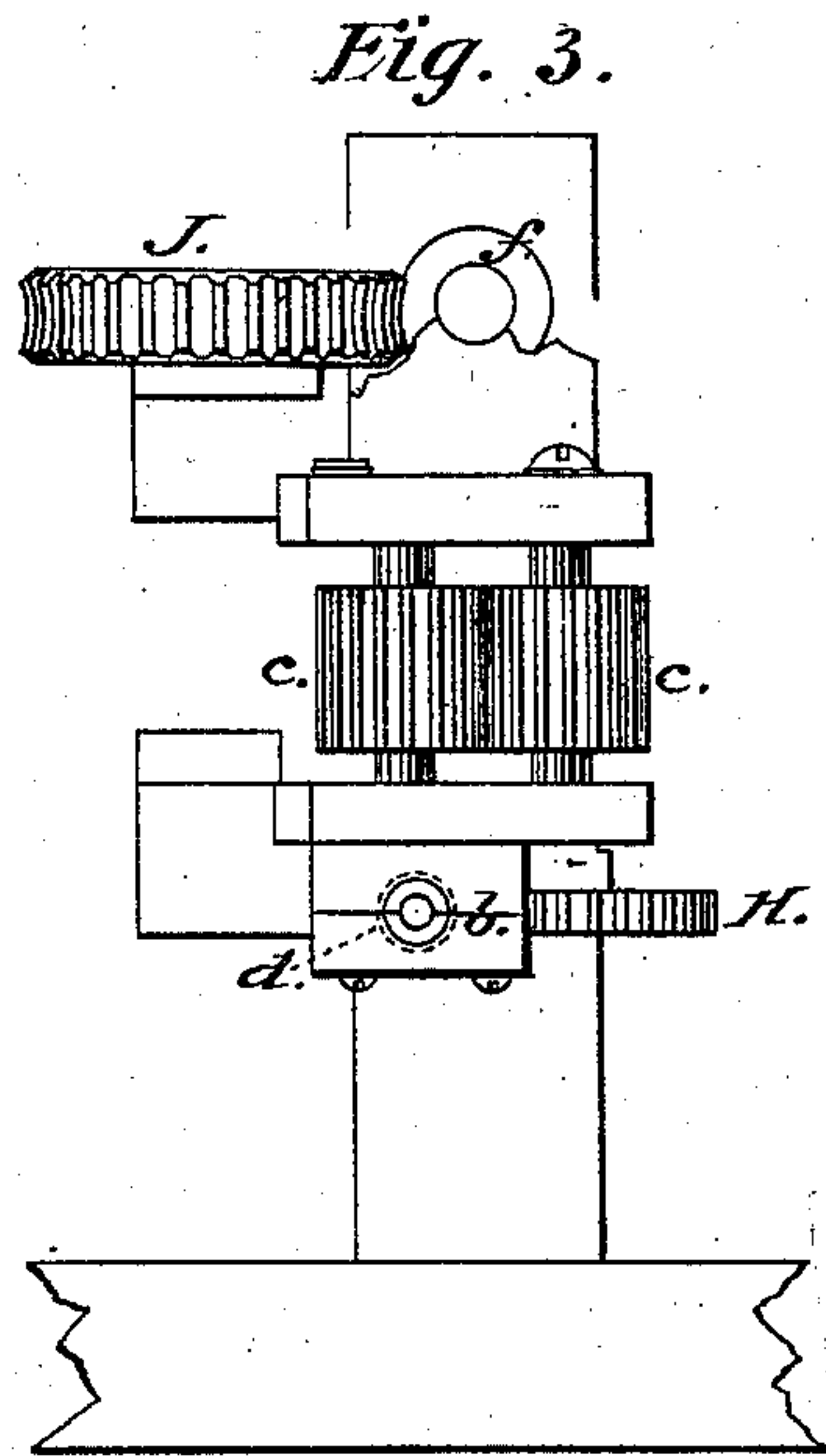
