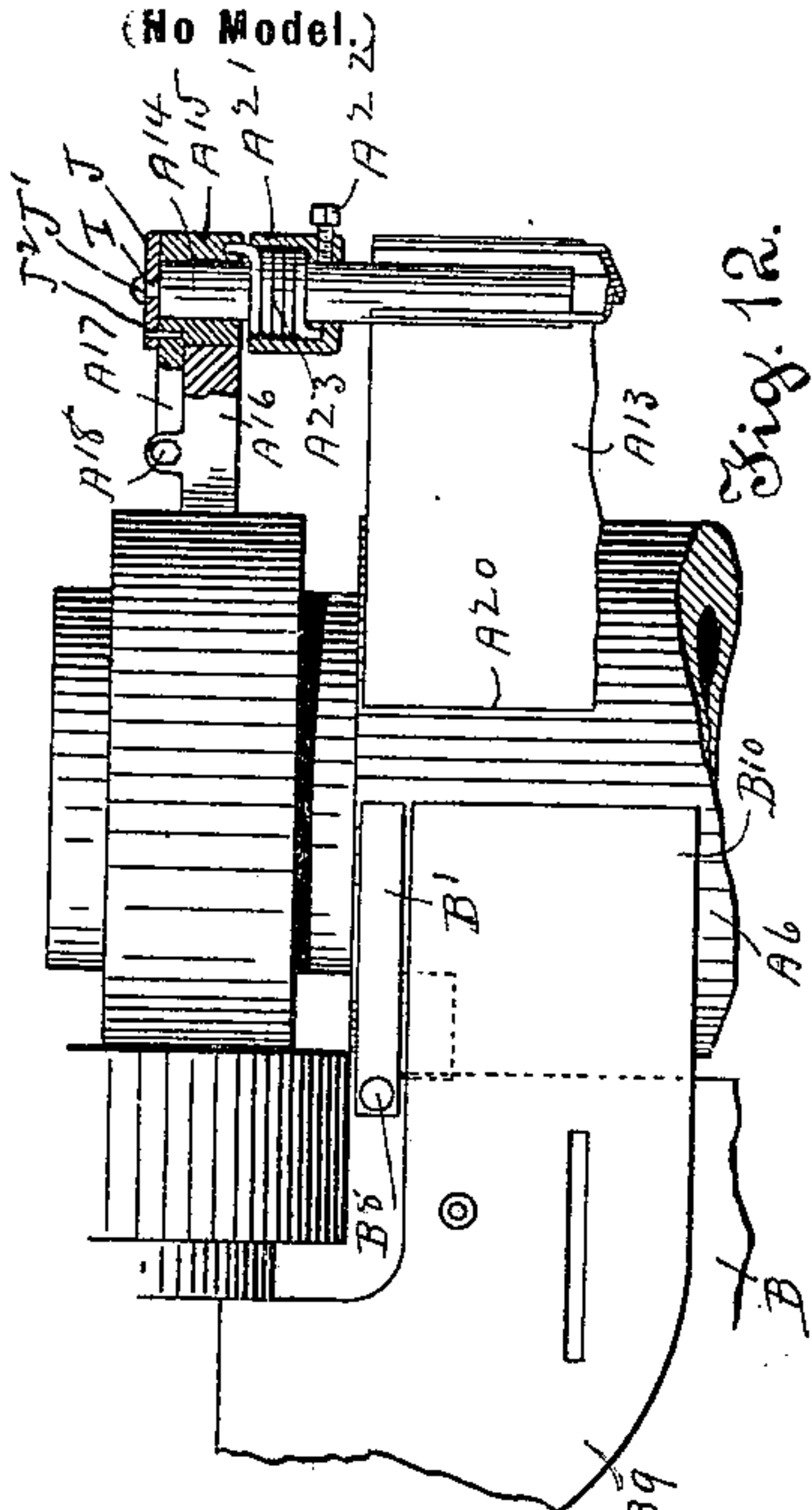


Fig. 12.

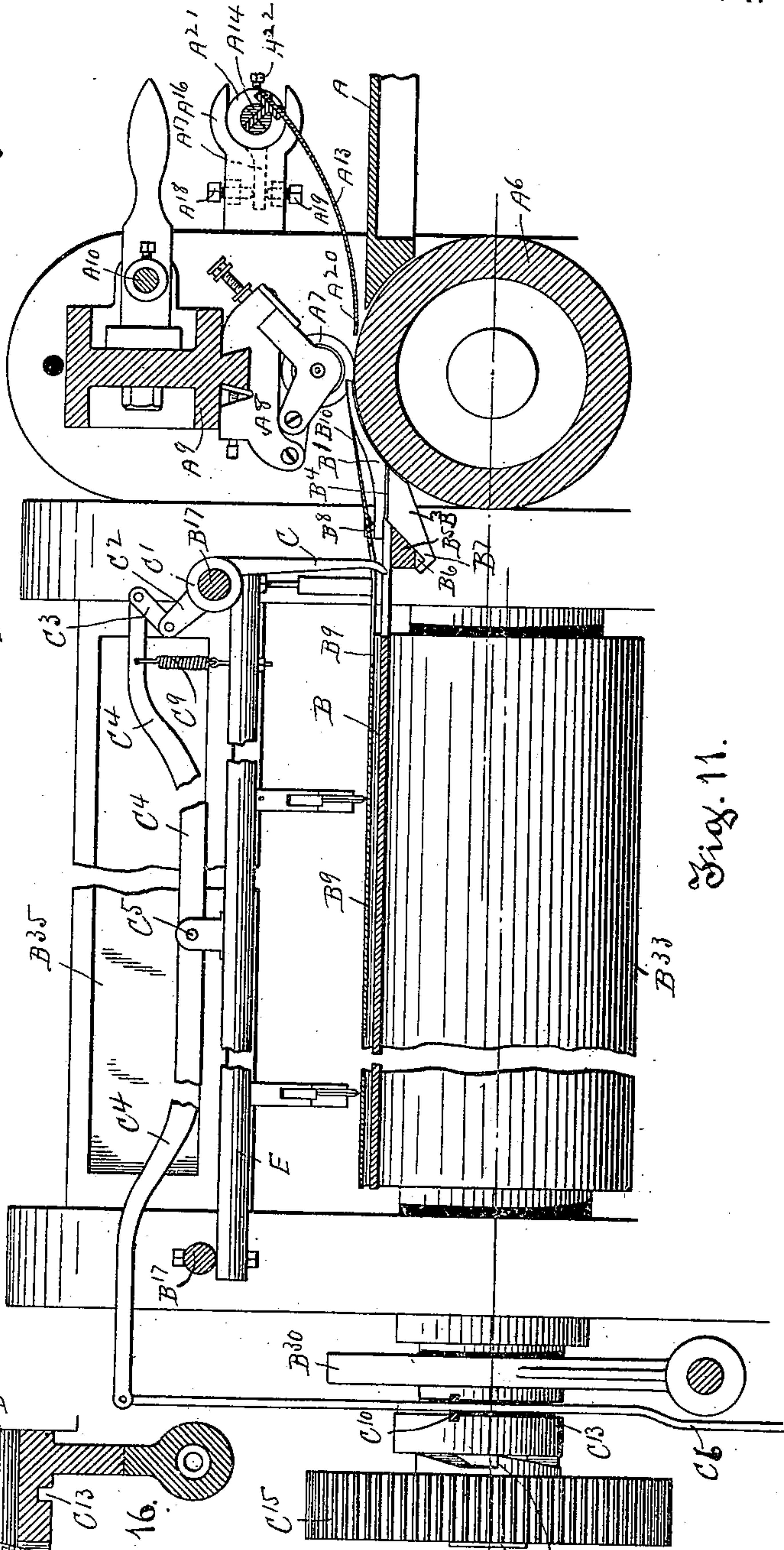


Fig. 11.

