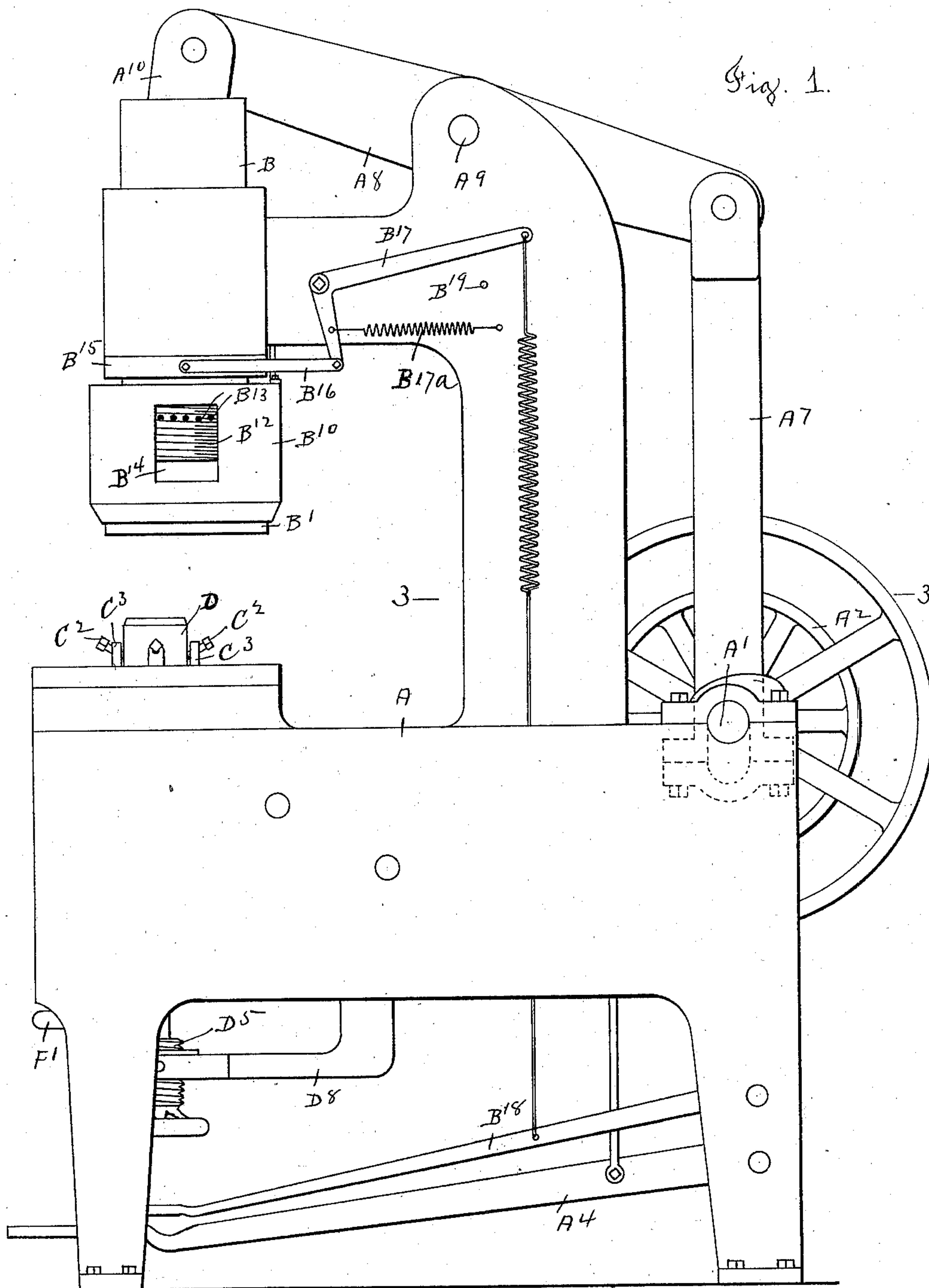


3 Sheets—Sheet 1.

No. 558,601.

Patented Apr. 21, 1896.