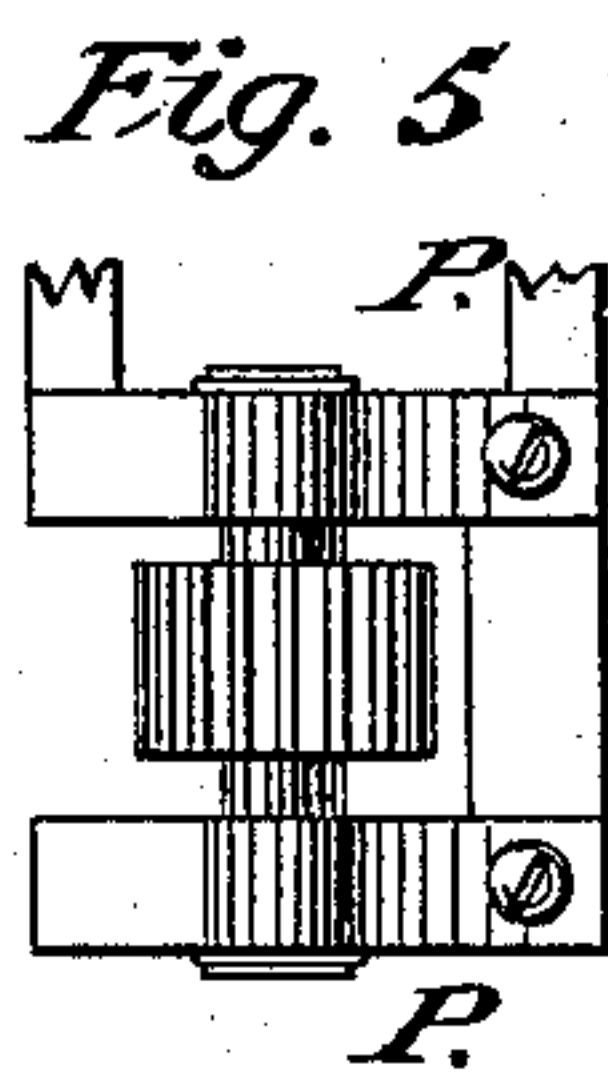
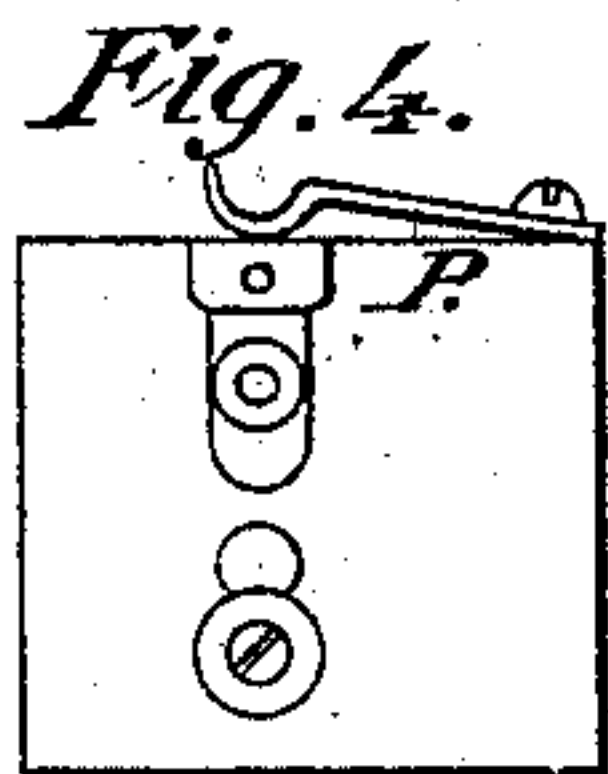
