

No. 666,634.

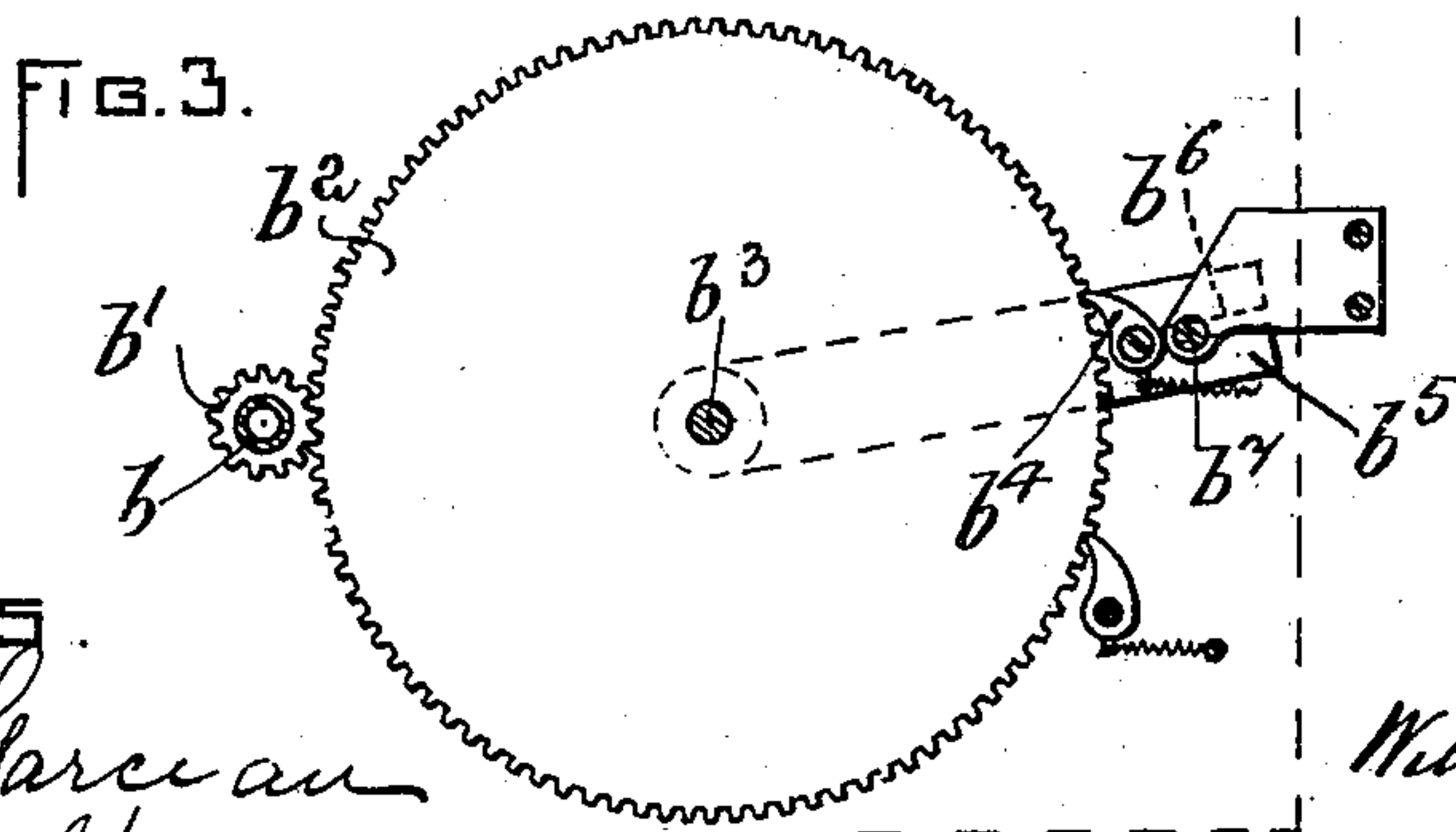
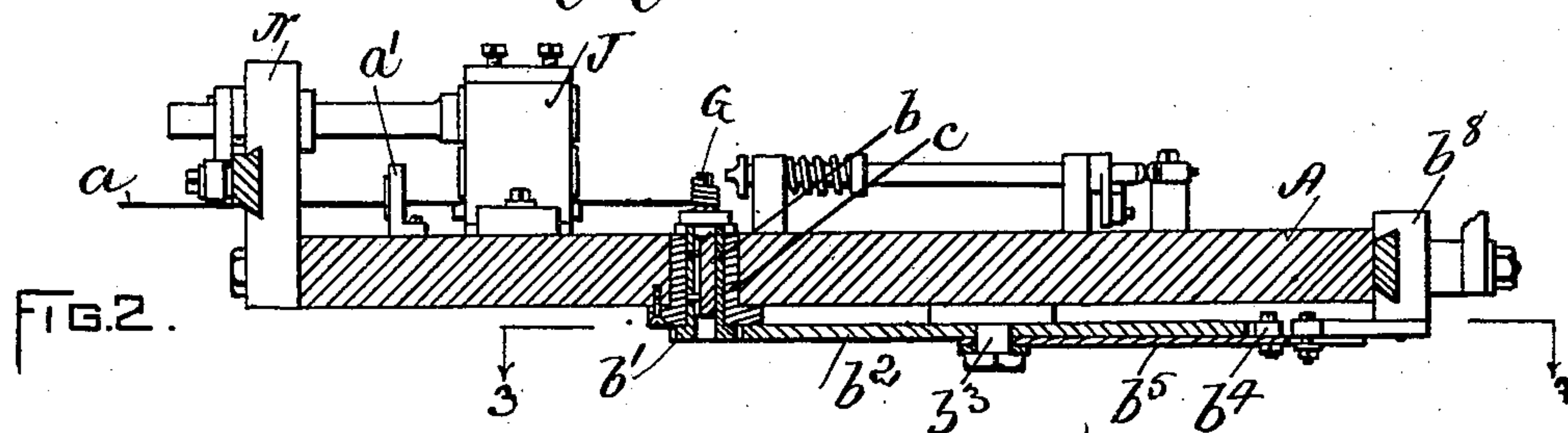
