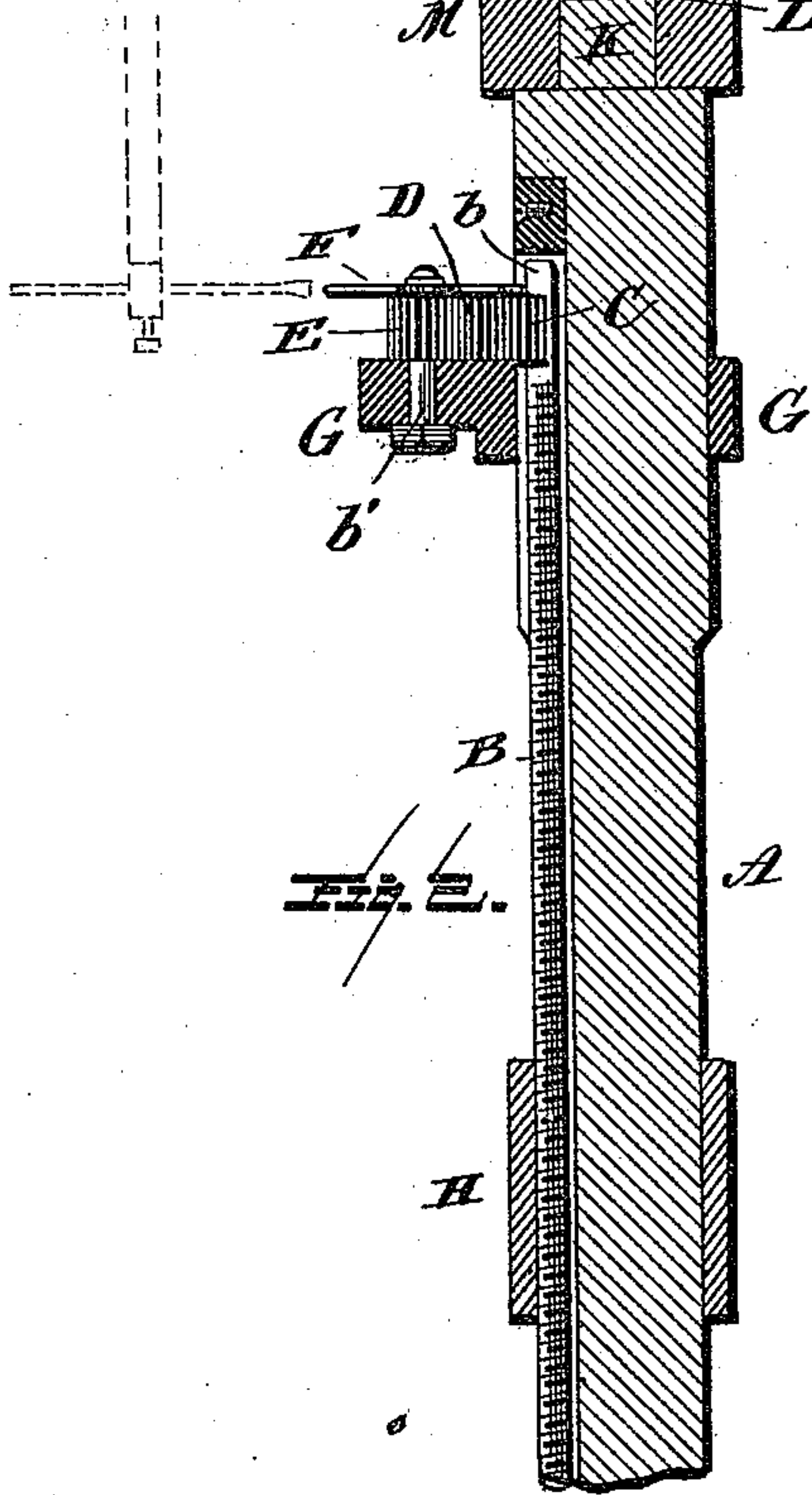
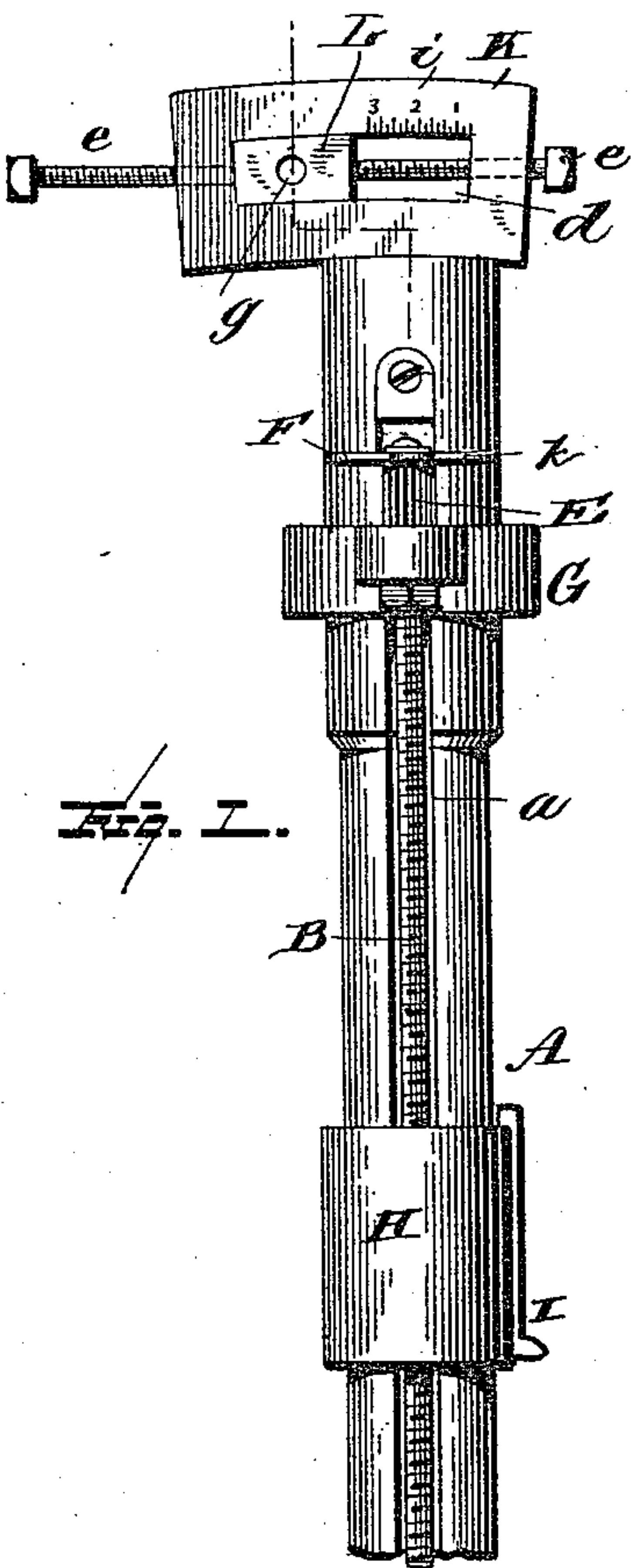
