

(No Model.)

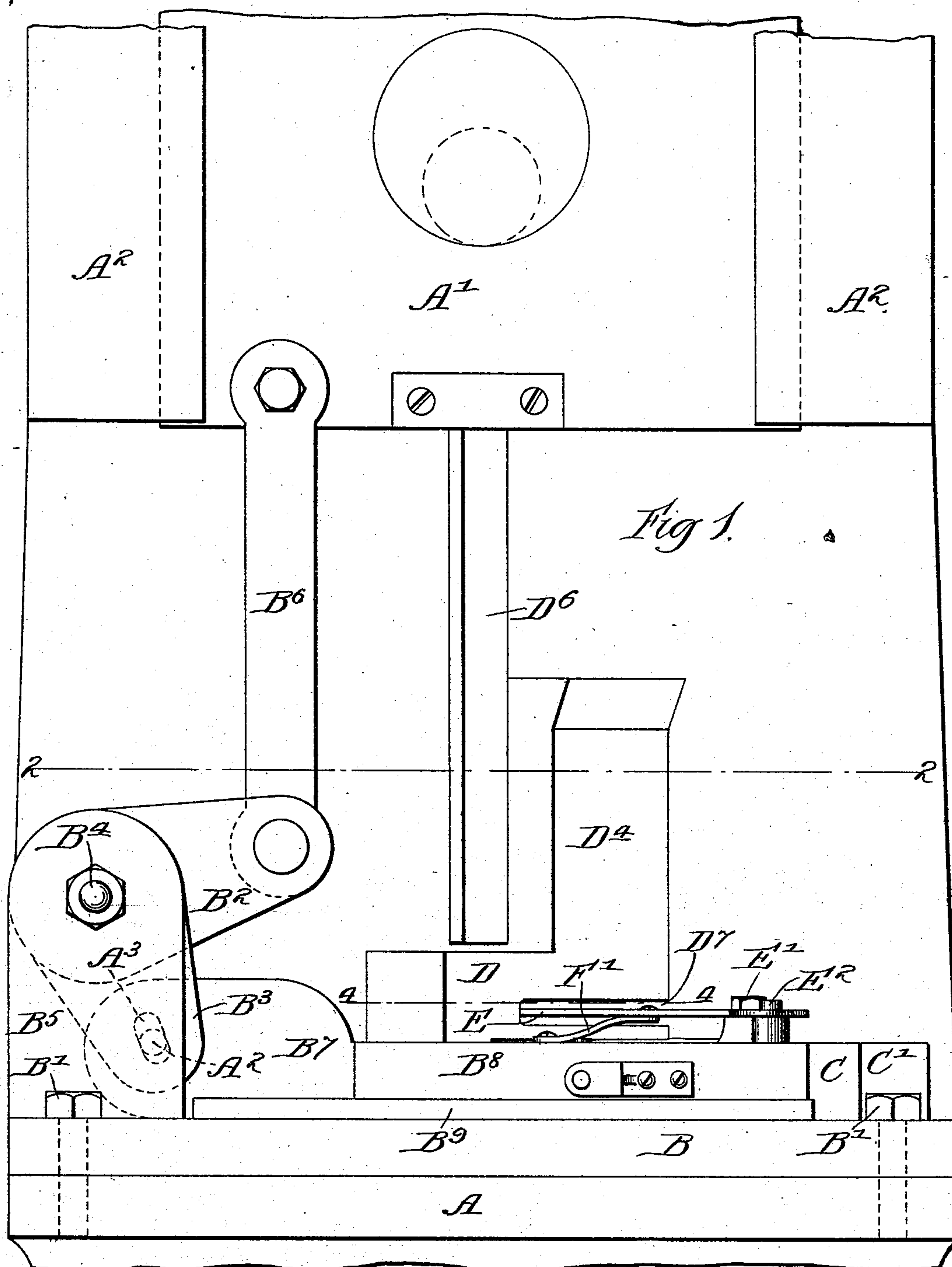
3 Sheets—Sheet 1.

H. P. LUTTON.

**MACHINE FOR ASSEMBLING PARTS OF LINK BELTS.**

No. 532,572.

Patented Jan. 15, 1895.



Witnesses

Wm. F. Hemming

Walter J. Gunthorp.

Henry P. Lutton *Inventor*

by Baileys W. Foster Atty.

Attij.

(No Model.)

