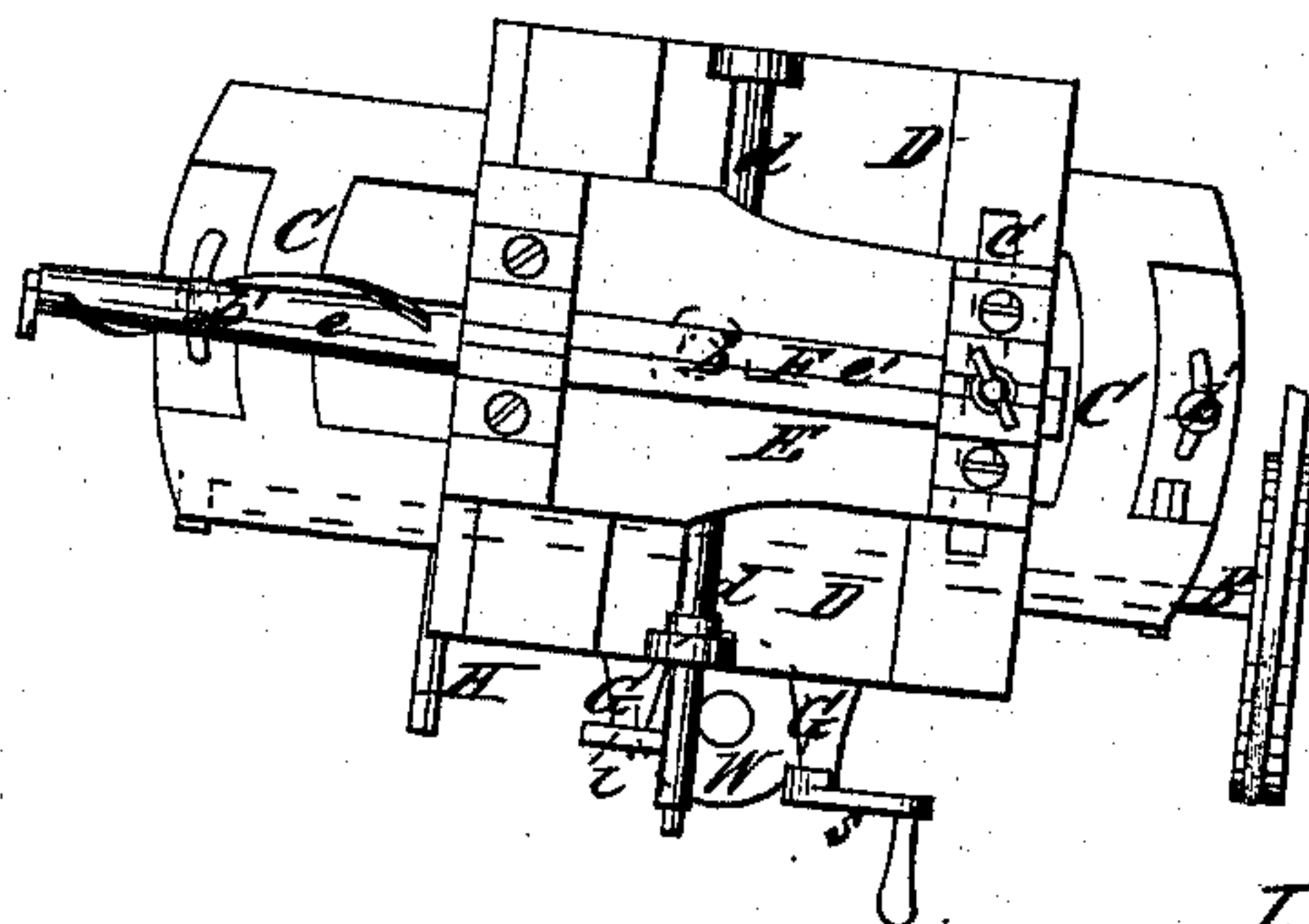