Incentos

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By his Attorney

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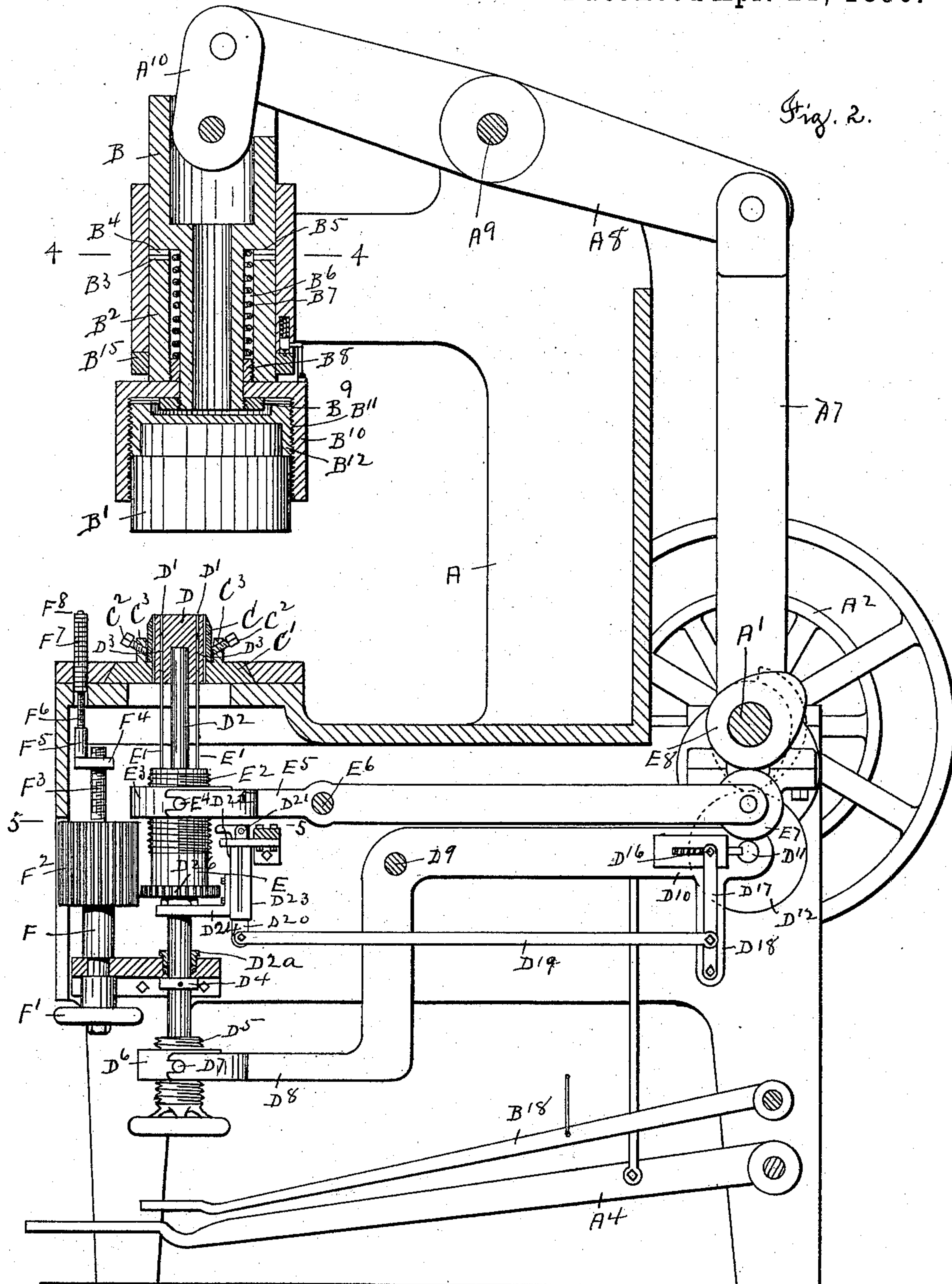
(No Model.)

3 Sheets—Sheet 2.

J. D. COLOMY.  
DIE PRESS.

No. 558,601.

Patented Apr. 21, 1896.



Witnesses

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3 Sheets—Sheet 3.

J. D. COLOMY.  
DIE PRESS.

No. 558,601.

Patented Apr. 21, 1896.

