

No. 693,852.

Patented Feb. 25, 1902.

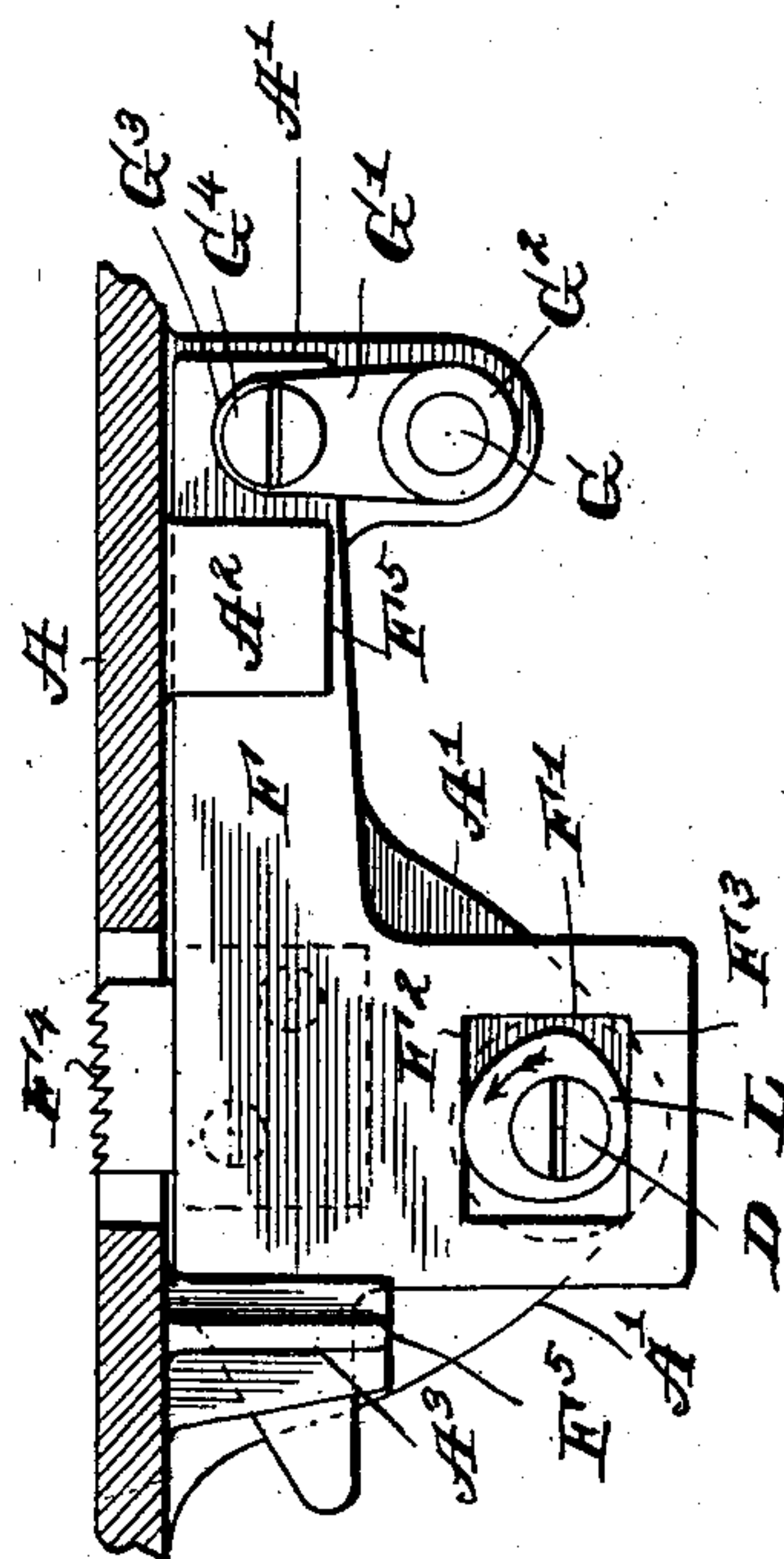
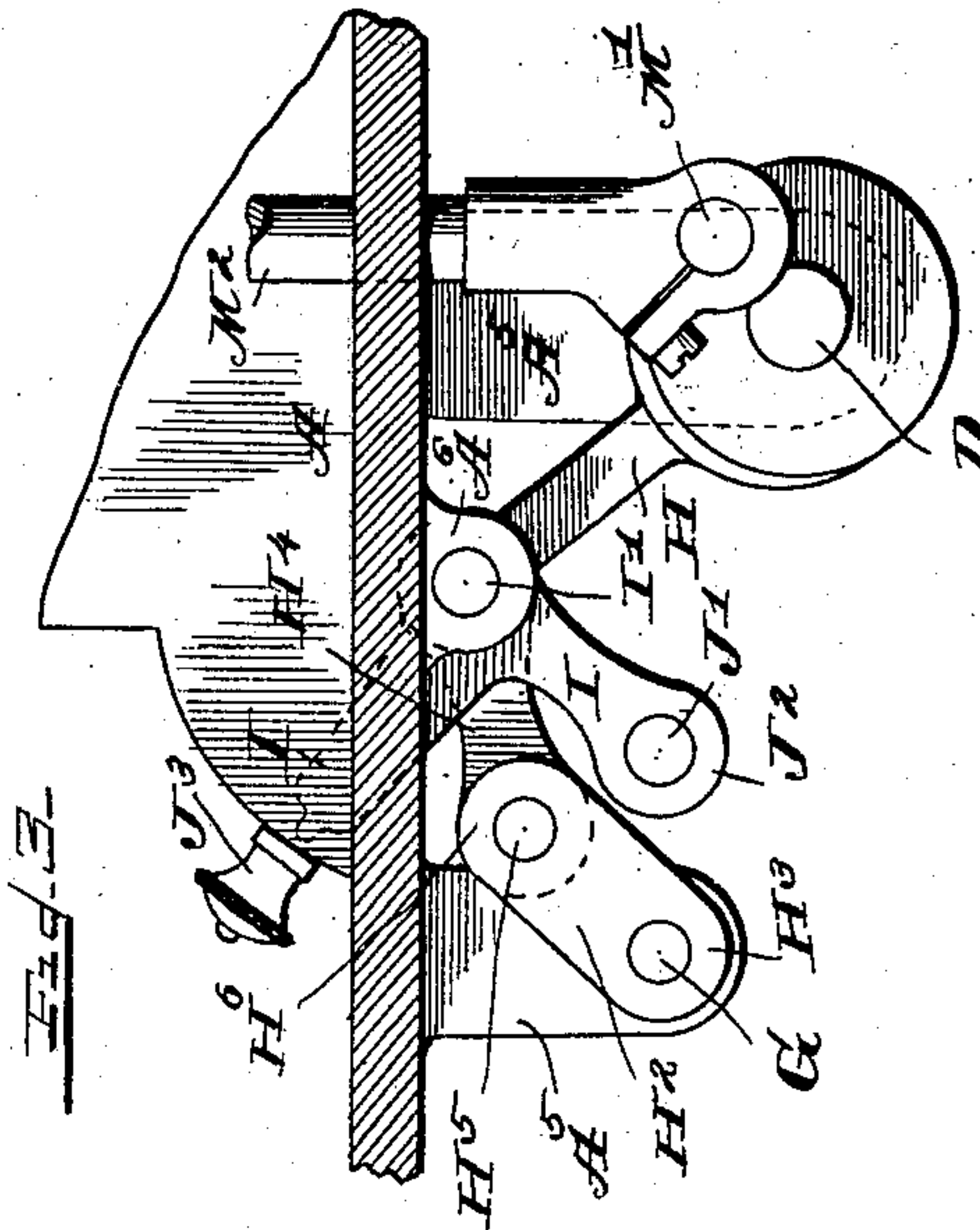
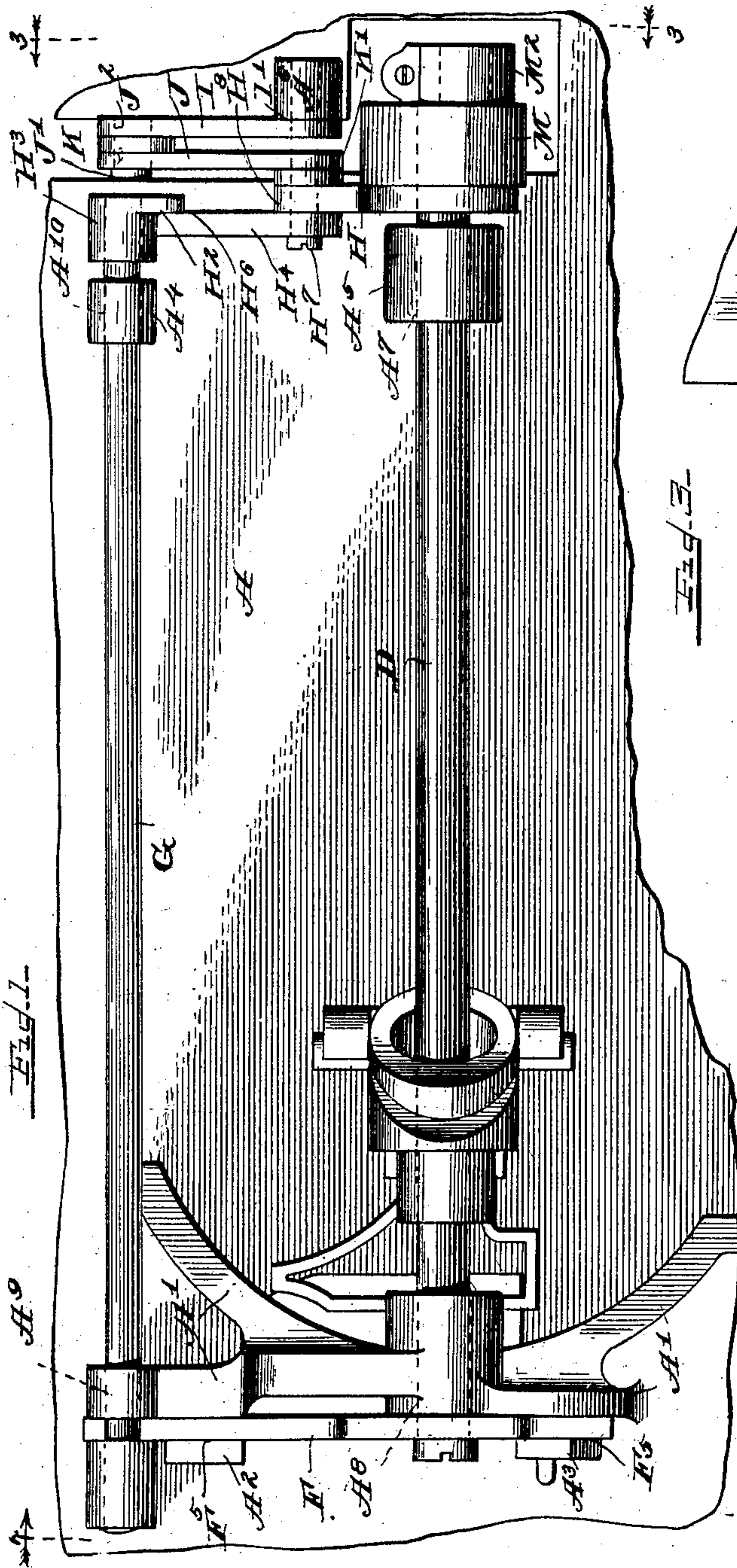
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FEEDING MECHANISM FOR SEWING MACHINES.

