

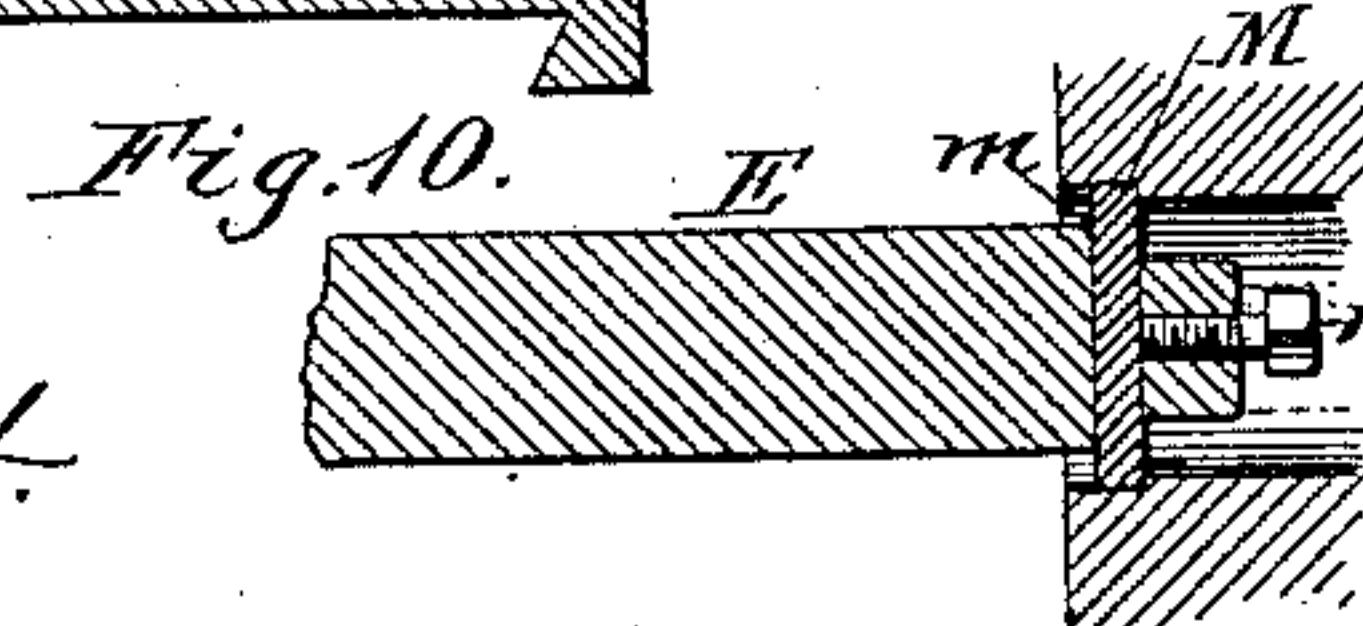