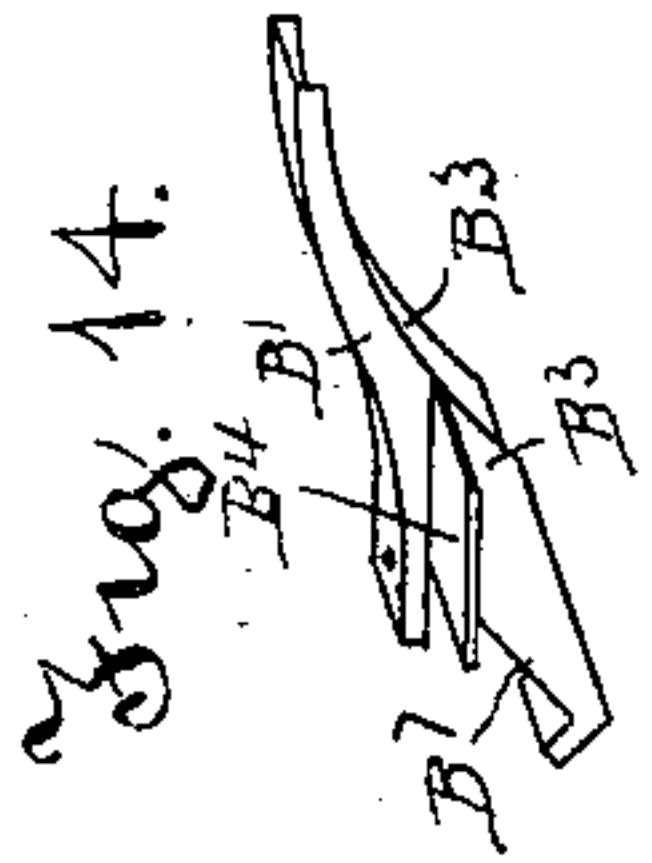


Fig. 14.

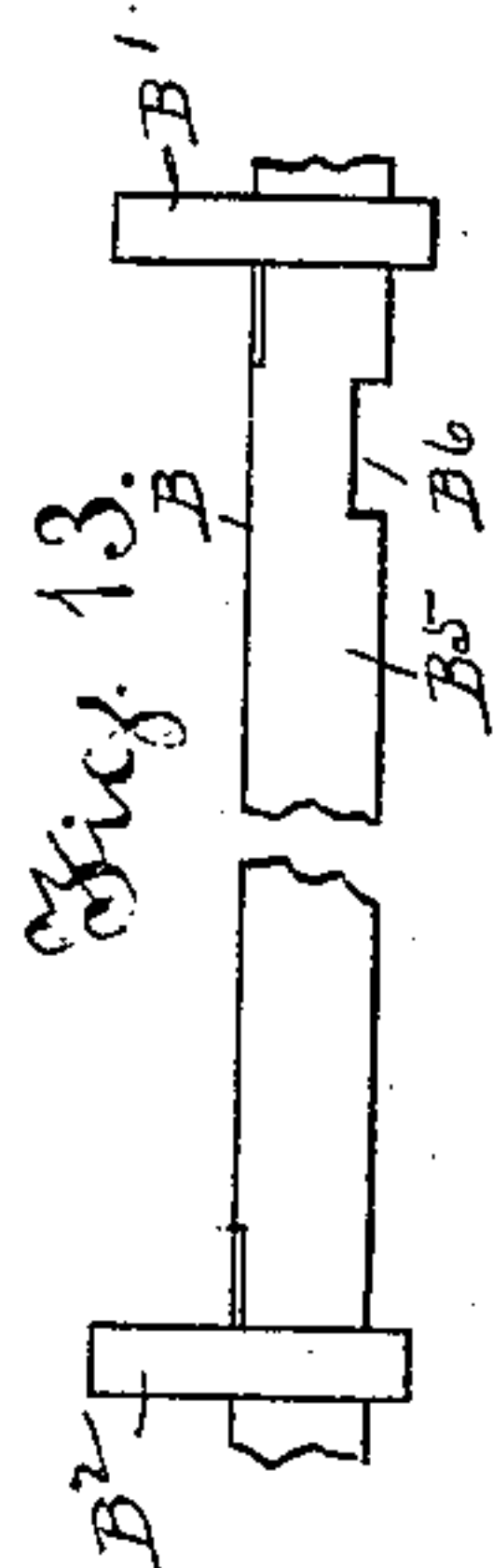


Fig. 13.

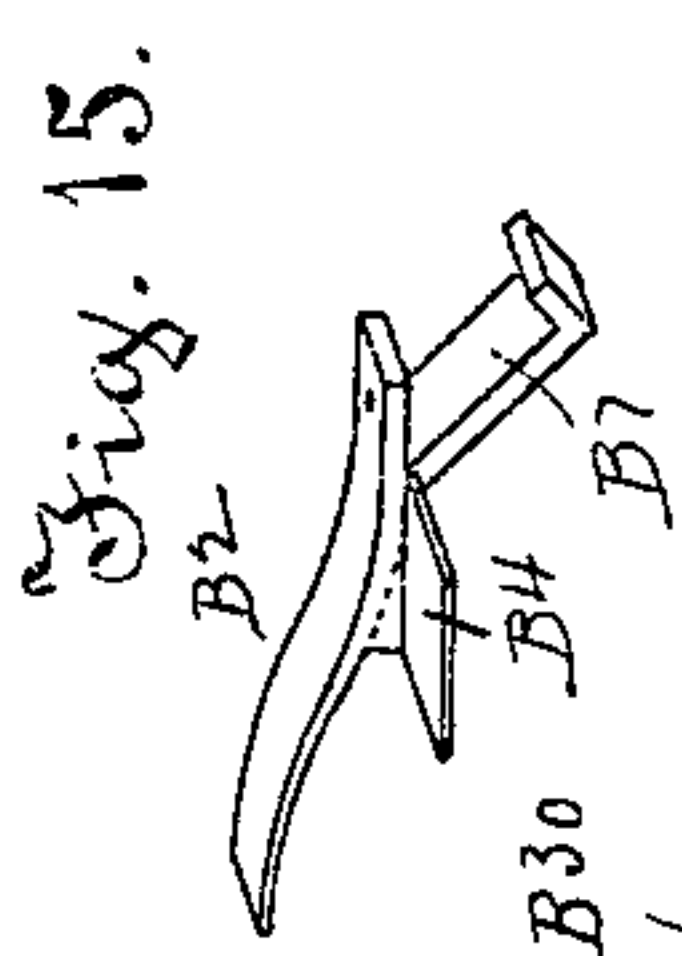


Fig. 15.