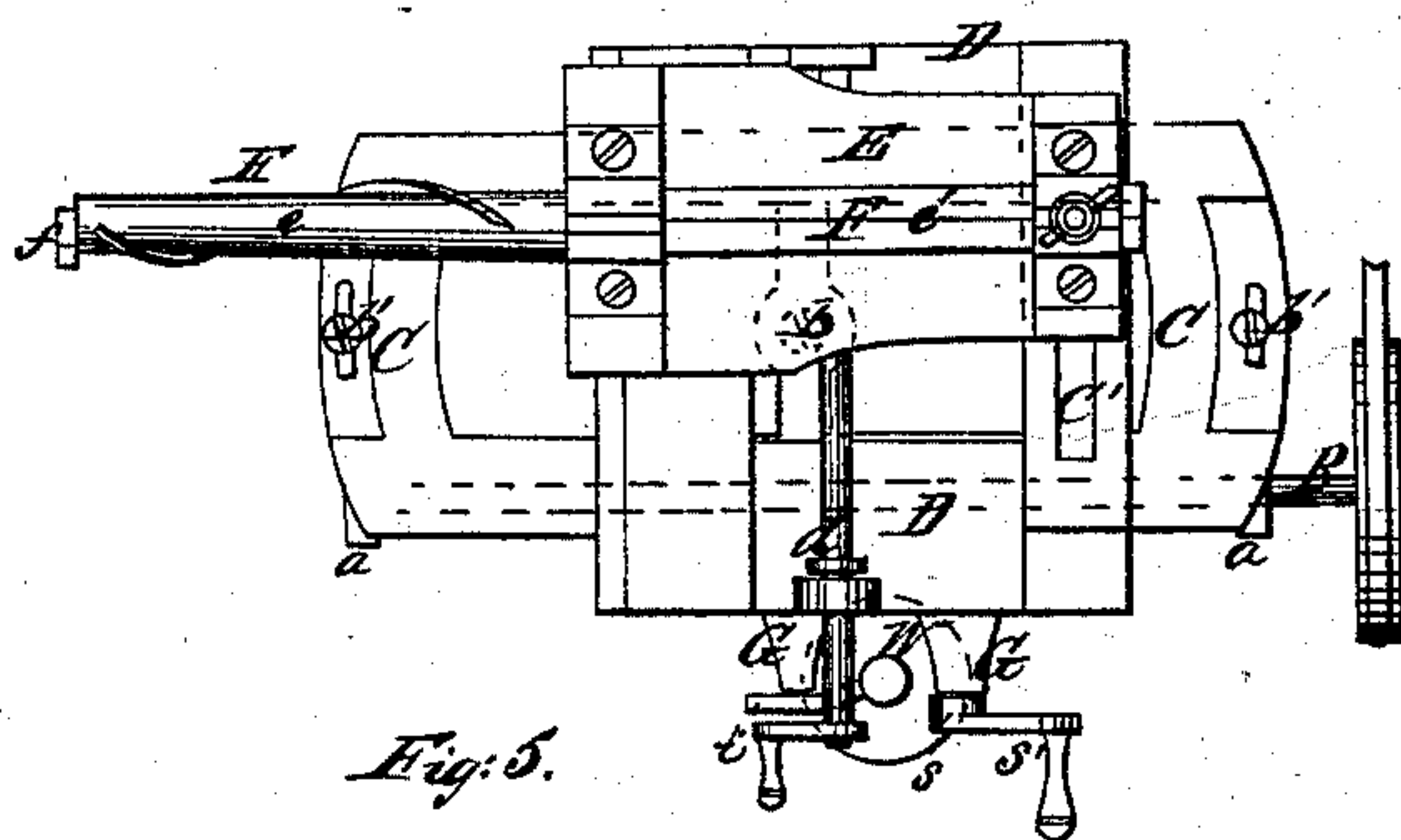
