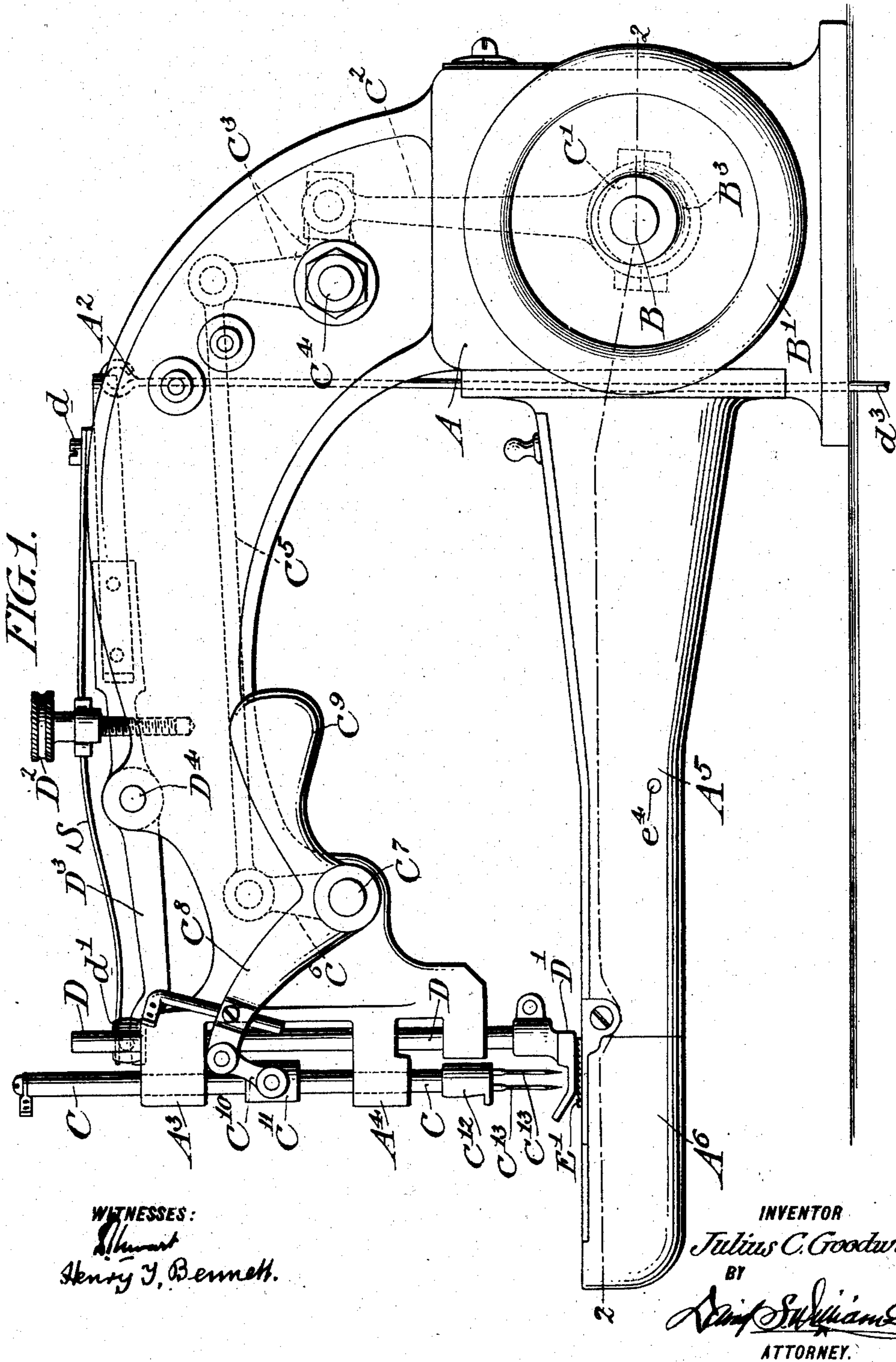


J. C. GOODWIN.  
SEWING MACHINE.  
APPLICATION FILED DEC. 31, 1907.

909,081.

