

No. 877,036.

PATENTED JAN. 21, 1908.

A. BATES.
INSEAM TRIMMING MACHINE.

APPLICATION FILED NOV. 4, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

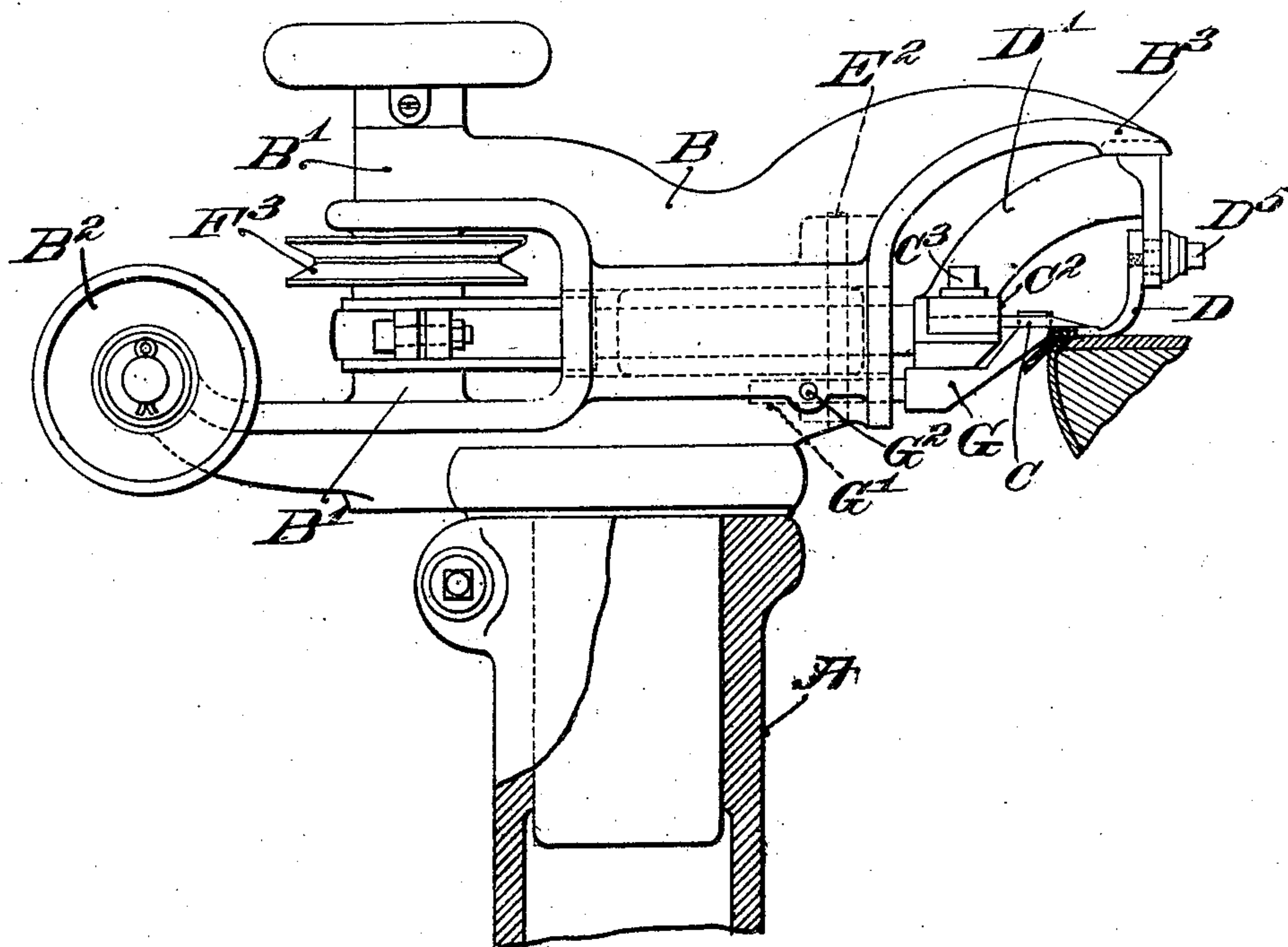
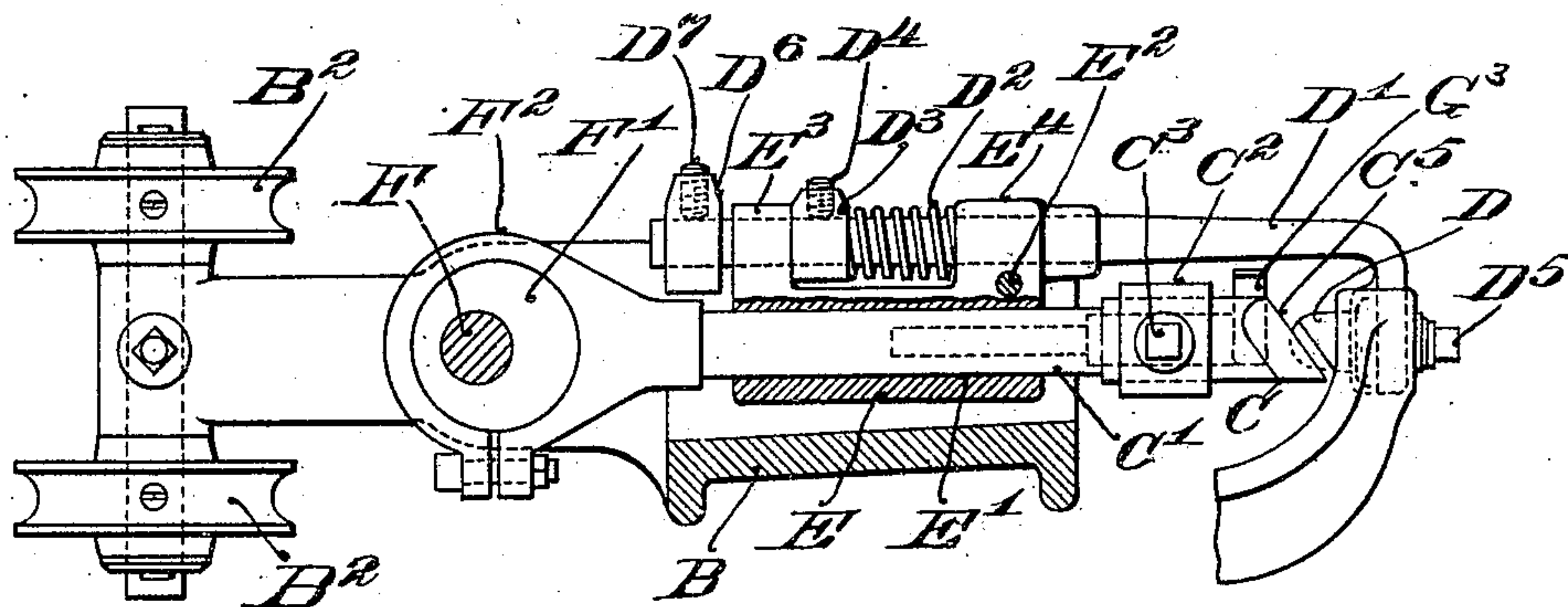