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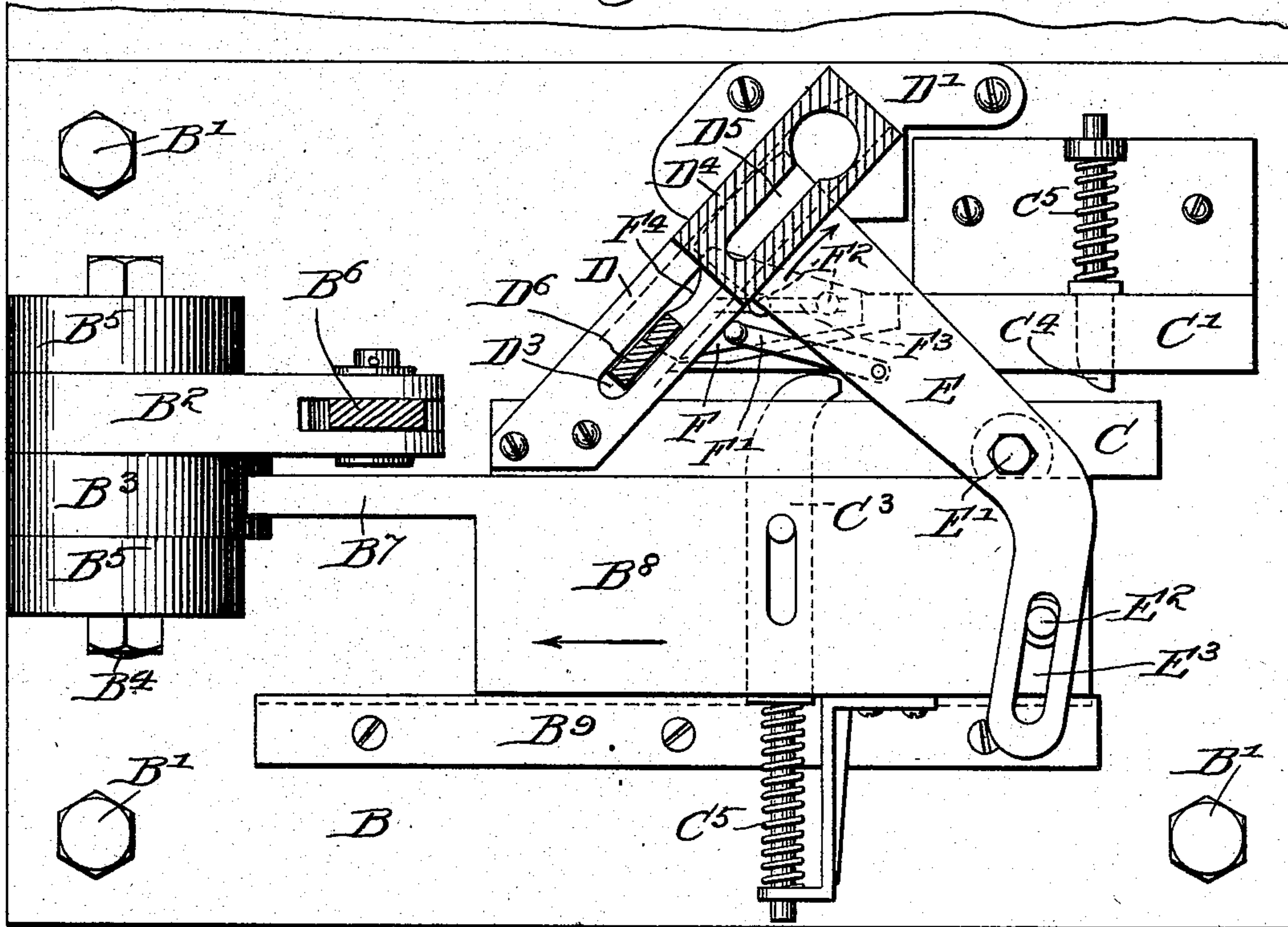
H. P. LUTTON.

