

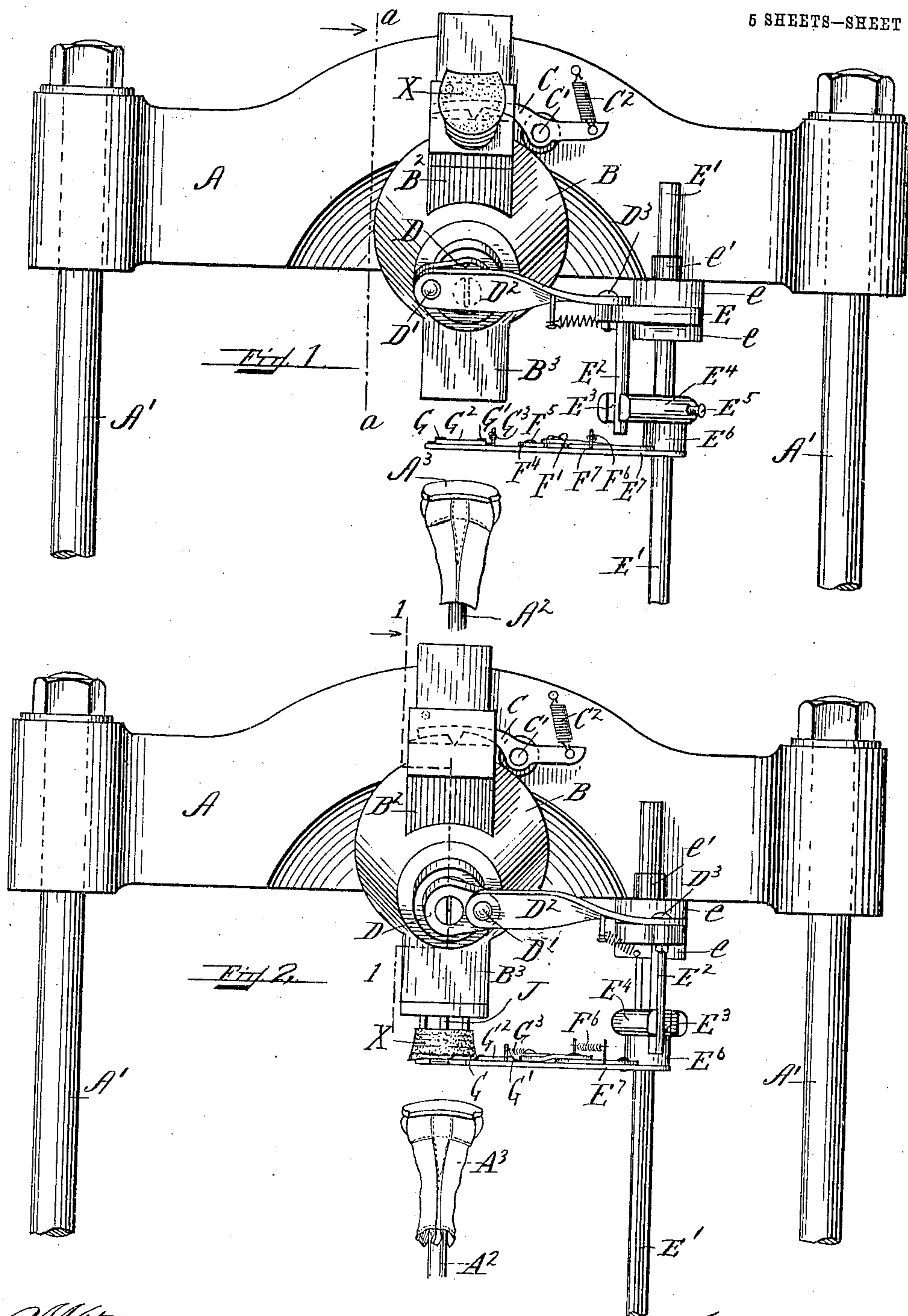
No. 844,573.

PATENTED FEB. 19, 1907.

E. WOODWARD.
HEEL ATTACHING MACHINE.

APPLICATION FILED JAN. 28, 1903.