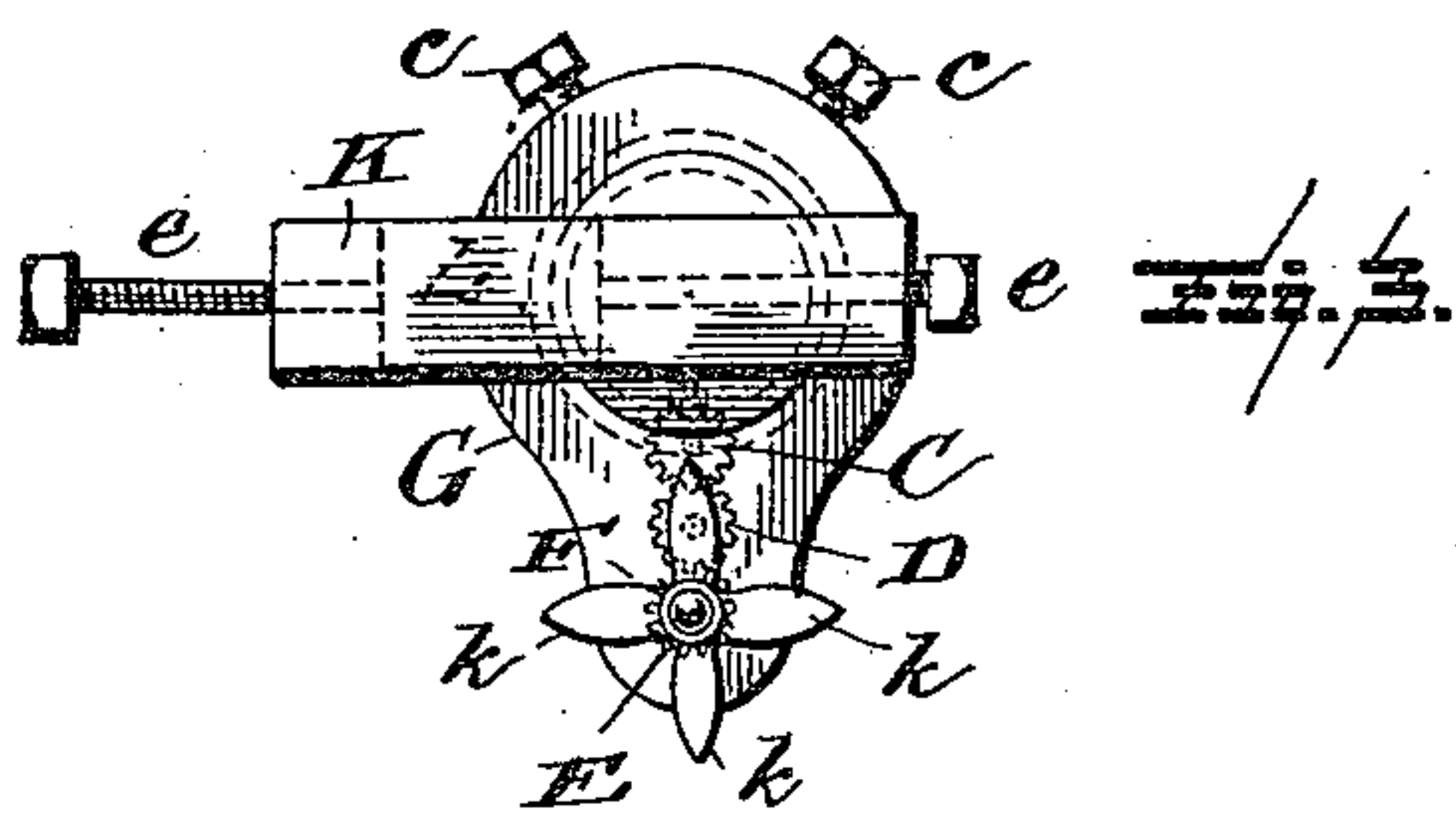