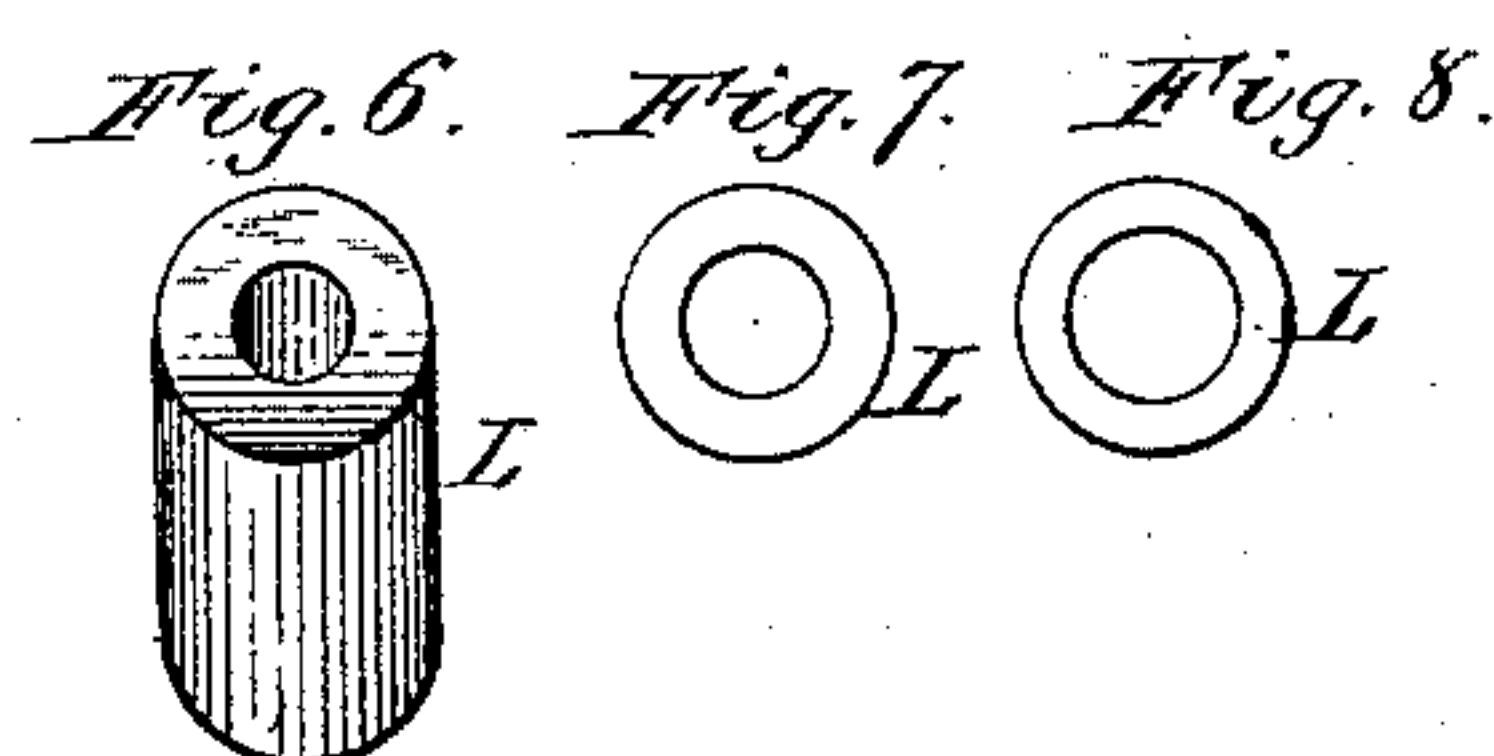
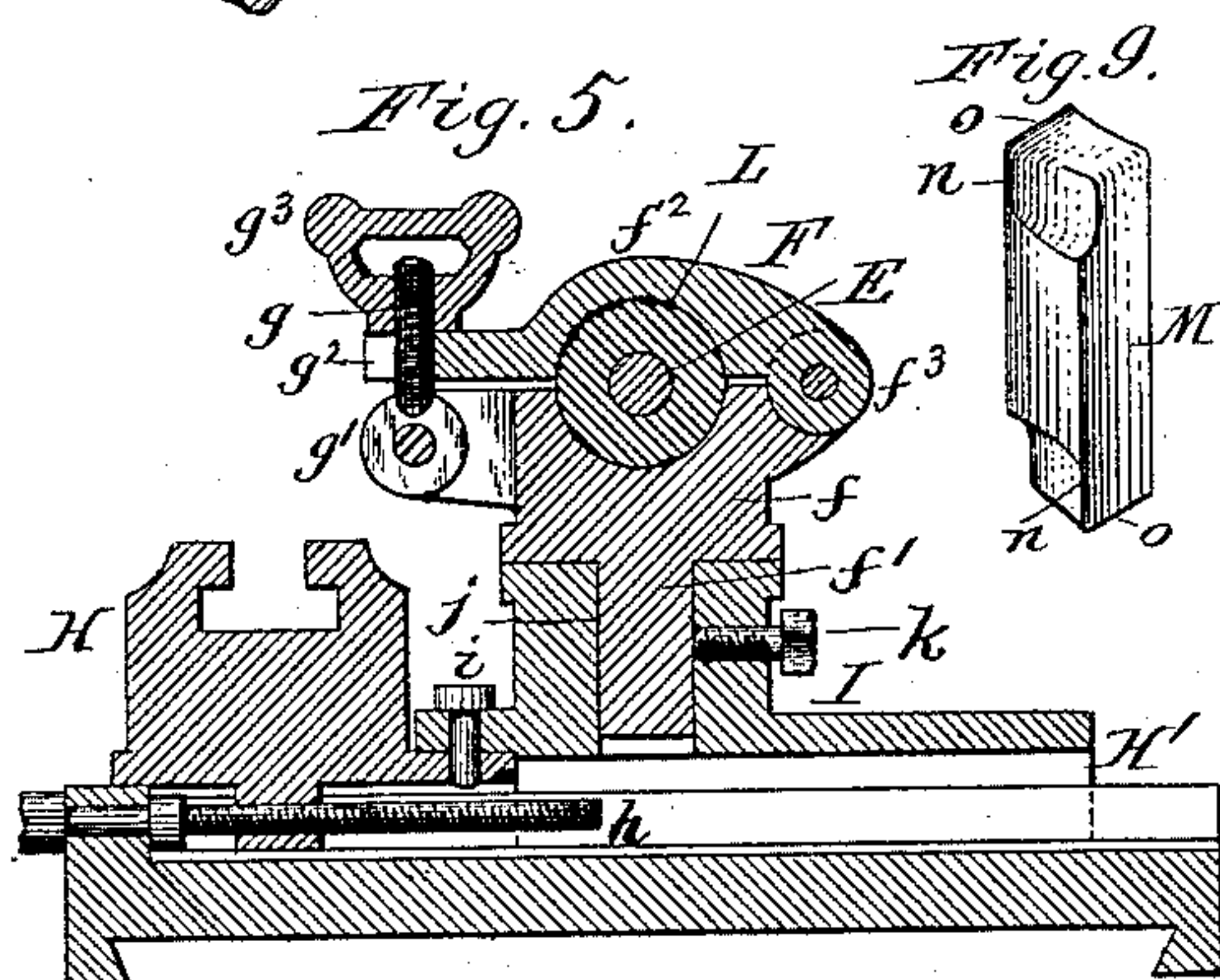