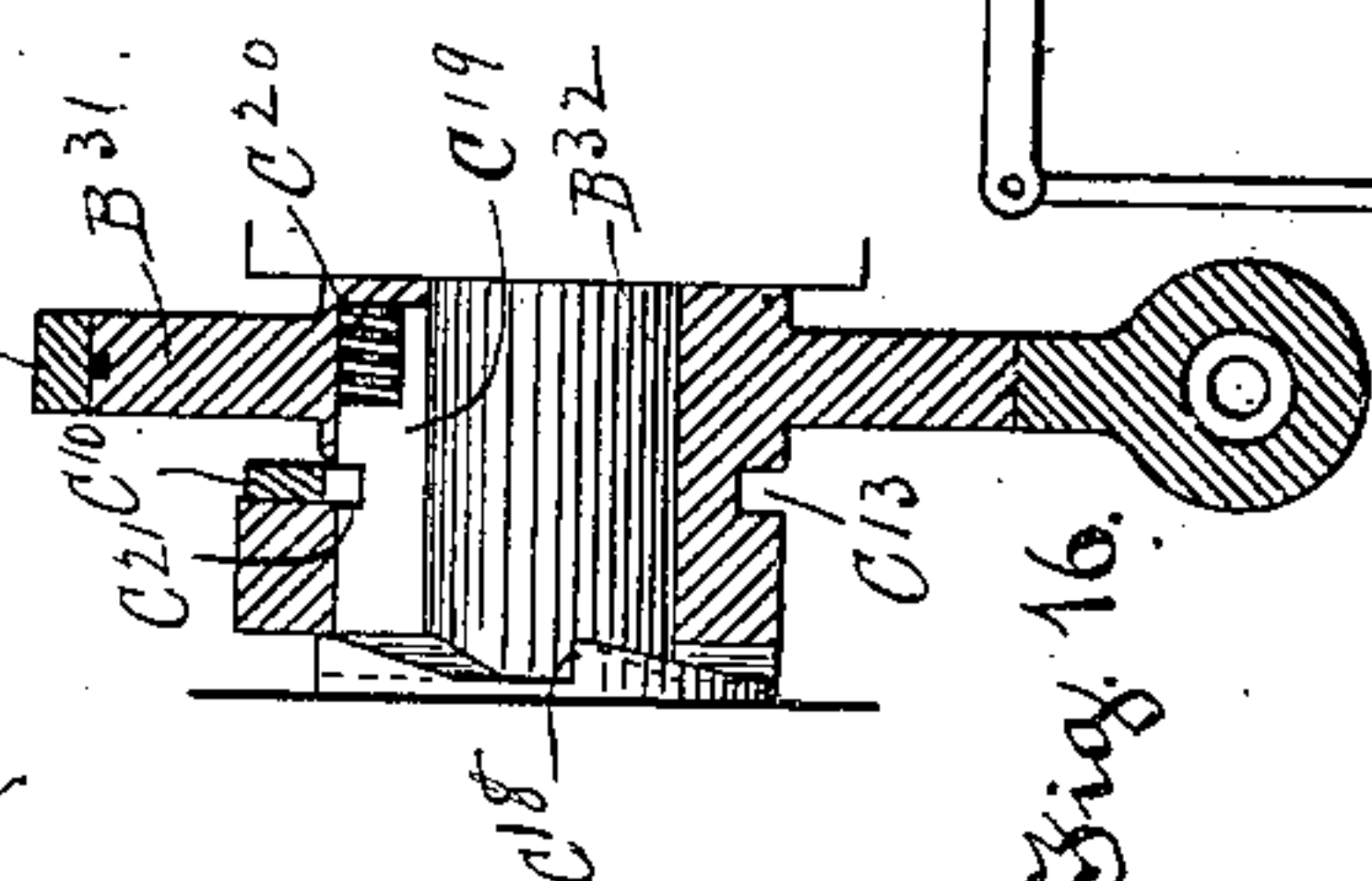


Fig. 16.

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(No Model.)

5 Sheets—Sheet 5.

Fig. 18.

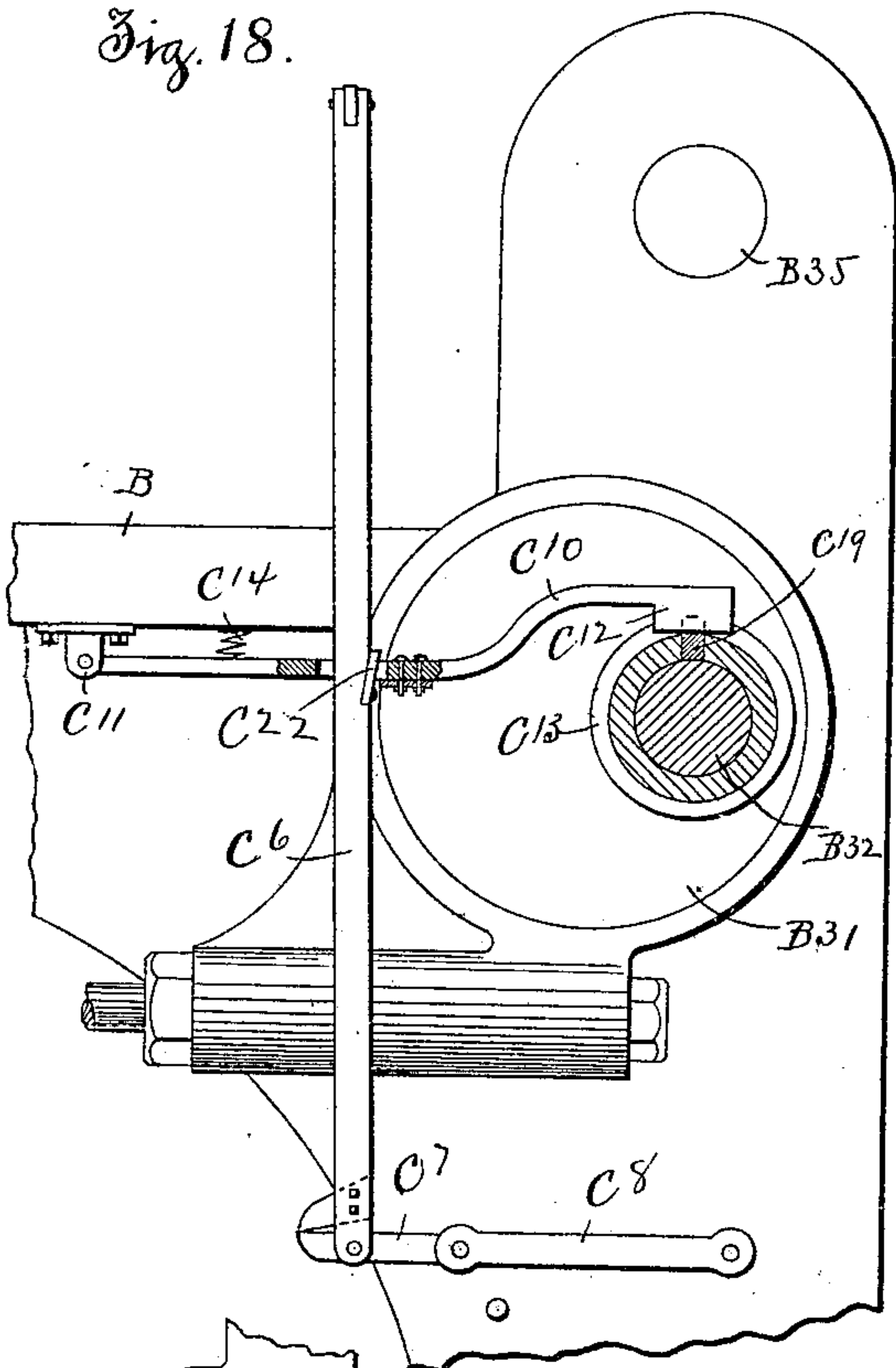


Fig. 17.