Patented Jan. 5, 1909.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

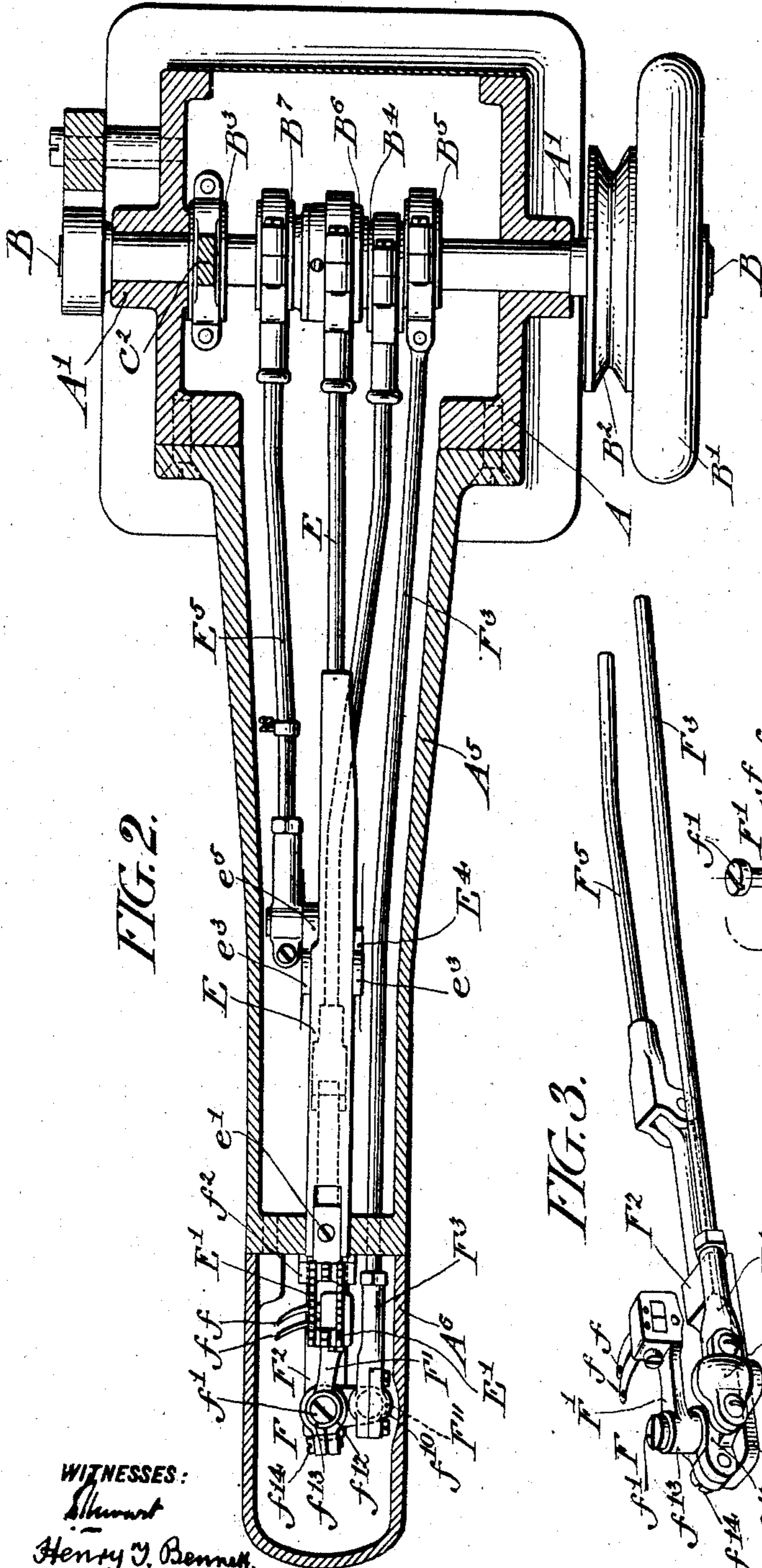


FIG. 2.

FIG. 3.