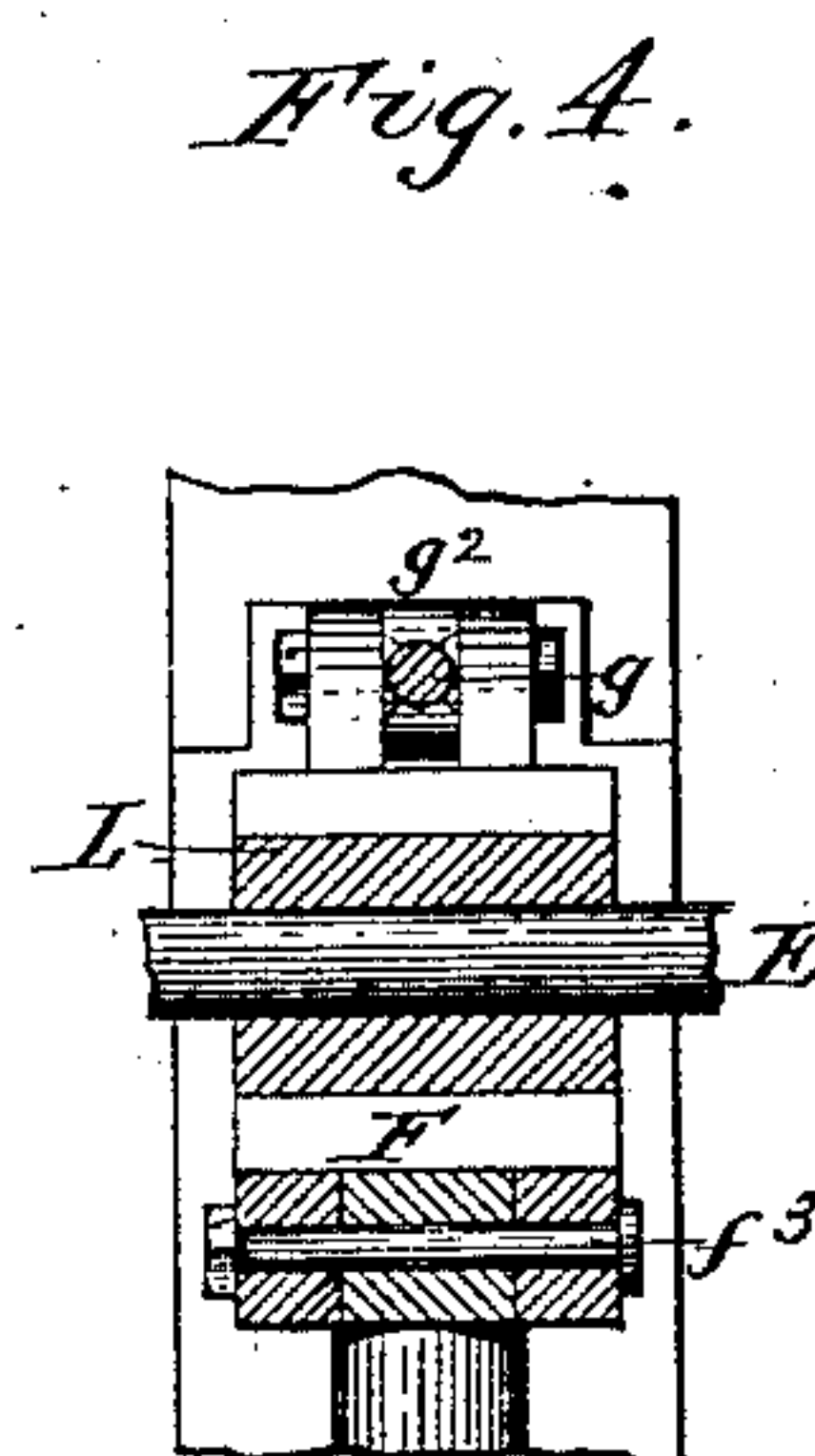