5 SHEETS—SHEET 1.



Witnesses:
E. L. Harlow
A. D. Warner

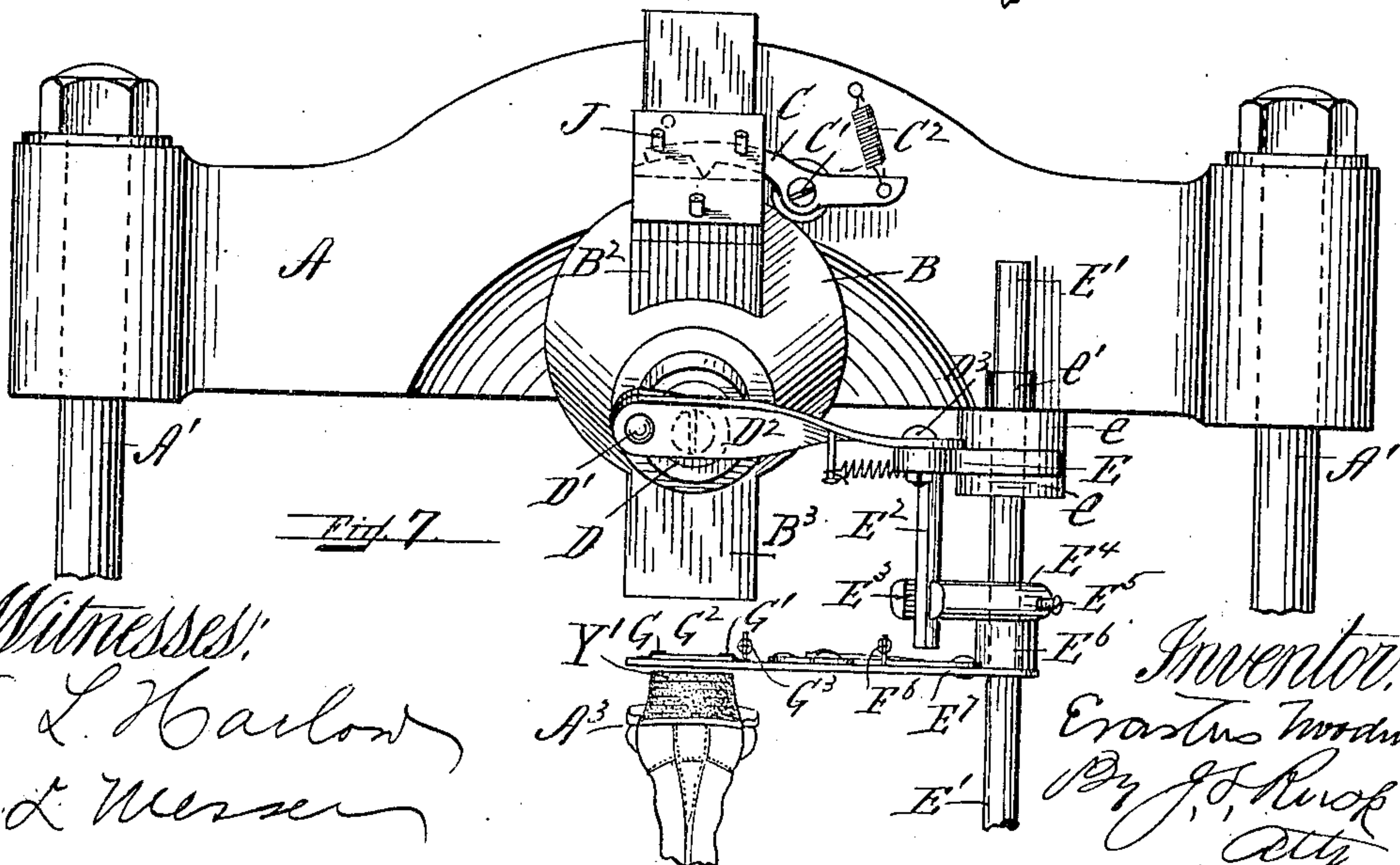
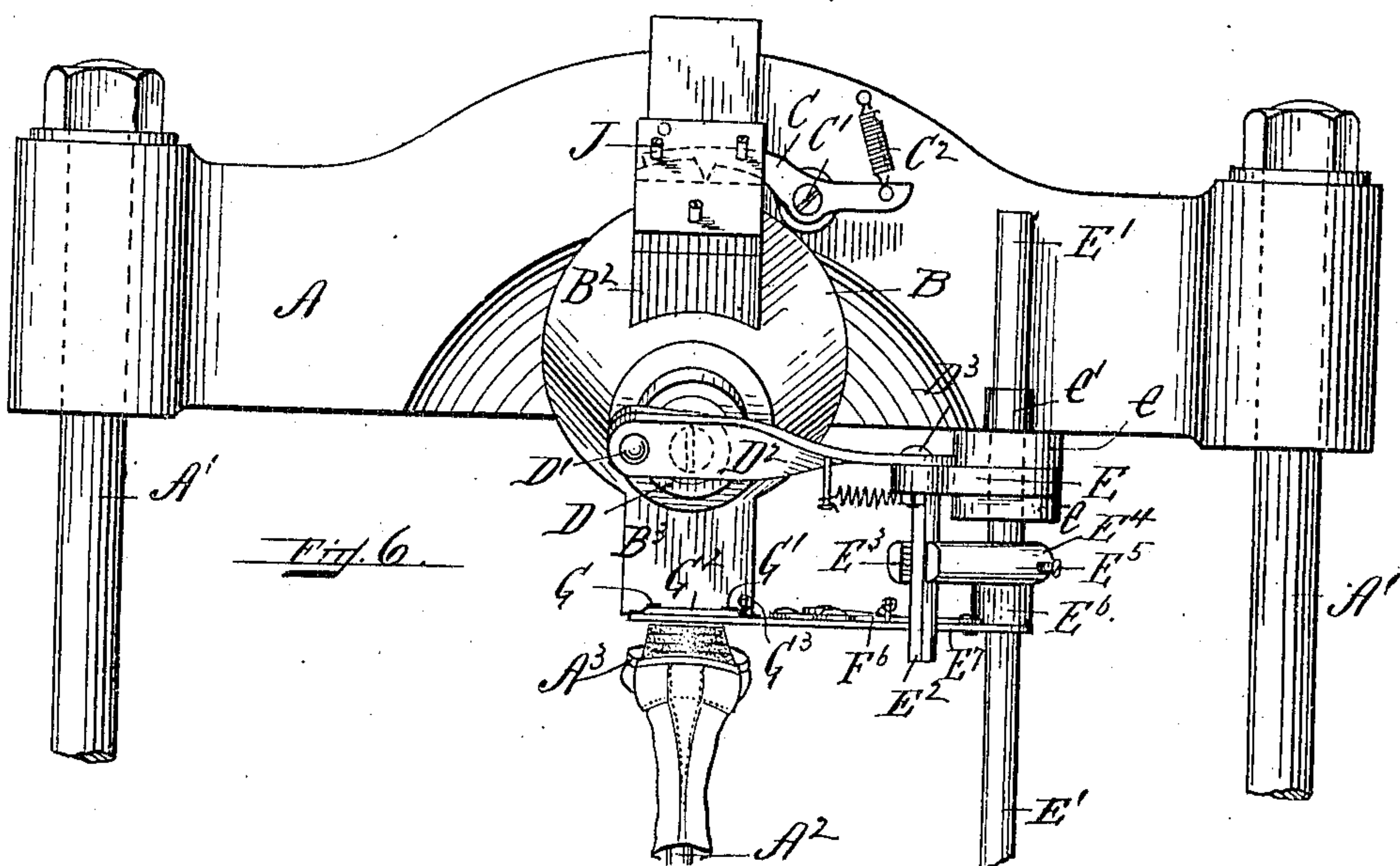
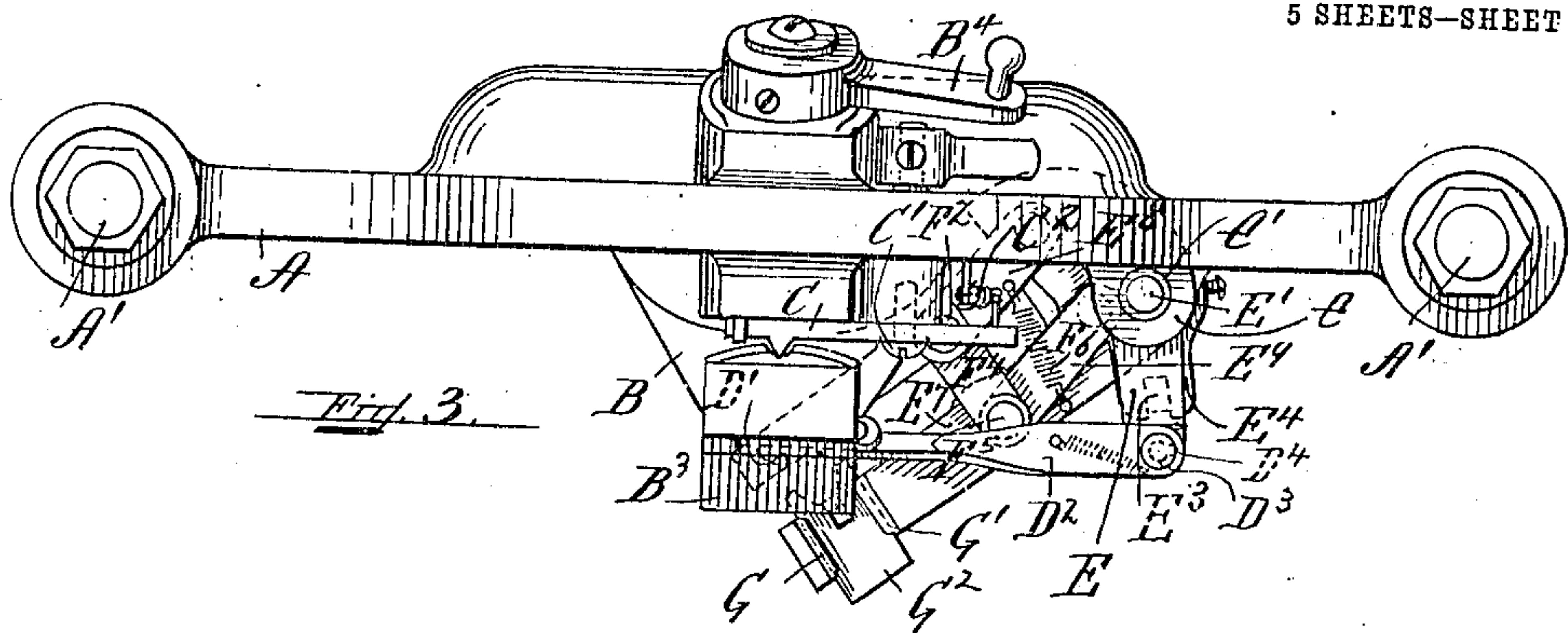
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5 SHEETS—SHEET 2.