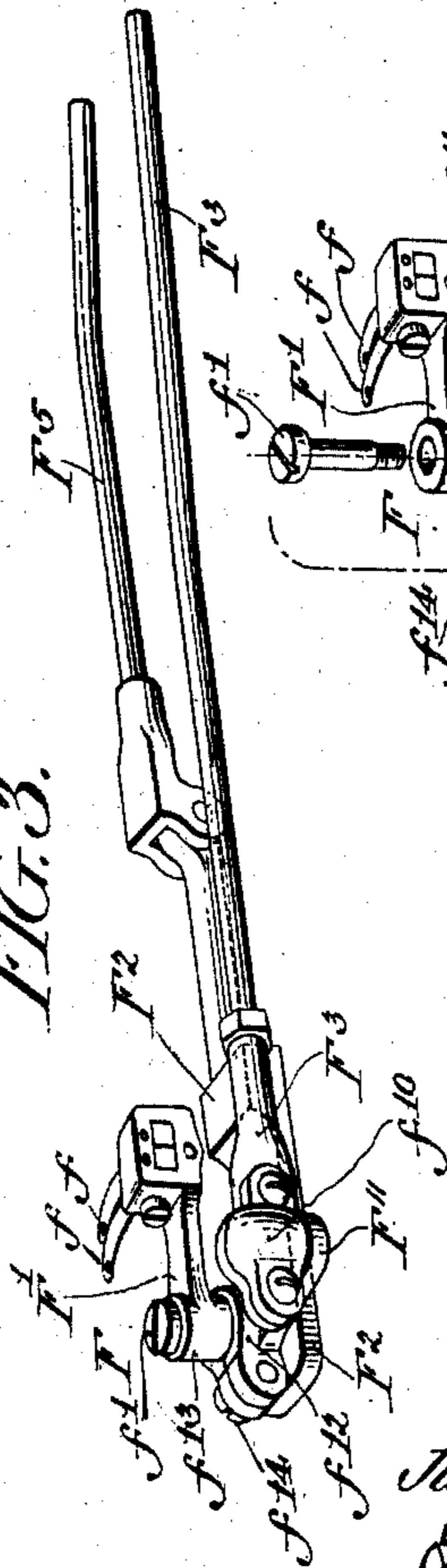