(No Model.)

A. TATEM.
METAL BORING MACHINE.

No. 441,204.

Patented Nov. 25, 1890.



Witnesses
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per
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UNITED STATES PATENT OFFICE.

AVA TATEM, OF NORFOLK, VIRGINIA.

METAL-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,204, dated November 25, 1890.

Application filed September 10, 1890. Serial No. 364,539. (No model.)

To all whom it may concern:

Be it known that I, AVA TATEM, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have
5 invented certain new and useful Improvements in Metal-Boring Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings,
10 making a part of this specification, and to the letters of reference marked thereon.

Figure 1 of the drawings represents an elevation of my invention; Fig. 2, a similar view, partly in section; Fig. 3, an end view thereof.

15 The present invention has relation to that class of metal-boring machines adapted for heavy work, such as large pulleys, propeller-wheels, and other parts of heavy machinery; and the object thereof is to improve this class
20 of boring-machines in the several details of construction, whereby it will more effectually and perfectly do its work, the cutter being automatic in its feeding action, and provision being made for a nicety of adjustment
25 of the boring-shaft from a perpendicular to the required angle necessary to give the desired taper to the hole to be bored. These several objects I attain by the construction substantially as shown in the drawings, and
30 hereinafter described and claimed.

In the accompanying drawings, A represents a boring-shaft of any preferred diameter and length, and has a longitudinal groove
35 *a* to receive the screw-rod B, which feeds the cutter downward at every quarter-revolution of the shaft, as will be hereinafter described. This screw-rod B has its end *b* made flat or of such shape as to engage with the pinion C,
40 which pinion engages with the teeth on a pinion D, which in turn engages a pinion E. This last-mentioned pinion, carrying a trip-wheel F, is mounted on a shaft *b'*, which extends through a bracket G, rigidly connected to the shaft by set-screw *c* or by any other
45 preferred and well-known means, so that when the shaft A turns the bracket will be carried around with it. These pinions, which are arranged with relation to each other as shown in Fig. 3, may be connected to the
50 bracket in any manner found best adapted to the purpose, and any changes as would come within ordinary mechanical skill in the