(Application filed July 9, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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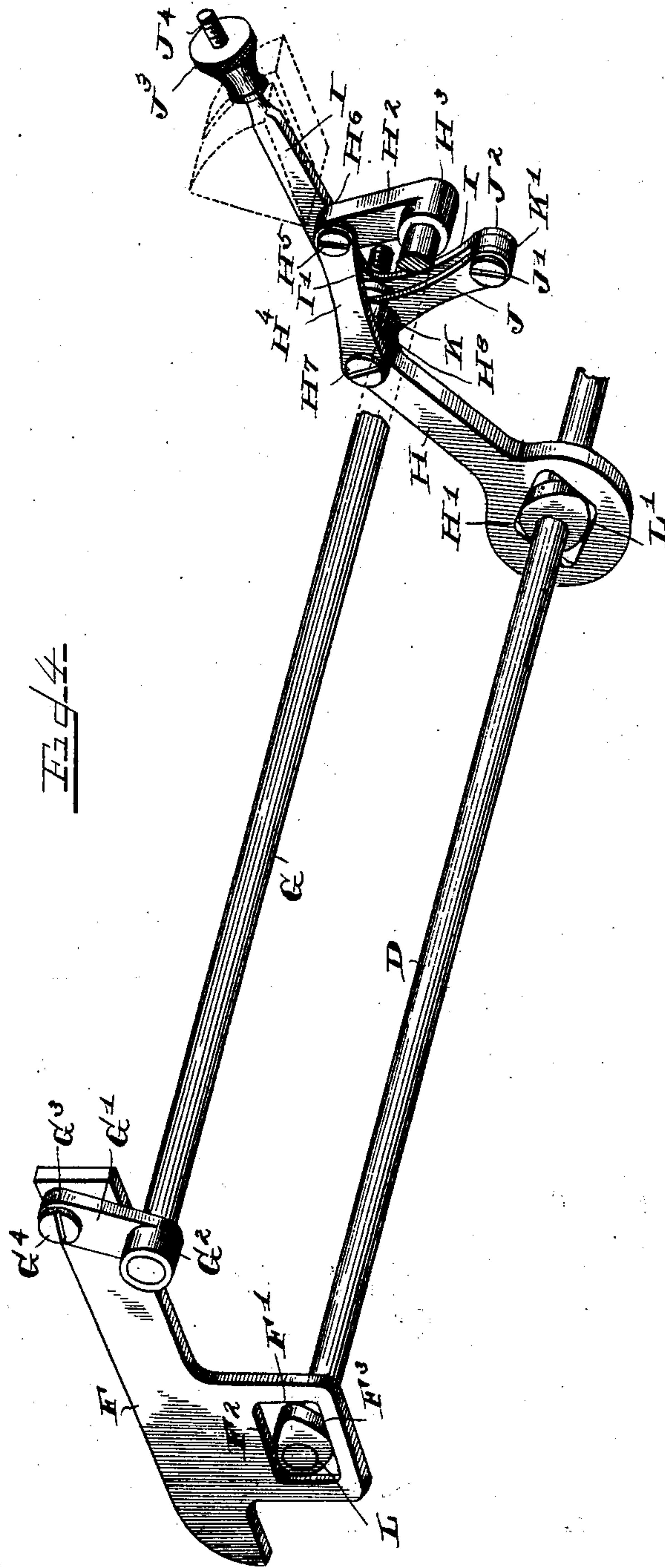
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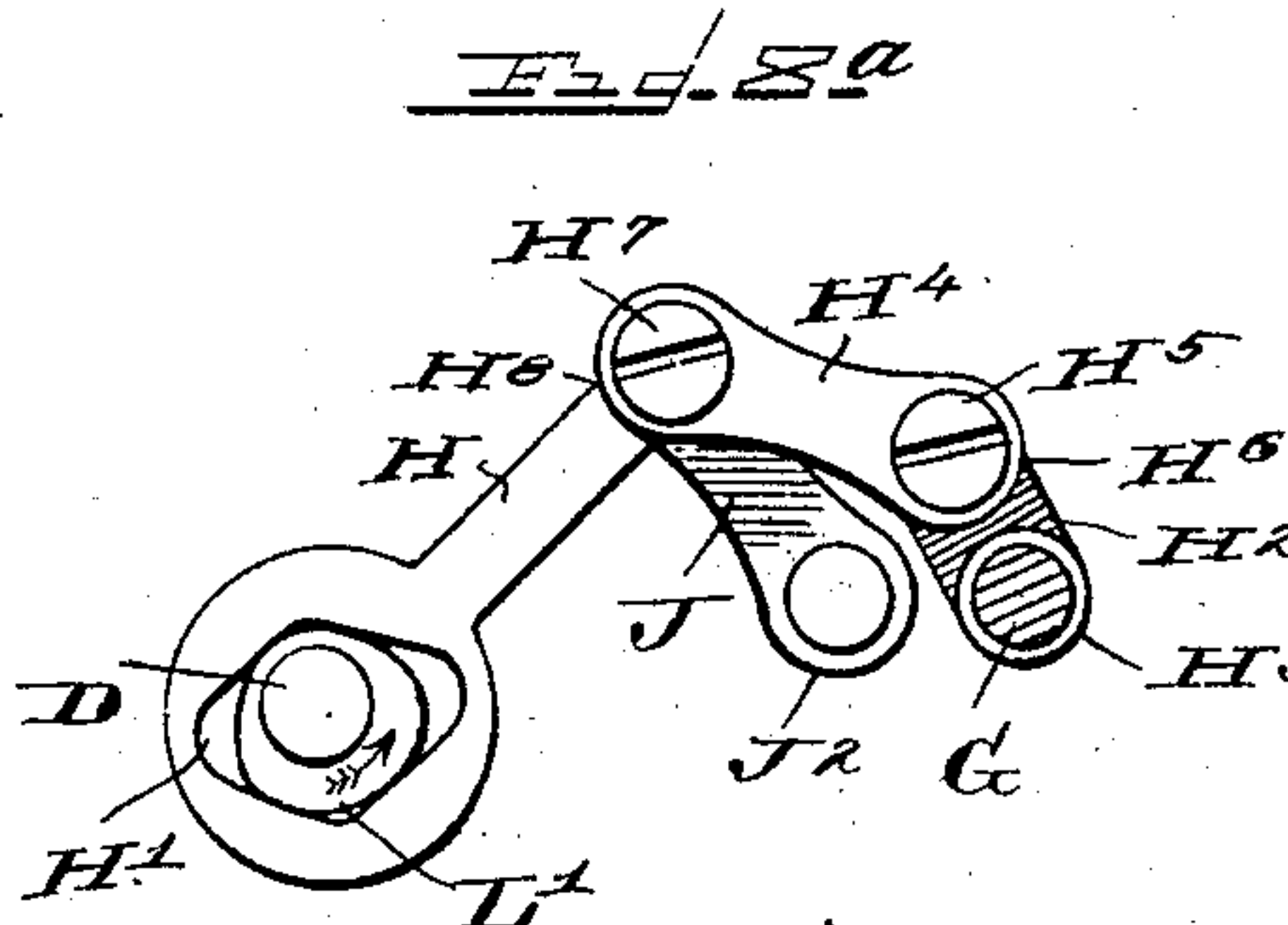