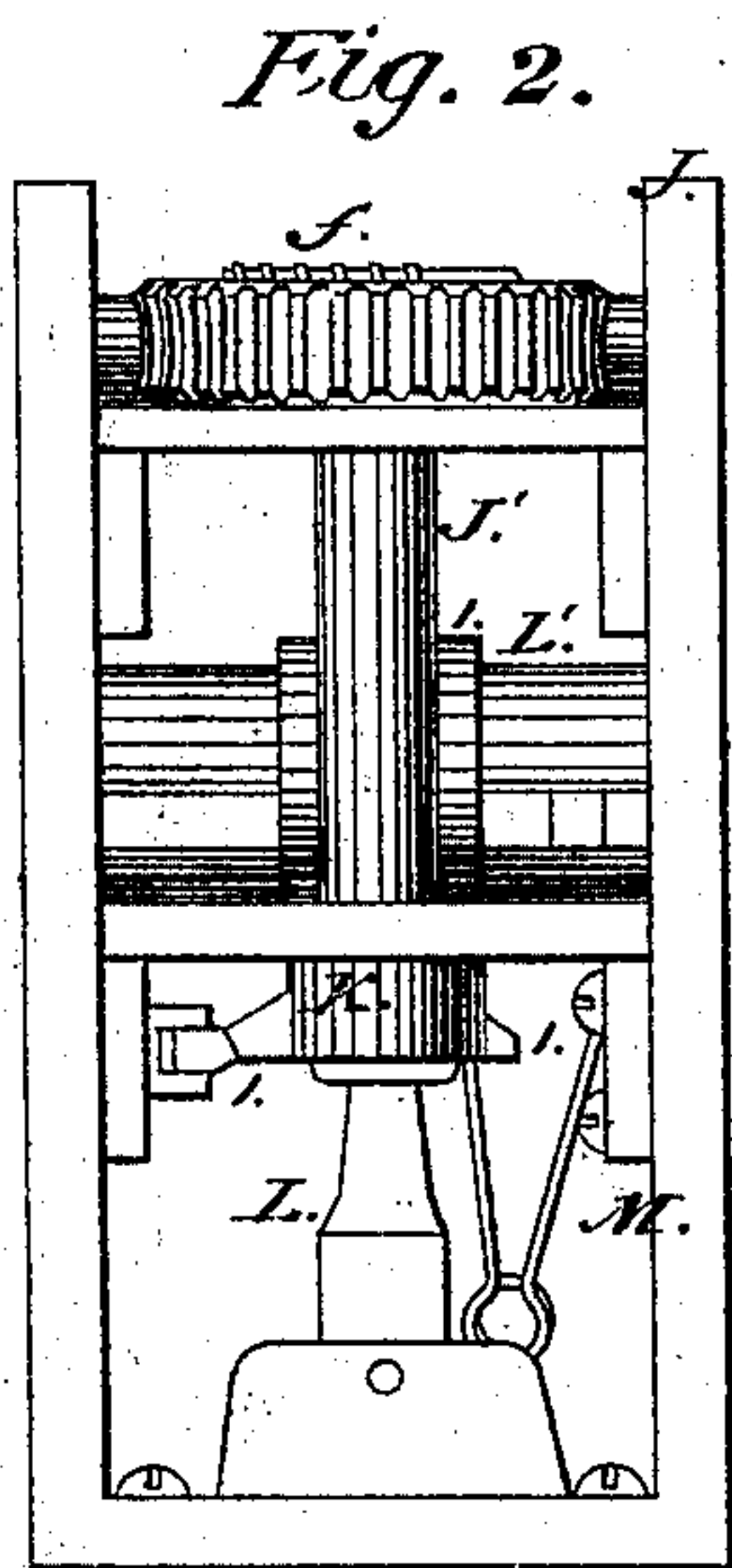