construction of the boring-machine I reserve the right to make without departing from the principle of my invention. A sleeve H encircles the shaft A, and the screw-rod B passes
55 down through a screw-threaded hole in the sleeve, the screw-threads thereof engaging with the threads of the rod, so that when the rod is turned the sleeve will be fed downward
60 on the shaft, said sleeve carrying the cutter I. The upper end of the shaft A is provided with a head K, having therein a rectangular slot *d*, in which is located a sliding block L, the adjustment of this block being regulated
65 by the adjusting-screws *e*, which pass through screw-holes in the ends of the head K, and the ends of the screws abut against the ends of the block.

To the head K is connected a suitable
70 clutch M by means of a bolt *f*, which passes through the clutch and through a hole *g* in the block L, and this clutch in turn is connected to the shaft N of a drill-press or other machine or mechanism that will impart a rotary
75 motion to the boring-shaft A. In the present instance I have shown the clutch as being connected to the shaft N by means of a wedge or key *h*; but it is evident that any well-known means may be employed and any
80 suitable form and construction of clutch may be substituted for that shown, so long as it will admit of the proper adjustment of the shaft A by means of the adjusting-screws *e* and block *g*.
85

As will be noticed, the head K is provided with a scale, as shown at *i*, to enable the block L to be adjusted to a fraction of an inch, according to the size and taper of the hold
90 desired, this being done by moving the block away from the center of axis of the shaft (through the medium of the screws *e*) to one side, so that the axis of the shaft A will be on a different vertical plane with the shaft N. This adjustment of the shaft A will cause the
95 same to describe a circle in its rotary movement that will be greater than the diameter of the shaft itself, the circle being greater at the upper end of the shaft than at the lower end, and a very slight adjustment of the shaft A
100 with relation to the axis of the shaft N will produce a very marked increase in the circle described by the cutter I when the shaft is rotated. By this adjustment the diameter of

the hole to be bored and also the taper thereof may be regulated and controlled at pleasure, and with the means herein described a very nice and perfect adjustment can be attained with little or no trouble to the attendant.

The means employed for imparting to the cutter an automatic feed is both simple and effective and most reliable in its action.

In order to operate the trip-wheel or device F, a rod is necessary, which I have shown in dotted lines, Fig. 2. This rod is connected to any stationary object—such as the frame of the drill-press—used to impart motion to the boring-shaft, and extends down on the same vertical line with the fingers of the trip-wheel or device F. Now, as the shaft A revolves the fingers as they come in contact with the hanger-rod will cause the trip device to turn, and with it the pinion E, which pinion, gearing with the intermediate pinion D, will impart motion thereto, and in turn motion will be imparted to the pinion C. This last-mentioned pinion engaging with the upper end of the screw-shaft B will cause the shaft to turn upon its axis and feed the sleeve H downward at each quarter-revolution of the shaft A or as each finger of the trip device comes in contact with the hanger-rod the feeding, as above described, continuing during the entire process of boring.

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

1. In a metal-boring machine, the combination, with the boring-shaft and a clutch device for attachment to a driving shaft or spindle, of an intermediate mechanism for changing the axis of the boring-shaft with relation

to that of the driving shaft or spindle, substantially as and for the purpose set forth.

2. In a metal-boring machine, the combination, with the boring-shaft and a clutch device for attachment to a driving shaft or spindle, of an adjusting mechanism between the boring-shaft and clutch device consisting of a sliding block, to which the clutch device is attached, and adjusting-screws for changing the position of said block, substantially as and for the purpose specified.

3. In a metal-boring machine, the combination, with a clutch device and boring-shaft, of a slotted head thereto, a block adjustable within the slot, and adjusting-screws for adjusting and holding the block in its adjusted position, substantially as and for the purpose described.

4. In a metal-boring machine, the combination of the boring-shaft, a feed screw-rod, a sleeve carrying the cutter and engaging therewith, and a trip device for rotating the screw-rod, substantially as and for the purpose set forth.

5. In a metal-boring machine, a boring-shaft and a sleeve carrying the cutter and encircling said shaft, of a feed screw-rod engaging the sleeve, and a trip device consisting of a wheel with fingers, and a set of pinions engaging with the screw-rod and operating substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

AVA TATEM.

Witnesses:

ALFONSO MERCER,
F. E. NOTTINGHAM.