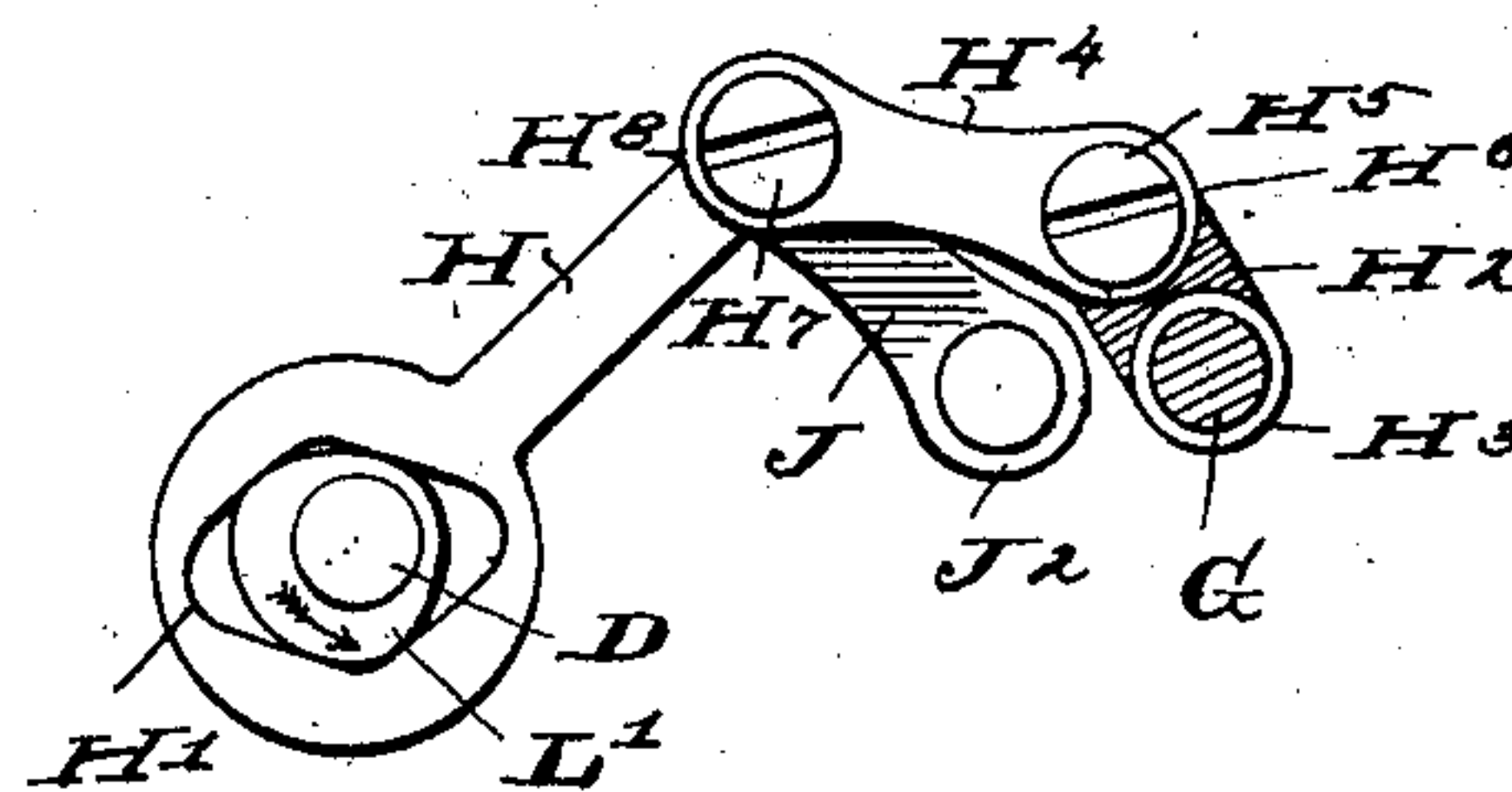
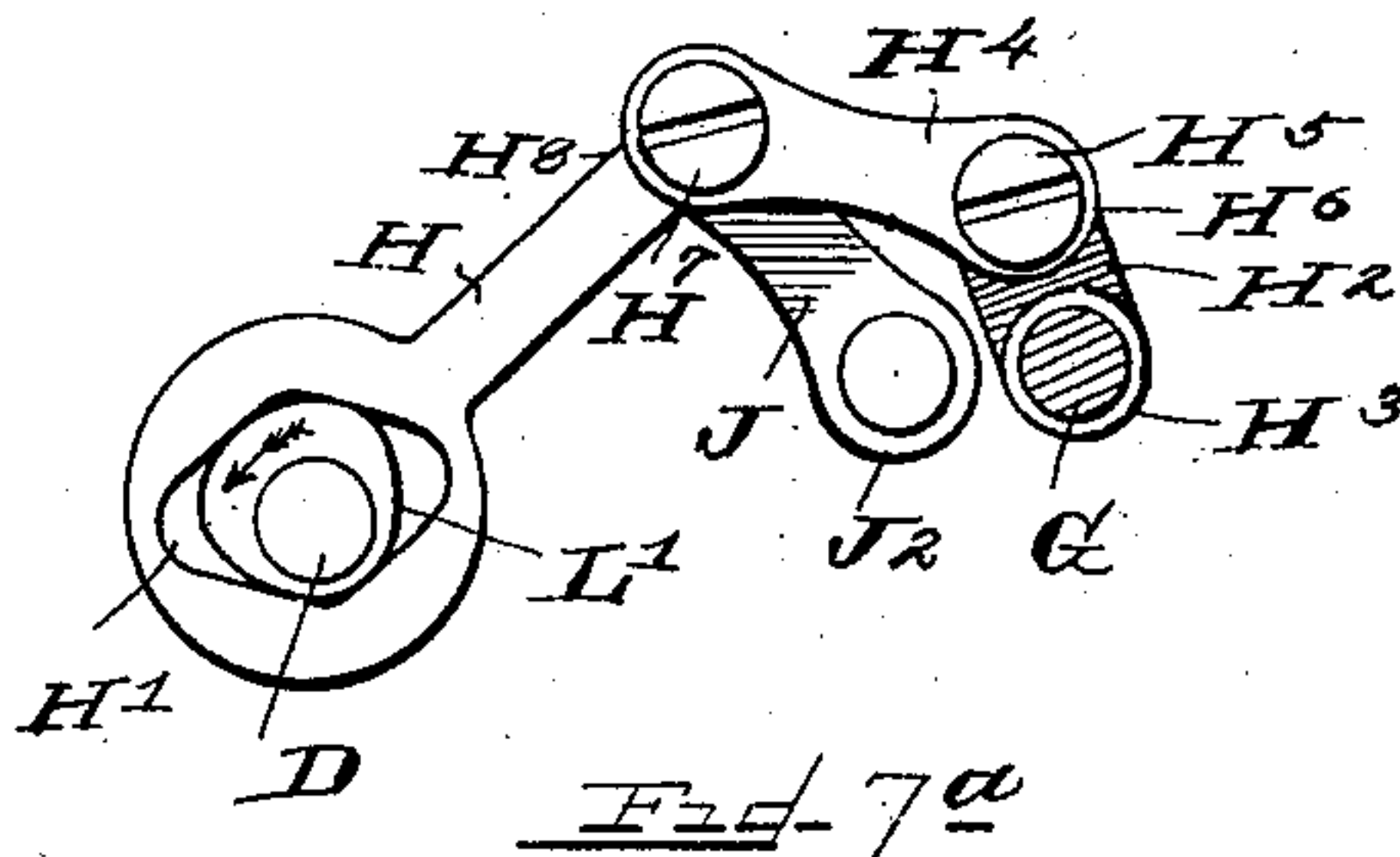
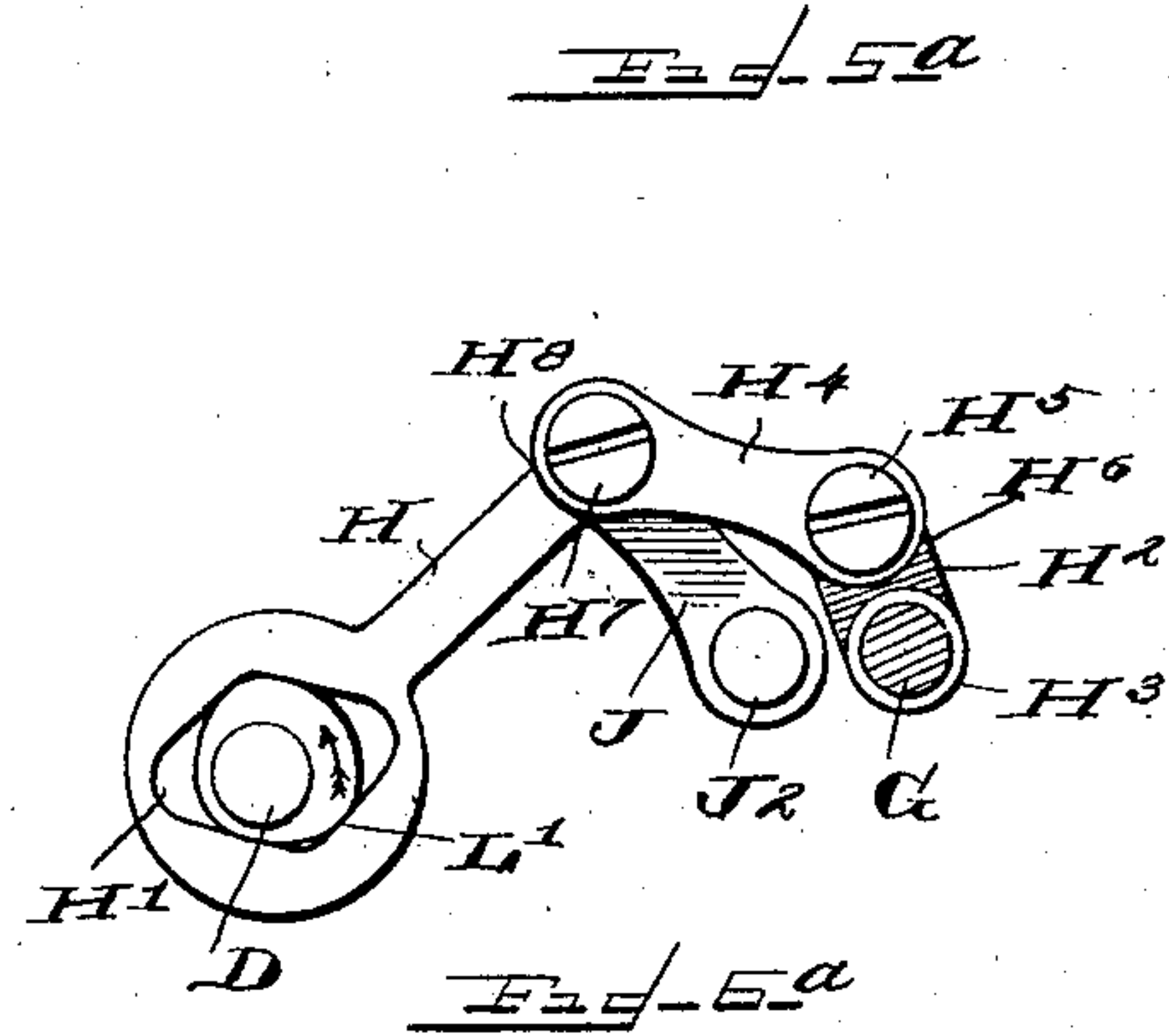