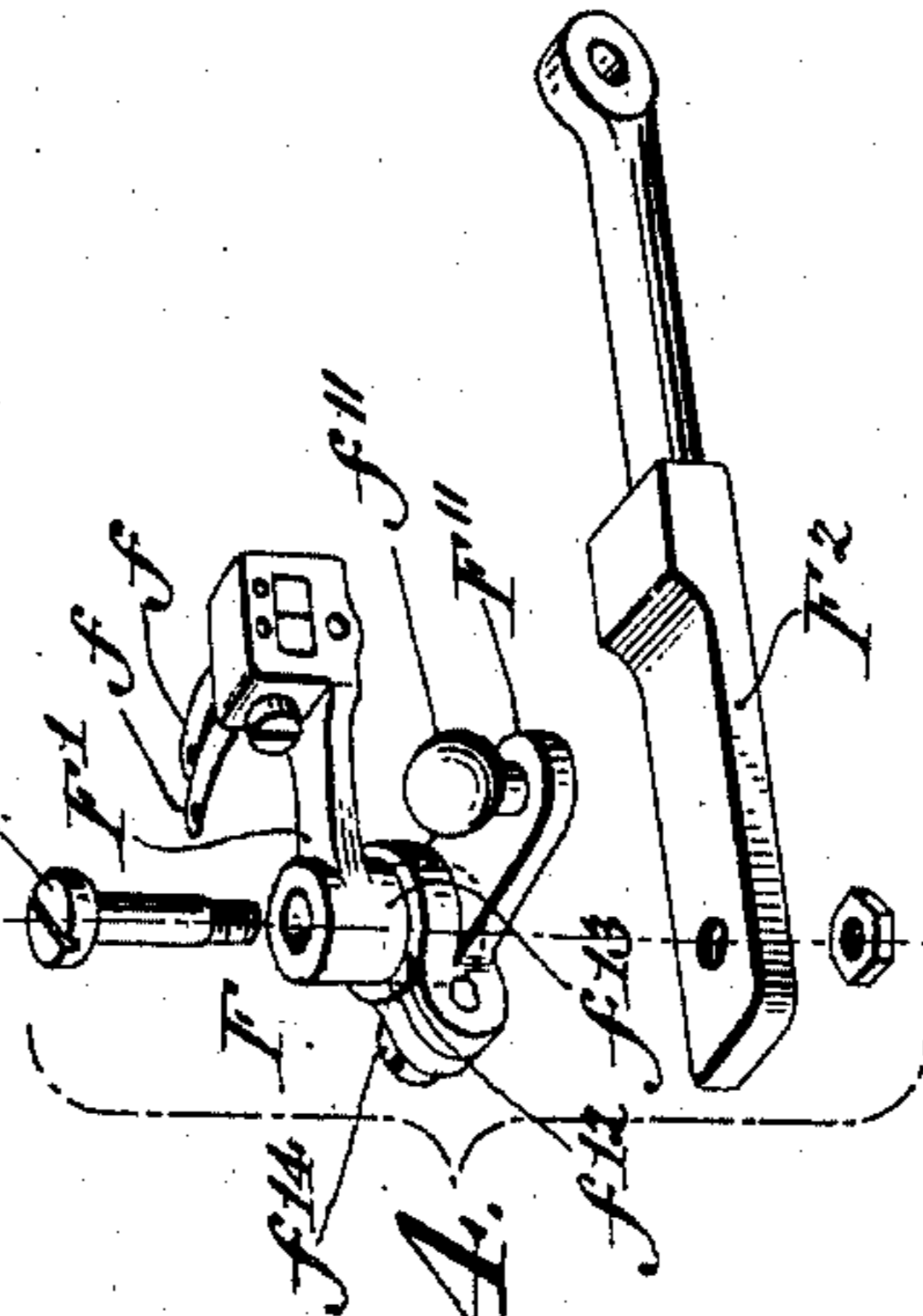