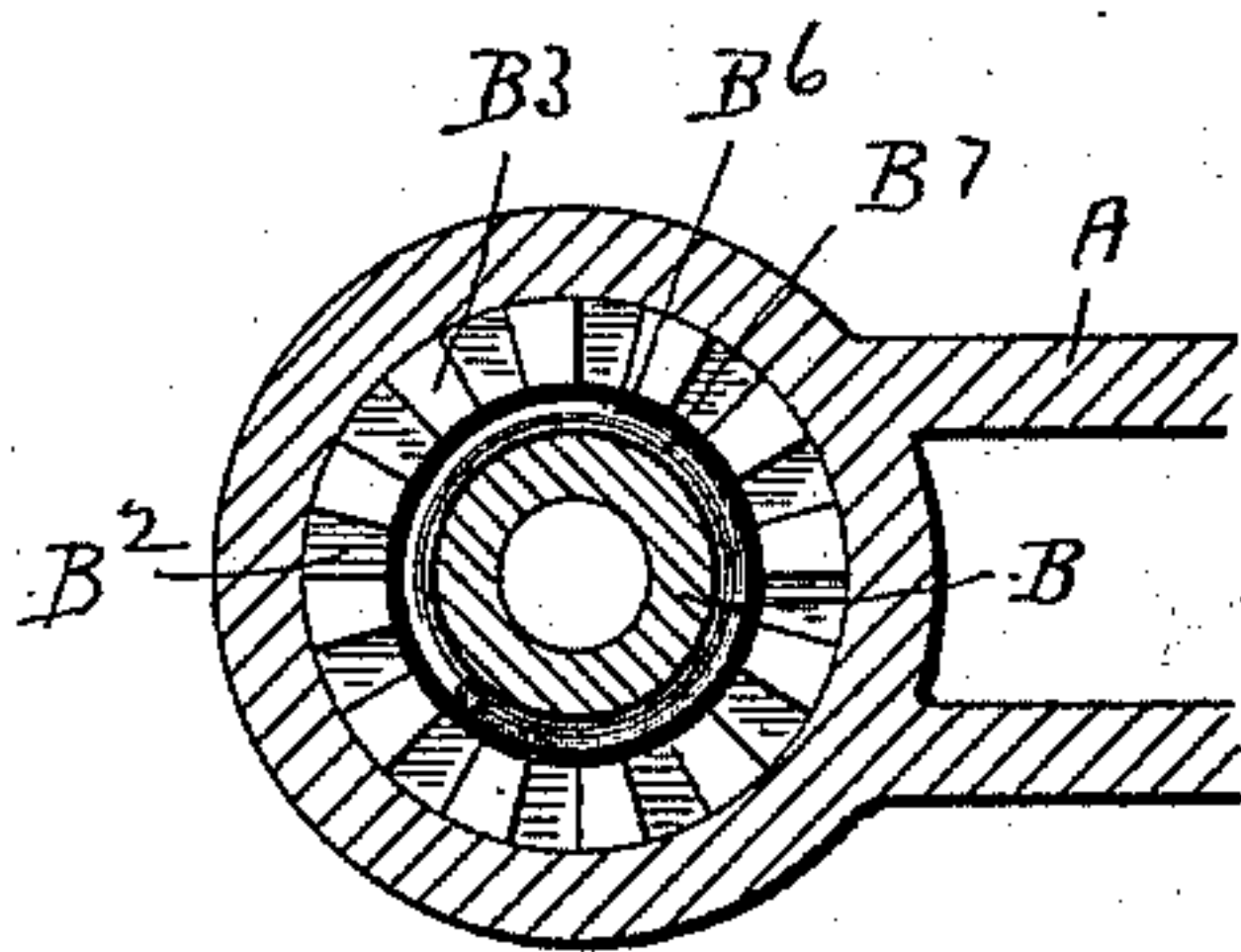
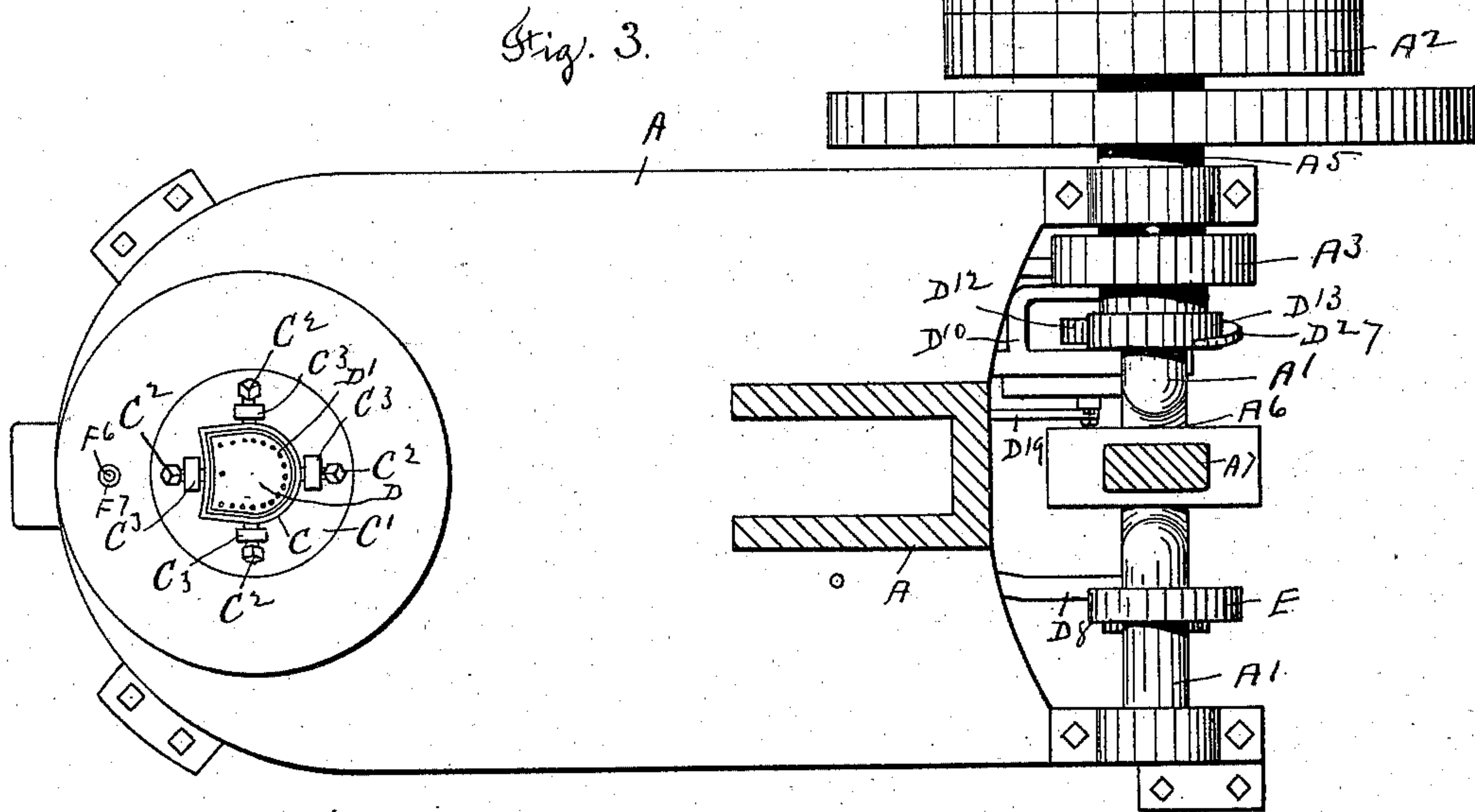


Fig. 4.