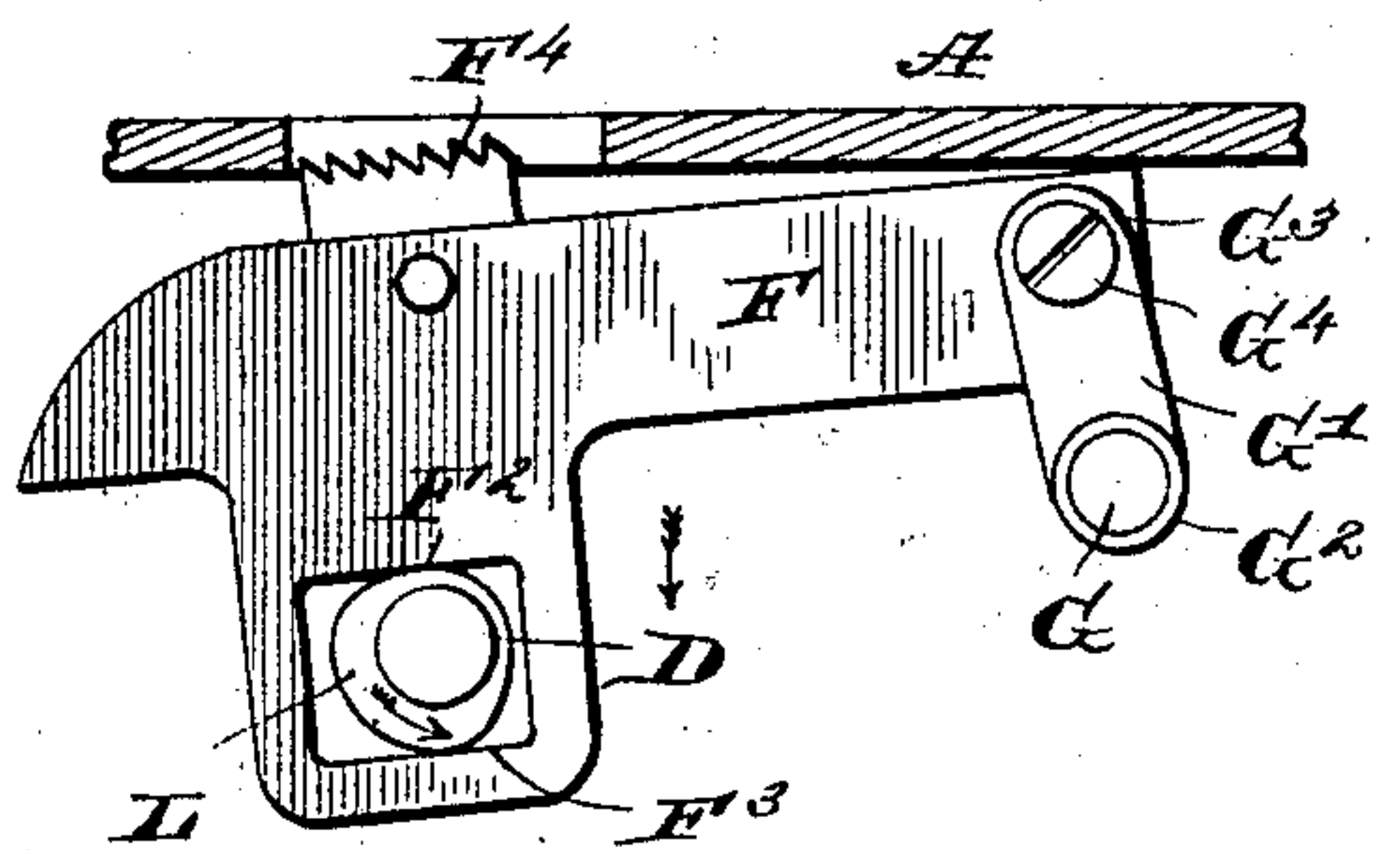
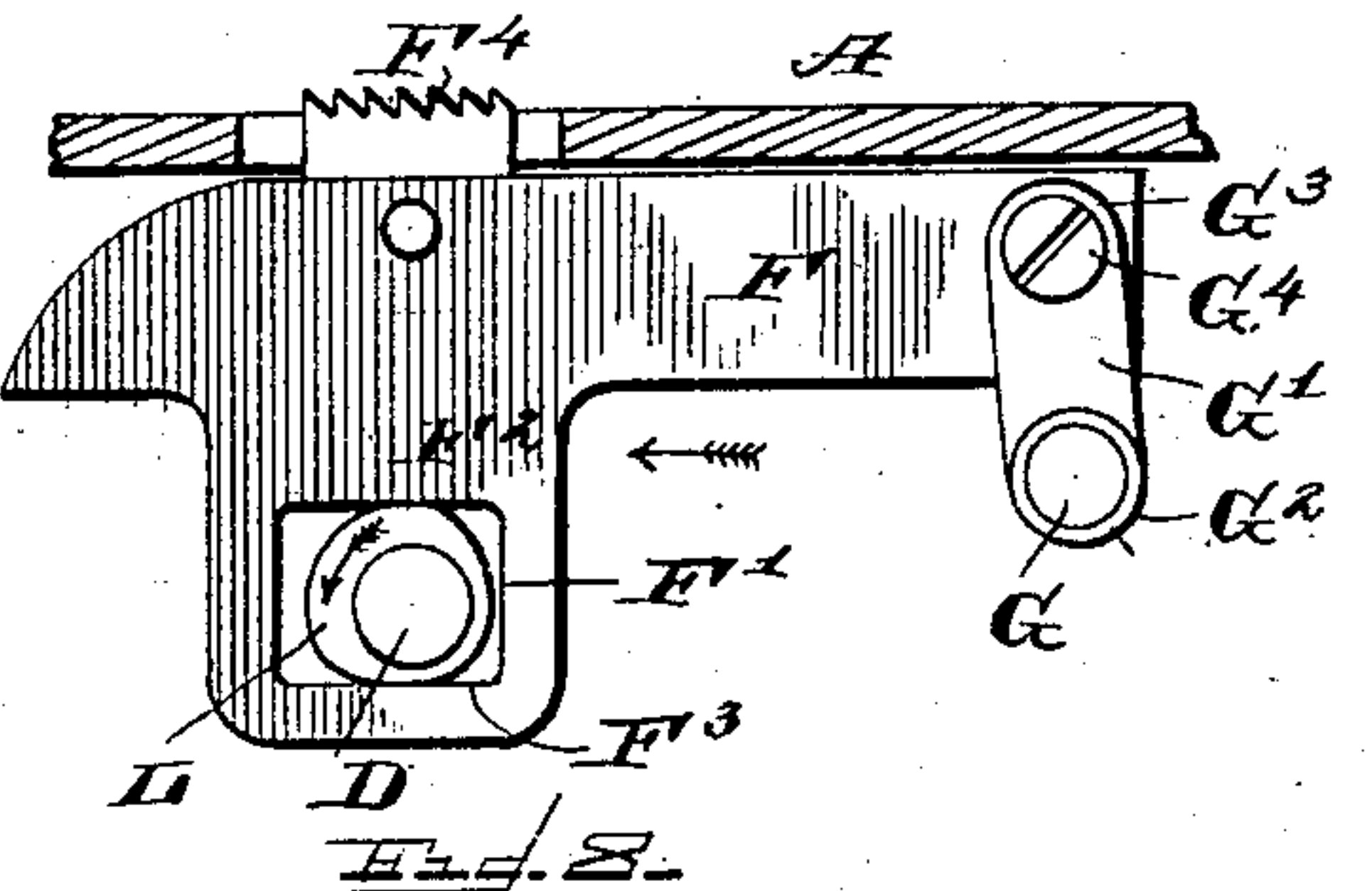
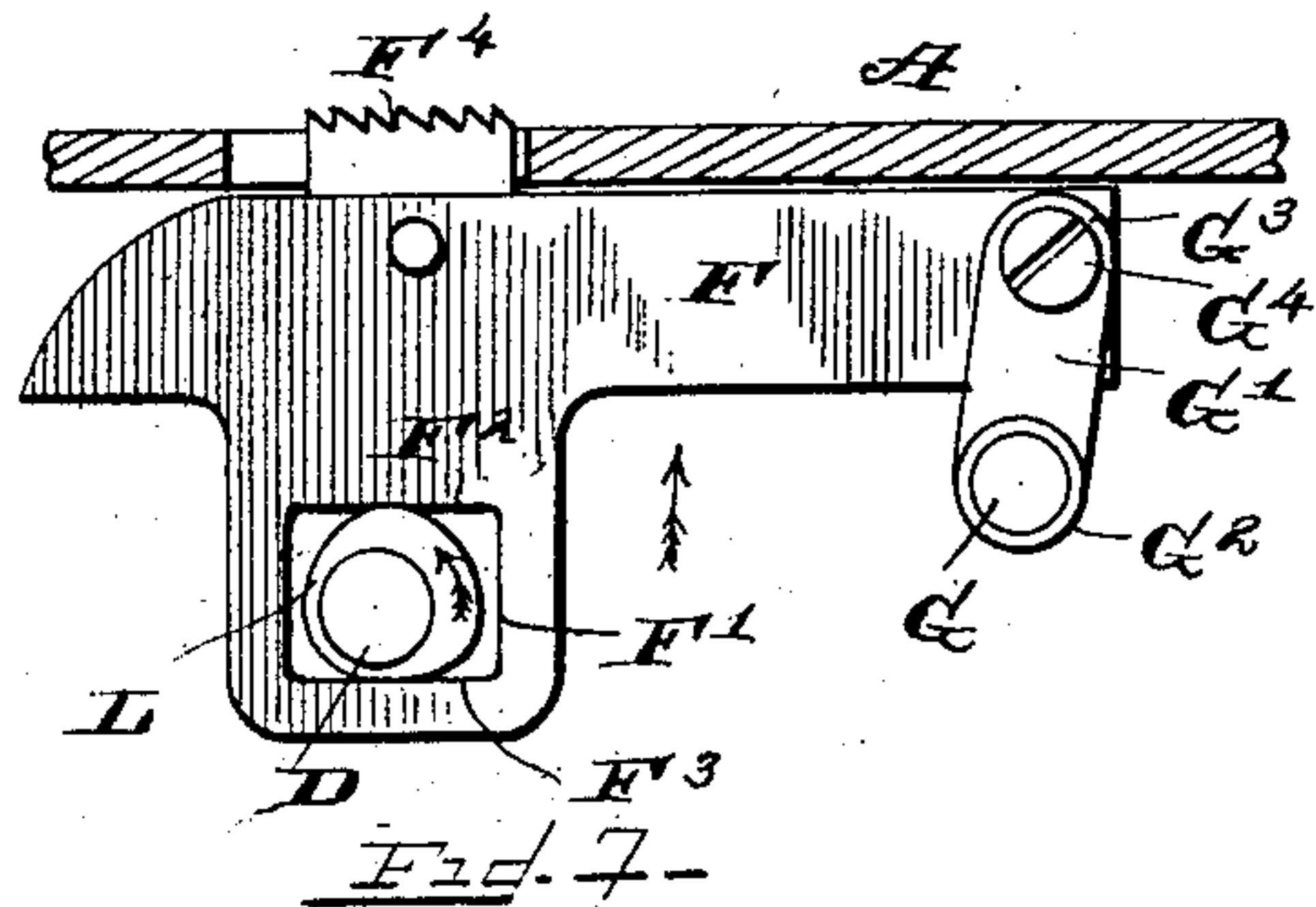