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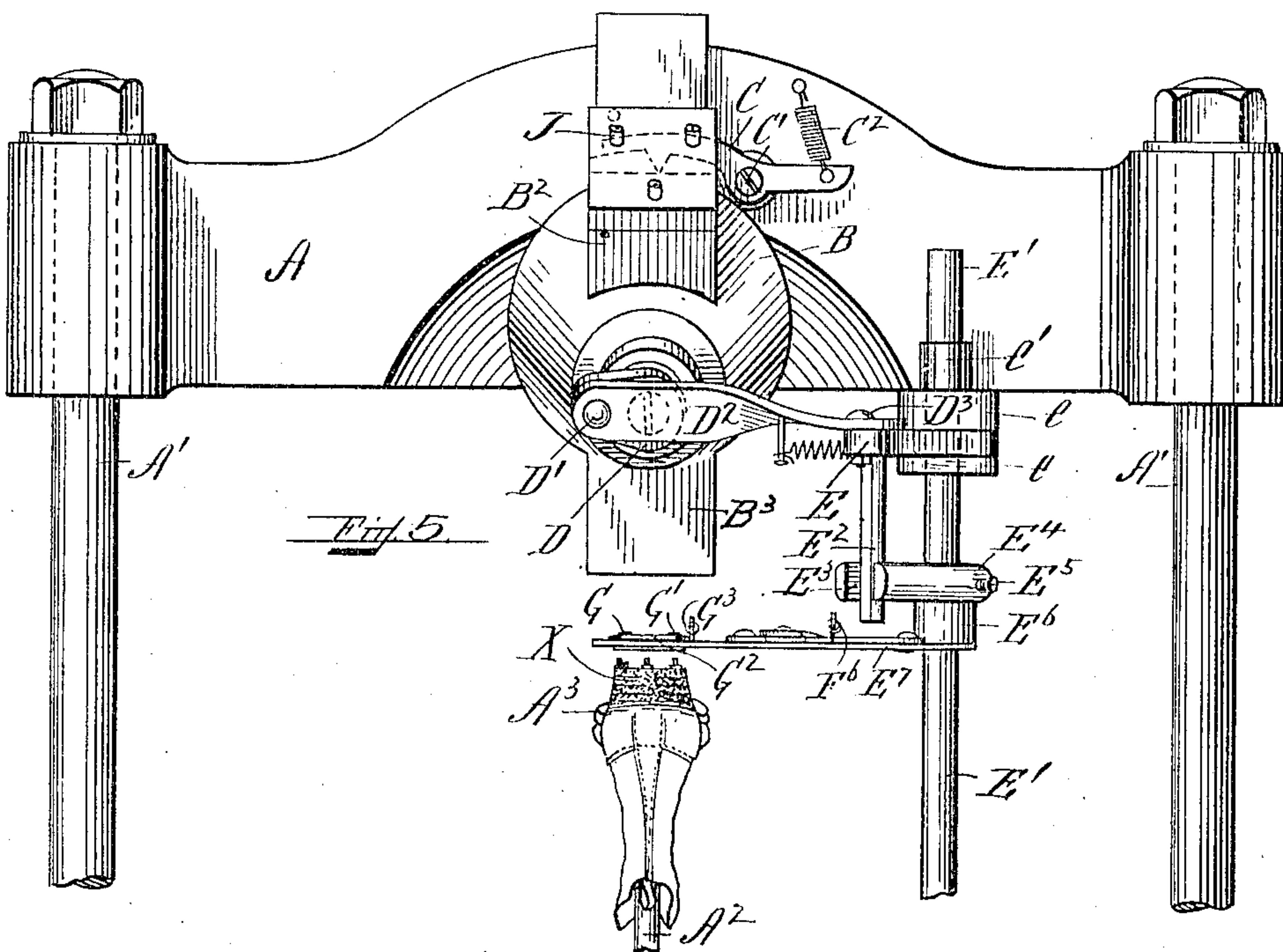
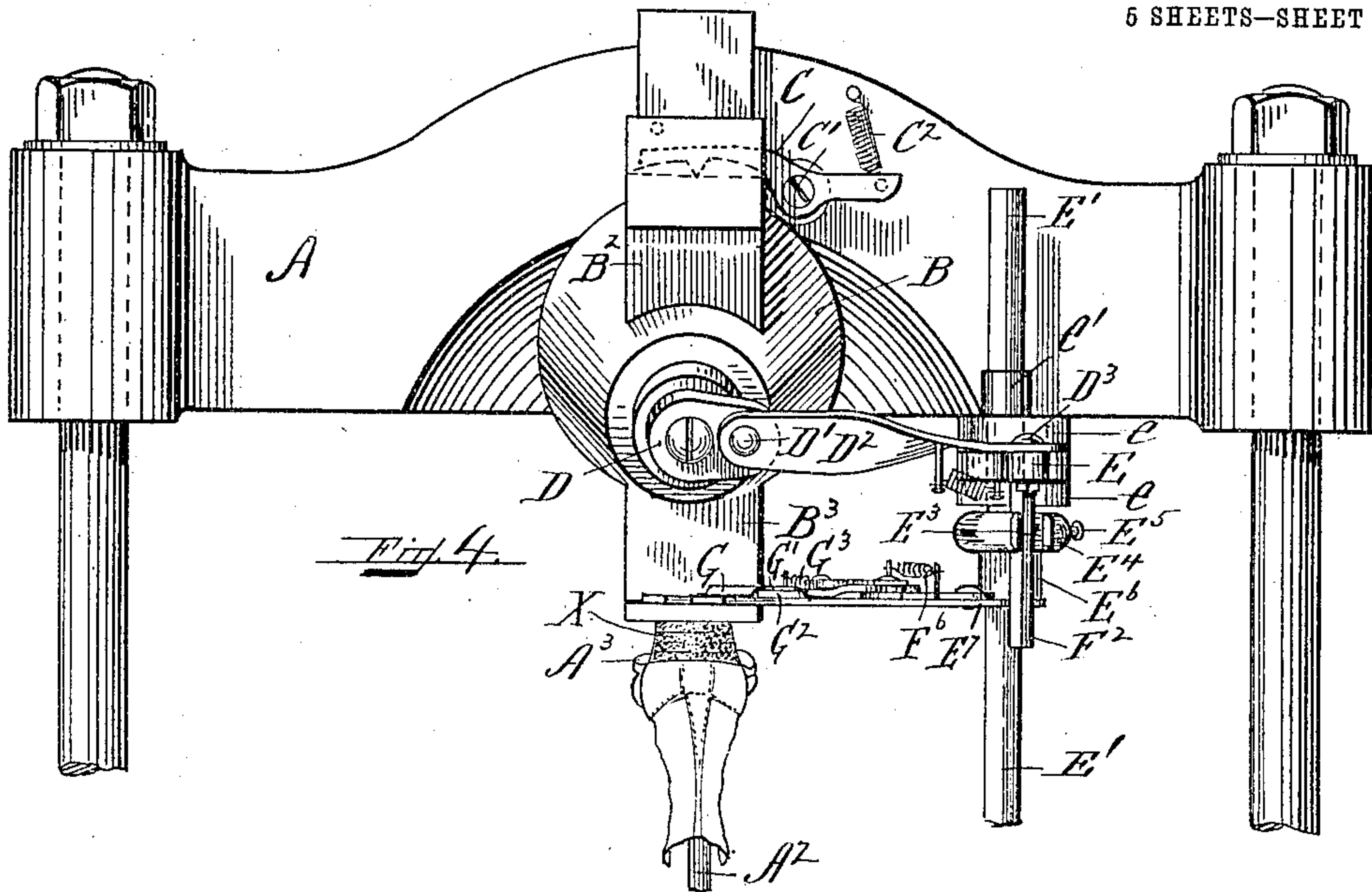
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5 SHEETS—SHEET 3.