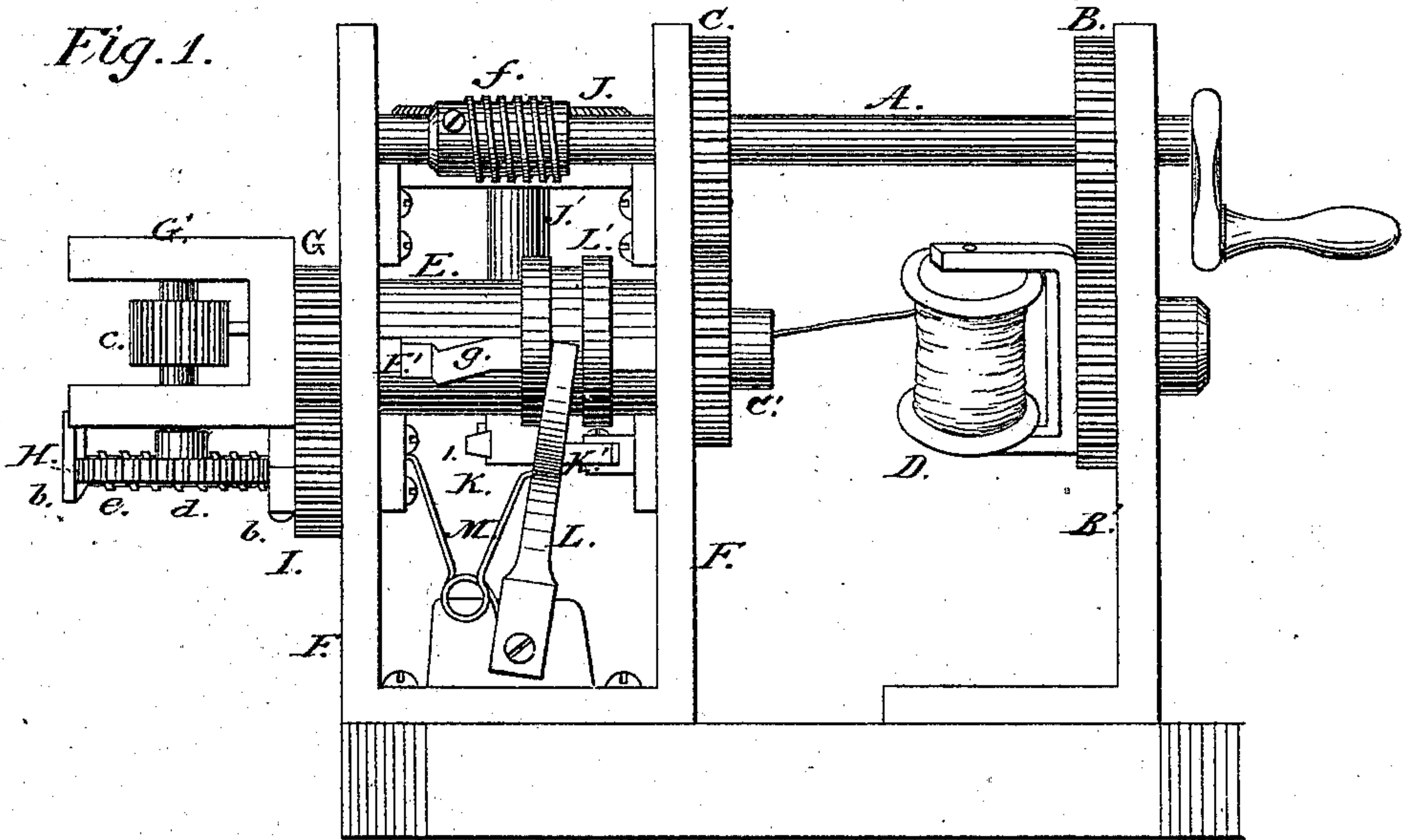