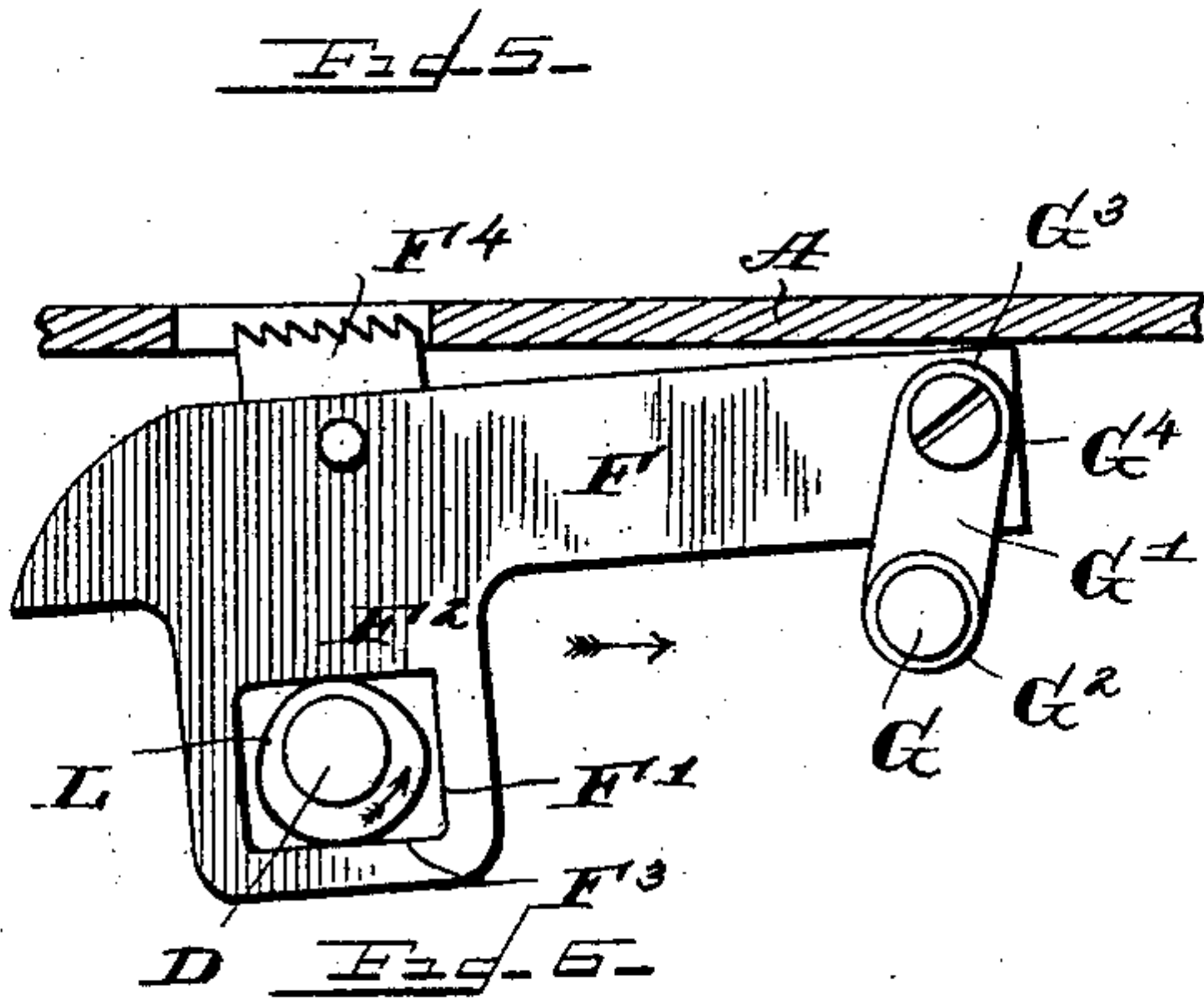
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# UNITED STATES PATENT OFFICE.