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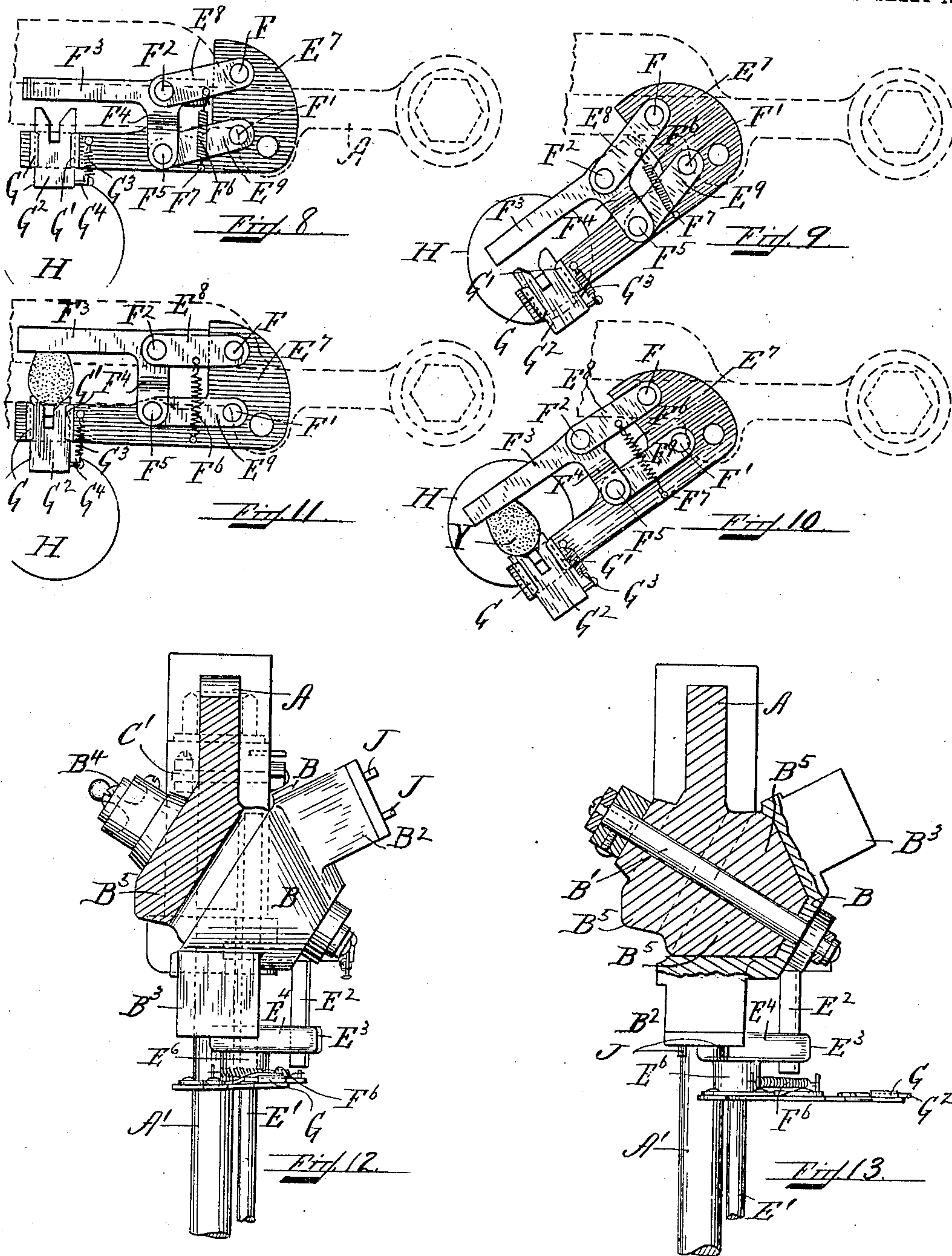
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5 SHEETS—SHEET 4.