G. V. SHEFFIELD.

Machines for Making Double Tapered Thread.

No. 137,033.

Patented March 18, 1873.



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Fig. 6.

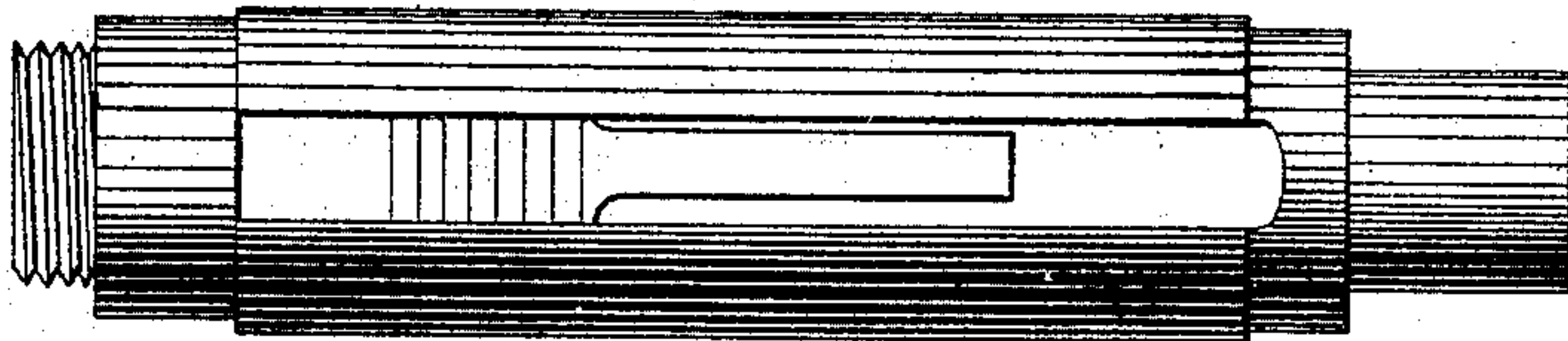
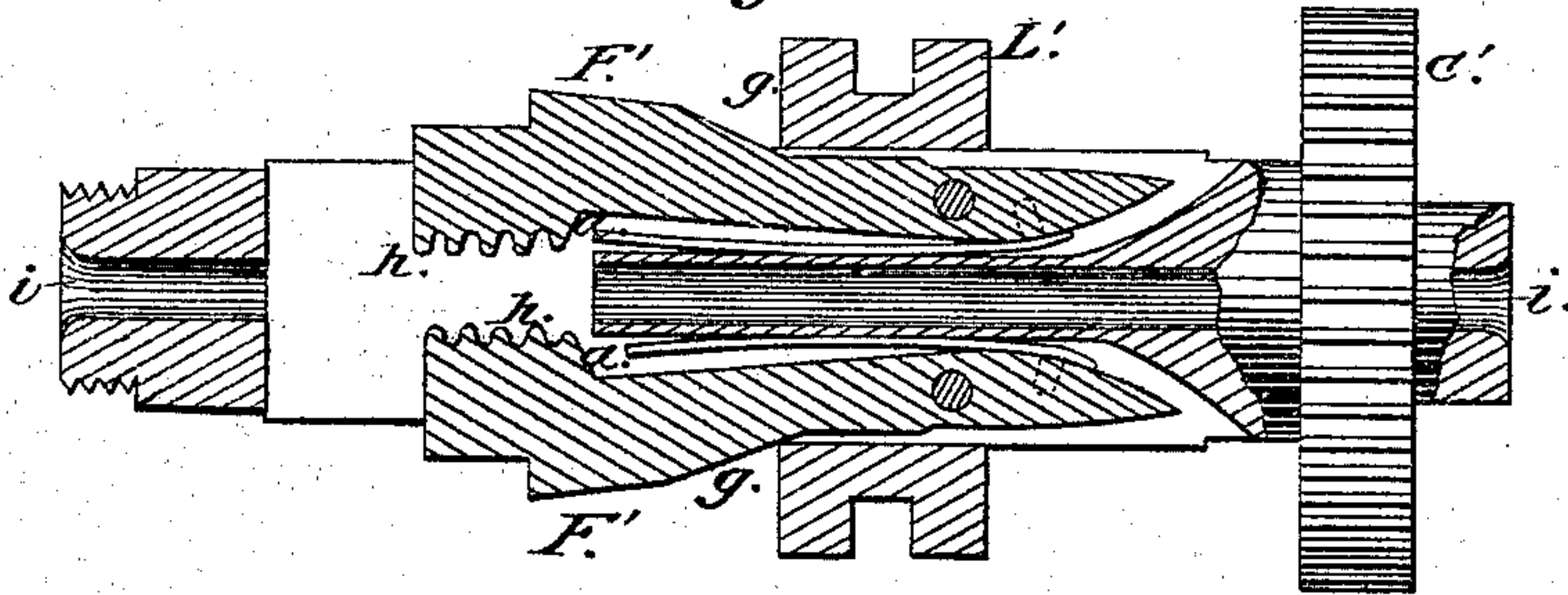


Fig. 7.

Fig. 8.