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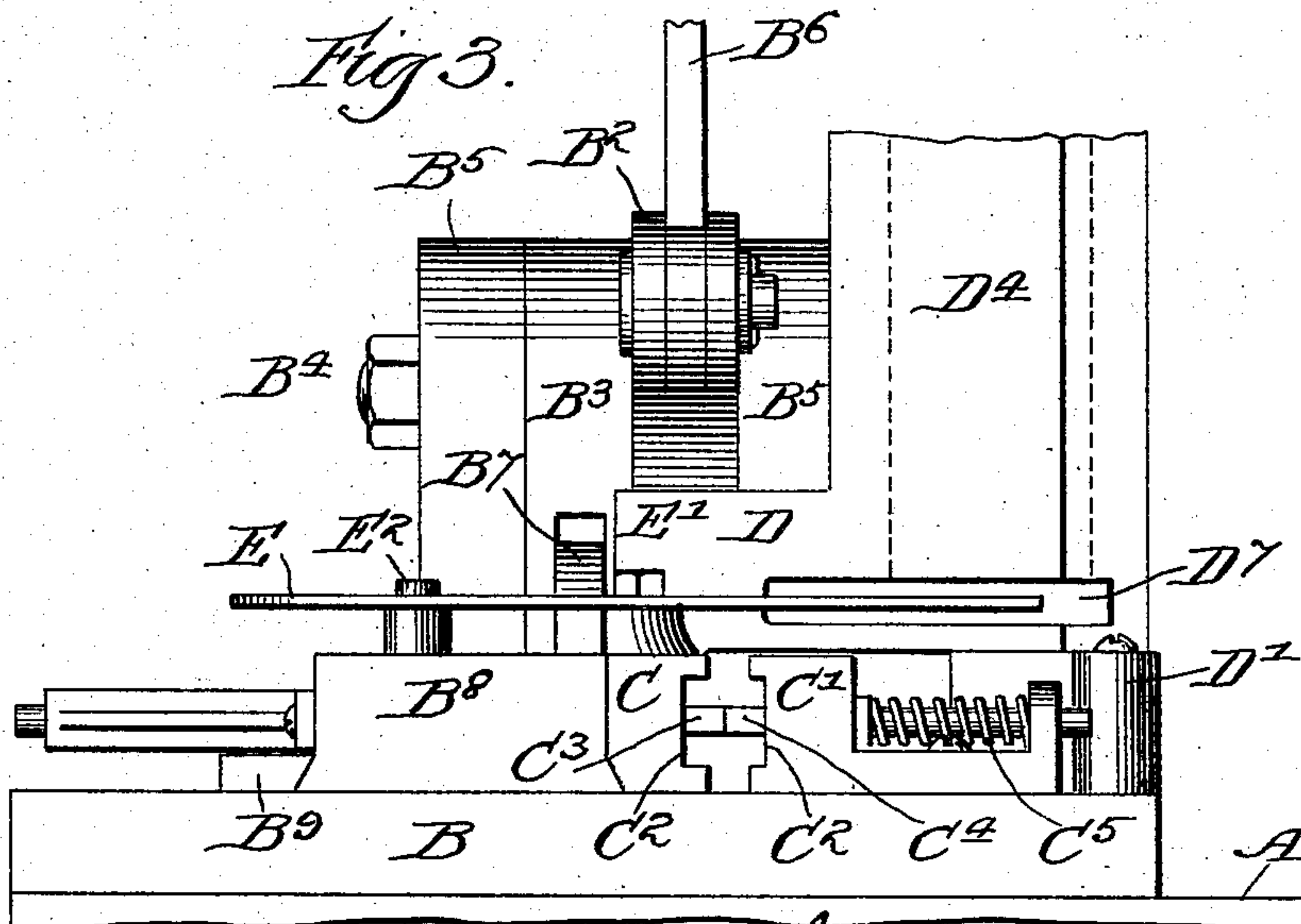
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*Fig 2.*



*Fig 3.*



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(No Model.)