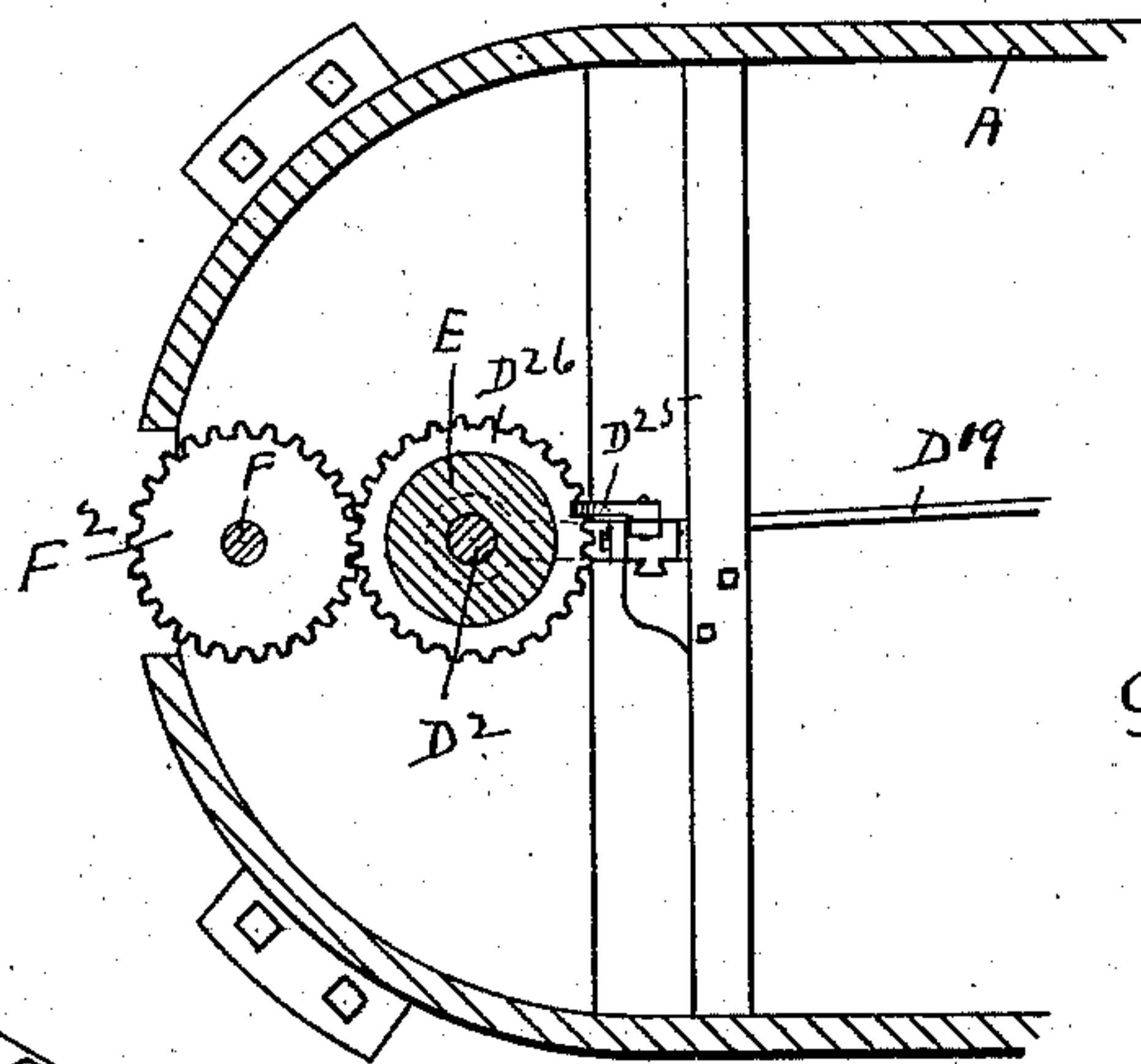


Fig. 5.

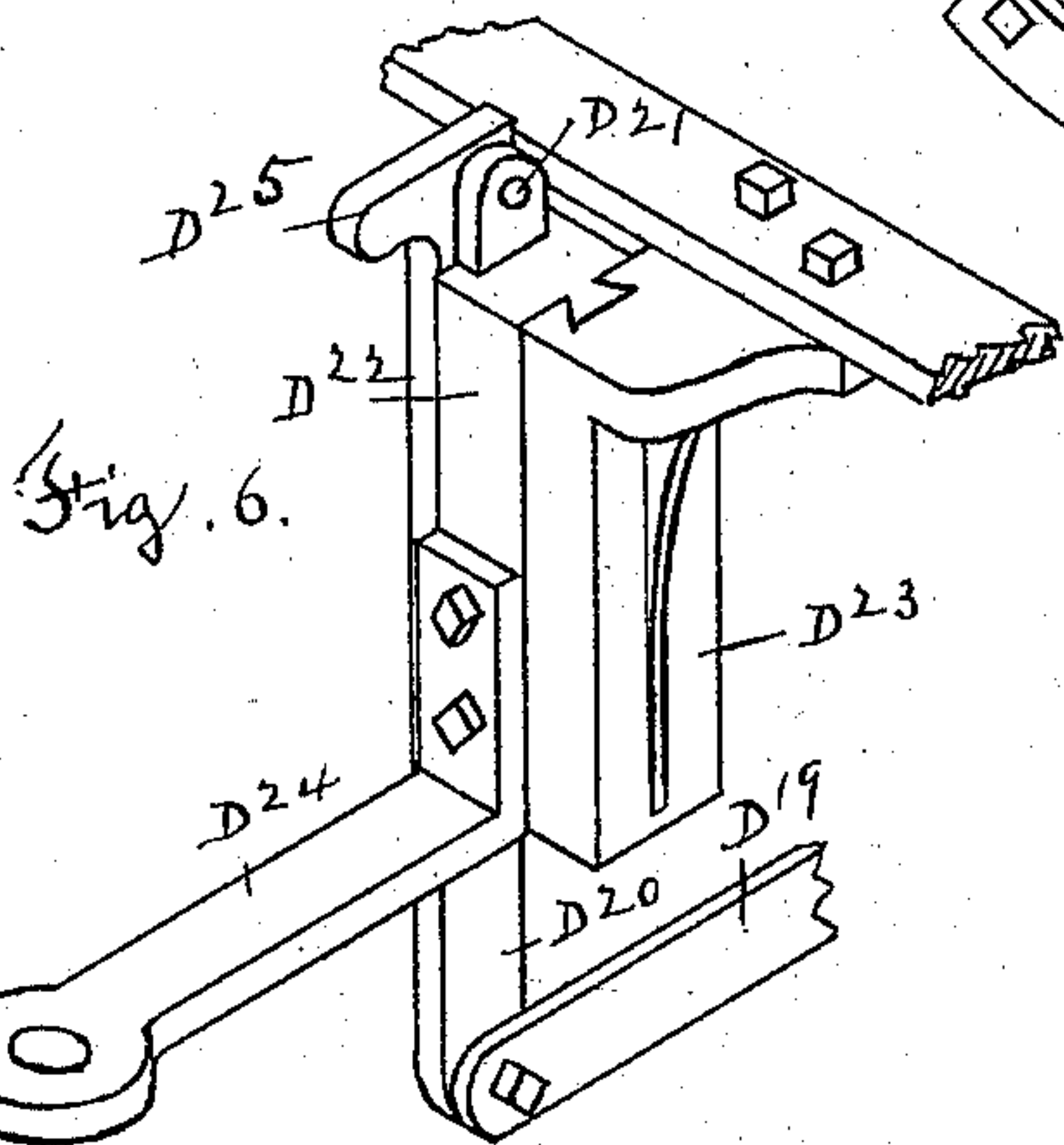


Fig. 6.