Fig. 2.

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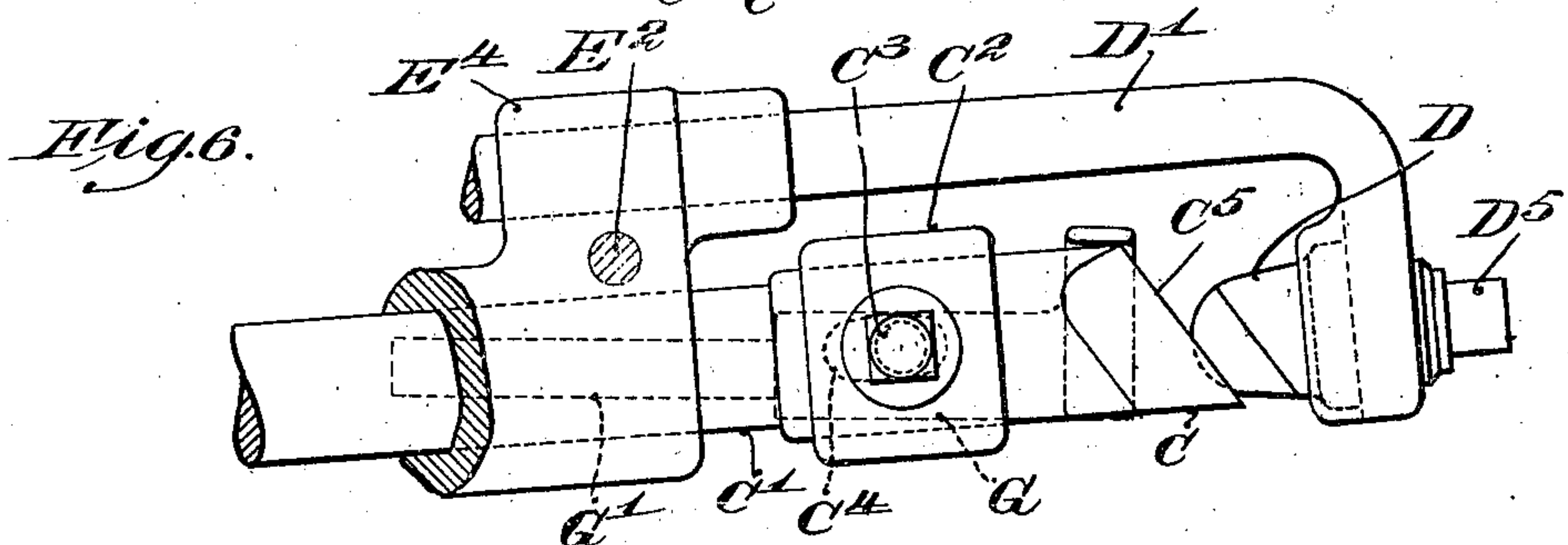