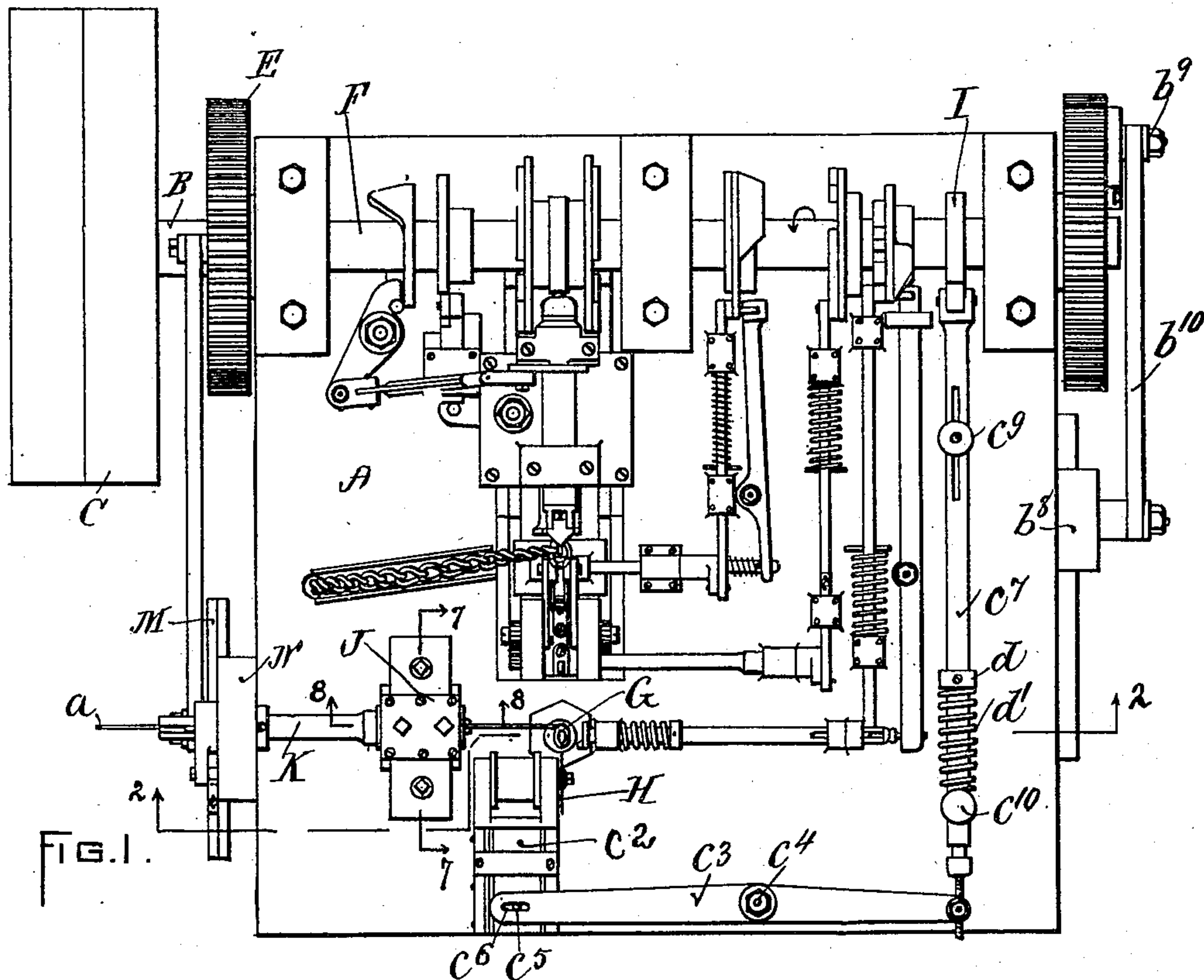
Patented Jan. 22, 1901.