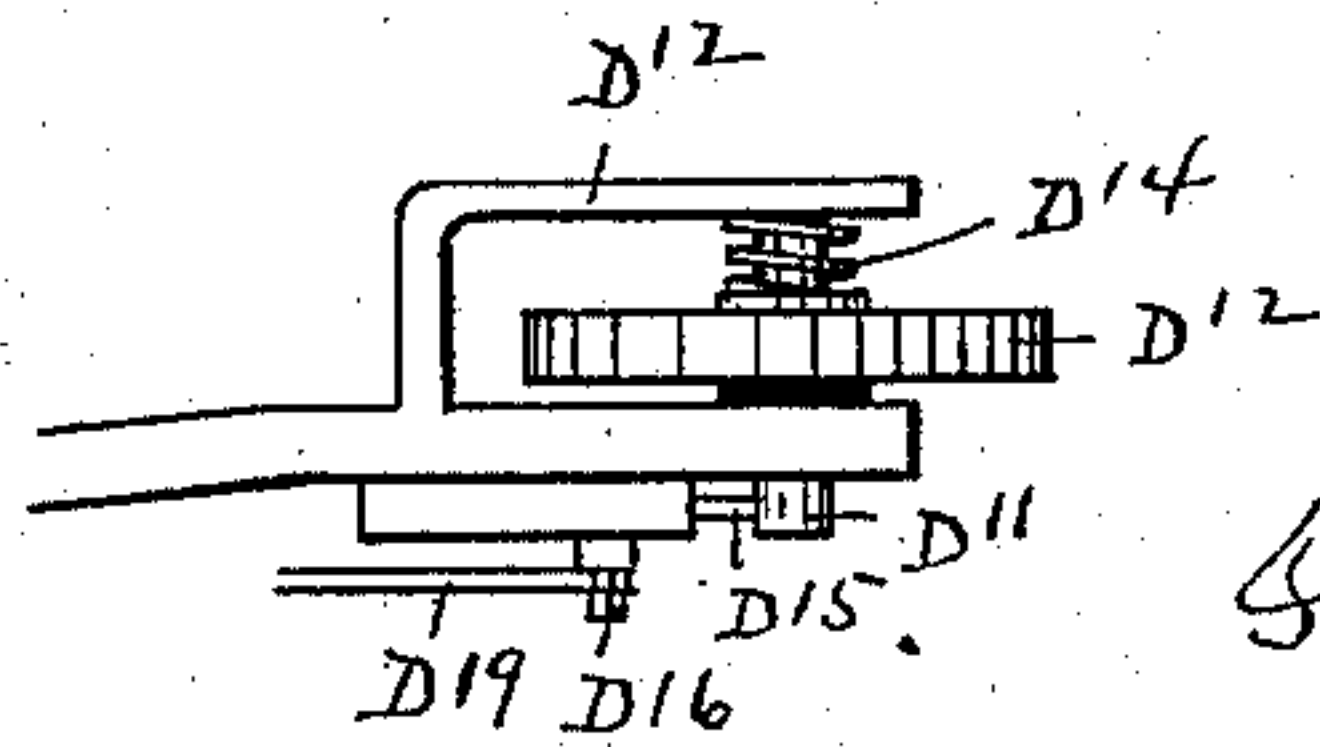


Fig. 7.

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# UNITED STATES PATENT OFFICE.

JAMES DANIEL COLOMY, OF DURHAM, NEW HAMPSHIRE.

## DIE-PRESS.

SPECIFICATION forming part of Letters Patent No. 558,601, dated April 21, 1896.

Application filed July 28, 1894. Serial No. 518,898. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES DANIEL COLOMY, a citizen of the United States, residing at Durham, in the county of Strafford and State of New Hampshire, have invented a new and useful Improvement in Die-Presses, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, and representing a die-press embodying my invention.

The die-press forming the subject of my invention is designed and adapted for cutting leather into any desired shape, and the machine shown in the accompanying drawings is adapted to cut the pieces of leather forming the "lifts" of a boot or shoe heel, and it also embodies mechanism for driving the nails into the several lifts and for ejecting the heel from the cutting-die when a sufficient number of lifts have been nailed together to form a heel of the desired thickness.

Figure 1 represents a machine embodying my invention shown in side view. Fig. 2 is a central vertical sectional view. Fig. 3 is a plan view shown in sectional view on line 3 3, Fig. 1. Fig. 4 is a sectional view of the plunger on line 4 4, Fig. 2. Fig. 5 is a sectional view on line 5 5, Fig. 2; and Fig. 6 is a detached view in perspective of the bracket D<sup>23</sup> and slide D<sup>22</sup>.

Similar letters refer to similar parts in the different figures.

Referring to the drawings, A denotes the frame of the machine; A', the main driving or cam shaft journaled in the frame A and driven through a belt connection with a counter-shaft by means of a belt-pulley A<sup>2</sup> and a clutching device A<sup>3</sup>, which is not shown in detail, as it may be of any known form of construction suitable for the purpose by which the continuous rotary motion of the belt-pulley is imparted at the will of the operator to the shaft A' to give it one complete revolution, the clutching device being operated by the attendant by means of a foot-treadle A<sup>4</sup>. The belt-pulley A<sup>2</sup> is attached to one end of a sleeve A<sup>5</sup>, which incloses the shaft A' and extends through one of the journal-boxes supporting the shaft A', the clutching device A<sup>3</sup> being placed at the opposite end of the sleeve A<sup>5</sup>.