FIG. 4.



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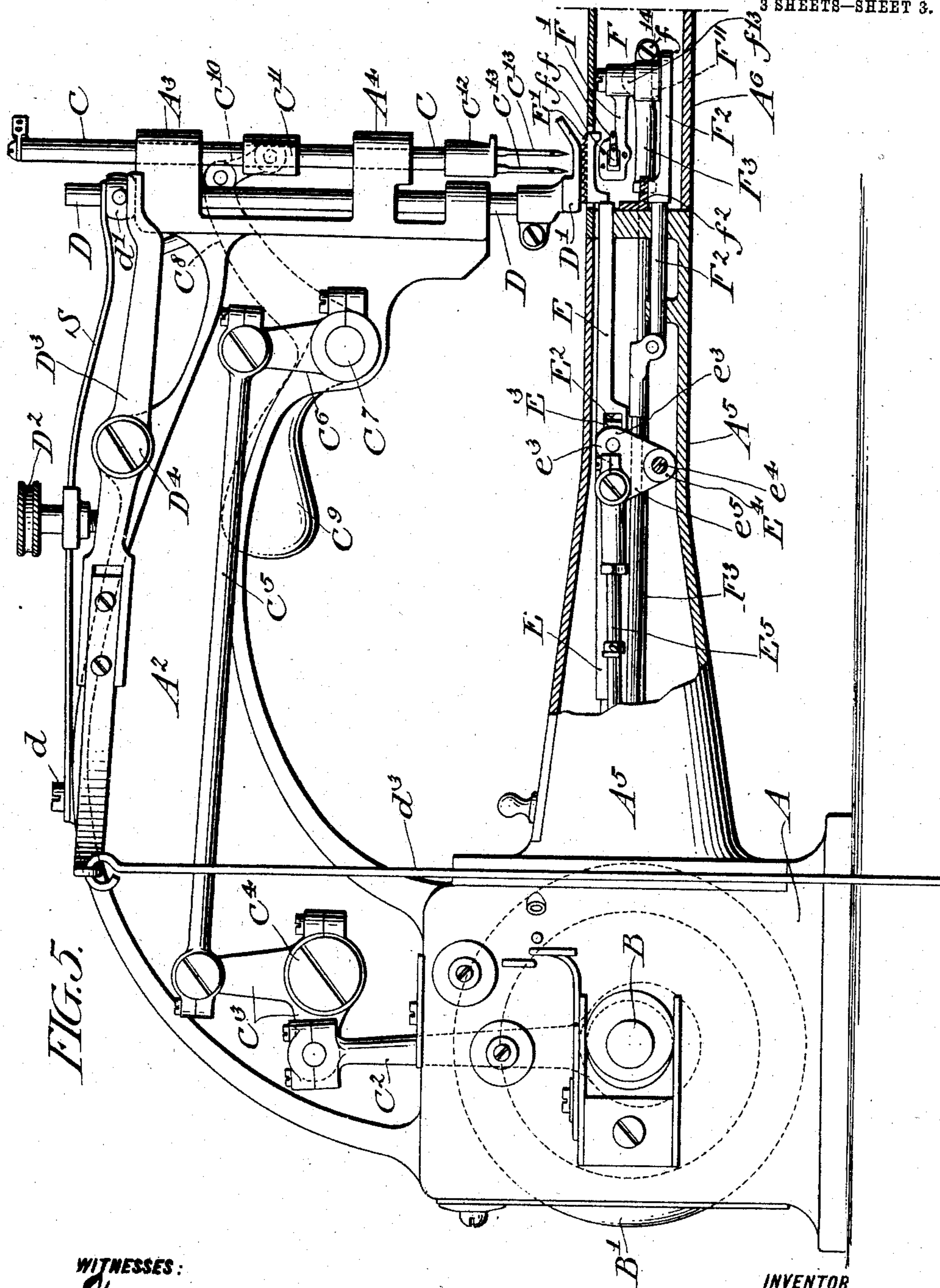


FIG. 5.

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# UNITED STATES PATENT OFFICE.

JULIUS C. GOODWIN, OF PHILADELPHIA, PENNSYLVANIA.

## SEWING-MACHINE.

No. 909,081.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Original application filed September 14, 1905, Serial No. 278,428. Divided and this application filed December 31, 1907. Serial No. 408,819.

*To all whom it may concern:*

Be it known that I, JULIUS C. GOODWIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to improvements in that class of sewing-machines employed in the making of shirts and underwear in which two or more chain stitches are produced by means of duplicate needles and thread-carrying loopers.

My improvements relate particularly to the mechanism for operating the needle-bar and thread carrying loopers, and the objects of the invention are to render this mechanism nearly free from lost motion tending to set up unnecessary vibration by the employment of positive and direct movements which are at once simple and durable in construction and capable of meeting the demand for a high speed power driven machine for a special class of factory work.

In an application filed September 14, 1905, Serial No. 278,428 I have shown and described a similar machine as a whole, but as the stitch forming mechanism was held to be an independent subject of invention, I herewith make separate application therefor.

In the accompanying drawing forming part of this specification I have illustrated my improvements as applied to a special form of sewing machine; but it will of course be understood that my invention is adapted for use in connection with other types of sewing machine.

In the drawings, Figure 1 illustrates a front elevation of a sewing machine embodying my improvements. Fig. 2 represents a sectional plan view of the same taken on a line indicated at 2—2 in Fig. 1. Fig. 3 shows a detached perspective view of a portion of the looper mechanism. Fig. 4 illustrates a similar view of portions of the looper mechanism detached and arranged in line of connection, and Fig. 5 shows a rear elevation

with a portion of the bed broken away better to illustrate the internal mechanism.

Referring now in detail to the parts of the machine illustrated in the drawings.