W. I. MACOMBER.  
MACHINE FOR MAKING ORNAMENTAL CHAINS.

(Application filed May 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

*Harry J. Garceau*  
*John T. Neely*

INVENTOR:

*William I. Macomber.*

*J. Scholfield.*

ATTY.

BY

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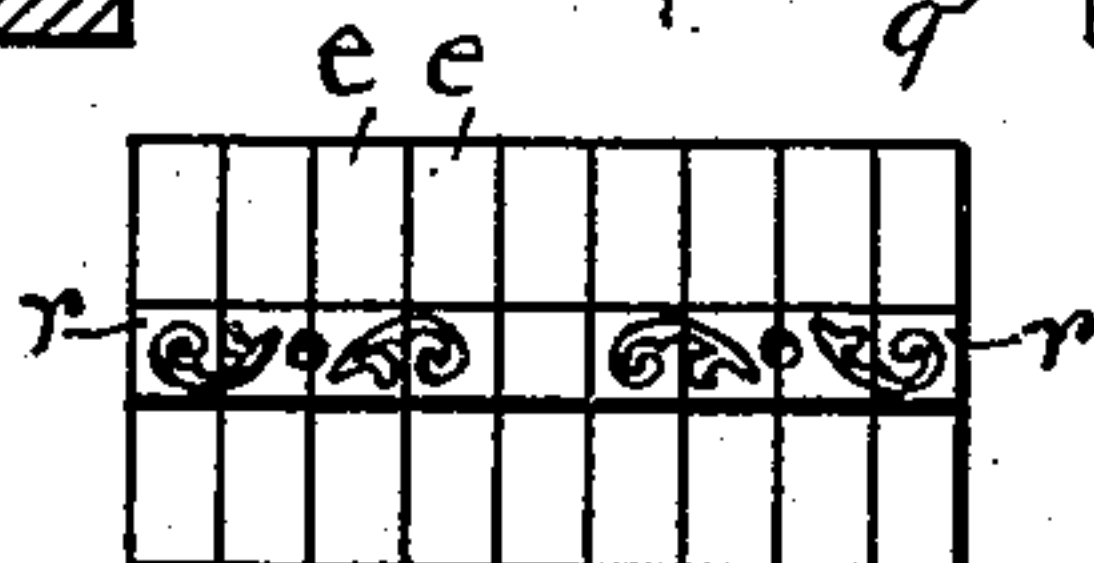
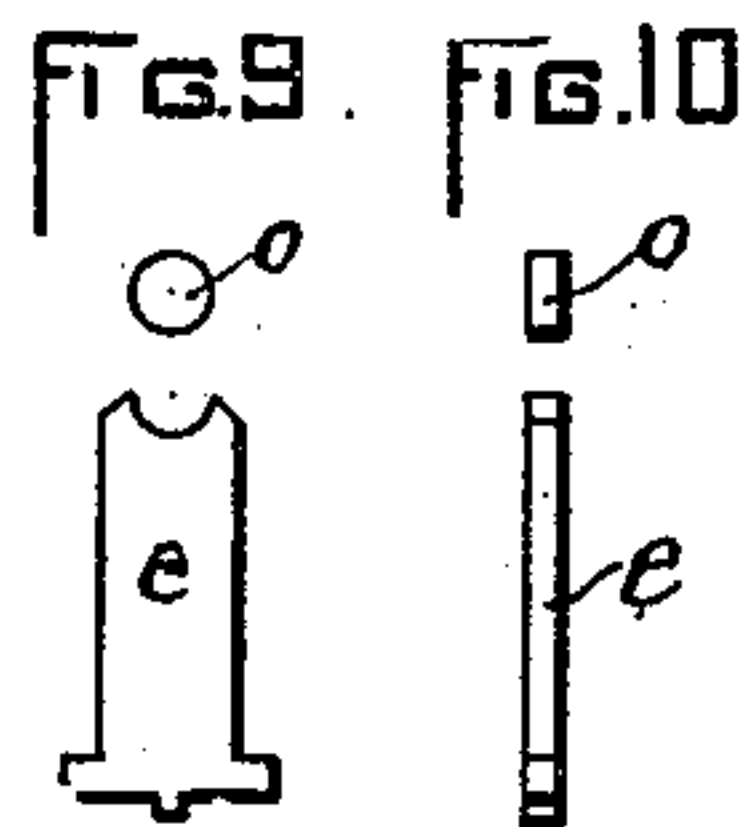
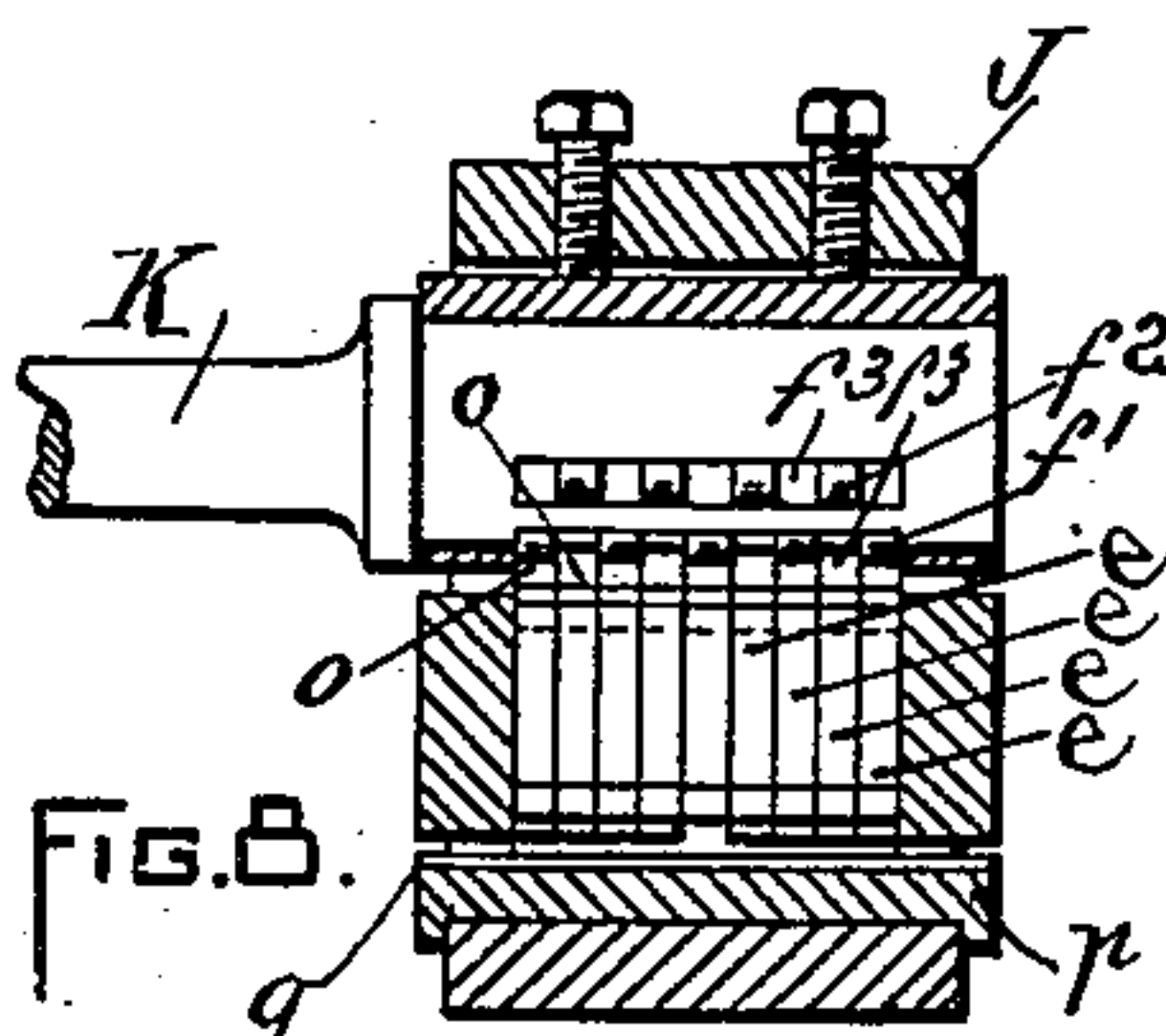
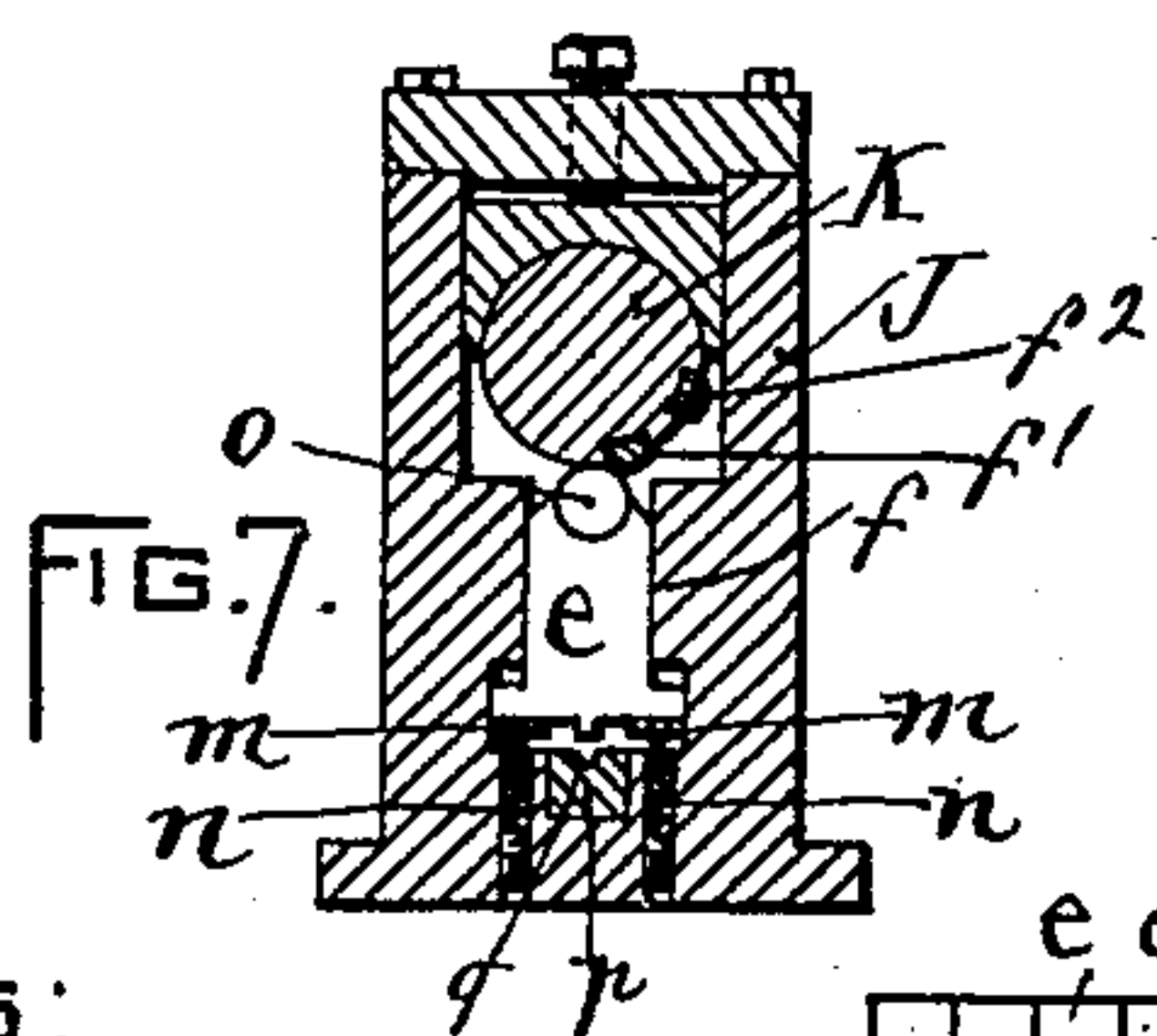