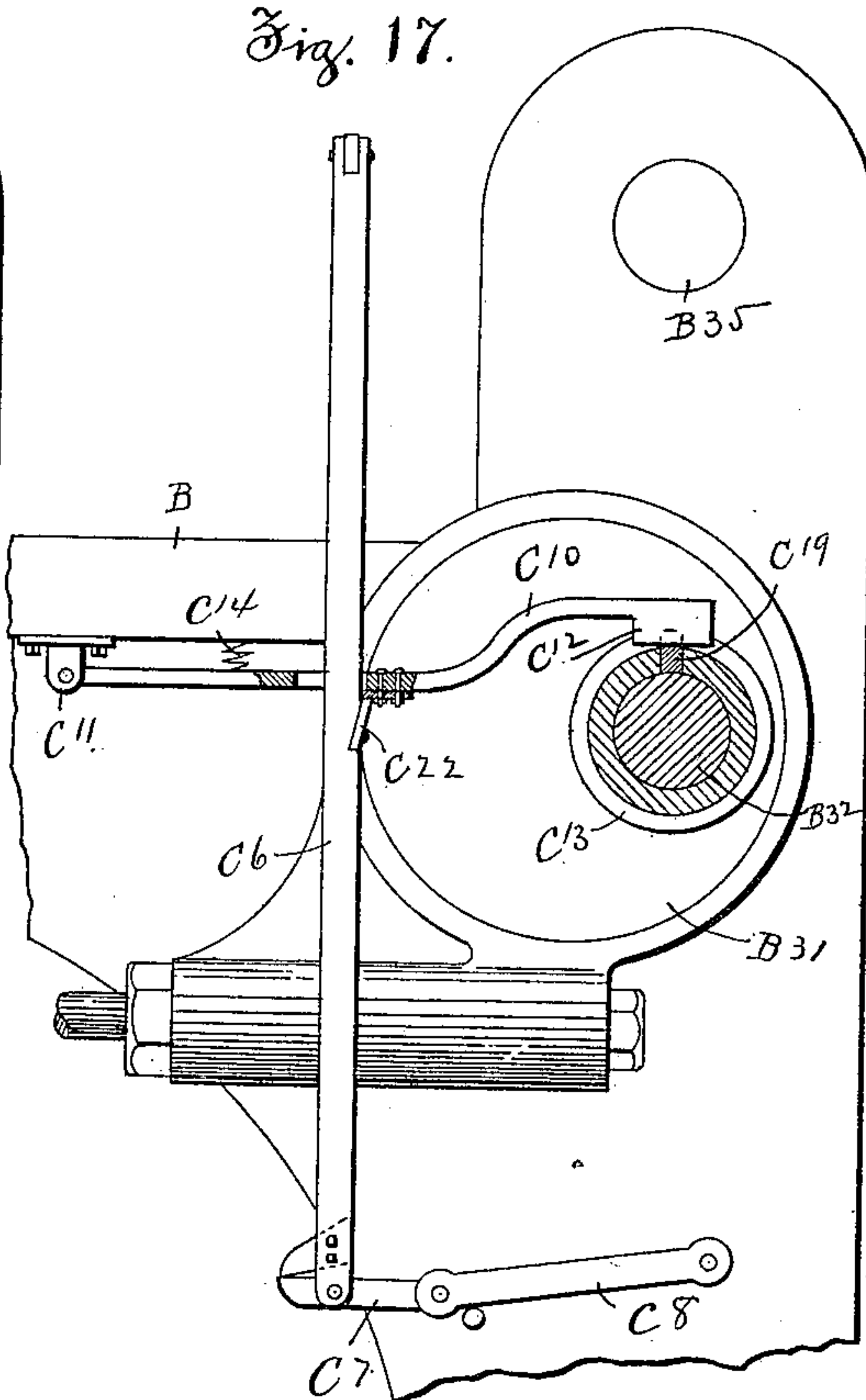


Fig. 19.

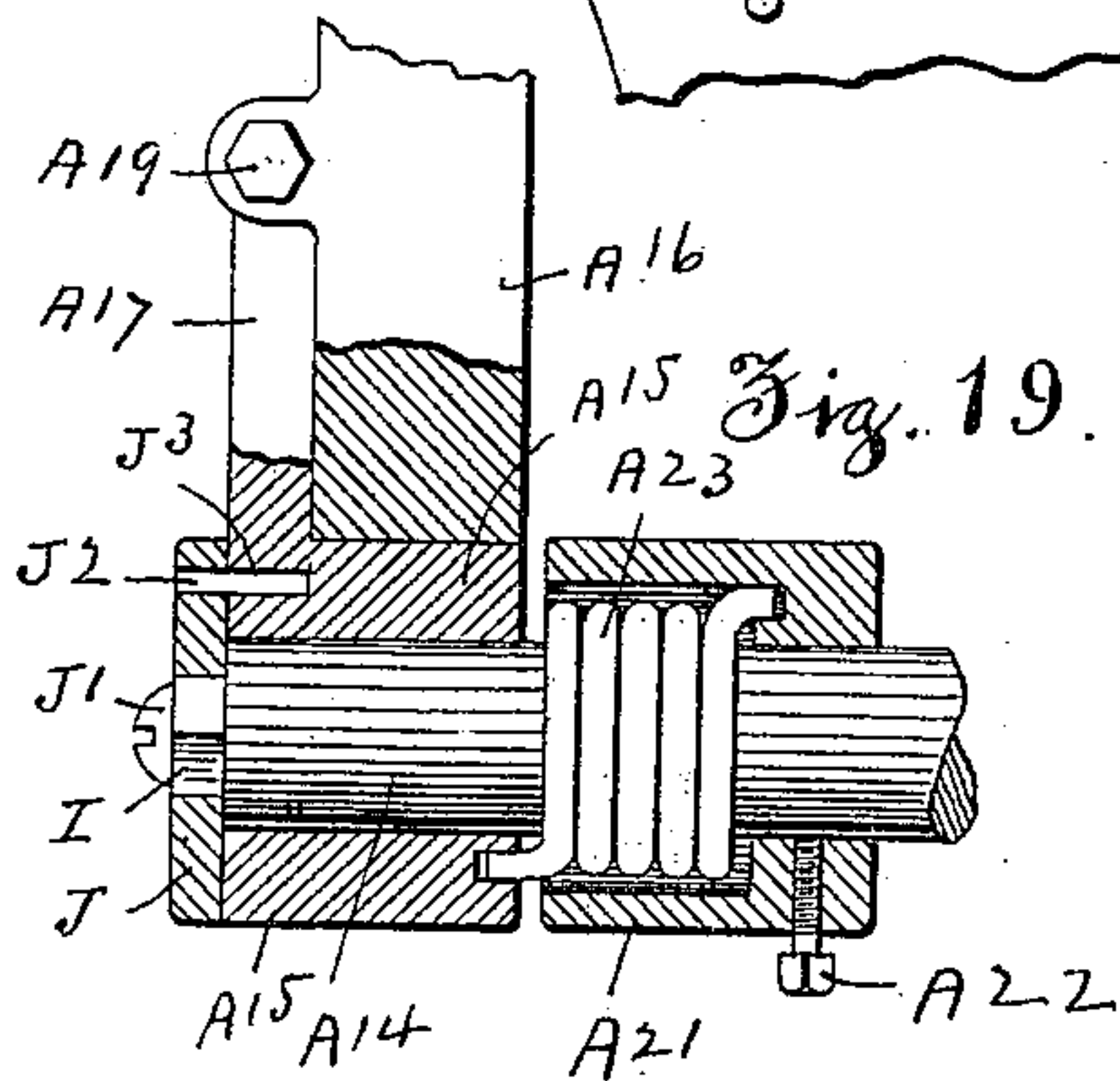
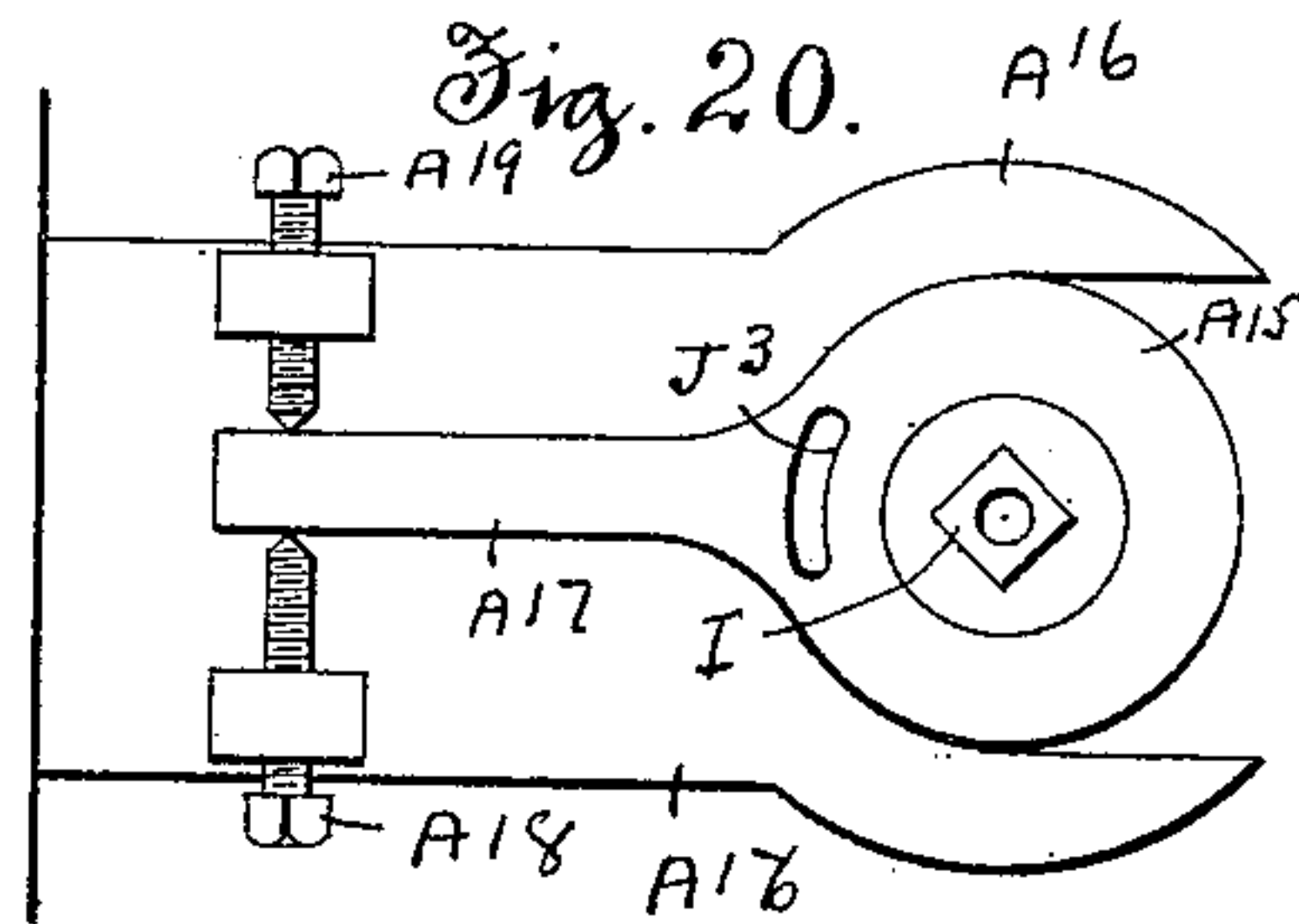