A, indicates the base of the machine which as shown in Fig. 2 is provided with bearings  $A^1$ ,  $A^1$  to support a main shaft B. This driving shaft is furnished with a hand wheel  $B^1$ , a grooved driving-pulley  $B^2$  and a line of eccentrics  $B^3$ ,  $B^4$ ,  $B^5$ ,  $B^6$  and  $B^7$ , from which power is obtained to operate the several parts of the machine in a manner hereinafter described. The base of the machine supports a curved arm  $A^2$  in front of which are lugs or projections  $A^3$ , and  $A^4$ , for guiding a needle-bar C, and a presser-bar D. The base as will be seen has also a projecting arm  $A^5$ , hollowed out to receive a portion of a stitch forming mechanism together with a feeding mechanism and at its free end is furnished with a removable cover  $A^6$ .

The needle-bar and its operating devices which I shall hereinafter refer to as the upper stitch forming mechanism, is controlled by the eccentric  $B^3$ , after the following manner.

The eccentric  $B^3$ , is provided with an eccentric rod  $C^2$  which extends upward through an opening in the bed of the machine and is there connected by a stud to the lower arm of a bell-crank lever  $C^3$ . The bell-crank lever  $C^3$ , is fulcrumed to the arm  $A^2$ , by means of a stud-bolt  $C^4$ , and is connected to a crank-arm  $C^6$ , by a connecting rod  $C^5$ . The crank-arm  $C^6$ , is firmly secured to a short shaft  $C^7$ , supported in a bearing formed in the front end of the arm  $A^2$ , which shaft after passing through the arm  $A^2$ , is connected on the front side of the machine to a counter-balance, lever  $C^8$ . One end of the lever  $C^8$ , is connected to a sleeve  $C^{11}$ , on the needle-bar C, by means of a link  $C^{10}$ , while the other end of the lever is enlarged as shown at  $C^9$ , to furnish sufficient weight to counter-balance the weight of the needle-bar C, and its connections. The lower end of the needle-bar C, is furnished with another sleeve  $C^{12}$ , provided with suitable openings to receive one or more needles  $C^{13}$ ,  $C^{13}$ .

The presser-bar D, is provided with the conventional presser-foot D<sup>1</sup>, which is normally pressed downward by means of a leaf-spring S, one end of which is fastened by a screw d, to the arm A<sup>2</sup>, while the other bears upon a collar d<sup>1</sup>, on the presser-bar D. The pressure of the spring S, may be increased or diminished by means of a thumb-screw D<sup>2</sup>, which passes through a projection on the spring and enters a threaded opening in the arm A<sup>2</sup>.

The presser-bar D is raised and lowered by means of a lever D<sup>3</sup>, fulcrumed by a stud D<sup>4</sup>, on the arm A<sup>2</sup>, and having one end operatively connected to the presser-bar, while the other end is provided with a rod d<sup>3</sup>, which passes down below the base of the machine and is adapted to be actuated by the foot of the operator. Within the arm or extension A<sup>5</sup>, is a feeding mechanism comprising a bar E, controlled by the cams B<sup>6</sup>, and B<sup>7</sup>, the former of which directs the horizontal movement or feed proper, while the latter raises and lowers the mechanism to engage and disengage the work. The feed-bar E, at its working end is provided with a toothed feed-dog E<sup>1</sup>, adjustably secured in position by a screw e<sup>1</sup>, and at its opposite end directly connected to the eccentric B<sup>6</sup>.

The feed-bar E, is provided with a slot E<sup>2</sup>, to receive a slidable block E<sup>3</sup>, to which the bifurcated members e<sup>3</sup>, e<sup>3</sup>, of a bell-crank lever E<sup>4</sup>, are operatively connected. The bell-crank lever E<sup>4</sup>, is fulcrumed to the bed A<sup>5</sup>, by a stud e<sup>4</sup>, and is operated from the eccentric B<sup>7</sup> by an eccentric-rod E<sup>5</sup>, interposed between the eccentric and a member e<sup>5</sup>, of the bell-crank lever.

The looper mechanism which constitutes one of the essential features of my invention comprises a looper-bar F<sup>2</sup>, guided in the bed A<sup>5</sup>, partly by said arm and partly by a guide member f<sup>2</sup>. The looper-bar being thus guided is free to slide back and forth under the control of the eccentric B<sup>4</sup> and an eccentric-rod F<sup>5</sup>.