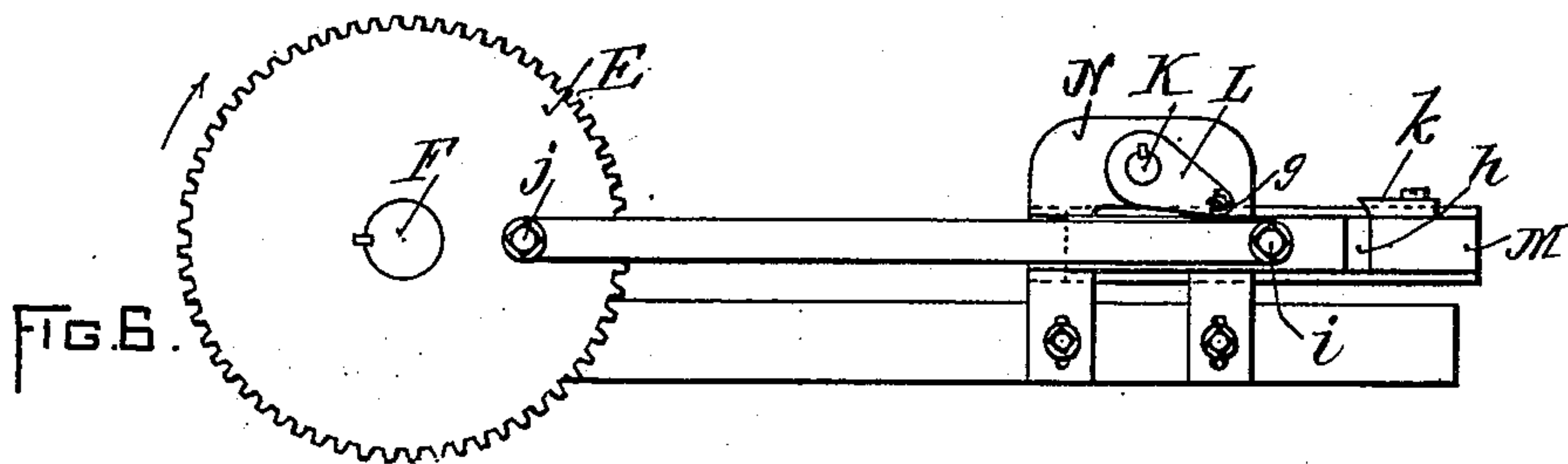
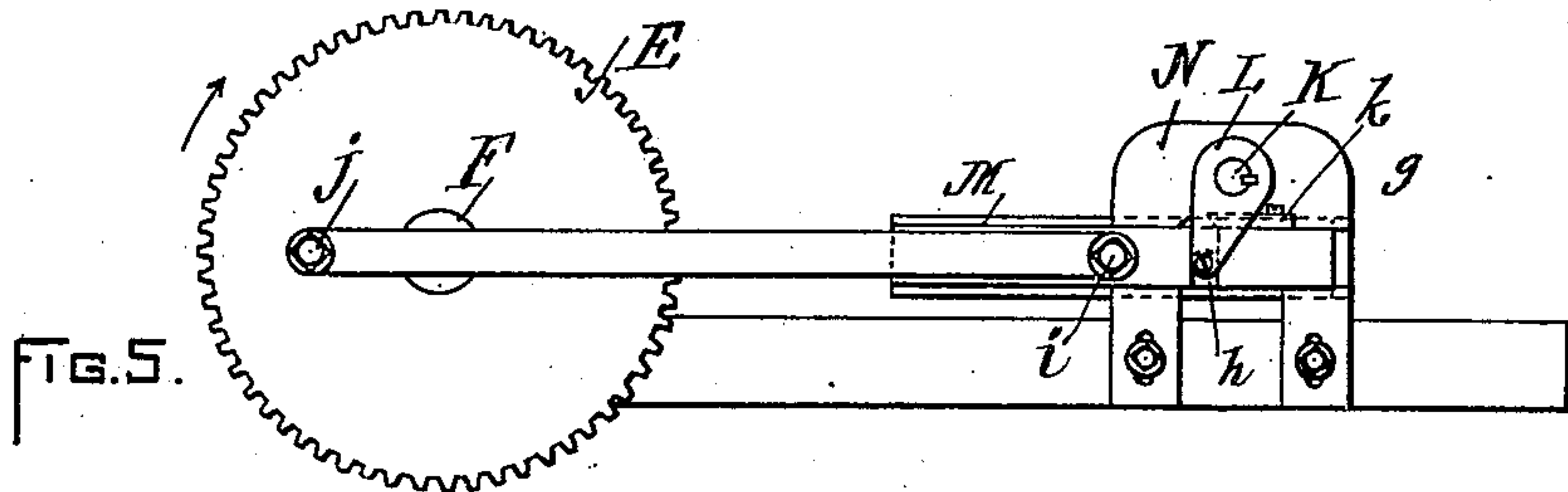
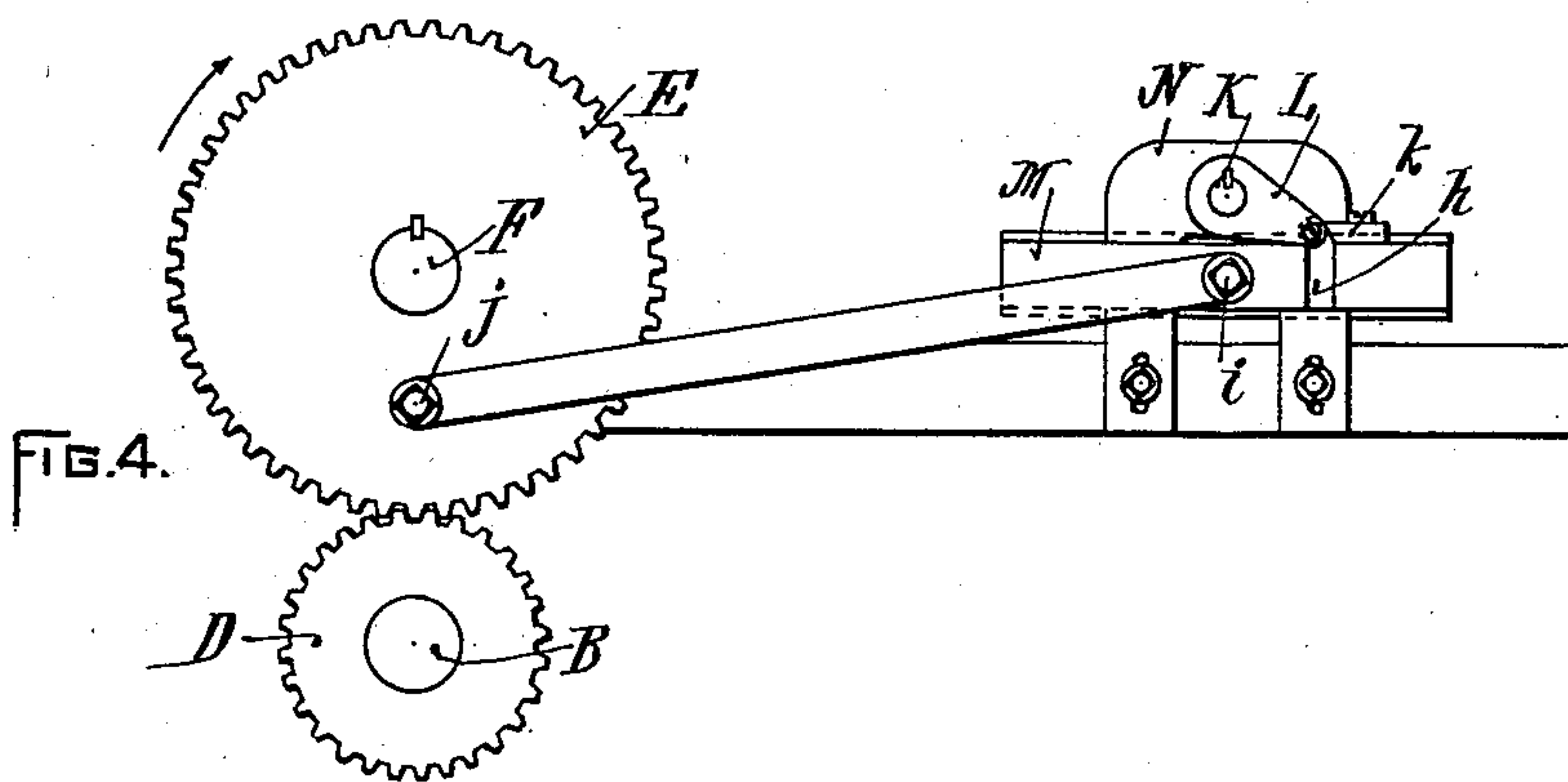
**W. I. MACOMBER.**