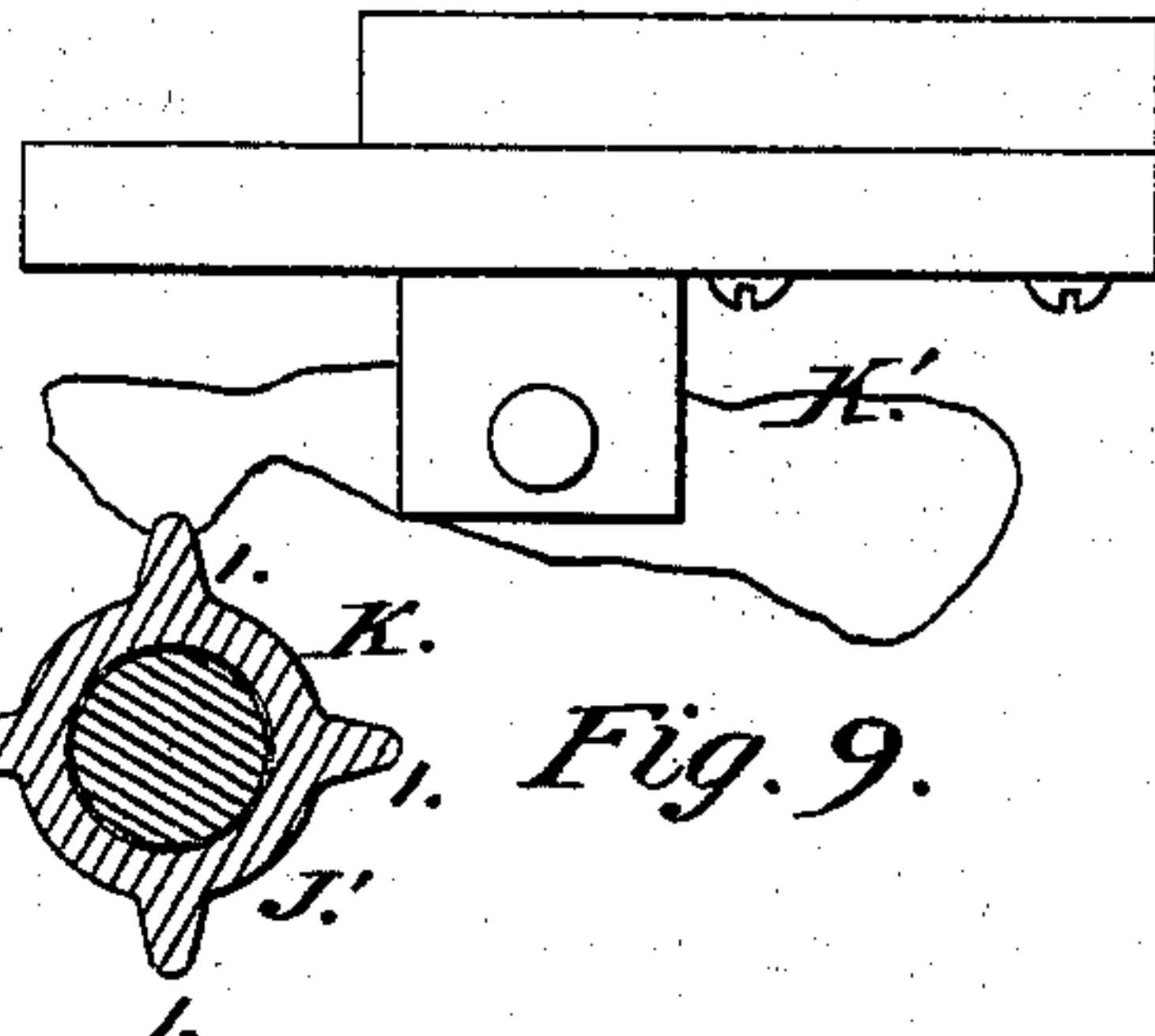