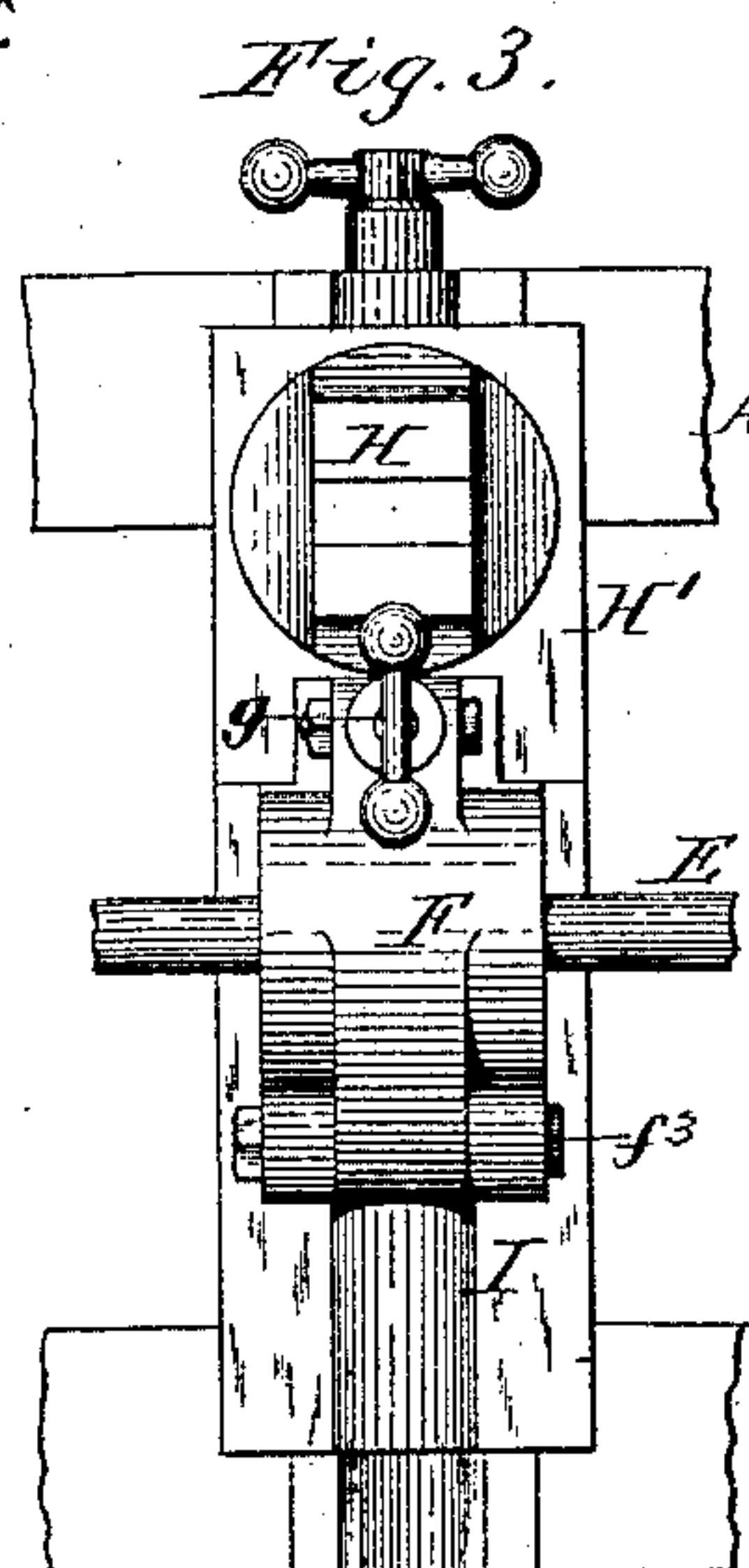
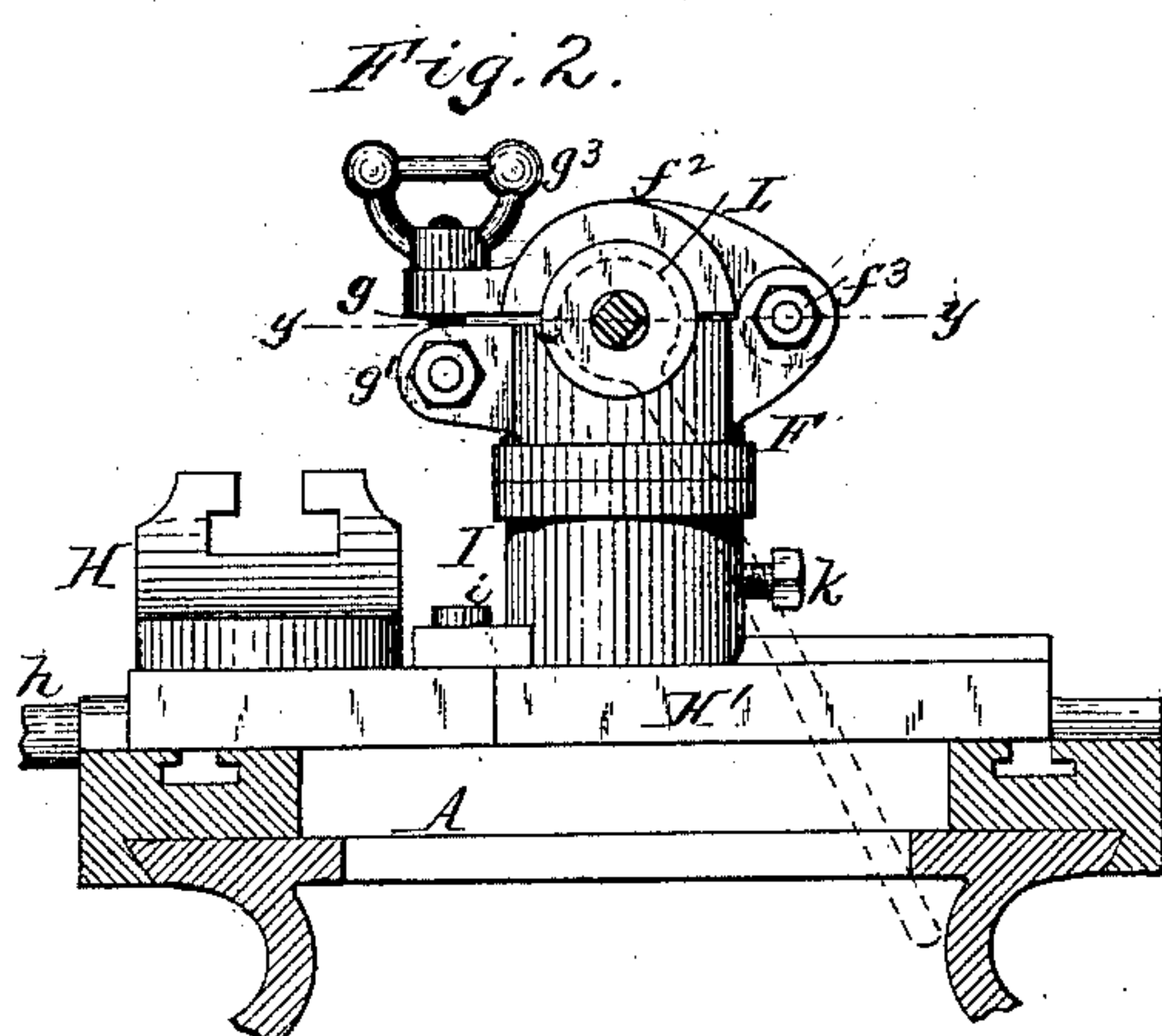