Witnesses:
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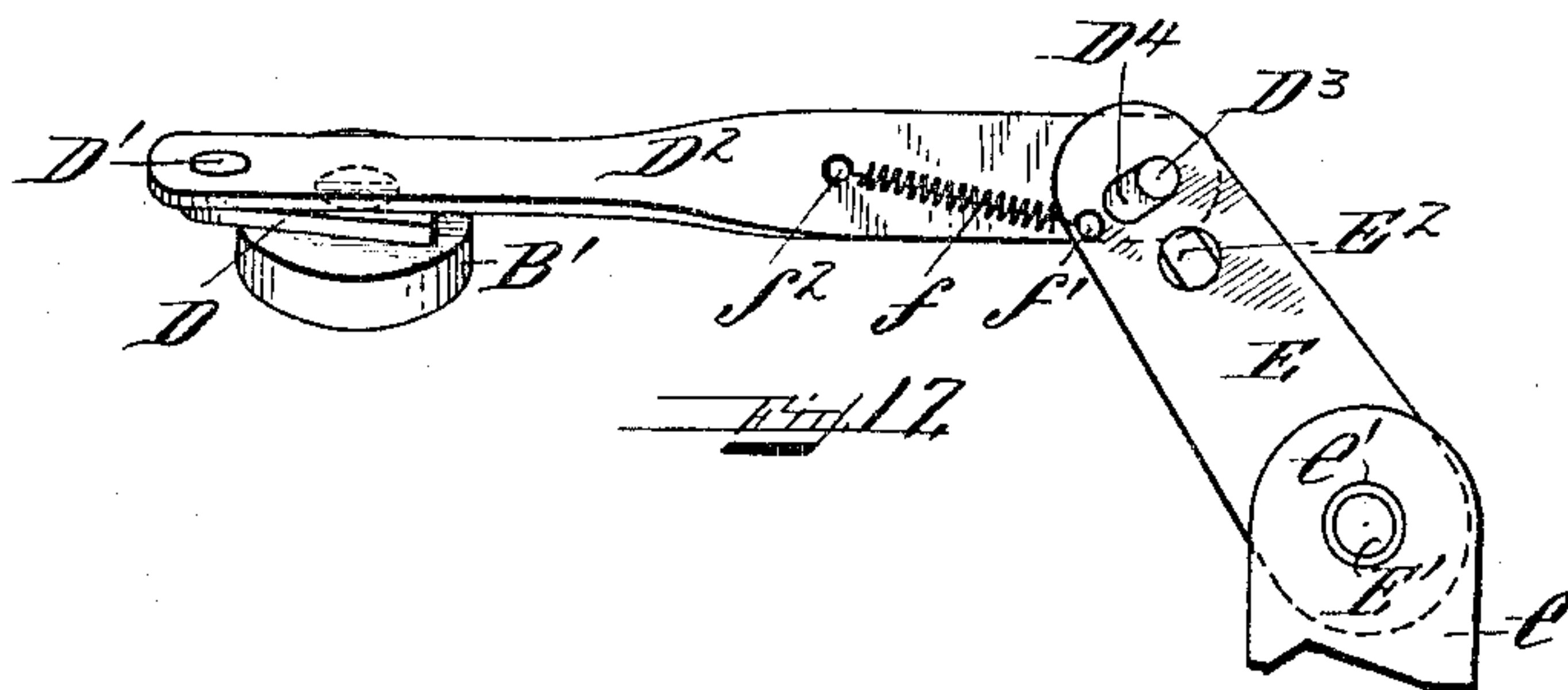
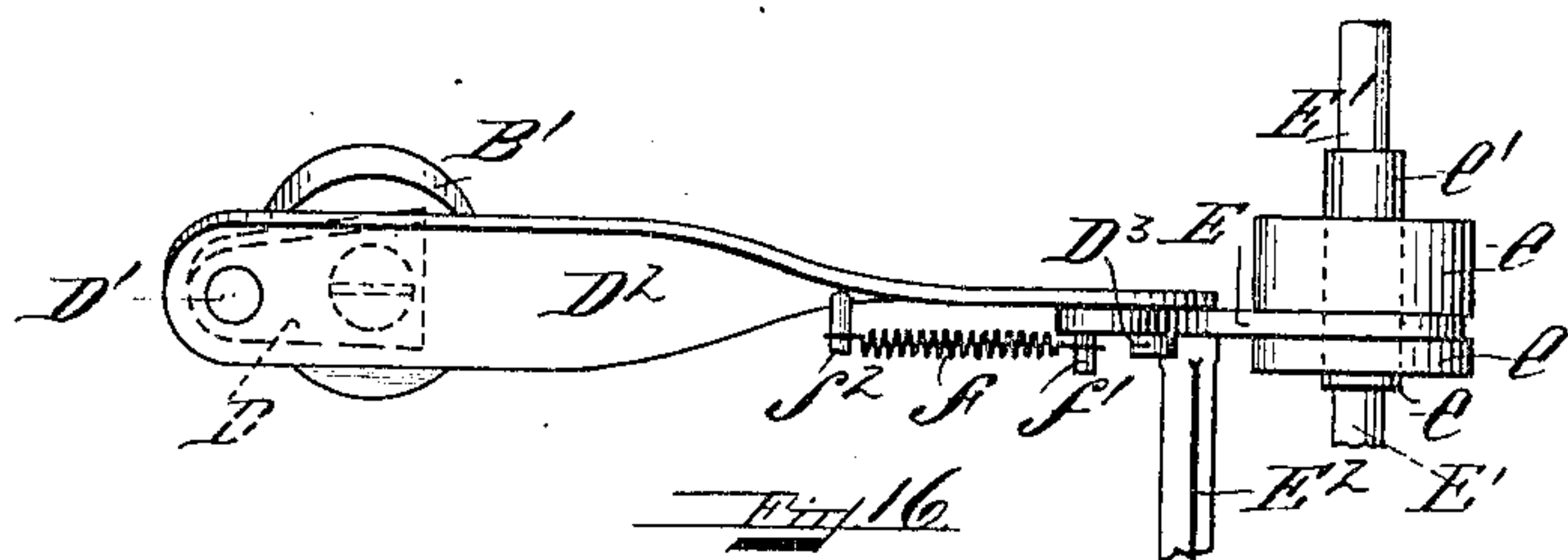