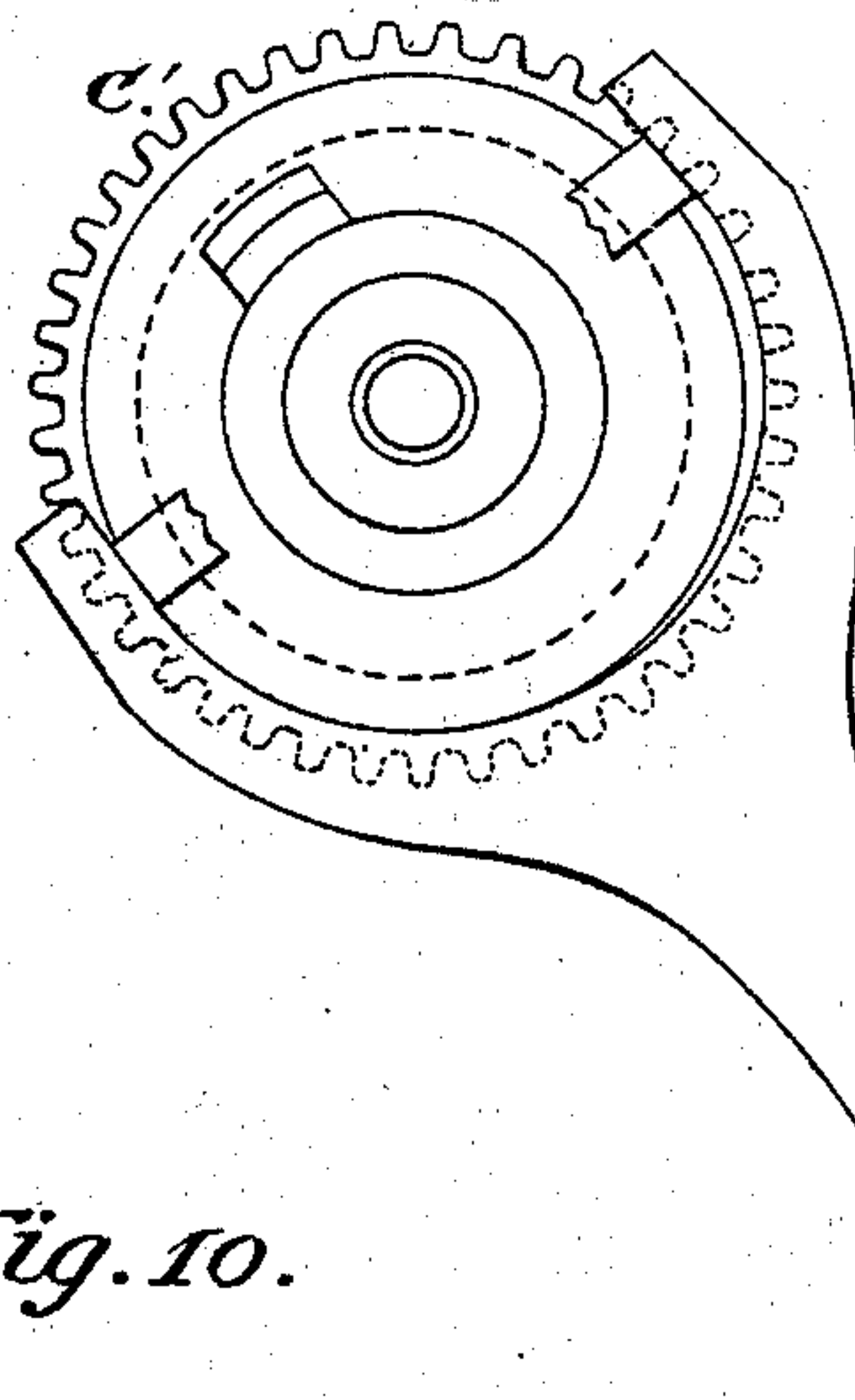


Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE V. SHEFFIELD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING DOUBLE-TAPERED THREAD.

Specification forming part of Letters Patent No. 137,033, dated March 18, 1873.

To all whom it may concern:

Be it known that I, GEORGE V. SHEFFIELD, of the city of Boston, county of Suffolk, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Making Double-Taper Thread for Fastening Soles to Boots and Shoes, and for other purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 represents a side view of my improved machine. Fig. 2 represents a side view of a part of the machine, but the opposite side of that shown in Fig. 1. Fig. 3 represents a front view of the drawing end of the machine, a portion of the frame of the machine being shown broken away. Fig. 4 represents a side view of a part of the drawing-frame. Fig. 5 represents an opposite view of the drawing-frame from that shown in Fig. 1. Fig. 6 represents a longitudinal section through the holding-jaws and their revolving frame. Fig. 7 represents a side view of the jaw-frame detached, and one of the jaws removed. Fig. 8 represents an end view of the jaw-frame, the operating-gear and jaw-clamping lever detached, and Fig. 9 represents a plan view of the clamping-lever and a cross-section of its operating-cam. Fig. 10 represents a section of a double-tapered thread.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it in detail.

By reference to Fig. 1 it will be seen that the driving-shaft A is provided with two gears, B C, which take into the gears B' C', the former giving motion to the roving or roping bobbin-frame D, and the latter to the jaw-clamping frame E, which turns in proper bearings in frame F. Frame E has a hole through the center, and is slotted out to receive the holding-jaws F' F', the rear ends of which jaws are pivoted to frame E, as indicated in Fig. 6. Jaws F' F' are thrown apart by springs a a, the rear ends of the springs being fastened to the rear ends of the jaws, while the front ends of the springs rest against the bottom of the slots in frame E, as shown in Fig. 2. To the front end of frame E, which passes through and turns in a stationary

gear, G, is fastened the drawing-frame G', in which are arranged two drawing-gear rolls, c c, which turn in suitable bearings in said frame. In projections b b of frame G' is supported and turns a worm-shaft, d, the thread e of which takes into the teeth of the gear H on the end of one of the journals of the drawing-rolls. Upon the inner end of worm-shaft d is fastened a gear, I, which takes into the stationary gear G, the latter being fastened to the frame F, whereby, when the jaw-frame E is revolved, the gear I will be revolved around gear G, and thus impart a motion to the drawing-rolls through the gear and worm on shaft d. Upon shaft A is fastened a worm, f, which turns a gear, J, on the top of shaft J' and the cam K on its lower end. Cam K is provided in this instance with four points, l, each of which, in turn, acts upon one end of lever K', and thus throws the other end of said lever against the forked jaw-clamping-arm L, thus throwing or forcing the clamping-ring L' forward upon frame E, and clamping the jaws F' F' by pressing upon their inclined sides g g. When the jaws F' F' are closed their teeth h h clamp the roving, which passes through the hole i and between the jaws, and hold the roving until the drawing-rolls have drawn the fibers down so as to make a double taper—that is, the roving will be so drawn that the smallest point will be equidistant from the jaws and the drawing-rolls. As soon as the fibers are sufficiently drawn the arrangement is such that the then acting point l of cam K has passed the end of lever K', when the ring-lever L is drawn back by the action of spring M upon the cam-lever L, and springs a a then force the jaws F' F' apart again, when the roving is drawn forward until that part of the roving which was held by the jaws has reached the drawing-rolls, when the jaws are closed again and the operation is repeated.

By varying the number of points on cam K the length of taper may be varied.

The drawing-head, as it revolves, twists the thread, which may be wound upon a spool, if preferred, thus making a single-stranded thread.

When the thread is to be made of more than one strand the mechanism is to be duplicated, and so arranged that the different

strands will run to a proper twister, in such a manner that their several large and taper parts will be twisted together, thus making a uniform double-tapered thread from several strands. The thread I prefer to make from flax, but it may be made from any other suitable material. The roving-frame D is revolved in this instance slower than the drawing and twisting frame G', whereby all the twist that was put in the roving when wound upon the spool or bobbin is taken out before the roving passes through the drawing-rolls *c*, the frame of the latter, as well as the roving-frame, turning in an opposite direction from the twist in the roving as it is drawn from the spool.

It will thus be seen that the double-tapered thread, a section of which is shown in Fig. 10 of the drawing, is put in between the drawing-rolls and the winding device, which lays it upon the spool or bobbin after it passes the drawing and twisting rolls *c*.

The speed of the roving-frame D should be such in all cases as to remove all twist from

the roving before it passes the drawing and twisting rolls *c*.

To permit one of the feed-rolls to conform to the inequalities of the material passing between them, its bearings are held in place by springs P P.

Having described my improved machine for making double-taper threads for fastening soles to boots and shoes, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination, with the tubular frame E, of the clamping-jaws F' F', drawing-rolls *c c*, clamping-ring L', and the intermittingly-operating lever L, substantially as and for the purposes set forth.

2. The combination, with lever L, of the cam K, shaft J', gear J, and worm *f*, substantially as and for the purposes set forth.

GEORGE V. SHEFFIELD.

Witnesses:

E. E. MOORE,

J. A. KINSMAN.