Fig. 20.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR SCORING CARDBOARD.

SPECIFICATION forming part of Letters Patent No. 621,965, dated March 28, 1899.

Application filed May 18, 1896. Serial No. 591,902. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. JORDAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Machines for Scoring Cardboard, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents a top view of a scoring-machine embodying my invention. Fig. 1<sup>a</sup> shows a portion of one of the feed-tables with a guide-rib attached thereto, forming the way or track for the pushing-plate. Fig. 2 represents a side view of the upper part of the machine, the lower portion of the supporting-framework being omitted. Fig. 3 is an end view of the upper part of the machine, shown in sectional view on line 3 3, Fig. 2. Fig. 4 is an end view of a portion of the machine, shown on a larger scale and showing the eccentric by which a reciprocating motion is given to the second pushing-plate, the shaft carrying said eccentric being shown in sectional view on line 4 4, Fig. 2. Fig. 5 is a central sectional view on line 5 5, Fig. 4, of the clamping device for supporting the horizontal retaining-plates arranged over the second feed-table. Fig. 6 is an end view of the adjustable stop for limiting the forward movement of the cardboard on the second feed-table and for holding it against any rebound or forward movement. Fig. 7 is a central vertical sectional view of the same on line 7 7, Fig. 6. Fig. 8 is a side view of one of the adjustable cutters. Fig. 9 is an end view of the same. Fig. 10 is a central sectional view on line 10 10, Fig. 9. Fig. 11 represents portions of the two scoring-rolls with portions of the first and second feed-tables on an enlarged scale, showing the spring-actuated pressure-plate in vertical sectional view, by which the cardboard is held down as it passes to the first scoring mechanism, and also showing portions of the tripping mechanism by which the movement of the cardboard onto the second feed-table is made to control the reciprocating movement of the second pushing-plate. Said Fig. 11 also shows one of the guide-plates by which the strip cut from the edge of the cardboard, in order to

trim the same, is diverted and carried below the second feed-table. Fig. 12 is a top view of a portion of the spring-actuated pressure-plate, certain parts being shown in sectional view in order to disclose the torsional spring by which the pressure-plate is held upon the cardboard with a yielding pressure. Fig. 13 is an edge view of the second feeding-table with the guide-plates for turning the strips cut from the sides of the cardboard beneath the table. Fig. 14 is a perspective view of the guide-plate attached to the edge of the second feed-table next the scoring-roll for turning the severed strip of cardboard beneath the table. Fig. 15 is a perspective view of the guide-plate attached to the edge of the second feed-table farthest from the second scoring-roll, and Fig. 16 is a central sectional view of the eccentric for moving the pushing-plate and clutching mechanism.

Similar letters refer to similar parts in the different figures.

My invention relates to certain improvements in that class of scoring-machines which comprise two scoring mechanisms for the purpose of scoring a sheet of cardboard in two directions at right angles to each other to allow the cardboard to be bent on its scored lines in the manufacture of a paper box, the machine embodying my present invention being what is known as a "double-scoring" machine; and my present invention consists in certain features of construction and arrangement of parts, as hereinafter described, and specifically pointed out in the annexed claims, by which certain advantages are secured, such as simplicity of construction, efficiency and accuracy of operation, and automatic control of the cardboard, as hereinafter set forth.

Referring to the drawings, A denotes the first feed-table, upon which a sheet of cardboard is fed to the first scoring mechanism, it being pushed forward on the table A by hand by means of a pushing-plate A', projecting laterally from a sliding plate A<sup>2</sup>, which slides upon and is guided by the vertical member A<sup>3</sup> of an angle-plate A<sup>4</sup>, adjustably attached to the feed-table A by a tightening-bolt A<sup>5</sup>.

The first scoring mechanism consists of a



bed-roll  $A^6$  and rotating cutters  $A^7$ , held in frames  $A^8$ , adjustably attached to the under side of a cutter-bar  $A^9$ , which is journaled at its ends in the framework of the machine in order to allow it to be rotated to raise the rotating cutters into convenient position for adjustment, said cutter-bar  $A^9$  being held from rotation during the operation of the machine by a sliding bolt  $A^{10}$  in lugs projecting from the side of the cutter-bar, with its end carried by the springs  $A^{11}$  into a hole in the framework of the machine. The sliding bolt  $A^{10}$  is withdrawn to allow the cutter-bar to be rotated by means of the pivoted lever-handle  $A^{12}$   $A^{12}$ .

As the sheet of cardboard passes from the feed-table  $A$  over the bed-roll  $A^6$  it passes beneath a pressure-plate  $A^{13}$ . (Shown in sectional view and on a larger scale in Figs. 11 and 12.)

The pressure-plate  $A^{13}$  consists of a curved sheet-metal plate provided at its upper edge with gudgeons  $A^{14}$   $A^{14}$ , which are journaled in a sleeve  $A^{15}$ , held in and capable of being slightly rocked in the forked ends of the brackets  $A^{16}$ , which project from the framework of the machine. The sleeves  $A^{16}$  are provided with the tailpieces  $A^{17}$ , which extend between adjusting-screws  $A^{18}$   $A^{19}$ , held in lugs projecting from the brackets  $A^{16}$ , the adjustment of the screws serving to rock the sleeves  $A^{15}$  slightly within their forked bearings, so as to change the position of the pressure-plate  $A^{13}$  and vary the distance between the lower edge  $A^{20}$  of the pressure-plate and the bed-roll  $A^6$ .