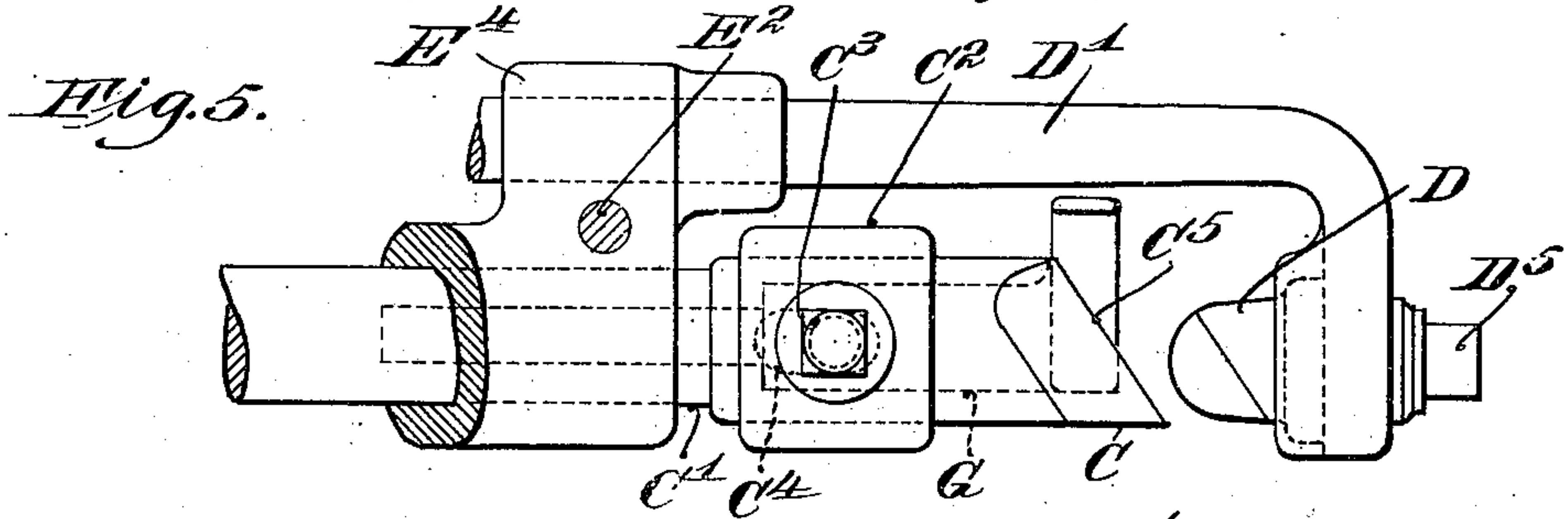
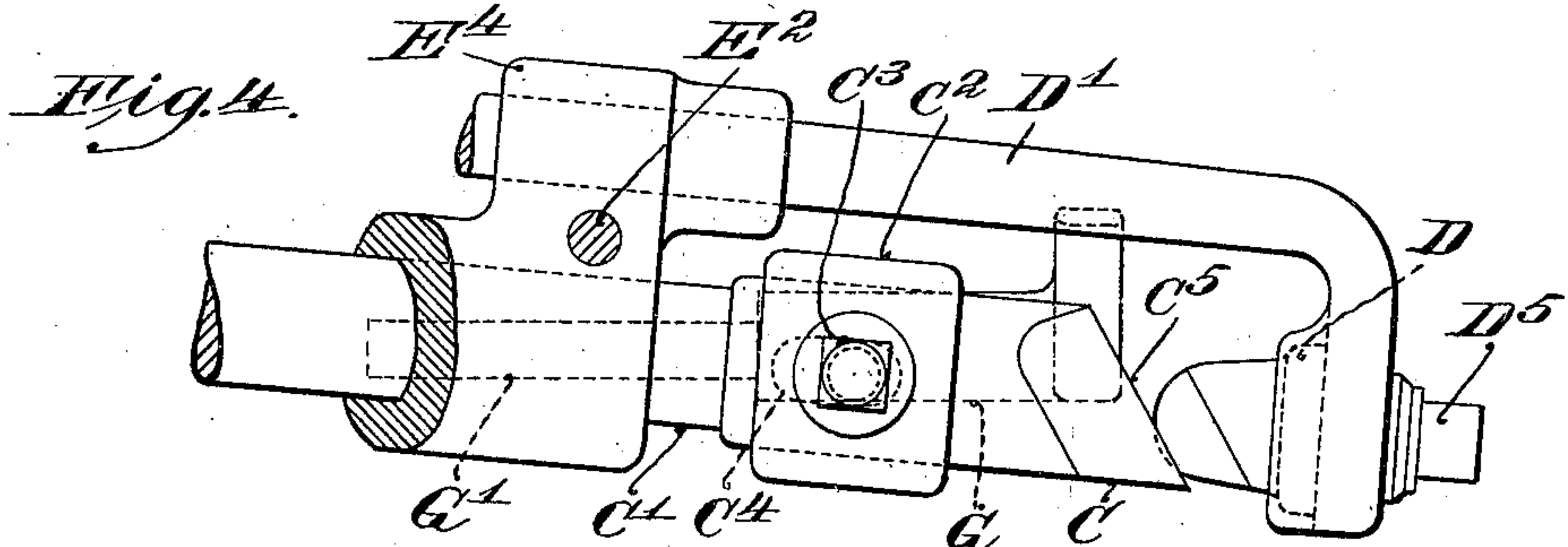
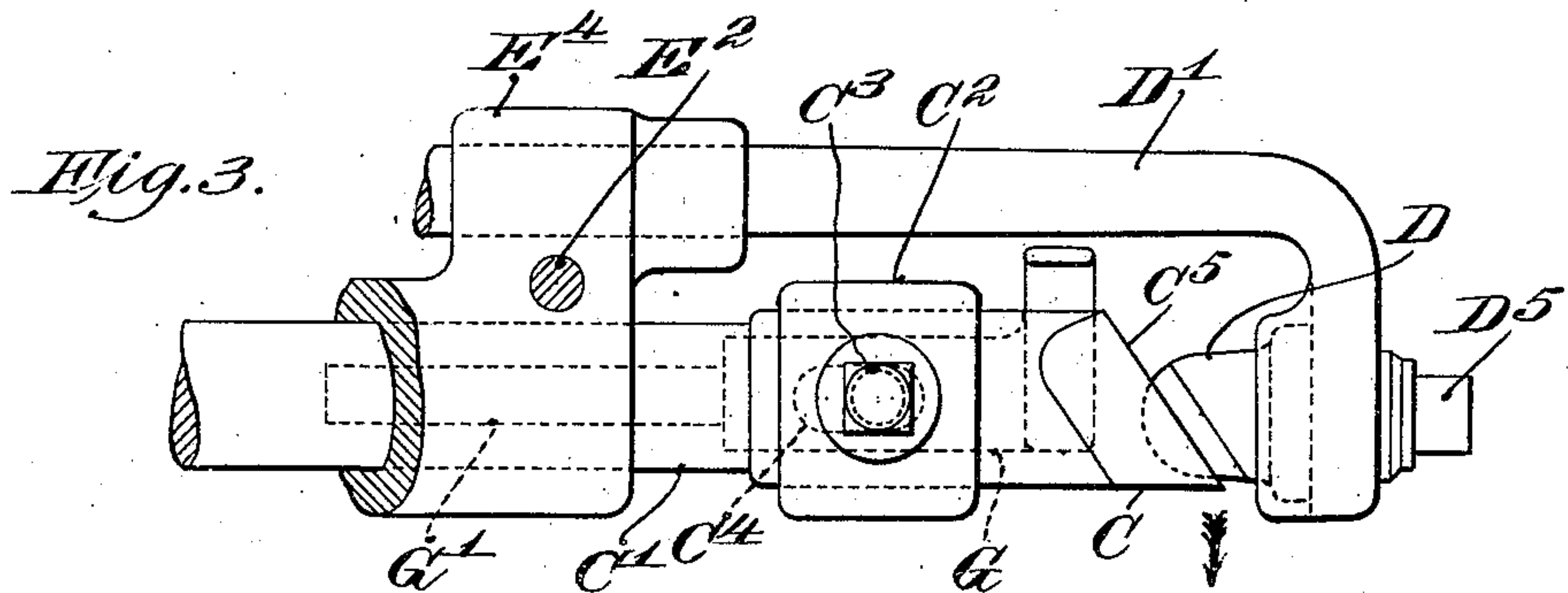
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ARTHUR BATES, OF LEICESTER, ENGLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