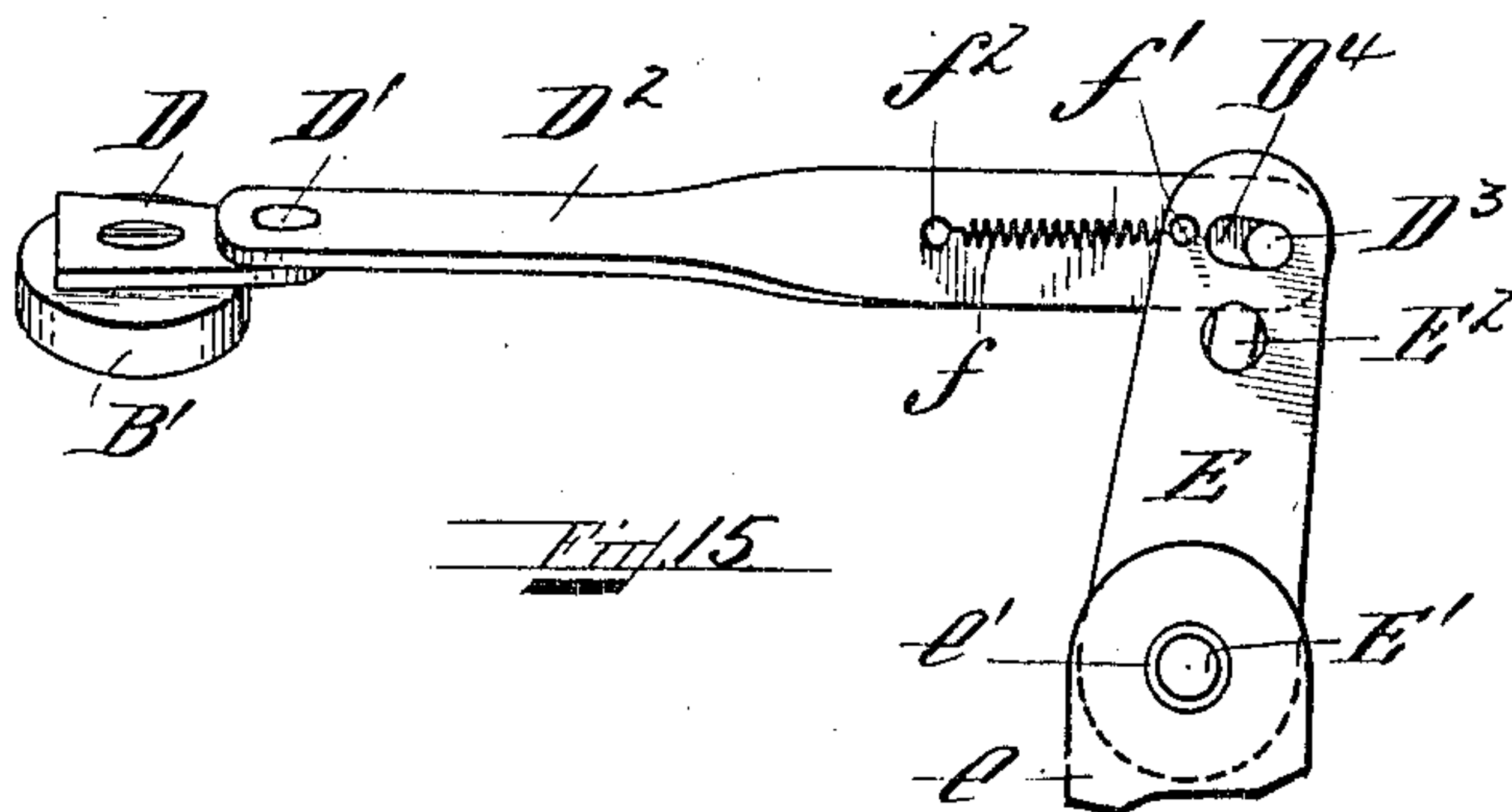
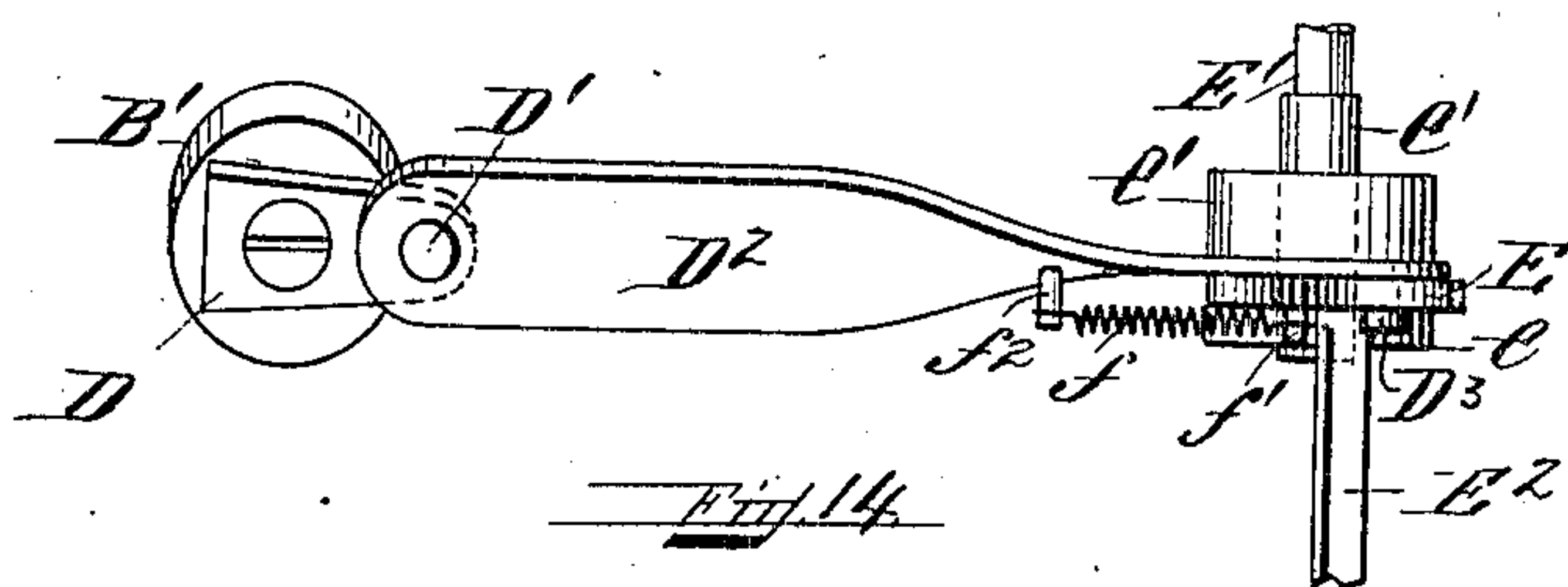
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No. 844,573.