Flanged collars  $A^{21}$  are attached to the gudgeons  $A^{14}$  by set-screws  $A^{22}$  and inclose torsional springs  $A^{23}$ , one of which is shown in Fig. 12. One end of the torsional spring  $A^{23}$  engages the collar  $A^{21}$ , and the opposite end engages the sleeve  $A^{15}$ , so the tension of the spring will be exerted to prevent the rocking of the gudgeons  $A^{14}$  in their bearings by the rising of the lower end  $A^{20}$  of the pressure-plate  $A^{13}$ . The adjustment of the collars  $A^{21}$  on the gudgeons  $A^{14}$ , by means of their attaching set-screws, allows the tension of the torsional springs  $A^{23}$  to be varied. By loosening one of the adjusting-screws  $A^{18}$  or  $A^{19}$  the sleeves  $A^{15}$ , together with the pressure-plate  $A^{13}$ , can be readily removed from the forked end of the brackets  $A^{16}$ , the sleeves being held in place by the adjusting-screws  $A^{18}$  and  $A^{19}$ , which enter countersunk recesses in the tailpieces  $A^{17}$ . The sheet of cardboard is scored in one direction in the usual manner by the action of the bed-roll  $A^6$  and cutters  $A^7$  and is moved by them forward onto the second feed-table  $B$ , which is slightly lower than the first feed-table  $A$ . The two outer cutters in the first scoring mechanism serve to trim the opposite edges of the cardboard, the cutter on the right cutting off a narrow strip of the cardboard sufficient to straighten its edge and the cutter on the left cutting the

cardboard the proper width required for the box, while two intermediate cutters score the cardboard in two parallel lines, upon which the cardboard is to be bent to form the sides of the box. The strips which are cut off from the sides of the cardboard are deflected and carried beneath the table  $B$  by means of guide-plates  $B^1$  and  $B^2$ , which are attached to the edge of the table  $B$  and are represented in perspective view in Figs. 14 and 15. The guide-plates  $B^1$  and  $B^2$  are attached to the edge of the table  $B$  and extend partially over the bed-roll  $A^6$ , with their free ends slightly raised above the surface of the roll to allow the severed strip of cardboard to pass beneath them.

The guide-plate  $B^1$  upon the right-hand side of the cardboard is provided with the depending sides  $B^3$   $B^3$ , between which the narrow strip of cardboard severed from the sheet passes. Upon the inner sides of the guide-plates  $B^1$  and  $B^2$  are the horizontal blades  $B^4$ , which support the side edges of the cardboard between the bed-roll  $A^6$  and the edge of the table  $B$  and insure its passage upon the table.

The under side of the edge of the table  $B$  next the bed-roll  $A^6$  is provided with a triangular rib  $B^5$ , which is notched at  $B^6$ , and the guide-plates  $B^1$  and  $B^2$  are provided with the hooked prongs  $B^7$ , which extend beneath the triangular rib  $B^5$  and are drawn against it by binding-screws  $B^8$ , the notch  $B^6$  allowing the hooked prong  $B^7$  to be inserted and the guide-plate to be locked upon the triangular rib by being moved to the right or left of the notch  $B^6$ .

Arranged a short distance above the surface of the table  $B$  are a series of horizontal retaining-plates  $B^9$ , extending transversely across the table  $B$  parallel with the movement of the cardboard, with one end slightly raised, as at  $B^{10}$ , Fig. 11, to project partially over the scoring-roll  $A^6$ , so the sheet of cardboard as it passes upon the table  $B$  will be conducted beneath the retaining-plates  $B^9$ .

The retaining-plates  $B^9$  are provided near their opposite ends with the hollow stems  $B^{11}$ , which inclose the spindles  $B^{12}$ , depending from the clamping-bars  $B^{13}$  and  $B^{14}$ . The retaining-plates  $B^9$  are capable of a slight vertical movement by the hollow stems  $B^{11}$  sliding upon the spindles  $B^{12}$ , with which they are connected by means of pins  $B^{15}$ , held in the spindles  $B^{12}$  and entering slots  $B^{16}$  in the hollow stems  $B^{11}$ , thereby holding the plates  $B^9$  parallel with the face of the table as they rise and fall upon the spindles  $B^{12}$ . The spindles  $B^{12}$  are adjustably connected by the clamping-bars  $B^{13}$  and  $B^{14}$  with horizontal rods  $B^{17}$ , which are supported above the table  $B$  by posts at the corners of the table. The clamping-bars are connected at one end by an elastic plate  $B^{18}$ , and their opposite ends are recessed at  $B^{19}$  to inclose the supporting-rods  $B^{17}$ .

The spindles  $B^{12}$  have a fixed collar  $B^{20}$  bearing against the lower clamping-bar  $B^{13}$  and a nut  $B^{21}$  held upon the screw-threaded end of



the spindle B<sup>12</sup> and bearing against the upper side of the clamping-bar B<sup>14</sup>, allowing the bars to be pinched upon the rod B<sup>17</sup>.

The spiral spring B<sup>22</sup> is inserted between the clamping-bars B<sup>13</sup> and B<sup>14</sup> in order to separate them and release the rod B<sup>17</sup> when the nut B<sup>21</sup> is unscrewed.

The retaining-plates B<sup>9</sup> consist of broad steel plates held at a slight distance above the surface of the table B in order to retain the sheet of cardboard in a horizontal plane when acted upon by the pusher-plate B<sup>23</sup>, which consists of a thin blade capable of passing between the surface of the table and the retaining-plates B<sup>9</sup>. The pusher-plate B<sup>23</sup> is attached at one end to a sliding plate B<sup>24</sup>, sliding in ways B<sup>25</sup> at the side of the table B and outside of the surface occupied by the cardboard.

The slide B<sup>24</sup> has a depending lug B<sup>26</sup>, Fig. 3, projecting beneath the table and pivoted to one end of a lever B<sup>27</sup>, which is pivoted at its opposite end to a bracket B<sup>28</sup> and midway its length to a rod B<sup>29</sup>, connecting it with the strap B<sup>30</sup> of an eccentric B<sup>31</sup>, which is carried upon a shaft B<sup>32</sup>, upon which is mounted the second scoring-roll B<sup>33</sup>, so one revolution of the eccentric will impart a complete reciprocating motion forward and backward to the pusher B<sup>23</sup>, carrying the sheet of cardboard upon the second feed-table B forward to be engaged by the second scoring mechanism, comprising the bed-roll B<sup>33</sup> and the rotating cutters B<sup>34</sup>, attached to the cutter-bar B<sup>35</sup>.

The eccentric B<sup>31</sup> is rotated at the proper period of time by a clutching mechanism, which is thrown into action by means of a tripping mechanism actuated by the moving sheet of cardboard and comprising a finger C, Fig. 11, depending from a rocking sleeve C', supported on one of the rods B<sup>17</sup>. The sleeve C' is provided with a radial arm C<sup>2</sup>, connected by a link C<sup>3</sup> with a lever C<sup>4</sup>, pivoted at C<sup>5</sup> to a fixed support and having its opposite end pivotally connected with a vertical rod C<sup>6</sup>, extending downward at the end of the machine and connected with the toggle-joint levers C<sup>7</sup> and C<sup>8</sup>, connecting the lower end of the rod C<sup>6</sup> with the framework of the machine.

The vertical rod C<sup>6</sup> is capable of a slight swinging motion on the end of the lever C<sup>4</sup>, and the toggle-joint connection of the lower end of the rod C<sup>6</sup> is for the purpose of causing the lower end of the rod to swing by the straightening of the levers C<sup>7</sup> and C<sup>8</sup>, as hereinafter described.

As the cardboard passes from the first scoring mechanism onto the second feed-table B its advancing edge strikes against the finger C, rocking the sleeve C' and raising the connected end of the lever C<sup>4</sup>, and as soon as the cardboard passes the finger C the finger is carried back to its normal position and the motion of the lever C<sup>4</sup> is reversed by means of a pull-spring C<sup>9</sup>, connecting the end of the lever C<sup>4</sup> with the fixed framework of the ma-

chine. The vertical rod C<sup>6</sup> passes through an opening in a horizontal latch C<sup>10</sup>, pivoted at one end at C<sup>11</sup> to a bracket depending from the under side of the table B. The free end of the latch C<sup>10</sup> is provided on its under side with a wedge-shaped lug C<sup>12</sup>, adapted to drop into an annular groove C<sup>13</sup> in the hub of the eccentric B<sup>31</sup>, and the latch C<sup>10</sup> is pressed downward by a spring C<sup>14</sup>, inserted between the latch and the table B.