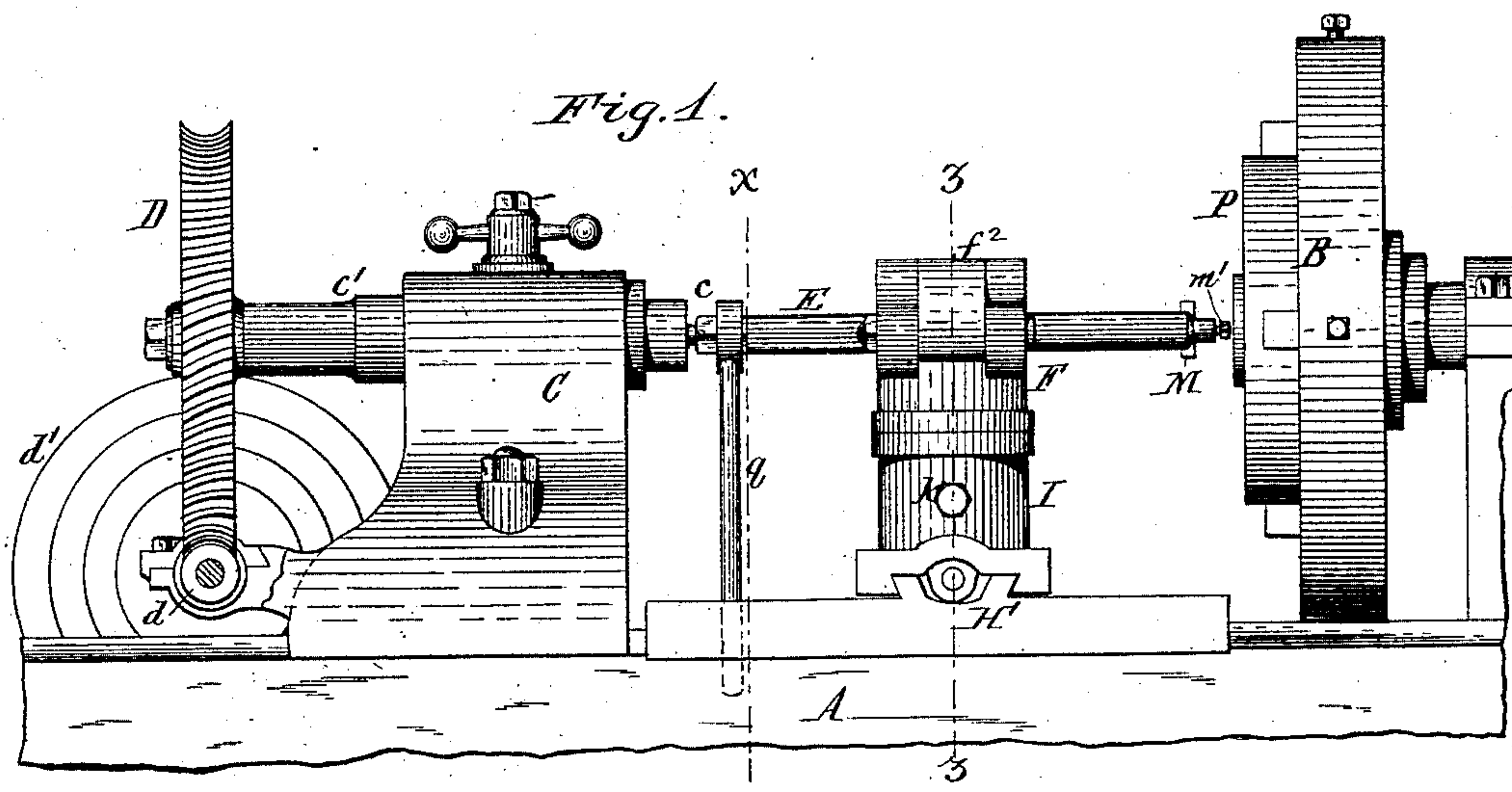
(No Model.)