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## FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 693,852, dated February 25, 1902.

Application filed July 9, 1901. Serial No. 67,661. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. FREE, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Feeding Mechanisms, of which the following is a specification.

My invention relates specifically to feeding mechanisms for sewing-machines. Its object is the production of a feeding mechanism therefor so contrived and arranged as to be operated by the same shaft that drives the shuttle-driving mechanism of the machine; and it consists of certain new and useful features of construction and combinations of parts especially devised to that end, all as hereinafter described, and specifically pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a bottom plan view of a sewing-machine provided with my improvements. Fig. 2 is a section at the dotted line 2 2 in Fig. 1 of parts there shown. Fig. 3 is a section at the dotted line 3 3 in Fig. 1 of parts there shown. Fig. 4 is an isometrical detail of the feeding mechanism of the machine detached from its base-plate. Figs. 5, 6, 7, and 8 are side elevations of the feed-bar, illustrating, *seriatim*, its movements—namely, up, left, down, and right—while the machine is in operation. Figs. 5<sup>a</sup>, 6<sup>a</sup>, 7<sup>a</sup>, and 8<sup>a</sup> are side elevations of the rock-shaft-actuating arm, also illustrating, *seriatim*, its synchronous movements while the feed-bar was being moved, as indicated, respectively, by Figs. 5 to 8, inclusive.