The shaft B<sup>32</sup>, upon which the eccentric B<sup>31</sup> turns loosely, carries an attached gear-wheel C<sup>15</sup>, by which the shaft B<sup>32</sup> is rotated by its engagement with the pinion C<sup>16</sup>, carried on a main driving-shaft C<sup>17</sup>, which is journaled in brackets at the side of the machine. The hub of the gear-wheel C<sup>15</sup>, on the side next the eccentric B<sup>31</sup>, is provided with clutch-teeth C<sup>18</sup>, which are adapted to be engaged by a sliding clutch-bar C<sup>19</sup>, sliding in a groove in the hub of the eccentric B<sup>31</sup> and arranged to be pushed outward to engage the clutch-teeth C<sup>18</sup> by a spring C<sup>20</sup>. The sliding clutch-bar C<sup>19</sup> is provided with a notch C<sup>21</sup> in proper position to be caught by the pointed end of the wedge-shaped lug C<sup>12</sup> as the eccentric is rotated, thereby causing the sliding clutch-bar to be withdrawn from its engagement with the clutch-teeth C<sup>18</sup>. The vertical rod C<sup>6</sup> is provided with a shoulder C<sup>22</sup>, which is adapted to strike the under side of the latch C<sup>10</sup> when the rod C<sup>6</sup> is raised and lift the latch, withdrawing its wedge-shaped lug C<sup>12</sup> from the annular groove C<sup>13</sup> in the hub of the eccentric B<sup>31</sup>, thereby allowing the spring C<sup>20</sup> to force the sliding clutch-bar C<sup>19</sup> into engagement with the clutch-teeth C<sup>18</sup> and causing the rotary motion of the gear C<sup>15</sup> to be imparted to the eccentric. Attached to the lower end of the rod C<sup>6</sup> and at right angles thereto is an arm C<sup>7</sup>, which is pivotally connected with the frame by means of a link C<sup>8</sup>, and when the rod C<sup>6</sup> is in its lowest position the arm C<sup>7</sup> and link C<sup>8</sup> are in the position shown in Figs. 3 and 17, with the arm C<sup>7</sup> and link C<sup>8</sup> forming an angle with each other; but when the rod C<sup>6</sup> is raised the arm C<sup>7</sup> and link C<sup>8</sup> are lifted, bringing the link C<sup>8</sup> into a straight line with the arm C<sup>7</sup>, as shown in Fig. 18, thereby moving the lower end of the vertical rod C<sup>6</sup> to one side and carrying the shoulder C<sup>22</sup> out of engagement with the under side of the latch C<sup>10</sup>. The opening in the latch is large enough to allow the shoulder C<sup>22</sup> to pass thereby, thereby releasing the latch C<sup>10</sup>, which is instantly forced down by the spring C<sup>14</sup>, carrying the wedge-shaped lug C<sup>12</sup> into the annular groove C<sup>13</sup> in position to engage the notch C<sup>21</sup> of the sliding clutch-bar and withdraw the same from its engagement from the clutch-teeth C<sup>18</sup>, thereby stopping the eccentric at the end of one complete revolution.

By the action of the above-described mechanism the movement forward of the sheet of cardboard upon the table B will swing the finger C, and carry the rod C<sup>6</sup> downwardly



without engaging the latch C<sup>10</sup>; but when the finger C is released by the passage of the cardboard beneath it the spring C<sup>9</sup> reverses the movement of the finger C and raises the vertical rod C<sup>6</sup>, when the shoulder C<sup>22</sup> of the rod C<sup>6</sup> hits the latch and lifts it, allowing the sliding clutch-bar to engage the clutch-teeth C<sup>18</sup>.

The driving-shaft C<sup>17</sup> carries the belt-pulley C<sup>23</sup>, running loosely thereon, but capable of being connected with the driving-shaft by a clutch mechanism C<sup>24</sup>, of the usual and well-known form of construction, which is thrown into and out of engagement by means of a shipping-lever C<sup>25</sup>, links C<sup>26</sup>, and bell-crank lever C<sup>27</sup>. (Shown by broken lines in Fig. 1 beneath the table A in convenient position to be operated by the attendant.) The first scoring-roll A<sup>6</sup> is rotated from the driving-shaft C<sup>17</sup> by means of the beveled gears C<sup>28</sup> C<sup>29</sup>. Projecting from the lower side of the pusher-slide B<sup>24</sup> is a lug D, which carries a rod D', sliding through the fixed lug D<sup>2</sup>, attached to the under side of the table B and carrying an adjustable collar D<sup>3</sup>, between which and the fixed lug D<sup>2</sup>, I insert a compression-spring D<sup>4</sup>, which acts as a buffer to check the momentum as the pusher B<sup>24</sup> and B<sup>25</sup> is pushed outward.

Supported a short distance above the upper surface of the table B are the parallel rods E E', upon which are placed sliding sleeves E' E', adjustably attached by set-screws to the rod E, and supported by the sleeves E' E' is a rod E<sup>2</sup>, to which the device for stopping the movement of the cardboard on the table B is adjustably attached, said stop device consisting of a sleeve F, having a spline connection with the rod E<sup>2</sup> and held from longitudinal movement on the rod and in any desired position by means of a set-screw F'. The sleeve F is provided on opposite sides with the gudgeons F<sup>2</sup> F<sup>3</sup>, and on the gudgeon F<sup>2</sup> is suspended the swinging frame F<sup>4</sup>, provided with holes F<sup>5</sup> F<sup>5</sup> in its lower end, in which are placed the sliding pins F<sup>6</sup> F<sup>6</sup>, which are pressed downward by spiral springs F<sup>7</sup> F<sup>7</sup>, and the lower ends of the pins F<sup>6</sup> carry a pin F<sup>8</sup>, upon which the roll F<sup>9</sup> turns. The roll F<sup>9</sup> is slightly beveled, and one edge is held in contact with the upper surface of the table B by the pressure of the spiral springs F<sup>7</sup>, so the side F<sup>10</sup> of the roll next the first scoring mechanism will serve as a stop for the advancing edge of the cardboard. Upon the gudgeon F<sup>3</sup> is pivoted a swinging frame G, slotted at its lower end at G' to receive a swinging block G<sup>2</sup>, pivoted at G<sup>3</sup> with its axis at right angles with the axis of the swinging frame 1. The lower end of the swinging block G<sup>2</sup> carries a stud G<sup>4</sup>, upon which is journaled a beveled roll G<sup>5</sup>, presenting a sharp corner G<sup>6</sup> to the surface of the table B. As the sheet of cardboard is moved against the stop-roll F<sup>9</sup> in the direction of the arrow G<sup>7</sup>, Fig. 7, the retaining-roll G<sup>5</sup> is raised by the swinging of the block G<sup>2</sup>, allowing the cardboard to pass beneath the retaining-roll, allowing the sharp corner G<sup>6</sup> to rest upon the

upper surface of the cardboard and by its engagement with the cardboard prevent its rebound or backward movement. As the cardboard is pushed toward the second scoring mechanism by the pusher-plate B<sup>23</sup> the forward end of the cardboard is in contact with the stop-roll F<sup>9</sup> and its upper surface is engaged by the sharp corner G<sup>6</sup> of the retaining-roll G<sup>5</sup>, and both the stop-roll F<sup>9</sup> and the retaining-roll G<sup>5</sup> are free to move in the direction of the moving cardboard by the rotation of their swinging frames F<sup>4</sup> and G upon their supporting-gudgeons. By this means I avoid any friction between the edge of the cardboard and the side of the retaining-roll and prevent any displacement of the cardboard owing to the movement of an irregular edge against the side of the stop-roll F<sup>9</sup>, in order to allow the pushing-plate B<sup>23</sup> to pass under the rolls carried by the swing-frame, if required, but if not then to allow the frame to swing as the sheet of cardboard is moved along by the forward motion of the pushing-plate and prevent any undue friction or drag upon the sheet of cardboard.

As it bears against the side of the roll F<sup>9</sup>, the stop device above described can be adjusted to any position upon the surface of the second feed-table B by sliding the sleeves E' E' on the parallel rods E E' and by moving the sleeve F on the cross-rod E<sup>2</sup>. The rotating cutters employed in each of the scoring mechanisms are alike and are represented in Figs. 8, 9, and 10.