2 Sheets—Sheet 1.

H. B. STEVENS.
BORING LATHE.

No. 327,343.

Patented Sept. 29, 1885.



Witnesses:

Chas. J. Buchheit.
Thos. L. Poppo

H. B. Stevens Inventor.

By Wilhelm H. Bonner.

Attorneys.

(No Model.)

2 Sheets—Sheet 2.

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BORING LATHE.

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Fig. 11.

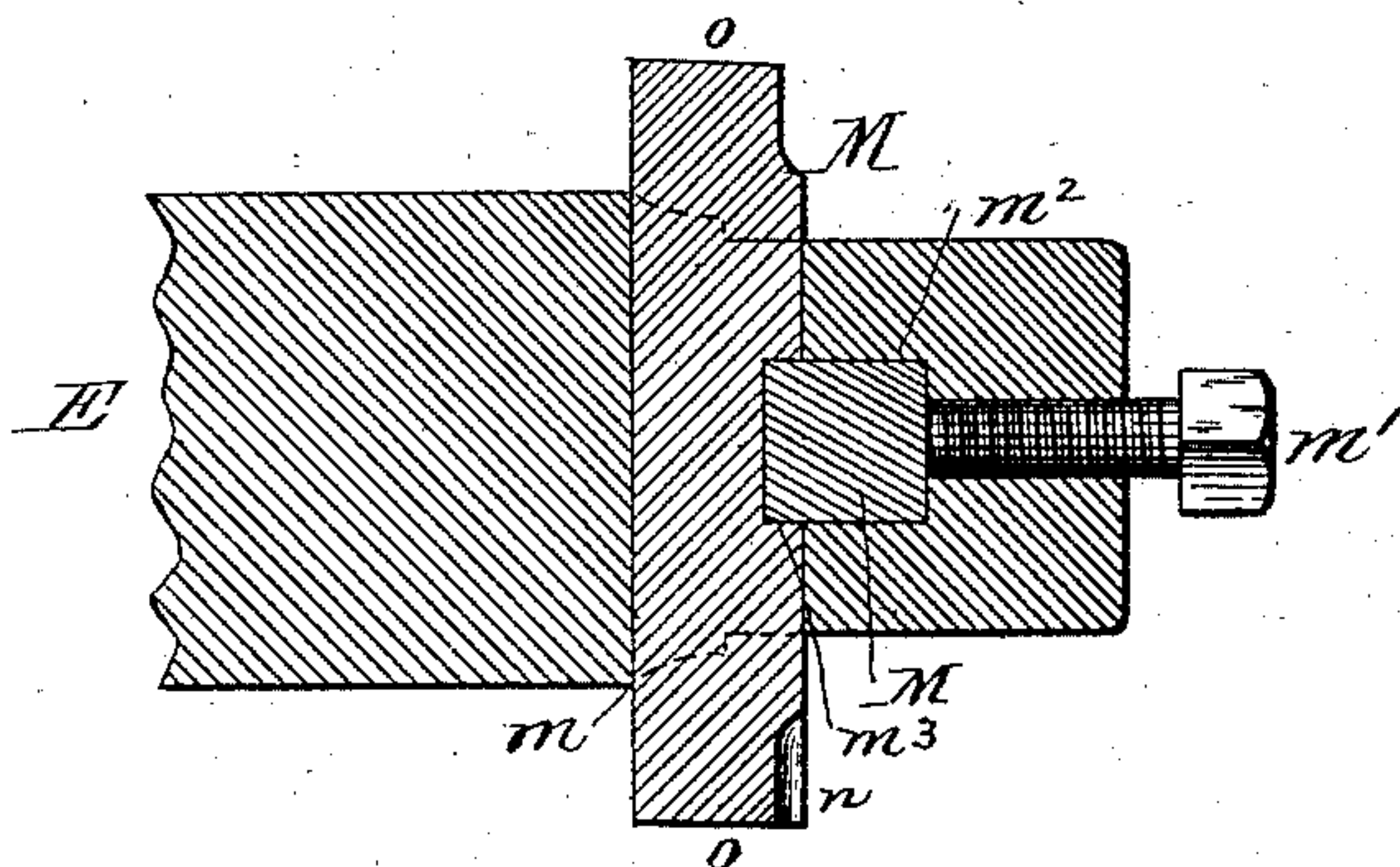
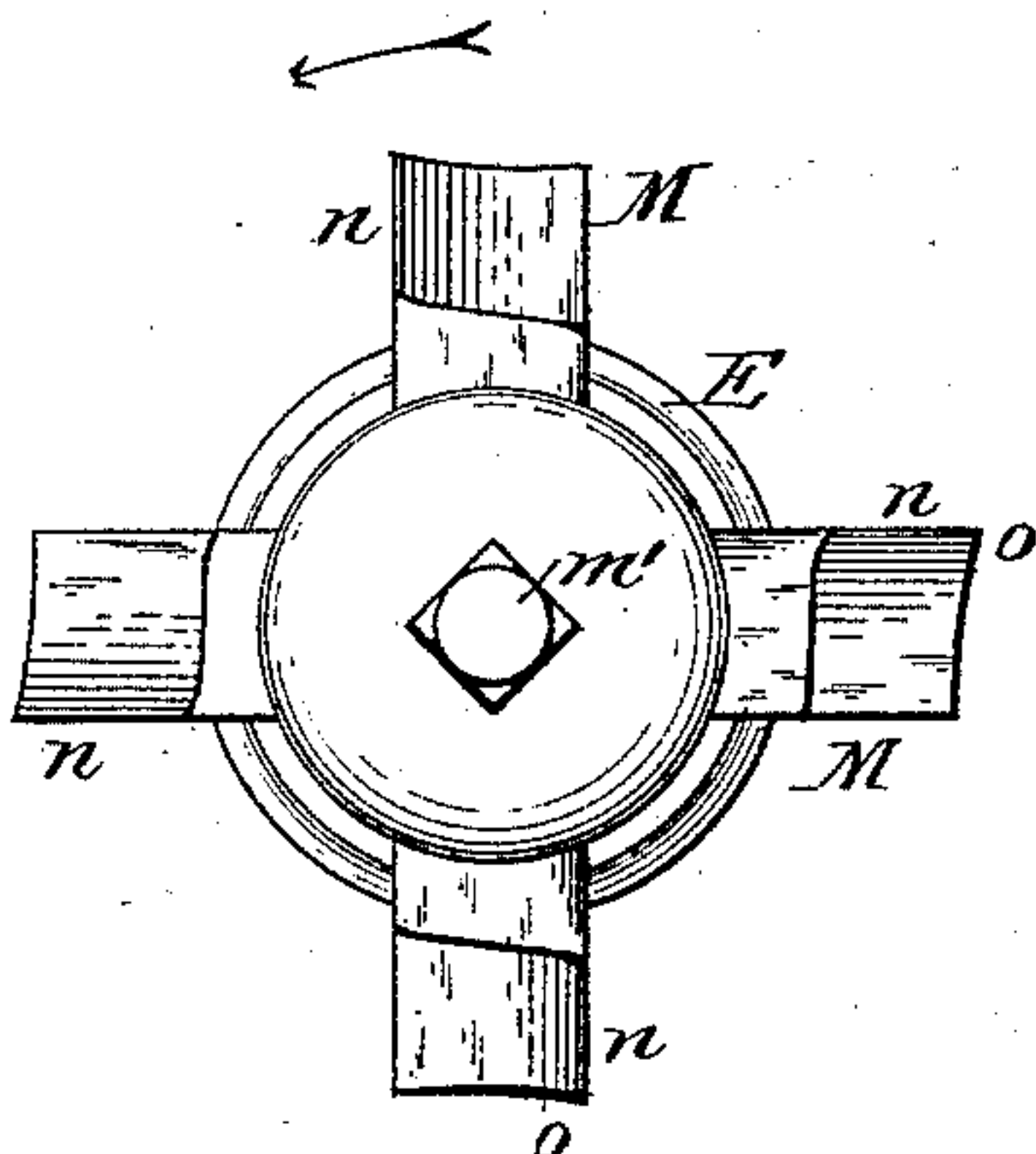