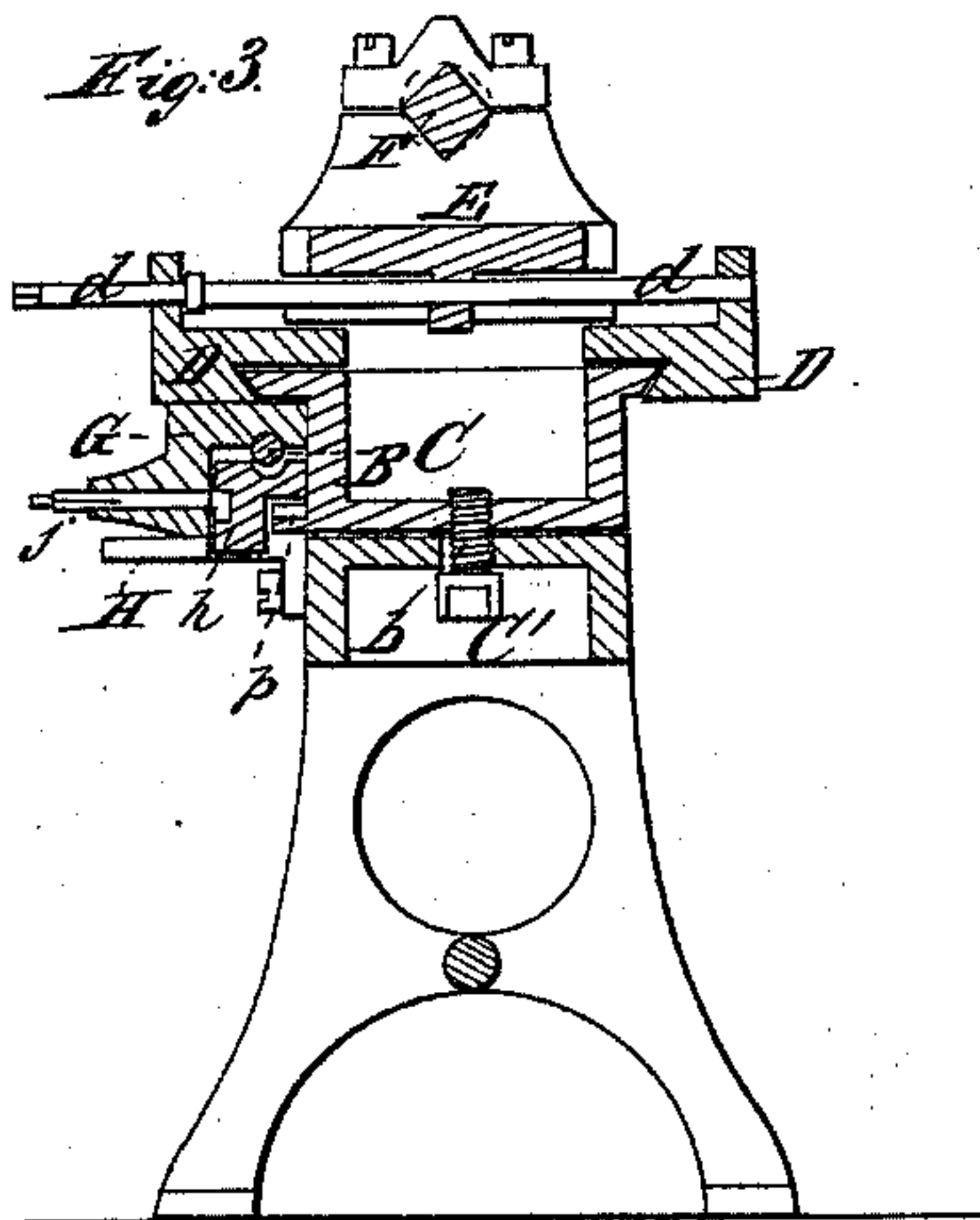