The looper-lever F, is constructed in the form of an adjustable bell-crank lever, one of the arms F<sup>1</sup> of which is provided with a set of thread carrying loopers f, f, which as is well known in the art are adapted to intercept the loops brought down by the upper or complementary stitch forming mechanism including in this instance the thread carrying needles C<sup>13</sup>, C<sup>13</sup>.

The looper lever F, is fulcrumed to the looper-bar F<sup>2</sup>, by a stud f<sup>1</sup>, and is adapted to oscillate or move back and forth through the arc of a circle by means of the eccentric B<sup>5</sup> and an eccentric rod F<sup>3</sup>. The looper lever F, has an arm F<sup>11</sup>, provided at its extremity with a ball f<sup>11</sup>, which is adapted to a socket f<sup>10</sup>, in the end of the eccentric rod F<sup>3</sup>.

In order to adjust the position of the loop-

ers f, f, with respect to the needles C<sup>13</sup>, C<sup>13</sup>, the looper-lever F, is made in two parts, so that the arm F<sup>1</sup>, may be moved about the stud f<sup>1</sup>, without affecting the position of the arm F<sup>11</sup>. To accomplish this the arm F<sup>11</sup>, is provided with a split ring f<sup>12</sup>, to receive a hub f<sup>13</sup>, of the lever F<sup>1</sup>, which when properly adjusted may be held in position by a screw f<sup>14</sup>, adapted to lugs on the split ring f<sup>12</sup>.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In a sewing machine, the combination with the upper stitch forming mechanism, a looper-bar guided in the bed of the machine and adapted to move in a path parallel with the feed mechanism, a looper lever fashioned in the form of a bell crank and fulcrumed to the upper side of the looper bar, an auxiliary looper-rod connected to one arm of the looper-lever, a looper secured to the other arm thereof, an eccentric and eccentric rod for operating the looper-bar, and an eccentric for operating the auxiliary looper-rod.

2. In a sewing machine, the combination with the upper stitch forming mechanism, a looper-bar guided in the bed of the machine and adapted to reciprocate in a path parallel with the feed mechanism, a looper-lever mounted upon the looper-bar and adapted to oscillate upon a vertical axis, an auxiliary looper-rod operatively connected to the looper lever, an eccentric and eccentric rod for operating the looper-bar and an eccentric for operating the auxiliary looper-rod.

3. In a sewing machine, in combination with the lower stitch forming mechanism, a main shaft, an eccentric, a bell crank, mounted upon the arm of the machine, an eccentric rod operatively connected to the eccentric and to one of the arms of the bell crank, a needle bar, a fulcrumed lever having one of its arms weighted to form a counter balance and the other connected to the needle-bar, and intermediate actuating mechanism in line of connection with the main shaft whereby said lever is operated.

4. In a sewing machine, the combination with the lower stitch forming mechanism including a thread carrying-looper, a main shaft, an eccentric, a bell crank lever mounted on the arm of the sewing machine, an eccentric rod operatively connected to the eccentric and to one of the arms of the bell-crank lever, a needle-bar provided with a thread carrying needle, a counter balance lever fulcrumed to the arm of the machine and operatively connected to the needle-bar and a connecting rod interposed between the counter-balance lever and the other arm of the bell crank lever.

5. In a sewing machine, the combination with the lower stitch forming mechanism including a reciprocating looper-bar and oscil-

latory looper, a needle bar provided with a  
thread carrying needle, a counter balance  
lever operatively connected to the needle bar  
and fulcrumed to the arm of the machine, a  
5 main shaft, an eccentric, a bell crank lever  
fulcrumed to the arm of the machine midway  
between the shaft and the needle bar, an ec-  
centric rod leading from the eccentric to one  
of the arms of the bell crank lever, and a con-

necting rod leading from the other arm of the 10  
bell crank lever to the counter balance lever  
substantially as set forth.

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

JULIUS C. GOODWIN

Witnesses:

DAVID S. WILLIAMS,  
ARNOLD KATZ.