The shaft A' is provided at its center with

a crank A<sup>6</sup>, connected by a link A<sup>7</sup> with a walking-beam A<sup>8</sup>, pivoted at A<sup>9</sup> to the frame of the machine and connected by a link A<sup>10</sup> with a reciprocating plunger B, carrying at its lower end a wooden block B', adapted to press the strips of leather against a stationary cutting-die C, mounted upon a circular bed C', held in circular ways in the frame of the machine in order to allow the die to be turned by the rotation of the bed C'.

The die C is held in position on the bed C' by means of set-screws C<sup>2</sup>, held in lugs C<sup>3</sup> projecting from the bed C'. The plunger B is inclosed by a sleeve B<sup>2</sup>, provided at its upper end with teeth B<sup>3</sup>, which oppose a series of corresponding teeth B<sup>4</sup>, formed on a shoulder B<sup>5</sup> of the reciprocating plunger B. Between the sleeve B<sup>2</sup> and the plunger B is an annular chamber B<sup>6</sup>, containing a spiral spring B<sup>7</sup>, which acts against the shoulder B<sup>5</sup> on the plunger B and a ring B<sup>8</sup> carried by the sleeve B<sup>2</sup>. To the lower end of the plunger B is attached a ring B<sup>9</sup>, and between the ring B<sup>9</sup> and the lower end of the sleeve B<sup>2</sup> is loosely held a cylindrical shell or box B<sup>10</sup>, provided with an internal screw-thread B<sup>11</sup>, which is engaged by an external screw-thread on the cup-shaped holder B<sup>12</sup>, to which the wooden block B' is attached.

The block-holder B<sup>12</sup> is provided with a series of holes B<sup>13</sup> to receive a spanner, which is inserted through an opening B<sup>14</sup> left in the side of the shell B<sup>10</sup>.

As the plunger B moves down upon a piece of leather resting upon the cutting-die, the pressure against the face of the wooden block B' will cause the spiral spring B<sup>7</sup> to be compressed, allowing a slight sliding movement of the shell B<sup>10</sup> on the plunger B, the teeth B<sup>3</sup> sliding past the teeth B<sup>4</sup> and providing a yielding pressure sufficient to crowd the piece of leather on the cutting edge of the die, but not to entirely sever it.

To the sleeve B<sup>2</sup> I attach a collar B<sup>15</sup>, to which is pivoted a link B<sup>16</sup>, connected to a bell-crank lever B<sup>17</sup>, pivoted on the frame of the machine. The bell-crank has a yielding connection with a foot-treadle B<sup>18</sup>, hung immediately above the actuating treadle A<sup>4</sup> by which the bell-crank B<sup>17</sup> is rocked against a pin B<sup>19</sup>, thereby imparting a limited rotary motion to the sleeve B<sup>2</sup>, in order to bring the



ends of the teeth  $B^3$  on the sleeve opposite the ends of the teeth  $B^4$  on the plunger, so that whenever it is desired to completely sever the piece of leather on the cutting-die the teeth can be brought opposite and cause the full stroke of the plunger to be imparted to the sleeve and prevent the sliding movement of the shell  $B^{10}$  on the plunger  $B$  and cause a solid blow to be struck by the wooden block  $B'$  on the cutting-die, the rotation of the sleeve  $B^2$  being reversed by a spring  $B^{17a}$ .

Within the die  $C$  is a metal follower  $D$ , filling the die and provided with a series of holes  $D'$ , arranged to correspond with the nails to be inserted in the boot-heel.

The follower  $D$  rests upon the upper end of a vertical sliding rod  $D^2$ , which is held up by the frictional resistance of a packed bearing  $D^{2a}$  in the supporting-framework, or by other known means. Sliding upon the rod  $D^2$  is a sleeve  $E$ , the upper end of which carries a series of rods  $E'$ , arranged to correspond with the series of nail-holes  $D'$  in the follower. The outer surface of the sleeve  $E$  is provided with a screw-thread  $E^2$ , upon which is placed a collar  $E^3$ , having studs  $E^4$ , engaged by the forked end of a lever  $E^5$ , pivoted at  $E^6$ , and carrying at its opposite end a cam-roll  $E^7$  in the path of a cam  $E^8$  on the driving-shaft  $A'$ . The upper ends of the rods  $E'$  enter the holes  $D'$  in the follower  $D$ , and nails  $D^3$  are placed in the holes  $D$ , resting upon the ends of the rods  $E$  and with their points uppermost. The collar  $E^3$  is adjusted on the screw-threaded sleeve  $E$  to raise or lower the rods  $E'$ , so the upward motion of the sleeve and rods by the action of the cam  $E^8$  will drive the nails  $D^3$  upward and bring their points flush with the cutting edge of the die  $C$ . The rod  $D^2$  is provided with a fixed collar  $D^4$ , and capable of sliding on the rod  $D^2$  is a sleeve  $D^5$ , having an external screw-thread and carrying a screw-threaded collar  $D^6$ , having studs  $D^7$ , held in the forked end of a lever  $D^8$ , pivoted at  $D^9$ , and having at its opposite end a fork  $D^{10}$ , carrying a spindle  $D^{11}$  capable of sliding longitudinally in the fork and having a cam-roll  $D^{12}$ , turning on the spindle  $D^{11}$  and brought into the path of a cam  $D^{13}$  on the driving-shaft  $A'$  by means of a spiral spring  $D^{14}$ , inclosing the spindle  $D^{11}$ .

The spindle  $D^{11}$  is held against the tension of the spring  $D^{14}$  by a sliding spring-actuated latch-pin  $D^{15}$ , sliding in ways on the lever  $D^8$  and carrying a pin  $D^{16}$ , entering a hole in the end of a lever  $D^{17}$ , pivoted at its opposite end to an arm  $D^{18}$ , extending downward from the lever  $D^8$ . To the lever  $D^{17}$  is pivoted a link  $D^{19}$ , connected to the vertical arm  $D^{20}$  of a bell-crank lever pivoted at  $D^{21}$  to a slide  $D^{22}$  capable of a vertical motion along ways in a bracket  $D^{23}$ , attached to the frame of the machine. To the slide  $D^{22}$  is attached the angle-bar  $D^{24}$ , carried by the vertical sliding rod  $D^2$ .