# MACHINE FOR MAKING ORNAMENTAL CHAINS.

(Application filed May 28, 1900.)

**(No Model.)**

**2 Sheets—Sheet 2.**



WITNESSES:

Harry J. Garceau  
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FIG. 11.

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BY

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# UNITED STATES PATENT OFFICE.

WILLIAM I. MACOMBER, OF NORWOOD, RHODE ISLAND, ASSIGNOR TO  
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## MACHINE FOR MAKING ORNAMENTAL CHAINS.

SPECIFICATION forming part of Letters Patent No. 666,634, dated January 22, 1901.

Application filed May 28, 1900. Serial No. 18,323. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM I. MACOMBER, a citizen of the United States, residing at Norwood, in the county of Kent and State of Rhode Island, have invented a new and useful Improvement in Machines for Making Ornamental Chains, of which the following is a specification.

The nature of my invention consists in an improved attachment whereby the wire to form the links of ornamental chains is provided with an ornamental chasing; and it consists in the improved combination and arrangement of the chasing die or dies, as hereinafter set forth.

In the accompanying drawings, Figure 1 represents the top view of a chain-machine provided with my improvement. Fig. 2 represents a vertical section taken in the line 2 2 of Fig. 1. Fig. 3 represents a horizontal section taken in the line 3 3 of Fig. 2. Figs. 4, 5, and 6 are detail side views of the machine, showing different positions of the parts which operate the chasing-dies. Fig. 7 represents an enlarged section taken in the line 7 7 of Fig. 1. Fig. 8 represents an enlarged section taken in the line 8 8 of Fig. 1. Fig. 9 represents a side view of one of the chasing-dies and its antifriction-roller. Fig. 10 represents an edge view of the same. Fig. 11 represents a bottom end view of the series of chasing-dies.

The drawings represent my improvement as applied to the chain-machine for which Letters Patent of the United States were issued to me, No. 645,039, and to which reference may be made for a full description.

My present invention has only to do with the wire-feeding and link-forming devices and may be applied to chain-machines of various constructions.

In the drawings, A represents the horizontal bed or table of the machine; B, the driving-shaft; C, the driving-pulley; D, a pinion secured to the driving-shaft, and E a driven gear secured to the cam-shaft F.