The cutters consist of a disk II, provided with a knife-edge turning upon a stud H', held in a slotted yoke H<sup>2</sup>, which is pivoted at one end to one end of a link H<sup>3</sup>, the opposite end of the link being pivoted to a frame II<sup>4</sup>, which is adjustably attached by a screw II<sup>5</sup> to the cutter-bar. By connecting the yoke to the frame by the link H<sup>3</sup>, I cause the end of the yoke to move in the arc of a circle as it is moved down, said arc nearly coinciding with a straight line. The opposite end of the yoke H<sup>2</sup> slides in ways in the frame II<sup>4</sup>, and the frame II<sup>4</sup> carries a set-screw II<sup>6</sup>, provided at its inner end with a neck II<sup>7</sup> and head II<sup>8</sup>, engaging a T-slot in the end of the yoke H<sup>2</sup>, by which the yoke is moved up or down in its ways by the screw II<sup>6</sup>. The end of the yoke sliding in the ways of the frame II<sup>4</sup> is held in position by a plate II<sup>9</sup>, attached to the frame II<sup>4</sup> by a screw II<sup>10</sup>, and between the plate II<sup>9</sup> and end of the yoke I interpose a spring II<sup>11</sup> in order to take up any lost motion between the yoke and its ways. The spring II<sup>11</sup> also allows a slight movement of the yoke as it is acted upon by the link H<sup>3</sup>.

One of the gudgeons A<sup>14</sup> of the pressure-plate A<sup>13</sup> is squared at its outer end, as at I, to receive a plate J, which is held upon the squared end of the gudgeon by a screw J'; so the plate J will turn with the gudgeon. The plate J carries a pin J<sup>2</sup>, which enters a slot J<sup>3</sup> in the tailpiece A<sup>17</sup> in order to limit the downward movement of the edge A<sup>20</sup> of the



pressure-plate as the cardboard passes beneath it.

What I claim as my invention, and desire to secure by Letters Patent, is—

5 1. In a scoring-machine the combination with the feed-table of an angle-plate attached to said table at one side thereof and adjustable on said table in a line at right angles with the movement of the cardboard and having a vertical member forming a rail parallel with the movement of the cardboard on said table, a plate inclosing the upper edge of said rail and capable of sliding thereon, and a pushing-plate projecting from the side of said sliding plate and extending across the table, substantially as described.

2. In a scoring-machine, the combination with a feed-table and a bed-roll of a yielding pressure-plate provided with gudgeons pivoted in removable sleeves held in the forked framework of the machine, an adjustable collar attached to one of said gudgeons and a torsional spring carried by said adjustable collar and engaging one of said sleeves, tailpieces projecting from said sleeves, and adjusting-screws bearing against said tailpieces by which said sleeves are rocked in the framework, in order to adjust the position of said pressure-plate, substantially as described.

30 3. In a scoring-machine, the combination, with a feed-table, of a pair of rods supported above the feed-table and parallel therewith, clamping-bars adjustably attached to said rods, retaining-plates supported over said clamping-bars a short distance above and parallel with the surface of the feed-table, and means for imparting a downward-yielding pressure to said retaining-plates, substantially as described.

40 4. In a scoring-machine, the combination with a table and a scoring mechanism by which a sheet of cardboard is delivered on said table, of an arm suspended vertically above said table and capable of a swinging motion about an axis parallel with the movement of the cardboard upon said table as it is delivered thereon by said scoring mechanism and a roll journaled in the lower end of said arm with its side presented to the edge of the advancing sheet of cardboard, substantially as described.

5. In a scoring-machine, the combination with a table and a scoring mechanism by which a sheet of cardboard is delivered upon said table, of a swinging frame suspended above said table, a roll held in the lower end of said frame and presenting its side to the advancing edge of cardboard, and a spring by which the face of said roll is held against the surface of said table, substantially as described.

6. In a scoring-machine, the combination with a table on which the sheet of cardboard is delivered by the scoring mechanism, of a rod supported above said table and extending across the same, a sleeve adjustably attached to said rod, a swinging frame suspended ver-

70 tically from said frame, and a roll carried by said swinging frame with its face in contact with said table and its side presented to the advancing edge of the cardboard, substantially as described.

7. In a scoring mechanism the combination with a feed-table upon which the cardboard is fed by the scoring mechanism of a stop by which the forward motion of a sheet on said feed-table is limited, a swinging frame suspended vertically above said table and in front of said stop, and a beveled roll supported by said swinging frame with its edge adapted to engage a sheet of cardboard lying on said table, substantially as described.

8. The combination with the feed-table B of a swinging frame suspended above said feed-table, a block pivoted in said swinging frame with its axis at right angles with the axis of said swinging frame, and a beveled roll carried by said swinging block with its edge adapted to engage a sheet of cardboard lying on said table, substantially as described.

9. In a scoring-machine the combination with a feed-table B and a rotating scoring-roll A<sup>6</sup> of guide-plates attached to the edge of said table and extending over said scoring-roll, whereby the severed edges of a sheet of cardboard are deflected below said feed-table, and blades projecting laterally from the sides of said guide-plates and in the horizontal plane of said table, whereby the edges of the cardboard are supported.

10. In a scoring-machine, the combination with a table and mechanism by which a sheet of cardboard is fed upon said table of a pushing mechanism having an intermittent reciprocating motion, a clutching mechanism by which said pushing mechanism is connected at will with the driving power, a pivoted finger with its end hanging in the path of a sheet of cardboard as it is fed upon said table, means for reversing the motion of said finger after the sheet of cardboard has passed beneath it, and mechanism by which said finger is operatively connected with said clutching mechanism to operate the same on the reverse movement of said finger, substantially as described.

11. In a scoring mechanism the combination with a feed-table B of a pivoted finger hanging in the path of a cardboard as it is moved upon said feed-table, a pivoted lever C<sup>4</sup> operatively connected at one end with said pivoted finger by which said lever is rocked by the movement of said finger, a spring attached to said lever to reverse its motion, a vertical rod C<sup>6</sup> pivoted at one end to the opposite end of said lever, toggle-joint levers connecting the opposite end of said vertical rod with the frame of the machine, whereby said rod is given a lateral motion at each vertical movement, a shoulder on said vertical rod C<sup>6</sup> adapted to engage a pivoted latch and raise the same, a clutching mechanism arranged to be released by the raising of said



latch, a pushing-plate, means for actuating said plate, comprising said clutching mechanism, substantially as described.

12. In a scoring-machine the combination  
5 with a feed-table provided with a guideway at its side of a sliding plate sliding in said guideway, means for imparting an intermittent motion to said sliding plate and a pusher-plate consisting of a flat blade lying in the  
10 plane parallel with the face of said feed-table and attached at one end to said sliding plate and projecting over said table, substantially as described.

13. In a scoring-machine, the combination,  
15 with a feed-table provided with a guideway at its side, of a sliding plate sliding in said guideway, means for imparting an intermittent motion to said sliding plate, a retaining-plate held at a slight distance above the sur-  
20 face of said feed-table and parallel therewith, and a pusher-plate attached at one end to said sliding plate and consisting of a flat

blade capable of a reciprocating motion in a space between said feed-table and said retaining-plate, substantially as described. 25

14. In a rotary cutter and a scoring-machine, the combination of a frame  $H^4$ , a yoke  $H^2$ , a rotating cutter carried by said yoke, a link pivoted at one end to said frame and at the opposite end to one end of said yoke 30 whereby the movement of the pivoted end of the yoke is controlled in the arc of a circle, the opposite end of said yoke being inclosed in a yielding guideway carried by said frame and capable of sliding therein, and an adjust- 35 ing-screw bearing against the end of said yoke inclosed in said guideway, substantially as described.

Dated this 8th day of April, 1896.

GEORGE W. JORDAN.

Witnesses:

RUFUS B. FOWLER,  
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