Fig. 12.



Chas. J. Buchheit.
Thos. L. Popp. } Witnesses:

H. B. Stevens Inventor.
By Wilhelm H. Bonner.
Attorneys

UNITED STATES PATENT OFFICE.

HENRY B. STEVENS, OF BUFFALO, NEW YORK, ASSIGNOR TO GEORGE L. SQUIER, OF SAME PLACE.

BORING-LATHE.

SPECIFICATION forming part of Letters Patent No. 327,343, dated September 29, 1885.

Application filed April 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. STEVENS, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Lathes, of which the following is a specification.

This invention has for its object to adapt an ordinary lathe by a simple attachment to the operation of boring the hubs of wheels, pulleys, and to similar work, and to perform such work at a single operation. Heretofore the hubs of pulleys, &c., have been first reamed out and then turned out by a succession of cuts until an opening of the required diameter was produced. This operation is very laborious and consumes a great deal of time. My invention is designed to simplify this operation; and it consists in the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of the upper portion of a lathe provided with my improvements. Fig. 2 is a cross-section in line *x x*, Fig. 1. Fig. 3 is a top plan view of the rest of the boring-rod. Fig. 4 is a horizontal section in line *y y*, Fig. 2. Fig. 5 is a cross-section in line *z z*, Fig. 1. Fig. 6 is a perspective view, and Figs. 7 and 8 are end views of the removable sleeves which are applied to the boring-rod. Fig. 9 is a perspective view of the boring-tool. Fig. 10 is a sectional elevation of the end of the boring-rod in a piece of work on an enlarged scale. Fig. 11 is a longitudinal section of the boring-rod, showing two of my improved boring-tools secured to the same. Fig. 12 is an end elevation thereof.

Like letters of reference refer to like parts in the several figures.

A represents the bed or frame of a lathe; B, the face-plate; C, the head-stock, provided with a mandrel, *c*, which is moved lengthwise in the head-stock by a screw-sleeve, *c'*. All of these parts are of ordinary construction. The mandrel *c* may be moved by a hand-wheel secured to the screw-sleeve *c'* in an ordinary manner; but I prefer to operate it by a worm-gear, D, and worm-pinion *d*, which latter is set in motion from a suitable moving

part of the lathe, so that the feed of the mandrel bears a certain relation to the rotation of the face-plate. The feed can be changed by means of a cone-pulley, *d'*.

E represents the boring-rod, which is arranged axially in the lathe and bears with its rear end against the mandrel *c*.