The wire *a* from which the chain is formed after passing through a guide-eye in the bracket *a'* and under the series of chasing-dies *e e e* is wound upon the rotary mandrel

G, held in the sleeve *b*, which passes downward through the bushing *c*, secured by means of its flange to the under side of the table and forming a bearing for the rotation of the sleeve. The lower end of the sleeve *b* is provided with the pinion *b'*, which engages with the gear *b<sup>2</sup>*, held for rotation upon the stud *b<sup>3</sup>*, the said gear being actuated for revolution by means of the spring-actuated ratchet-dog *b<sup>4</sup>*, which is loosely secured to the pivoted lever *b<sup>5</sup>*, provided at its outer end with the slot *b<sup>6</sup>*, and by means of the said slot and the stud *b<sup>7</sup>* operative connection is made with the slide *b<sup>8</sup>*, which is reciprocated by means of the adjustable crank-pin *b<sup>9</sup>* and the connecting-rod *b<sup>10</sup>*, whereby the mandrel G will be caused to make one complete revolution for winding the wire to form the link at each revolution of the cam-shaft F. Upon the backward movement of the ratchet-dog *b<sup>4</sup>* the revolving cutter H, held in the slide *c<sup>2</sup>*, will be brought forward by means of the lever *c<sup>3</sup>*, pivoted at the stud *c<sup>4</sup>* and connected with the slide by means of the stud *c<sup>5</sup>* and slot *c<sup>6</sup>*, the outer end of the lever *c<sup>3</sup>* being actuated to carry the cutter H forward by means of the sliding rod *c<sup>7</sup>* and the cam I, the said sliding rod being held in the bearing-stands *c<sup>9</sup>* *c<sup>10</sup>*, and between the bearing-stand *c<sup>10</sup>* and the collar *d* is placed the compression-spring *d'*, which serves to draw the cutter H backward when the sliding rod *c<sup>7</sup>* is released from the acting surface of the cam.

The chasing-dies *e e e* are placed side by side within the chamber *f* of the bearing-stand J, which supports the rock-shaft K, the said rock-shaft being provided with the parallel series of cam projections *f' f' f<sup>2</sup> f<sup>2</sup>*, the cam projections in one series being made opposite the intervening spaces of the other series, so that upon the rocking of the shaft K the cam projections of one series will serve to force each alternate chasing-die downward to chase the wire, the intermediate chasing-dies being forced down by the action of the projections of the other series, or instead of the parallel series of cam projections a single cam projection may be employed for action upon all of the dies at a time.

To the outer end of the rock-shaft K is se-



cured the crank-arm L, provided with the inwardly-directed stud *g*, which is adapted to enter the open slot *h*, made in the outer side of the slide-bar M, which is held for sliding movement in the bearing-stand N for the outer end of the shaft K, and from the slide-bar M at the stud *i* connection is made with the crank-pin *j* upon the side of the gear E. The rock-shaft K is required to make its rocking movement upon the occurrence of one-half of the revolution of the cam-shaft F and to remain at rest during the opposite half of the revolution, and this is effected by the engagement of the inclined block *k* with the stud *g* of the crank-arm, as shown in Fig. 4, thus causing the downward movement of the stud *g* in the open slot *h*, as shown in Fig. 5, the opposite position of the slide-bar M and the crank-pin *j* being shown in Fig. 6.

The chasing-dies *e e* are held in their upward position by means of the supporting-strips *m m* and spiral springs *n n*, the upper ends of the said chasing-dies being provided with the antifriction-rollers *o* for engagement with the cam projections *f' f'*. The anvil-block *p* is provided with the groove *q* to receive and guide the wire under the chasing-dies, and when the machine is in operation the revolution of the winding-mandrel G serves to draw the wire forward in the guiding-groove *q* of the anvil-block *p* for a space equal to the length of a single link. Then upon completion of the winding movement of the mandrel the required rotary movement will be imparted to the rock-shaft K, and when the first series of cam projections *f' f'* engages with the antifriction-rollers of the chasing-dies every alternate chasing-die will be forced into the metal of the wire, and upon the continued rotation of the rock-shaft the second series of cam projections *f<sup>2</sup> f<sup>2</sup>* will come into engagement, whereby the remaining chasing-dies will be acted upon, and thus producing

the desired ornamentation of the wire prior to the formation of the link.

By arranging the cam projections as described, so that but a portion of the chasing-dies are acted upon at a time, the chasing is accomplished with a much less expenditure of power.

In preparing the chasing-dies for imparting the required ornamentation to the wire they are secured together side by side, as shown in Fig. 11, when in their soft condition and the surfaces *r* engraved collectively to the required pattern. They are then tempered for use, and one of the said dies may be acted upon for chasing the wire without requiring a simultaneous action upon the adjoining die of the series. It is to be understood, however, that the ornamentation may be embraced in a single chasing-die, actuated by means of a single cam projection, in carrying out my invention, and that I do not restrict my claims to a plurality of chasing-dies, but include therein the employment of a single die.

I claim as my invention—

1. In a chain-machine, the combination of means for forming the link, with a guide for the wire in its passage to the link-forming means, a chasing-die arranged to operate upon the wire held in the guide, and means for actuating the chasing-die.

2. In a chain-machine, the combination of means for forming the link, a guide for the wire in its passage to the link-forming means, with independent chasing-dies arranged to operate upon the wire held in the guide, and means for actuating the chasing-dies independently of each other.

WILLIAM I. MACOMBER.

Witnesses:

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MARTHA M. GALLAGHER.