PATENTED FEB. 19, 1907.

E. WOODWARD.
HEEL ATTACHING MACHINE.
APPLICATION FILED JAN. 28, 1903.

5 SHEETS—SHEET 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, MASSACHUSETTS.

HEEL-ATTACHING MACHINE.

No. 844,573.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed January 28, 1903. Serial No. 140,833.

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Attaching Machines, of which the following is a specification.

My invention relates to a machine for attaching heels loaded with nails to the heel-seats of boots and shoes, and where blind-nailing is employed to the subsequent attachment of top lifts to the attached heels.

My improvement is shown applied to a heeling-machine in which there is a vertically-reciprocating cross-head carrying a hub adapted to be oscillated about a shaft and provided with two diametrically-arranged arms, one of which carries the nail-driving mechanism to which the loaded heel is applied for attachment to the shoe and the other arm being adapted to subsequently attach or spank the top lift onto the attached heel at the proper time. I have not shown in the drawings the mechanism for reciprocating this cross-head, as it is too well known in the art to require description.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate a construction embodying my invention, Figure 1 shows a side elevation of the cross-head referred to, together with the jack in position thereunder for holding the shoe, and also showing the loaded heel held on the upper arm, to which it has been applied by the body. Fig. 2 is a similar view with the arms reversed and showing the heel above the jack in position to be attached to the heel-seat of the boot or shoe. Fig. 3 is a top plan view of Fig. 2 and showing the top-lift-carrying device out of the vertical line of motion of the arm carrying the heel during its attachment to the heel-seat of the boot or shoe. Fig. 4 is a side elevation showing the cross-head down with the heel attached to the shoe. Fig. 5 is a side elevation similar to Fig. 4 with the arms reversed and showing the projecting ends of the nails onto which the top lift is to be attached. Fig. 6 is a view similar to Fig. 5 with the cross-head down and the spanker-block attaching the top lift to the projecting ends of the nails. Fig. 7 is a view similar to Fig. 6, showing the

cross-head raised with the arms and the heel finished. Fig. 8 is a top plan view of the top-lift-carrying device in the position shown in Fig. 1 when the heel is applied by the body to the arm carrying the heel-attaching mechanism. Fig. 9 is a top plan detail view of the top-lift-carrying device with the parts in the position shown in Fig. 2 out of the driving-line of the arm carrying the heel. Fig. 10 shows a top lift applied to the top-lift-carrying device and ready to be moved into position under the spanker-block for attachment to the attached heel. Fig. 11 is a top plan view of the top-lift-carrying device and in the driving-line of the spanker-arm for attachment of the top lift to the attached heel. Fig. 12 is a cross-sectional view through the cross-head on the line *a a*, Fig. 1. Fig. 13 is a cross-sectional view through the head and hub with the two arms in full lines on line 1 1, Fig. 2. Figs. 14 and 15 are respectively side and under side plan views of the mechanism which operates the top-lift-carrying device, representing the parts in their positions when the top-lift-carrying device is out in position to receive a top lift. Figs. 16 and 17 represent, respectively, side and under side plan views of the mechanism which operates the top-lift-carrying device, showing the parts in their positions when the top-lift-carrying device is moved inward with the top lift over the heel for attachment thereto.

Like letters of reference refer to like parts throughout the several views.

In the drawings the cross-head *A* is reciprocated, by means of the rods *A'*, in the manner well known in the art.

*A*² is the last, carrying the shoe to which the heel and top lift are to be attached when blind-nailing is employed and to which the heel only is to be attached when flush-nailing is employed. The hub *B*, attached fast to the shaft *B'*, which is set at an angle of thirty degrees, carries the diametrically-arranged arms or blocks *B*² *B*³, and said hub and arms are adapted to be firmly held in position during the attaching operation by the arm *C*, pivoted at *C'* on the cross-head *A* and normally caused to engage a suitable recess in each arm by means of the spring *C*². (Shown in Figs. 1, 2, and 3.) Secured fast to the lower end of the shaft *B'* is the arm *D*, to which is pivotally connected at *D'* the lever *D*², which at its opposite end is pivotally con-

nected to the arm E by the pin D^3 , extending
 down through the opening in the movable
 arm E, mounted freely on the sleeve e'
 around the rod E' , which extends upward
 5 from the base of the machine. The end of
 this arm E opposite the lever D^2 is supported
 in the lugs e , secured to and extending from
 under the cross-head A, and in the move-
 10 ments of the lever D^2 the arm E moves to and
 fro on the sleeve e' , supported in the lugs e .
 From the under side of the arm E there ex-
 tends downwardly the depending rod E^2 ,
 which passes through the slot E^3 in the bifur-
 15 cated arm E^4 , held fast on the rod E' by the
 set-screw E^5 . Secured to the boss E^6 on the
 arm E^4 is the plate E^7 , to which are pivotally
 secured two links E^8 E^9 at F and F'. The
 forward end of the link E^8 is pivotally con-
 20 nected at F² to the arm F³ of the link F⁴, to
 which is secured the forward end of the link
 E^9 at F⁵, forming the well-known parallel
 motion. The spring F^6 , secured to the link
 E^8 at one end and at its opposite end to the
 25 pin F⁷, tends to hold the forward end of the
 arm F³ in a parallel closed position with re-
 spect to the forward end of the plate E^7 and
 exerts a pressure on the top lift to hold it
 square and clamped in a suspended position
 30 as it travels into position over the attached
 heel. On the forward end of the plate E^7 are
 two guides G G', in which there is adapted to
 slide the forked plate G^2 , having shoulders,
 as shown, to limit the forward movement of
 said plate under tension of the spring G^3 , se-
 35 cured to the plate E^7 and to the pin G^4 .

The top lift is placed on the top-lift-carry-
 ing device by putting its breast against the
 parallel arm F³ and forcing said arm out until
 40 the top lift Y drops into the fork in the plate
 G^2 , which yields as the arm F³ returns to its
 normal position under the tension of the
 spring F^6 until the back of the top lift strikes
 the edge of the forward end of the plate E^7 ,
 which is the gaging-point of the top lift, the
 45 plate H preventing the top lift falling through
 during its application, as above described.
 The plate H is located on a suitable standard
 extending up from the base of the machine
 and is fixed in positive relation to the arm F³
 50 and the forward end of the plate E^7 , so that
 when the top-lift-carrying device is moved
 out into position to receive a top lift it comes
 directly over the plate H in close proximity
 thereto and prevents the top lift when being
 55 applied thereto from passing through.

The machine is so organized that when the
 top lift is arranged as described and brought
 over the attached heel its rear end comes
 over the rear end of the heel in a positive re-
 60 lation to the back nail.