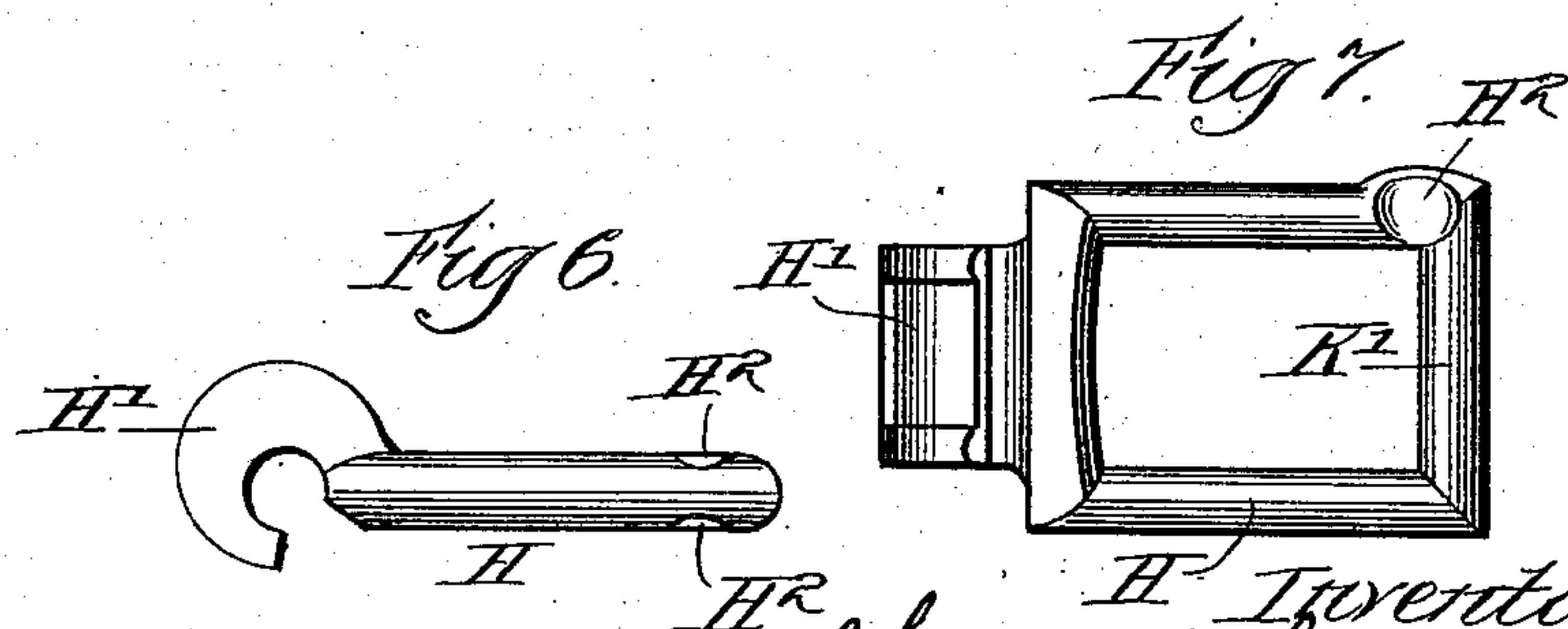
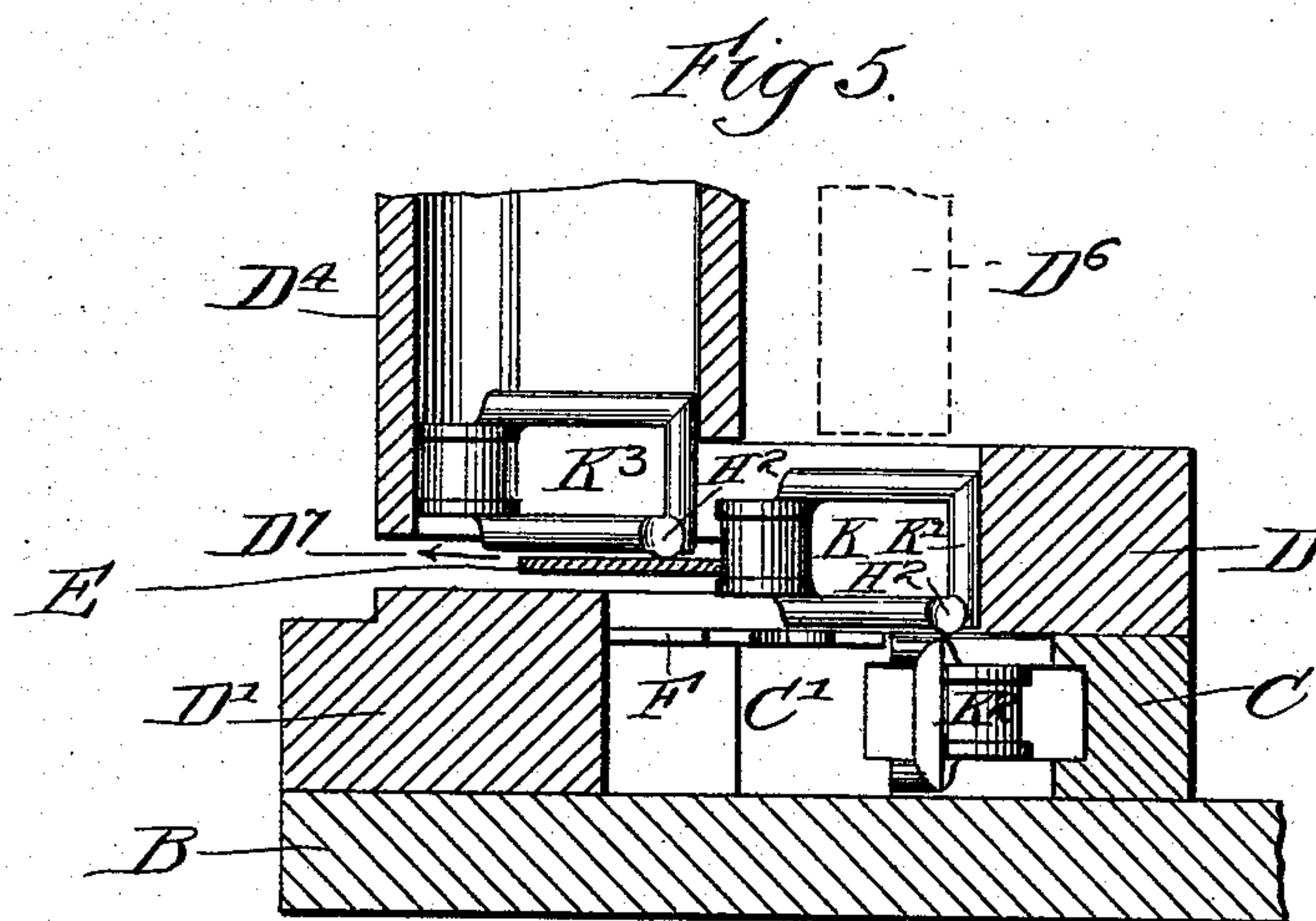