The horizontal arm  $D^{25}$  of the bell-crank overhangs a toothed flange  $D^{26}$  on the lower end of the sleeve  $E$ , so that when the follower

$D$  and rod  $D^2$  have been pushed down by the insertion of successive heel-lifts in the cutting-die, the slide  $D^{22}$  will be moved down with the downward motion of the rod  $D^2$ , bringing the horizontal arm  $D^{25}$  of the bell-crank within the path of the flange  $D^{26}$  as the sleeve  $E$  is moved upward by the action of the lever  $E^5$  and cam  $E^8$ . The contact of the flange  $D^{26}$  with the arm  $D^{25}$  rocks the bell-crank and through the link  $D^{19}$  and lever  $D^{17}$  withdraws the latch-pin  $D^{15}$  and allows the spiral spring  $D^{14}$  to force the spindle  $D^{11}$  endwise and carry the cam-roll  $D^{12}$  into the path of the cam  $D^{13}$ , rocking the lever  $D^8$  and raising the sleeve  $D^5$ , and by its contact with the fixed collar  $D^4$  lifting the rod  $D^2$  and follower  $D$  and throwing out the heel-lifts, which had been pushed into the die and nailed together by the action of the nailing mechanism, as already described. As the cam  $D^{13}$  completes a revolution, the spiral wing  $D^{27}$ , attached to the cam, will strike against the side of the cam-roll  $D^{12}$  and push the roll and spindle  $D^{11}$  endwise against the tension of the spring  $D^{14}$  until the spring-actuated latch  $D^{15}$  again slides over the end of the spindle  $D^{11}$  and holds the cam-roll  $D^{12}$  out of the path of the cam  $D^{13}$ . The screw-threaded sleeve  $D^5$  on the lower end of the rod  $D^2$  is provided with a hand-wheel to allow the sleeve to be adjusted in the collar  $D^6$  relatively to the fixed collar  $D^4$ , in order to vary the upward movement of the rod  $D^2$  and follower  $D$ . The adjustment of the screw-threaded sleeve  $E$  is effected by means of a vertical shaft  $F$ , journaled in the frame of the machine and having a hand-wheel  $F'$  and a barrel-gear  $F^2$  engaging the toothed flange  $D^{26}$  on the lower end of the sleeve  $E$ , so the rotation of the barrel-gear  $F^2$  will rotate the sleeve  $E$  within the screw-threaded collar  $E^3$ . The upper end of the shaft  $F$  is screw-threaded, as at  $F^3$ , and carries a nut  $F^4$ , having an attached spindle  $F^5$  extending upward through the frame of the machine and having a screw-threaded section  $F^6$ , upon which is placed a screw-threaded sleeve  $F^7$ , having its outer surface graduated to indicate the distance the graduated sleeve projects above the surface of the frame  $A$ .

The operation of the machine is as follows: A piece or scrap of leather is placed upon the die  $C$ , the foot-treadle  $A^4$  is depressed, bringing into action the clutching mechanism and causing the shaft  $A'$  to make one complete revolution, rocking the walking-beam  $A^8$  and bringing the wooden block  $B'$  down upon the piece of leather with a yielding pressure caused by the compression of the spiral spring  $B^7$ , causing the piece of leather to be pressed down upon the edge of the die and partially cut. Simultaneously with the downward movement of the block  $B'$  the cam  $E^8$  actuates the lever  $E^5$  to force the sleeve  $E$  and rods  $E'$  upward, carrying the points of the nails up flush with the edge of the cutting-die and causing the nails which meet the piece of leather to



be forced into it and left suspended therefrom as the rods E' move downward. Additional pieces of leather are placed on the die C and the operation repeated until the die has  
 5 been entirely covered, when, at the last downward movement of the plunger B, the foot-treadle B<sup>18</sup> is depressed, rotating the sleeve B<sup>2</sup> on the plunger, so as to bring the ends of the teeth B<sup>3</sup> and B<sup>4</sup> opposite each other, causing  
 10 the next downward stroke of the plunger to entirely sever the pieces of leather and crowd them into the die forming the first heel-lift and pushing down the follower D and rod D<sup>2</sup> the thickness of the heel-lift.

15 The operation is repeated, forming successive heel-lifts, until a sufficient number have been placed in the die to form a heel of the required thickness, when by the proper adjustment of the several parts, as already described, the flange D<sup>26</sup> on the sleeve E is  
 20 brought into contact with the horizontal arm D<sup>25</sup> of the bell-crank lever, causing the latch-pin D<sup>15</sup> to be withdrawn, releasing the spindle D<sup>11</sup> and allowing the spring D<sup>14</sup> to carry the roll D<sup>12</sup> beneath the cam D<sup>13</sup>, thereby raising the rod D<sup>2</sup> and follower D and throwing the completed heel out of the die C.

The graduated sleeve F<sup>7</sup>, carried upon the screw-threaded spindle F<sup>5</sup>, will be raised or  
 30 lowered to correspond with the adjustment of the sleeve E in the collar E<sup>3</sup>, and the distance of the spindle F<sup>5</sup> above the frame will show the length of nails which are inserted in the heel-lifts, and the sleeve F<sup>7</sup> is adjusted on  
 35 the spindle F<sup>5</sup> to correspond with the adjustment of the sleeve D<sup>5</sup> relatively to the fixed collar D<sup>4</sup>, which will indicate the thickness of the heel, and the difference between the spindle F<sup>5</sup> and sleeve F<sup>7</sup>, or the distance above  
 40 the sleeve F<sup>7</sup> which the spindle F<sup>5</sup> projects, as at F<sup>8</sup>, will indicate the distance the ends of the nails will be left projecting from the heel-lifts, in order to allow the heel to be finished by driving a lift upon the projecting  
 45 ends of the nails, in the method known as "blind nailing."