INSEAM-TRIMMING MACHINE.

No. 877,036.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed November 4, 1907. Serial No. 400,524.

To all whom it may concern:

Be it known that I, ARTHUR BATES, a subject of the King of Great Britain, residing at Leicester, in the county of Leicester and Kingdom of England, have invented certain new and useful Improvements in Inseam-Trimming Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to inseam trimming machines adapted for use in the manufacture of boots and shoes.

The objects of the present invention are to provide a machine of the class above referred to in which the parts are so constructed, arranged and operated, that the lip of the insole, vamp and lining, and in the case of a welted shoe, the welt, can be trimmed in a certain and reliable manner, that the shoe can be readily manipulated by the operator and guided to present all parts to be trimmed to the trimming knife or knives without any liability of injury to the stitches of the inseam or other parts of the shoe, and that the shoe can be readily fed to subject the desired portions of the shoe to the action of the trimming knife or knives.

To permit the shoe to be presented to the trimming knife or knives and guided so that the knives will sever the materials at the desired distance from the stitches of the inseam without liability of injury to the stitches, a feature of the present invention contemplates the provision of two guides in line with each other transversely of the line of feed and yielding means to permit a relative movement of said guides towards and from each other, one of said guides being arranged to engage the shoe externally, and the other of said guides being arranged to engage the inner surface of the lip of the insole. By the provision of these two guides the shoe can be accurately positioned in proper relation to the trimming knife or knives and fed past the knives without any liability of displacing the shoe so as to cause the stitches of the inseam to be cut by the knives, while the provision of yielding means for permitting relative movement of the guides towards and from each other enables the guides to be in engagement respectively with an external portion of the shoe and with the inner surface of the lip