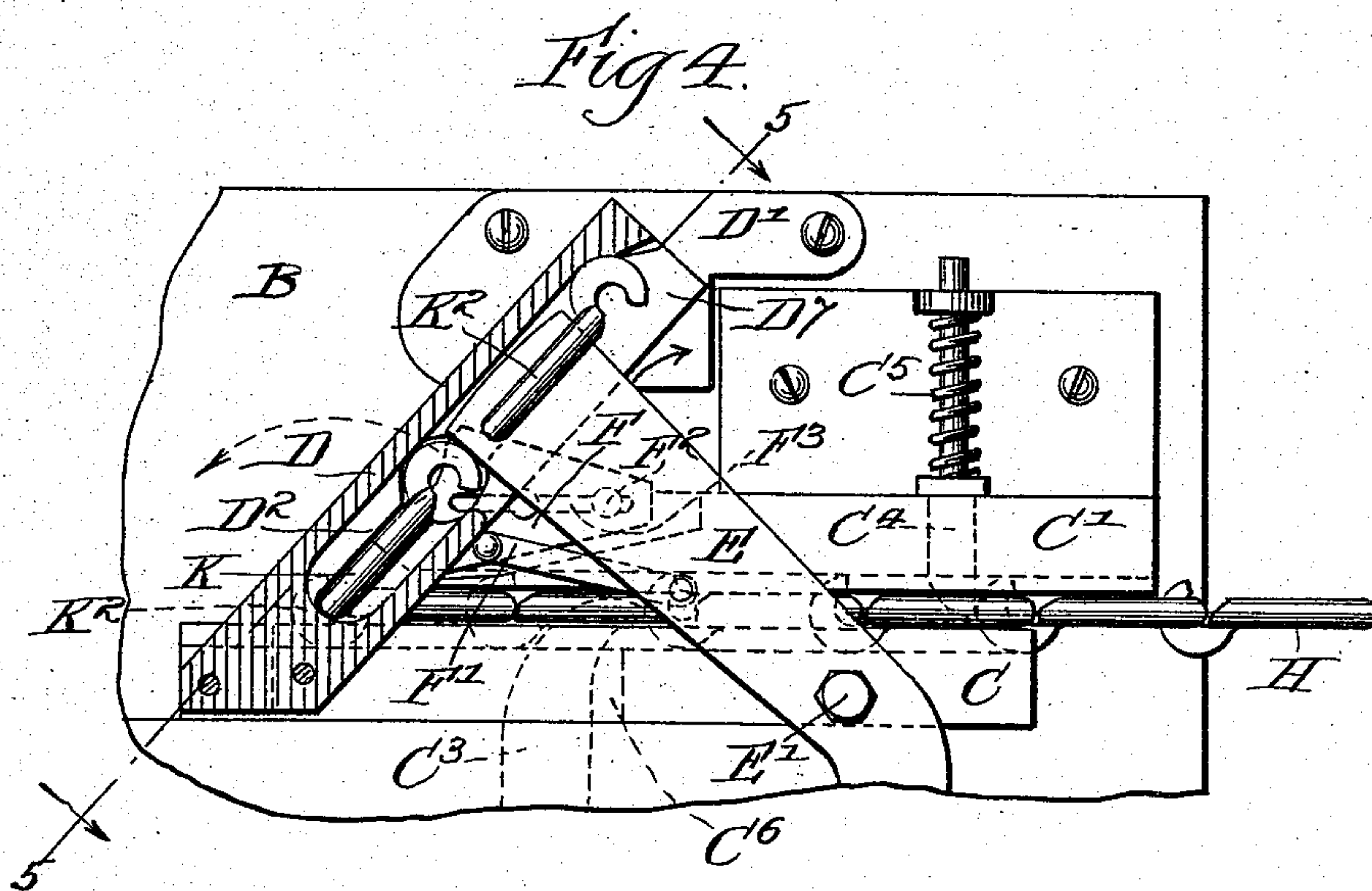
3 Sheets—Sheet 3.