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

1. The combination of a die, a plunger having a reciprocating motion and provided with the teeth B<sup>4</sup>, a sleeve B<sup>2</sup> provided with teeth B<sup>3</sup>, said sleeve being capable of a rotating motion around said plunger, a spring interposed between said plunger and said sleeve, a shell  
 50 capable of a sliding motion on said plunger and bearing against said sleeve and a block carried by said shell and adapted to press on said die, substantially as described.

2. The combination of a plunger B provided with teeth B<sup>4</sup>, a sleeve B<sup>2</sup> provided with opposing teeth B<sup>3</sup>, a spring B<sup>7</sup> interposed between said plunger and said sleeve, a bell-crank B<sup>17</sup> connected with said sleeve and a treadle B<sup>18</sup> connected with said bell-crank,  
 60 whereby said sleeve is rotated on said plunger in order to bring the teeth on said sleeve

opposite the teeth on said plunger, substantially as described.

3. The combination with a reciprocating plunger, of a shell B<sup>10</sup> carried by said plunger and provided with an internal screw-thread  
 70 and having an opening in its side to allow access to an adjustable block-holder, an adjustable block-holder provided with an external screw-thread fitting the screw-thread in said  
 75 shell and provided with a series of holes to receive a spanner and a block attached to said block-holder, substantially as described.

4. The combination of a cutting-die, a reciprocating plunger acting on said die, a follower D inclosed in said die and supported  
 80 upon a rod D<sup>2</sup>, a pivoted lever engaging said rod and a cam acting on said lever to raise said rod and follower and eject the heel from said die, substantially as described.

5. The combination of the die C, follower D, rod D<sup>2</sup> supporting said follower, lever D<sup>8</sup> engaging said rod, sliding spindle D<sup>11</sup> carried by the opposite end of said lever, a cam-roll  
 90 carried by said spindle, a spiral spring arranged to slide said spindle and carry the cam-roll into the path of a rotating cam, a rotating cam by which said lever is actuated to raise said follower, and a latching mechanism by which said spindle is held from longitudinal  
 95 movement against the tension of said spring, substantially as described.

6. The combination of a die C, follower D provided with a series of holes to receive nails, a sliding rod D<sup>2</sup> carrying said follower, a  
 100 sleeve sliding on said rod, rods carried by said sliding sleeve and entering said holes, the follower and connected actuating mechanism by which said sleeve and said rod D<sup>2</sup> are raised, substantially as described.

7. The combination of die C, follower D having a series of holes D' to receive nails, rods D<sup>2</sup>, sleeve E provided with an external screw-thread, a screw-threaded collar held on  
 110 said sleeve, actuating mechanism by which said collar is raised, connected means by which said sleeve is rotated in said collar in order to adjust the position of said sleeve in said collar and a series of rods E' carried by said sleeve and entering said holes D', substantially as described.

8. The combination of die C, follower D having a series of holes D' to receive nails, rod D<sup>2</sup>, sleeve E sliding on said rod and provided with an external screw-thread, a screw-threaded collar held on said sleeve, connected  
 120 actuating mechanism by which said collar is raised, a toothed flange D<sup>26</sup> attached to said sleeve, a barrel-gear F<sup>2</sup> engaging said toothed flange carried upon a shaft held from longitudinal movement, whereby said sleeve is rotated and adjusted within said collar and a series of rods E' held by said sleeve and entering said holes D' in said follower, substantially as described.

9. The combination with a die C, of a follower D inclosed in said die, a rod D<sup>2</sup> sup-  
 130



porting said rod, means for supporting said rod against gravity, a fixed collar  $D^4$  on said rod, a sliding sleeve  $D^5$  provided with an external screw-thread, a screw-threaded collar  $D^6$  held on said sleeve, connected means by which said collar is raised and said sleeve carried against said fixed collar in order to raise said rod, and means for adjusting said sleeve in said collar, substantially as described.

10 10. The combination of die C, follower D, rod  $D^2$  supporting said follower, pivoted lever  $D^8$  having one end engaging said rod, a spindle carried by the opposite end of said lever  $D^8$  and capable of a longitudinal sliding motion, a cam-roll carried on said spindle, a spring applied to said spindle to carry said cam-roll into the path of an actuating-cam, an actuating-cam by which an angular motion is imparted to said lever to raise said follower and a spiral wing on said cam to move said cam-roll out of engagement with said cam, substantially as described.

11. The combination of die C, follower D, rod  $D^2$  by which said follower is supported, pivoted lever  $D^8$  having one end engaging said rod, a cam-roll carried by the opposite end of said lever, a spring by which said cam-roll is carried into the path of an actuating-cam, an actuating-cam, a latching-pin  $D^{15}$  by which said cam-roll is held against the action of said spring, a pivoted bell-crank operatively connected with said latching-pin, a slide carrying said pivoted bell-crank and connected

with said rod  $D^2$ , whereby said bell-crank is moved downward with the downward movement of said rod, and a tripping device arranged in the path of said bell-crank, whereby said latching-pin is drawn, substantially as described.

12. The combination with a cutting-die and a reciprocating plunger acting against said die, mechanism for driving nails into the heel-lifts as they are cut and automatic mechanism for ejecting the heel-lifts from said die, of adjusting mechanism for determining the thickness of the combined heel-lifts placed in said die and a graduated bar connected with said adjusting mechanism, substantially as described.

13. The combination of shaft F and barrel-gear  $F^2$  operatively connected with the actuating mechanism for nailing and ejecting the heel-lifts from the cutting-die, said shaft having a screw-threaded section  $F^3$ , nut  $F^4$  carried on said screw-threaded section of the shaft F and held from rotation, a spindle  $F^5$  attached to said nut and having a screw-threaded section  $F^6$  and a graduated sleeve held on the screw-threaded section of said spindle, substantially as described.

Dated this 10th day of July, 1894.

JAMES DANIEL COLOMY.

Witnesses:

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