of the insole at all portions of the shoe regardless of variations in the thickness or position of the parts to be trimmed, and at the same time enables the shoe to be readily fed past the guides and trimming knife or knives. Broadly considered this feature of the invention contemplates yieldingly mounting either or both of the guides. It is preferred, however, to arrange the guides so that the external guide is stationary and forms a fixed support for the portion of the shoe which it engages. It is also preferred to arrange the external guide so that it engages the outer side of the marginal material upstanding from the inseam, as when the external guide is so arranged the shoe can be more accurately positioned with relation to the trimming knife or knives and the two guides cooperate to better advantage in preventing a displacement of the shoe which would bring the stitches of the inseam against the cutting edges of the knives. In the machine hereinafter specifically described as embodying the several features of the present invention in their preferred form the internal guide is yieldingly pressed towards the lip of the insole.

Another feature of the present invention contemplates the provision in an inseam trimming machine of improved means for feeding the shoe, which shall be effective to feed the shoe and at the same time permit the shoe to be readily manipulated by the operator. To avoid multiplication of the parts and to enable the parts to be arranged in as compact a manner as possible, the trimming knife is utilized in feeding the shoe, suitable means being provided for actuating the knife and means cooperating with the knife to grip the marginal material and move it with the shoe in the direction of feed. In the preferred embodiment of this feature of the invention hereinafter described the internal yielding guide above referred to is arranged to cooperate with the knife in feeding the work, a movement in the direction of feed being imparted to the yielding guide, and a vibratory movement transversely of the line of feed and also a movement in the direction of feed being imparted to the knife.

Another feature of the present invention contemplates the provision, in an inseam trimming machine provided with a suitable trimming knife and an external guide for the shoe, of an internal guide arranged to engage

the inner surface of the lip of the insole in line with the external guide transversely of the line of feed and provided with a cutting edge to cooperate with the cutting edge of the trimming knife. This arrangement of parts produces a simple and compact construction which does not interfere with the manipulation of the shoe by the operator and which guides the shoe and trims the material upstanding from the inseam in a certain and reliable manner. This feature of the invention broadly considered is not limited to a construction in which yielding means are provided for permitting a relative movement of the guides towards and from each other although such a construction is preferred for the reasons hereinbefore stated.

In addition to the features of the invention above referred to, the present invention also consists in certain combinations and arrangement of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description of the preferred embodiment of the invention.

In the accompanying drawings Figure 1 is a plan, partly in section; and Fig. 2 is a side elevation of an inseam trimming machine embodying the present invention in its preferred form; the latter figure showing the position occupied by the shoe during the trimming of the projecting marginal portions of material that stand up from the inseam; and Figs. 3, 4, 5 and 6 are detail views showing the various positions assumed by the knife and cooperating shear blade during the trimming operation.

The machine illustrated in the drawings comprises a head B adjustable vertically in a column A the lower portion of which is not shown. A carrier E (Fig. 1) pivoted to the head B at E² supports a knife holder C' for a trimming knife C and also a member D' upon which a shear blade D is secured. The knife C moves towards and from the blade D during the trimming operation, while the feeding of the work is effected by movement of the knife and blade about the pivot E² as a center as will be more fully explained hereinafter. To impart these movements to the knife C and shear blade D the knife holder C' is mounted to reciprocate in a guideway E' formed in the carrier E; and the rear end of the holder is provided with a strap F² that encircles an eccentric F' fast upon a vertical shaft F journaled in bearings B' (Fig. 2) on the head B. The shaft F is rotated by means of a band (not shown) that encircles a pulley F³ keyed to the shaft, the band being carried by way of a pair of guide pulleys B² to a pulley on the main driving shaft (not shown) of the machine. The knife C is secured to the holder C' by a cap plate C² and a bolt C³, which latter passes through a hole in the cap plate and through a slot C⁴ (Fig. 3) in the shank

of the knife and screws into the holder C'. The slot C⁴ permits the knife C to be adjusted into precise relationship with the blade D.