H. P. LUTTON.

**MACHINE FOR ASSEMBLING PARTS OF LINK BELTS.**

No. 532,572.

Patented Jan. 15, 1895.



Witnesses  
Wm J. Huming  
Hatter J. Gunthorp

H<sup>r</sup> Henry P. Sutton  
by Francis W. Parker Att'y.



# UNITED STATES PATENT OFFICE.

HENRY P. LUTTON, OF ST. CHARLES, ILLINOIS.

## MACHINE FOR ASSEMBLING PARTS OF LINK BELTS.

SPECIFICATION forming part of Letters Patent No. 532,572, dated January 15, 1895.

Application filed February 17, 1894. Serial No. 500,476. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY P. LUTTON, a citizen of the United States, residing at St. Charles, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Machines for Assembling the Parts of Link Belts, of which the following is a specification.

My invention relates to machines for assembling the parts of link belts, and has for its object the production of an improved device by which the parts of link belts may be quickly and cheaply put together.

The construction of the device will be readily understood by referring to the accompanying drawings, wherein—

Figure 1 is a side elevation. Fig. 2 is a horizontal section on line 2—2 Fig. 1. Fig. 3 is an end elevation. Fig. 4 is a horizontal section on line 4—4 Fig. 1, with parts broken away. Fig. 5 is a section on line 5—5 Fig. 4. Figs. 6 and 7 are views of a common form of link of which the belt is made.

As seen in Fig. 1, the machine proper is shown in connection with an ordinary sheet metal punch, and is fastened to the table A of such punch.

A' is the cross head of the punch and works between the guides A<sup>2</sup> A<sup>2</sup> in the usual manner.

B is the platform upon which the different parts of my device are supported, and is fastened to the table A by the bolts B' B'. Two rocker arms B<sup>2</sup> B<sup>3</sup> at an angle with each other as shown, are mounted on the shaft B<sup>4</sup> which is supported by the standards B<sup>5</sup> B<sup>5</sup>. The rocker arm B<sup>2</sup> is connected to the cross head A' by the rod B<sup>6</sup>. The rocker arm B<sup>3</sup> is attached to the piece B<sup>7</sup> by means of the pin A<sup>2</sup> and slot A<sup>3</sup>, and said piece B<sup>7</sup> is fastened to the sliding block B<sup>8</sup>. B<sup>9</sup> is a guide for said sliding block.

C C' are guides for the belt after it has been assembled, and are provided with the grooves C<sup>2</sup> C<sup>2</sup>. Two pins C<sup>3</sup> C<sup>4</sup> project through the guides C C'. The point of each pin has a beveled or rounded edge as shown. These pins are kept in place by means of the springs C<sup>5</sup>, and as the pin C<sup>3</sup> moves with the sliding block B<sup>8</sup>, the stationary guide C is provided with a slot C<sup>6</sup> to allow such motion. A block D is attached at one end to the guide C, and at the other end to the support D', and is provided

with the opening or recess D<sup>2</sup> which extends through the bottom of said block.