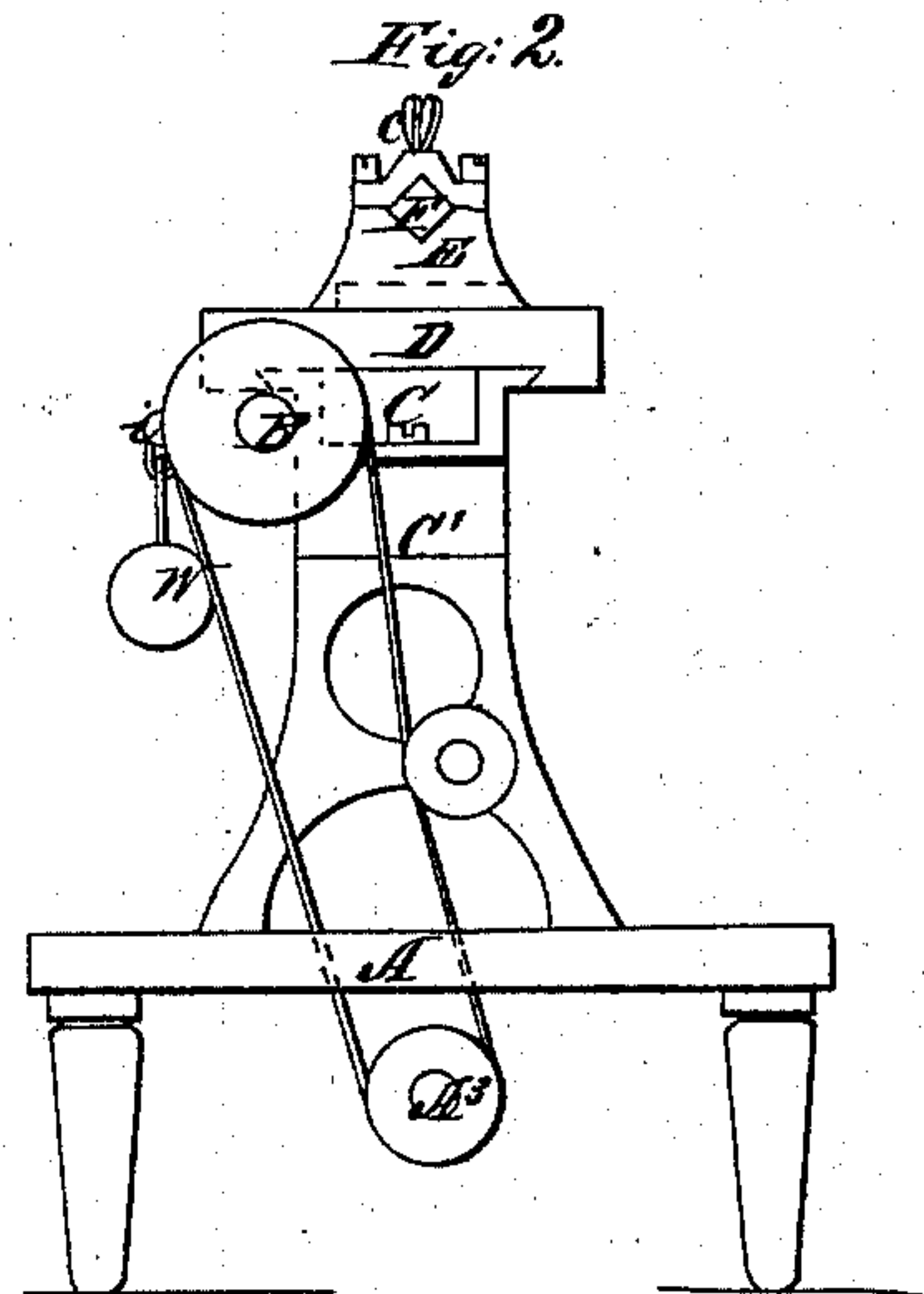