To insure the correct presentation of the shoe to the knife C and shear blade D, there is an external guide-rest or abutment G which is supported on the head B and which is adapted to engage the outer side of the portions of material to be trimmed, the other side of said portions, that is to say the channel of the inseam, or the lip of the insole, being engaged by the shear blade D which thus forms an internal guide. Further, the blade D is shaped, as shown in Fig. 2 to form an abutment for the tread face of the shoe.

The guide-rest G, so as to accommodate shoes which vary in regard to the thickness of the material to be trimmed, is adjustable toward and from the shear blade D the shank G' of the rest extending into a hole in the head B where it can be engaged by a set screw G² which secures the rest in adjusted position.

The shear blade D is adjustable vertically on the member D' to enable the blade to be placed in cooperative relationship with the cutting edge C⁵ of the knife C. A set screw D⁵ passing through a slot in the member D' and screwing into the shank of the blade fixes the blade in adjusted position.

To insure that the work, notwithstanding slight variations in its thickness, shall be securely gripped between the rest G and the blade D, the member D' that supports the blade is yieldingly mounted in the carrier E. To this end the member D' is movable endwise in lugs E³ E⁴ on the carrier E, and a spring D² surrounding the member and in compression between the lug E³ and a collar D³ tends to move the member rearwardly thereby to cause the work to be gripped in a yielding manner between the parts D and G. A second collar D⁶ on the member D' is adapted to engage the lug E⁴ to limit the forward movement of the member D' as will be explained hereinafter. The collars D³ D⁶ may be adjusted along the member D' and locked in adjusted position by set screws D⁴ D⁷ respectively.

In the operation of trimming the inseam as carried out by the machine herein illustrated, the shoe is so presented to the machine that the projecting marginal portions that stand up from the inseam are gripped between the shear blade D and the rest G while the tread face of the shoe rests against the lower face of the blade D, as shown in Fig. 2. Motion is now imparted to the main shaft, by any convenient means, and said motion is transmitted, by way of the band extending over the pulleys F³ and B², to the vertical shaft F, whereby rapid reciprocatory and oscillatory movements are imparted to the knife by the mechanism hereinbefore described.

Figs. 3 to 6, show four positions assumed by the knife G and shear blade D during each cycle of operation of the machine. In Fig. 6, the knife C has started on its outward travel toward the blade D and has begun to shear the material gripped between the rest G and the blade D. The parts then move from the position indicated in Fig. 6 into that shown in Fig. 3, and during such movement the knife C continues its outward travel and in conjunction with the blade D shears the material situated between them. Also, the blade D yields outwardly by reason of the pressure of the work exerted against it until the collar D⁶ abuts against the lug E⁴, such yielding of the blade permitting the work to be moved slightly away from the rest G so that the work, now gripped between the knife C and blade D, may be fed in the direction indicated by the arrow in Fig. 3 by the swinging movement of the carrier E about its pivot E². Continued movement of the parts brings them into the position shown in Fig. 4, wherein the knife C has started on its rearward travel, and the blade D has moved rearwardly with it under the action of the spring D² again to grip the work against the rest G. The carrier E now swings reversely from the position shown in Fig. 4 to that indicated in Fig. 6, the knife C during such time performing its idle travel to bring it into readiness to repeat the cycle of movement above described, while the blade D slides along in the in-seam channel without moving the work that is resting against the relatively broad bearing surface of the rest G. Fig. 5 shows an intermediate position of the parts, the knife C being at the limit of its inward travel. The operator presses the work upwardly against the blade D and to relieve the stresses that would otherwise come upon the member D⁷ there is an abutment B³ against which the upper end of the member bears, as shown in Fig. 3. To prevent any portion of the shoe, except the marginal portions upstanding from the in-seam, from being injured by accidental contact with the knife, C particularly while trimming around the hollow curves in the waist of a shoe a guard G³ is provided in the form of a projection on the rest G at the side of the knife towards which the shoe is fed.

The nature and scope of the present invention having been indicated and a machine embodying the several features of the invention in their preferred form having been specifically described, what is claimed is:—

1. An in-seam trimming machine, having, in combination, a trimming knife, a guide arranged to engage a shoe externally, an internal guide arranged to engage the inner surface of the lip of the insole in line with the external guide transversely to the line of feed, and cooperate with the external guide to position the shoe properly with relation to

the trimming knife, and yielding means arranged to hold said guides continuously in engagement with the shoe and permit a relative movement of said guides towards and from each other.