D<sup>3</sup> is a slot at the top of the block D which communicates with the opening D<sup>2</sup>.

D<sup>4</sup> is a chute by which the links of the belt are conveyed to the recess in the block D. The hole D<sup>5</sup> in said chute is just large enough to allow the passage of one link at a time.

D<sup>6</sup> is a bar or punch by which the links H H of the belt are forced into position. These links are so constructed that it requires considerable force to put them together. Said punch is fastened to the cross head A'.

The block D is provided with a slot D<sup>7</sup> (Figs. 1 and 3) in which works one end of the bell crank lever E. Said lever is pivoted at E' and is connected to the sliding block B<sup>8</sup> by the pin E<sup>2</sup>. E<sup>3</sup> is a slot in said lever in which the pin E<sup>2</sup> works.

A movable supporting plate F is located so as to move back and forward beneath the block D. Said plate is connected to the lever E and receives its motion from said lever by means of the rod F'. The plate is held in position by the two pins F<sup>2</sup> F<sup>2</sup> which work in the slot F<sup>3</sup>. A notch F<sup>4</sup> is cut in the end of said plate.

A common form of link H is shown in detail in Figs. 6 and 7. Each link has a hook H' at one end and has one side provided with the notches H<sup>2</sup> H<sup>2</sup> near the end K' as shown. These notches allow that side to pass through the opening in the hook H'.

As shown in Figs. 4 and 5 a portion of the assembled belt is between the guides C C' and the links K K<sup>2</sup> K<sup>3</sup> are in position to be connected together.

It is evident that these several parts can be greatly varied in form, construction and arrangement without departing from the spirit of my invention, and I therefore do not wish to be limited to the precise construction shown.

The use and operation of my invention are as follows:

I have shown my device in connection with a common sheet metal punch. When the punch is in operation the cross head A', as it slides up and down, moves the rocker arms B<sup>2</sup> B<sup>3</sup> and since rocker arm B<sup>3</sup> is connected to the piece B<sup>7</sup> attached to sliding block B<sup>8</sup>, said block will be oscillated. Since this block is connected with one end of the bell crank le-



ver E, the other end of said lever will be moved in and out of the slot D<sup>7</sup> in the block D. The bar or punch D<sup>6</sup> will also be moved up and down in the slot D<sup>3</sup> in the top of the block D.

Referring to Figs. 4 and 5 it will be seen that a part of the assembled chain is in position between the guides C C', and that two of the loose links are in the hollow or cavity of the block D. The end K' of the link K is directly over the opening of the hook of link K<sup>2</sup>, and is in such a position with relation to said hook that, on being forced straight downward, the end K' will enter the opening of the hook. When the device is in the position shown in the figures, the cross head A' has reached the upward limit of its motion. When said cross head descends, the punch D<sup>6</sup> enters the slot D<sup>3</sup> in the top of the block D, comes in contact with the top of the link K, and forces said link downward, the end K' entering the opening of the hook of link K<sup>2</sup>. In the meantime the sliding block B<sup>8</sup> is moved in the direction of the arrow through the agency of connecting rod B<sup>6</sup>, rocker arms B<sup>2</sup> B<sup>3</sup>, and piece B<sup>7</sup>. Since one end of the bell crank lever E is attached to said sliding block, the other end of said lever will be moved in the direction of the arrow carrying with it the movable supporting plate F through the agency of rod F', and withdrawing said plate from beneath the link K'. These several parts are so constructed that the supporting plate F is withdrawn from beneath the link K at about the time the punch B<sup>6</sup> comes in contact with the top of said link. Said plate is provided with the notch F<sup>4</sup> on account of the projecting hook H' on one end of the link; so that all parts of the link may be released at the same time. When the cross head A' reaches the limit of its downward motion, the lever E will have moved so far in the direction of the arrow as to release the link K<sup>3</sup> which then drops on to the support D'. As the cross head A' moves upward the sliding block B<sup>8</sup> is moved in the opposite direction to that indicated by the arrow. The pin C<sup>3</sup> which moves with said block engages one end of a link of the belt, and carries the assembled belt forward. The link K swings around in the direction of the arrow (Fig. 4) and takes the position of the link K<sup>2</sup>. The pin C<sup>4</sup>, having its beveled or rounded face toward the links, during this motion, is pushed back out of the way so that the ends of the links can pass. When said ends have passed the pin the spring C<sup>5</sup> pushes said pin forward, so as to engage the ends of the links and prevent a backward motion of the belt, when the pin C<sup>3</sup> is moved in the opposite direction. Said latter pin has its beveled surface so situated that when the sliding block B<sup>8</sup> is moving in the direction of the arrow, it will be forced backward so as to pass the ends of the links, but will engage said ends when moving in the opposite direction. In the meantime the lever E, now moving in the direction oppo-