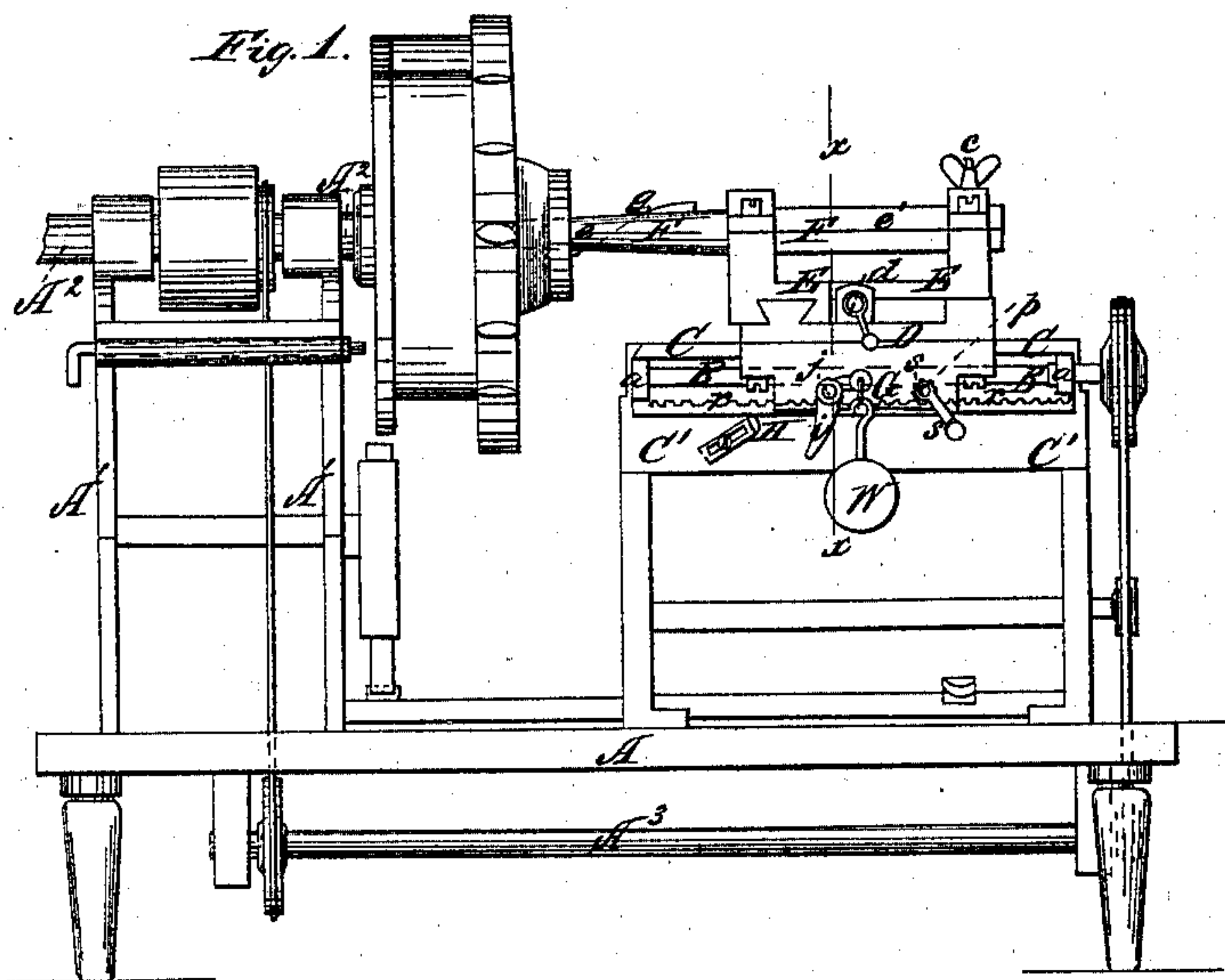