2. An in-seam trimming machine, having, in combination, a trimming knife, means for vibrating the trimming knife transversely to the line of feed, a yieldingly mounted guide engaging one side of the materials to be trimmed provided with a knife edge to cooperate with the trimming knife, and a stop to limit the yielding movement of the guide during the cutting stroke of the knife.

3. An in-seam trimming machine, having, in combination, a trimming knife, a fixed guide arranged to engage a shoe externally, an internal guide arranged to engage the lip of the insole of the shoe continuously and cooperate with the external guide to position the shoe properly with relation to the trimming knife, and means for yieldingly holding the internal guide continuously in engagement with the lip of the insole.

4. An in-seam trimming machine, having, in combination, a trimming knife, means for actuating the knife, means cooperating with the knife to feed the shoe, and guiding means to position the shoe in proper position with relation to the trimming knife.

5. An in-seam trimming machine, having, in combination, a trimming knife, a guide arranged to engage the external surface of the material upstanding from the in-seam, an internal guide arranged to engage the inner surface of the lip of the insole of the shoe continuously and cooperate with the external guide to position the shoe properly with relation to the trimming knife, and yielding means arranged to hold said guides continuously in engagement with the shoe and permit a relative movement of said guides towards and from each other.

6. An in-seam trimming machine, having, in combination, a trimming knife, and a guide arranged to engage the shoe externally and position the shoe properly with relation to said knife, said guide being provided with a guard at the side of the knife towards which the shoe is fed arranged to prevent accidental contact of the shoe with the knife.

7. An in-seam trimming machine, having, in combination, a trimming knife, means to guide the shoe with the parts to be trimmed in position to be acted upon by the knife, and means for vibrating the knife transversely to the line of feed and for moving it in the direction of feed.

8. An in-seam trimming machine, having, in combination, a trimming knife, a guide arranged to engage the shoe externally and position the shoe properly with relation to the knife, and an internal guide in line with the external guide transversely to the line of feed arranged to engage the inner surface of

the lip of the insole provided with a knife edge to cooperate with the trimming knife.

9. An in-seam trimming machine, having, in combination, a trimming knife, a fixed
5 guide arranged to engage the external surface of the material upstanding from the in-seam and position the shoe properly with relation to the trimming knife, an internal
10 guide arranged to engage the inner surface of the lip of the insole provided with a knife edge to cooperate with the trimming knife, means for yieldingly pressing the internal
15 guide towards the lip of the insole, means for vibrating the trimming knife transversely to the line of feed and for moving it in the direction of feed and means for moving the internal guide in the direction of feed with the trimming knife.

10. An in-seam trimming machine, having,
20 in combination, a trimming knife, means for vibrating the knife transversely to the line of feed and for moving it in the direction of feed, and an internal guide arranged to engage the inner surface of the lip of the insole,
25 said internal guide being provided with a knife edge to cooperate with the trimming knife and being mounted to move with the trimming knife in the direction of feed.

11. An in-seam trimming machine, having, in combination, a trimming knife, means for
30 vibrating the knife transversely to the line of feed, a guide arranged to engage the shoe externally and position the shoe properly with relation to the knife, an internal guide
35 in line with the external guide transversely to the line of feed arranged to engage the inner surface of the lip of the insole provided with a knife edge to cooperate with the trimming knife and yielding means arranged
40 to permit a relative movement of said guides towards and from each other.

12. An in-seam trimming machine, having, in combination, a trimming knife, means for
45 vibrating the knife transversely to the line of feed and for moving it in the direction of feed, a guide engaging one side of the materials to be trimmed provided with a knife edge to cooperate with the trimming knife,
50 and means for moving the guide in the direction of feed with the trimming knife.

In testimony whereof I affix my signature, in presence of two witnesses.

ARTHUR BATES.

Witnesses:

JOHN RICHARD LAW,

ARTHUR ERNEST JEWAM.