Like letters of reference indicate corresponding parts throughout the several views.

A is the base-plate of a sewing-machine and is provided with a hanger A' and downwardly-projecting lugs A<sup>2</sup>, A<sup>3</sup>, A<sup>4</sup>, A<sup>5</sup>, and A<sup>6</sup>, having bearings A<sup>7</sup>, A<sup>8</sup>, A<sup>9</sup>, and A<sup>10</sup> therein for supporting parts to be described hereinafter.

D is a driving-shaft mounted in the bearings A<sup>7</sup> A<sup>8</sup> in the parts A' A<sup>5</sup>.

F is a feed-bar having a transverse opening F' therethrough, the upper and lower edges F<sup>2</sup> F<sup>3</sup> whereof are preferably substantially parallel, and provided with a feed-dog F<sup>4</sup> on its upper edge and mounted in the

slideway F<sup>5</sup>, formed by the hanger A' and lugs A<sup>2</sup> A<sup>3</sup> on the base-plate A.

G is a rock-shaft mounted in the bearings A<sup>9</sup> A<sup>10</sup> in the hanger A' and lug A<sup>4</sup>.

G' is a crank-arm connecting the rock-shaft G with the feed-bar F, one end G<sup>2</sup> of the crank-arm G' being fast to the rock-shaft G and the other end G<sup>3</sup> thereof being connected, by means of the pivot G<sup>4</sup>, with the feed-bar F.

H is a rock-shaft-actuating arm having a rhomb-shaped opening H' therethrough.

H<sup>2</sup> is a crank-arm fast by one end H<sup>3</sup> to the rock-shaft G.

H<sup>4</sup> is a link connected by means of a pivot H<sup>5</sup> with the end H<sup>6</sup> of the crank-arm H<sup>2</sup> and by means of a pivot H<sup>7</sup> with the end H<sup>8</sup> of the rock-shaft-actuating arm H.

I is an elbow-lever mounted at its angle on the pivot I' in the lug A<sup>6</sup>.

J is a link connected by means of a pivot J' with the end J<sup>2</sup> of the elbow-lever I and by means of the pivot H<sup>7</sup> with the rock-shaft-actuating arm H and link H<sup>4</sup>. J<sup>3</sup> is a securing-nut applied to the end J<sup>4</sup> of the elbow-lever I.

K K' are washers for separating the parts between which they are located.

The shaft D drives both the shuttle-driving mechanism and the feeding mechanism of the machine.

L L' are triangular curved eccentrics mounted on the driving-shaft and so located and arranged in the openings F' H' in the feed-bar F and rock-shaft-actuating arm H, respectively, as to act alternately thereon, and thereby move the feed-bar F upward, outward, downward, and inward, as indicated by arrows in Figs. 5 to 8, inclusive, to its starting-point, and whereby the horizontal movements of the feed-bar are rendered independent of and more rapid than the vertical movements thereof.

M is a wrist-wheel fast to the driving-shaft D and provided with a wrist-pin M'.

M<sup>2</sup> is an eccentric-rod connecting the wrist-pin M' of the wrist-wheel M with an eccentric (not shown) on the main shaft (also not shown) of the machine.

The remaining unlettered parts shown in Fig. 1 belong to the shuttle-driving mechanism of the machine and are fully shown, described, and claimed in the specification and drawings forming part of my application, now



pending and having Serial No. 62,154, for Letters Patent of the United States. Said unlettered parts need not be regarded in order to fully understand the invention herein described and claimed.

Supposing the feed-bar F and the combined devices for operating the same to be in the relative positions shown in Figs. 5 and 5<sup>a</sup> and that the driving-shaft D is constantly rotating from right to left, when the eccentric L, Fig. 5, has been turned to the position shown in Fig. 6 the feed-bar will have been thereby elevated to its upper limit of travel and the eccentric L' will be in the position shown in Fig. 6<sup>a</sup>. The eccentric L', Fig. 6<sup>a</sup>, acting through the rock-shaft-actuating arm H and rock-shaft G, will next slide the feed-bar to the left to its outward limit of travel, as shown in Fig. 7. The eccentric L, Fig. 7, acting upon the feed-bar, will then depress it to its lower limit of travel, as shown in Fig. 8. The eccentric L', Fig. 8<sup>a</sup>, will thereupon slide the feed-bar to the right to its inward limit of travel to the position from which it started, as shown in Fig. 5. The eccentrics L L' are so arranged that they act alternately and independently of each other upon the feed-bar F, and both being mounted on and driven by the same shaft always insure a positive and uniform four-motion feed.

Stitches of the required length may be obtained by raising or lowering the free end J<sup>4</sup> of the elbow-joint I, thereby moving the connecting-joint H<sup>7</sup> between the intermediate link H<sup>4</sup> and rock-shaft-actuating-arm H toward or from the rock-shaft G, according as a shorter or longer stitch is desired. The nut J<sup>3</sup> serves to secure the free end J<sup>4</sup> of the elbow-lever I at any desired elevation within the limits of its adjustability.

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

1. In a feeding mechanism for sewing-machines, in combination, a driving-shaft, a feed-bar, having a transverse opening therethrough,

a rock-shaft-actuating arm, having a transverse rhomb-shaped opening therethrough, a rock-shaft, a crank-arm connecting the rock-shaft with the feed-bar, a crank-arm on the rock-shaft and means for pivotally connecting the same with the rock-shaft-actuating arm, triangular curved eccentrics, mounted upon the driving-shaft, said curved eccentrics being so located and arranged in the openings in the feed-bar and rock-shaft-actuating arm as to act alternately thereon, whereby the horizontal movements of the feed-bar are rendered independent of, and more rapid than, the vertical movements thereof, substantially as and for the purpose specified.

2. In a feeding mechanism for sewing-machines, in combination, a driving-shaft, a feed-bar, having a transverse opening therethrough the upper and lower edges whereof are substantially parallel, a rock-shaft-actuating arm, having a transverse rhomb-shaped opening therethrough, a rock-shaft, a crank-arm connecting the rock-shaft with the feed-bar, a crank-arm and an intermediate link connecting the rock-shaft with the rock-shaft-actuating arm, means for adjusting the connecting-joint between the intermediate link and rock-shaft-actuating arm toward and from the rock-shaft, triangular curved eccentrics, mounted upon the driving-shaft and so located and arranged in the openings in the feed-bar and rock-shaft-actuating arm as to act alternately thereon, whereby the horizontal movements of the feed-bar are rendered independent of, and more rapid than, the vertical movements thereof, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM C. FREE.

Witnesses:

L. L. MORRISON,  
NELLIE BUNKER.