Depending from the under side of the lever
 D^2 is the pin f^2 , to which is attached the
 spring f , with its opposite end secured to the
 pin f' , depending from the arm E, and located

beyond said pin f' is the slot D^4 , which is 65
 longer than the pin D^3 , so as to allow a yield-
 ing movement between the lever D^2 and the
 arm E. When the top-lift-carrying device is
 in its outer or receiving position, as shown in
 Figs. 3 and 4, the coöperating parts shown in 70
 Figs. 14 and 15 are in the positions indicated
 in said figures; but when the top lift moves
 inward over the heel for attachment the co-
 operating parts shown in Figs. 16 and 17
 are in the positions indicated in those figures. 75
 When the block B^3 moves downwardly from
 the position shown in Fig. 5 to that shown in
 Fig. 6, the top lift is spanked onto the at-
 tached heel, and owing to the force of the
 blow of the spanker-block B^3 on the rigid 80
 heel of the shoe located on the last the leather
 of the top lift spreads out, which causes the
 forward end of the plate F^3 to move laterally
 and yield by means of the spring F^6 , and at
 the same time the forward end of the plate E^7 85
 moves laterally and yields by means of the
 spring f , so that the top lift is not marred by
 the force of the blow of the spanker-block B^3 ,
 its spreading being thus provided for as
 above described. 90

The plate E^7 is secured to the boss E^6 , car-
 rying the bifurcated arm E^4 , fast on the
 shaft E' , and through the slot E^3 of said bi-
 furcated arm E^4 passes the depending rod
 E^2 , fast to the under side of the arm E. By 95
 the constructions previously described the
 plate E^7 yields as the rod E^2 moves the arm
 E slightly toward the right from the position
 shown in Fig. 17 by the yielding of the spring
 f , and after the top lift is attached the spring 100
 f returns the arm E to the position shown in
 Fig. 17.

The loaded heels are secured on the heel-
 block B^2 by means of the carrying and hold-
 ing fingers J, which may be of any desired 105
 construction and form no part of this inven-
 tion. When the boy has placed a loaded
 heel X on the heel-block B^2 and the same is
 held there by the fingers J, the boy operates
 the latch C to release the heel-block and al- 110
 low it to be turned and brought into the posi-
 tion shown in Fig. 2. During this operation
 the top-lift-carrying device hereinbefore de-
 scribed moves out of alinement under the
 spanker-block B^3 in the position shown in 115
 Figs. 1 and 8 to the position shown in Figs. 2
 and 9, when the boy places the top lift Y on
 the top-lift-carrying device in the manner
 shown in Fig. 10. In the meantime the op-
 erator has placed the shoe A^3 on the jack A^2 120
 and operates the cross-head A to bring down
 the heel from the position shown in Fig. 2 to
 that shown in Fig. 4 for attachment to the
 shoe and then turning the arm B^4 brings the
 heel-block B^2 up into the position shown in 125
 Fig. 5. This movement brings the top-lift-
 carrying device into position over the at-
 tached heel and under the spanker-block B^3 ,

Fig. 6, when the operator brings the cross-head A down and spans the top lift onto the attached heel and upon the upward movement of the cross-head A leaves the entire heel Y' secured to the shoe.

When the parts are in the position shown in Fig. 1, the top-lift-carrying device is directly under the spanker-block B³ and over the shoe; but when the boy throws the block B² to bring it around over the shoe in the position shown in Fig. 2 the top-lift-carrying device moves from its horizontal position (shown in Fig. 8) to that shown in Fig. 9, ready to receive the top lift by the movement of the lever D², arm E, rod E², and arm E⁴ to the boss E⁶, to which the top-lift-carrying device is secured. When the operator turns the arm B⁴ to turn the heel-block up and turn the spanker-block down, the top-lift-carrying device, which has received a top lift, moves from the position shown in Fig. 10 to that shown in Fig. 11 through the operation of the lever D², arm E, rod E², and bifurcated arm E⁴, hereinbefore described, when the top lift is in position to be spanked onto the attached heel. The hub B with the blocks B² B³ do not rotate continuously in one direction, but oscillate in an arc of one hundred and eighty degrees.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a top-lift-carrying device pivoted to a fixed part of the machine, a pivoted lever movable with said cross-head and having a sliding connection with said top-lift-carrying device, and an arm rotatable with said spanker-block and connected with said lever.

2. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a top-lift-carrying device pivoted to a fixed part of the machine, a pivoted lever movable with said cross-head and having a sliding connection with said top-lift-carrying device, an arm rotatable with said spanker-block, and a yielding connection between said arm and said lever.

3. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a fixed support, a top-lift-carrying device pivoted to said support, a pivoted lever movable on said fixed support in the same direction as said cross-

head and having a sliding connection with said top-lift-carrying device, an arm rotatable with said spanker-block, and a link connecting said arm with said lever.

4. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a fixed support, a top-lift-carrying device pivoted to said fixed support, a pivoted lever movable on said fixed support in the same direction as said cross-head and having a sliding connection with said top-lift-carrying device, and an arm rotatable with said spanker-block and having a yielding connection with said lever.

5. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a fixed support, a top-lift-carrying device pivoted to said fixed support, a pivoted lever movable on said fixed support in the same direction as said cross-head and having a sliding connection with said top-lift-carrying device, an arm rotatable with said spanker-block, a link pivoted to said arm and having a loose connection with said lever, and a spring connecting said link with said lever.

6. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a fixed support, a top-lift-carrying device pivoted to said fixed support, a bifurcated arm on said top-lift-carrying device, a pivoted lever movable on said fixed support in the same direction as said cross-head, a rod on said lever registering with said bifurcated arm, and an arm rotatable with said spanker-block and connected with said lever.

7. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a spanker-block rotatably mounted on said cross-head and co-operating with said jack, a fixed support, a top-lift-carrying device pivoted to said fixed support, a bifurcated arm on said top-lift-carrying device, a pivoted lever movable on said fixed support in the same direction as said cross-head, a rod on said lever registering with said bifurcated arm, an arm rotatable with said spanker-block and connected with said lever, a link pivoted to said rotatable arm and having a loose connection with said lever, and a spring connecting said link with said lever.

8. In a heel-attaching machine, a jack for the boot or shoe, a cross-head reciprocative relatively to said jack, a hub rotatable on said cross-head, a block on said hub for carrying and attaching a loaded heel, a spanker-

block on said hub, a top-lift-carrying device
pivoted to a fixed part of the machine, an
arm on said hub, a link pivoted at one end to
said arm, a pivoted lever connected with the
5 other end of said link, a bifurcated arm on
said top-lift-carrying device, and a rod on
said lever and registering with said bifur-
cated arm.

In testimony whereof I have signed my
name to this specification, in the presence of 10
two subscribing witnesses, this 23d day of
January, A. D. 1903.

ERASTUS WOODWARD.

Witnesses:

A. R. LARRABEE,
A. L. MESSER.