*P. Schuttler,*

*Boring Hubs,*

*No. 47,576,*

*Patented May 2, 1865.*



*Witnesses:*

*R. S. Campbell  
C. Schaefer,*

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# UNITED STATES PATENT OFFICE.

PETER SCHUTTLE, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN MACHINES FOR BORING HUBS.

Specification forming part of Letters Patent No. 47,576, dated May 2, 1865.

*To all whom it may concern:*

Be it known that I, PETER SCHUTTLE, of Chicago, Cook county, State of Illinois, have invented a new and Improved Machine for Boring Hubs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of the front side of my machine. Fig. 2 is an end view of the machine. Fig. 3 is a vertical transverse section through Fig. 1 at the point indicated by red line *xx*. Fig. 4 is a plan view of the tool holding and adjusting devices. Fig. 5 shows these parts in working position.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to that class of hub-boring machinery in which the hub is rotated instead of the boring-tool, the latter being adjusted up to the work as the boring progresses.

It consists in mounting the boring-tool upon a horizontal bed which is susceptible of receiving an oscillating motion about a center, for the purpose of allowing said tool to be adjusted and set at any desired angle with respect to the axis of the hub, as will be hereinafter described.

My invention also consists in combining with such a bed a laterally-adjustable tool-holder and a longitudinally-adjustable carriage, which latter is provided with contrivances for moving it automatically or by hand at the pleasure of the operator, as will be hereinafter described.

My invention also consists in a contrivance for throwing the tool-carriage into and out of gear with a feeding-screw, for the purpose of feeding the tool up to the work with a slow movement, and then returning the tool with a fast movement, as will be hereinafter described.

My invention also consists in an adjustable stop in connection with said contrivance, for automatically throwing the carriage out of gear with the feeding-screw immediately the tool completes its work, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the accompanying drawings, A repre-

sents the bed or floor upon which the improved hub-boring machinery is mounted. A' is the frame upon which the main driving-shaft A<sup>2</sup> has its bearings, to which latter the hubs which are to be bored are clamped in any suitable manner. This driving-shaft A<sup>2</sup> communicates a rotary motion to a horizontal shaft, A<sup>3</sup>, which has its bearings under the bed A, as shown in Fig. 1, and the shaft A<sup>3</sup> transmits a rotary motion to a screw-shaft, B, which has its end bearings in projections *aa* on the front side of a horizontal bed, C. This bed C is supported upon a stationary table, C', and connected to this table by a vertical central pin, *b*, Figs. 3, 4, and 5, which constitutes a pivot-joint for allowing the bed C to be adjusted at any desired angle. This bed C can be fixed rigidly to the table C' by means of the set-screws *b' b'*, which pass through slots at the ends of said bed, as shown in Figs. 4 and 5.

D represents a longitudinally-movable carriage, which is mounted upon the bed C and connected to it by the interlocking beveled flanges, as shown in Figs. 2 and 3. This carriage can be moved from one end of the bed C to the other, as will be hereinafter described.

E represents the tool-rest, carrying the tool F, and *c* is a clamping-screw, which is used for securing the tool-rest rigidly to its carriage, when the boring-tool is properly adjusted. The tool-rest E is connected to the carriage D by means of a dovetail tenon extending transversely across this carriage and fitting into a corresponding groove formed in the tool-rest. The clamping-screw *c* passes up through a slot, *c'*, in the carriage D, and when the nut on the upper end of said screw is loosened the tool-rest can be adjusted laterally by means of the screw-shaft *d*.

The boring-tool consists of a tapering shaft, *e*, formed on the end of a square shank, *e'*, which latter fits into recesses in the pillows of the rest E, as shown in Figs. 2 and 3. A spiral thread or flange is wound around the tapering portion *e* of this tool, for the purpose of carrying off the chips during the operation of the cutter *f*, and thus preventing this cutter from choking up; and a double-beveled edge-cutter, *g*, is secured to the tool, at the proper distance from its end, for the purpose of forming a recess in the end of the hub to receive the annular flange on the skein.