site to that indicated by the arrow, engages the link K<sup>3</sup> and pushes it forward into the positions just occupied by link K, the plate F, at the same time being pushed forward so as to support said link. Another link from the chute D<sup>4</sup> will now drop on the lever. The punch B<sup>6</sup> moves up with the cross head A' and the relation of the parts is such that said punch is out of the way of the link K<sup>3</sup> before said link is pushed forward into the position of link K. This effect may be brought about by connecting the rocker arm B<sup>3</sup> to the piece B<sup>7</sup> as shown in Fig. 1, *i. e.*, by means of the pin A<sup>2</sup> working in the slot A<sup>3</sup>. This arrangement allows the punch D<sup>6</sup> to move upward a certain distance, depending on the size of the slot A<sup>3</sup>, before the sliding bar and hence lever E begins to move. When the cross head A' reaches the upward limit of its motion, the mechanism will be in the position shown in Figs. 4 and 5 and the operation just described will be repeated.

The chute D<sup>4</sup> may be of any length desired, and the links may be fed into it in any convenient manner. When the links are in the position of the link K (see Fig. 5) the notches H<sup>2</sup> H<sup>2</sup> must be situated as shown. To prevent trouble from this source, the opening of the chute D<sup>4</sup> is of such a shape that the links cannot be inserted unless they are in the right position.

It is evident that with this device the links of the belt can be rapidly put together, and the cost of production reduced. It is also evident that the relation of these several parts can be changed so that the device can be used for assembling the parts of belts of various sizes.

I have shown my device in connection with a common sheet metal punch, but it is evident that any other suitable mechanism may be used.

I claim—

1. The combination in a machine for assembling the parts of a link belt, of a punch which forces the links together at an angle to each other, guides between which the assembled belt passes, a pin projecting through one of said guides into the space between them so as to engage the assembled belt, means for moving said pin so as to carry the assembled belt forward and draw the last united link around the end of the guide and in line with the assembled belt, said pin being provided with a beveled edge and held in place by a spring or the like so that it may be moved in the direction of its length during its backward stroke in order to pass the ends of the links.

2. The combination in a machine for assembling the parts of a link belt, of a chute into which the links are dropped, a moving element working backward and forward beneath said chute which engages the lower link in the chute during its forward stroke and pushes said link to one side, a supporting plate that moves beneath said displaced



link and holds it in position until acted upon by a punch that forces said link into connection with the end link of a continuous belt.

3. A machine for assembling the parts of a link belt, comprising a punch that forces the links together, a moving element that places the links in position to be acted upon by said punch, and a movable supporting plate that holds the links in said position until acted upon by said punch substantially as described.

4. A machine for assembling the parts of a link belt, comprising a device that engages the assembled belt and carries it forward, a moving element that places the separate links in position to be united to the last link in said assembled belt, and a movable supporting plate that holds the links in said latter position until acted upon by a device that forces the links together.

5. The combination in a machine for assembling the parts of a link belt, of a punch that forces the links together, a sliding block, a lever, connected at one end to said sliding block, the other end working in a slot in a block into which the loose links are fed; a

movable supporting plate beneath said block, stationary guides between which the assembled belt passes, pins projecting from said guides, and means for moving said sliding block and punch whereby, when loose links are fed into said block, they will be formed into a continuous belt.

6. The combination in a machine for assembling the parts of a link belt, of guides between which the assembled belt passes, a pin projecting through each of said guides into the space between them, each of said pins being provided with a beveled or rounded face and being held in place by means of springs; whereby, when one of said pins is moved forward it engages the belt and carries it forward, and when moved backward the other pin engages the belt and prevents the said belt from moving in that direction substantially as described.

HENRY P. LUTTON.

Witnesses:

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