F represents the rest in which the boring-rod E is guided and supported, and which is arranged between the mandrel and the face-plate. The rest F consists of a lower jaw, *f*, provided with a downwardly-projecting pivot, *f'*, and an upper jaw or cap, *f''*, which is hinged to the lower jaw at *f'''*.

g represents a clamping-screw which is pivoted to the lower jaw, *f*, at *g'*, and extends upwardly through a notch, *g''*, in the end of the hinged cap *f''*, and is provided above the latter with a thumb-nut, *g'''*. Upon releasing the latter the screw *g* can be turned on its pivot *g'*, whereby the nut *g'''* is swung away from the jaw *f''*, leaving the latter free to be turned on its hinge and permitting the boring-rod to be lifted out of the rest.

H represents the ordinary holder of the lathe, made transversely adjustable on the sliding carriage H' by a screw, *h*.

I represents an auxiliary holder, attached to the holder H by a screw-bolt, *i*, so as to be adjusted with the holder H and by the adjusting device with which the latter is provided. The holder I is provided with a socket, *j*, in which the pivot *f'* of the rest F is seated, so that the latter can be turned on the pivot in order to adjust the rest to the boring-rod. The rest is secured in position when adjusted by a set-screw, *k*.

L represents a removable sleeve, having its outer surface turned to fit snugly in the cylindrical socket formed in the rest F, and provided with a bore in which the boring-rod E fits snugly. In order to enable the rest F to hold boring-rods of different diameters, a number of sleeves, L, are provided, all having the same outside diameter, and provided with bores of different diameters to receive boring-rods of different sizes, as represented in Figs. 6, 7, and 8.

M represents the boring tool or cutter, formed of a flat piece of steel and seated in an open-

ing or mortise, *m*, formed in the boring-rod E near the end thereof. The cutter M is secured in place by a set-screw, *m'*.

n n represent the front cutting-edges of the cutter M, designed to cut into the hub of the wheel or pulley, and *o o* are the longitudinal cutting-edges, designed to turn out and finish the bore. The cutting-edges *o o* are arranged diametrically opposite each other, and join at their front ends the outer ends of the cutting-edges *n*, as clearly represented in Fig. 9, the cutting-edges *n* and *o* on each side of the cutter M standing at right angles to each other, or nearly so.

If desired, two tools M may be arranged, one behind the other, in the boring-rod. In this case the boring-rod is provided with two mortises, *m m'*, arranged at right angles to each other, and one of the tools is preferably recessed, as shown at *m'*, to straddle the other tool, thereby effecting a close and secure connection of the two tools. When the work is very gritty, the first tool is liable to rapid wear, and in this case the second tool finishes the cut and completes the bore to the desired diameter. The number of tools employed may be further increased as the nature of the work may require.

P represents a pulley, wheel, or other piece of work secured to the face-plate B.

The boring-rod E, provided with the cutter M and sleeve L, is placed in the rest F, and the latter adjusted so that the boring-rod stands axially in the lathe. The rest F is arranged as closely to the face-plate as possible, in order to support the boring-rod near the point at which the work is done. In Fig. 1 the rest F is represented away from the cutter and the latter removed from the work, in order to better illustrate these parts. Upon starting the lathe the boring-rod is fed toward the work by the mandrel *c*, and the cutter M enters the work and bores a hole of the desired diameter at a single operation, the front cutting-edges, *n*, cutting into the metal and the longitudinal cutting-edges *o* finishing the inner surface of the bore.

When the ordinary tool-holder H is provided with a cylindrical socket, the pivot *f'* of the

rest F can be seated directly in the tool-holder H, and the auxiliary holder I is omitted.

The boring-rod E is prevented from turning by a wrench or arm, *q*, which is provided with a square socket and applied to the square rear end of the boring-rod, so to bear against the bed of the lathe.

I claim as my invention—

1. In a lathe, the combination, with a face-plate, B, and a head-stock, C, having a longitudinally-moving mandrel, *c*, of a boring-rod, E, supported at one end on the mandrel *c*, and provided near its opposite and free end with a boring-tool, M, and a lathe-rest, F, in which the boring-rod is supported and guided while boring as it is moved lengthwise in the rest toward the face-plate by the movement of the mandrel, substantially as set forth.

2. The combination, with the face-plate B and a head-stock, C, having a longitudinally-moving mandrel, *c*, of a boring-rod, E, supported at one end on the mandrel *c*, and provided near its opposite and free end with a boring-tool, M, and a lathe-rest, F, in which the boring-rod is guided in its longitudinal movements, and which is provided with a hinged cap, *f'*, and clamp *g*, substantially as set forth.

3. In a lathe, the combination, with the adjustable tool-holder, H, of the auxiliary tool-holder I, secured thereto and provided with a socket, *j*, and a rest, F, having a pivot, *f'*, seated in the socket *j*, substantially as set forth.

4. The combination, with the face-plate B and a head-stock, C, having a longitudinally-moving mandrel, *c*, of a boring-rod, E, supported at one end on the mandrel *c* and provided near its opposite and free end with a boring-tool, M, a lathe-rest, F, in which the rod E is guided in its longitudinal movements, and gear-wheels D *d*, whereby the mandrel *c* is moved longitudinally, substantially as set forth.

Witness my hand this 22d day of March, 1884.

H. B. STEVENS.

Witnesses:

JNO. J. BONNER,
CARL F. GEYER.