G' represents a bearing-block, which is secured to the bottom surface of the front overhanging edge of carriage D, as shown in Figs. 1 and 3. A portion of this block G projects over the screw-shaft B, but should not come in contact with said shaft. A block, *h*, having a half female screw-thread cut in a groove formed in its upper surface, is fitted to work up and down beneath the screw shaft B, and in a recess formed in the bearing-block G. This half-nut *h* is moved up or down by means of a toe-lever, *i*, which is secured on the outer end of a short shaft, *j*, having a small eccentric on its inner end adapted to work in a recess which is formed in the half-nut, as shown in Fig. 3. A weight, *w*, is suspended from one end of the lever *i*, for the purpose of pressing the half-nut *h* upward and in contact with the screw-shaft B. By pressing on the toe of lever *i*, and thus raising the weight *w*, the half-nut *h* will drop down sufficiently far to release itself from the screw-shaft B, thus throwing the carriage D out of gear with said shaft.

H represents a stop-arm, which is secured, by means of a set-screw passing through a slot, to the front side of the table C', as shown in Fig. 1. This stop-arm is adjustable, and it is set in such position at the commencement of the operation of boring that it will tilt the lever *i* and throw the carriage D out of gear with the screw-shaft B at the proper time to stop the advancing movement of the tool. The toe of lever *i* is slightly curved, so that it may be moved so far back as to throw the short arm of this lever forward of the center thereof, and thus hold the weight *w* in an elevated position during the return movement of the carriage. The carriage D is moved backward by means of a pinion, *p*, engaging with the teeth of a rack, *r*, as shown in Fig. 1. The pinion *p* is keyed on one end of a short shaft, *s*, which projects through the bearing-block G and receives a crank, *s'*, on its outer end, and the rack *r* extends along the front side of the table C', beneath the feed-shaft B.

The operation of my machine is as follows: A hub which it is desired to bore is secured to the arbor or driving shaft A<sup>2</sup> in any suitable manner and properly centered—*i. e.*, the center of the hub should be coincident with that of the shaft to which it is secured. The bed C is properly adjusted to give the desired taper to the hole through the hub, and the

tool set by means of the screw-shaft *d* in a proper position to commence work. The length of the hub being known, the stop-arm H is adjusted and set in such a position that it will trip the lever *i* and disengage the half-nut *h* from the screw-shaft B at the moment the cutter on the end of the tool completes its work—*i. e.*, passes through the hub. When the carriage D has advanced as far as desired, the operator moves this carriage back again very rapidly by means of the rack and pinion, as above described. The rack and pinion are always in gear, but the half-nut *h* is not unless it is pressed up against the screw-shaft B by the lever *i* and weight *w* acting upon the short axle *j*.

If desirable, a friction-brake may be applied to the hub-holder for retarding or stopping its motion at pleasure. Such a brake I have represented in Fig. 1.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The employment, in combination with a machine designed for boring taper eyes or holes in hubs, of a horizontal pivoted bed, C, or its equivalent, substantially in the manner and for the purpose described.

2. The employment, in combination with a machine designed for boring taper holes or eyes in hubs, of a laterally-adjustable carriage, E, and a longitudinally-movable carriage, D, and a pivoted bed, C, all constructed, applied, and operating substantially as and for the purpose set forth.

3. The employment of a rack and pinion, *r* *p*, in combination with a feeding-screw, B, and contrivances for throwing this screw into and out of gear with the carriage D, substantially as described.

4. The vertically-sliding half-nut *h*, toe-lever *i*, weight *w*, shaft *j*, and feeding-screw B, in combination with the tool-carriage of a hub-boring machine, substantially as described.

5. In combination with the lever *i* and half-nut *h*, the adjustable stop H, substantially as described.

6. The boring-tool F, constructed with a cutter, *f*, spiral flange, and a shoulder-cutter, *g*, substantially as described.

PETER SCHUTTLER.

Witnesses:

F. W. MATTERN,  
C. C. HUBBARD.