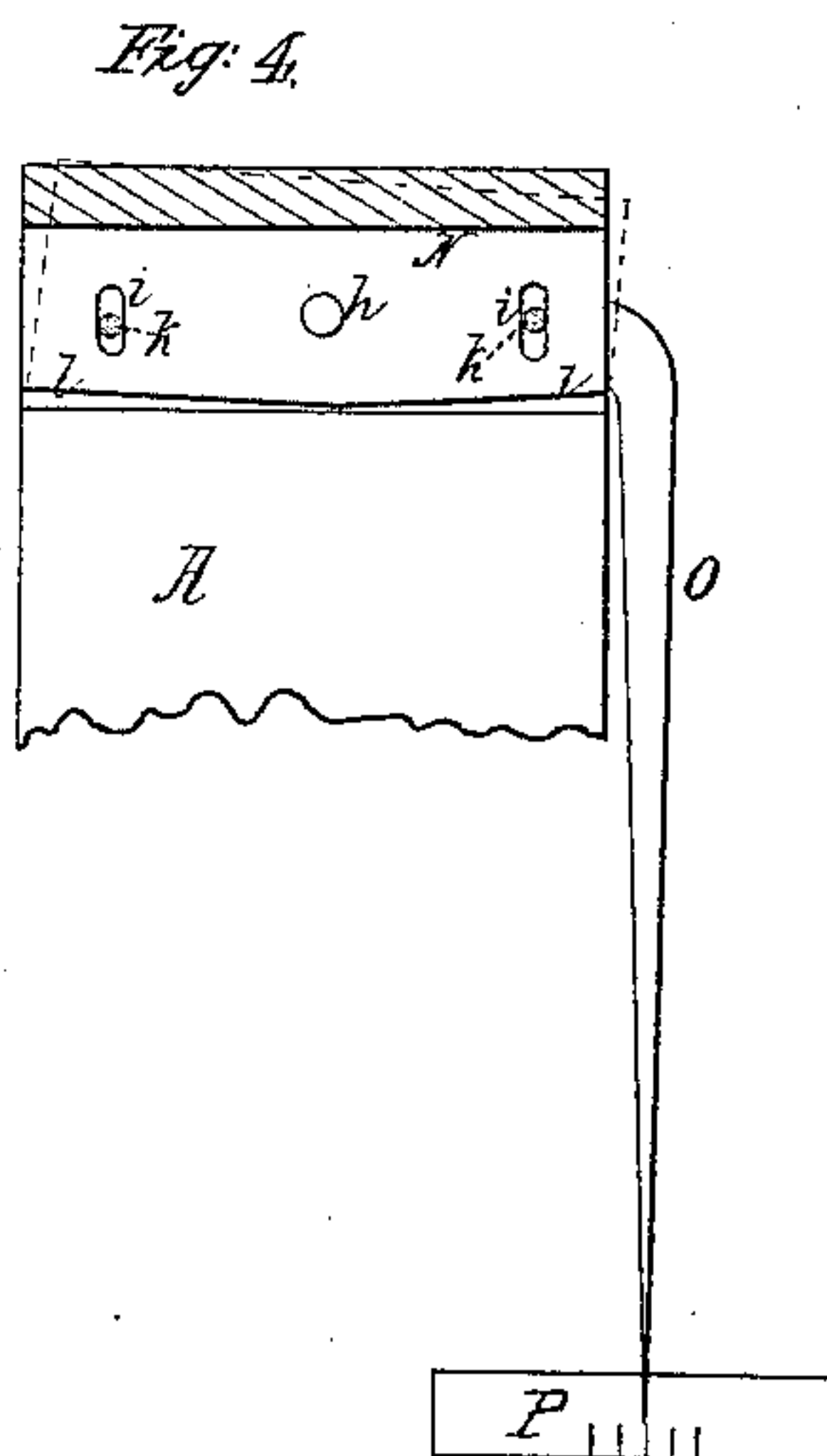
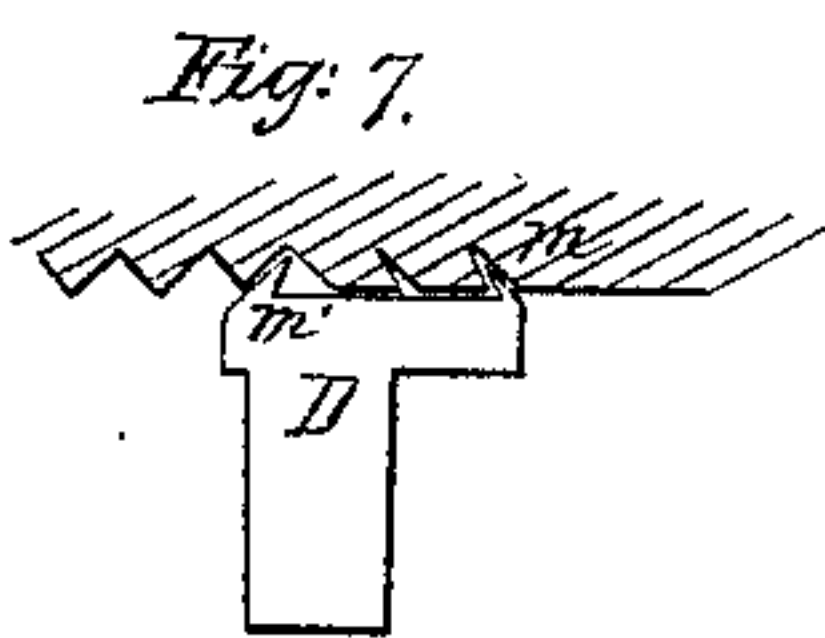
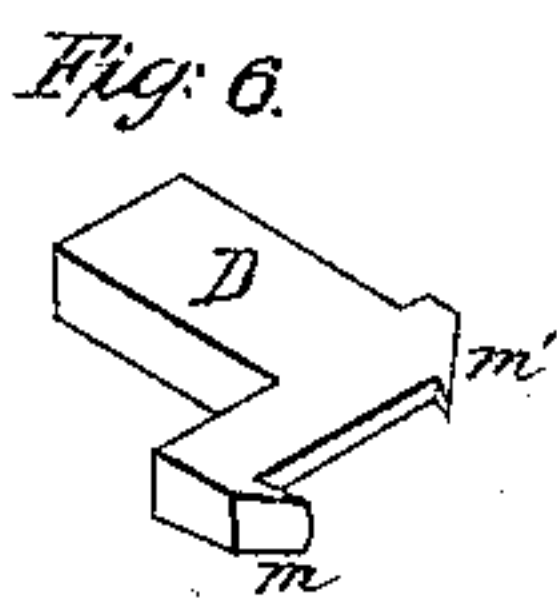
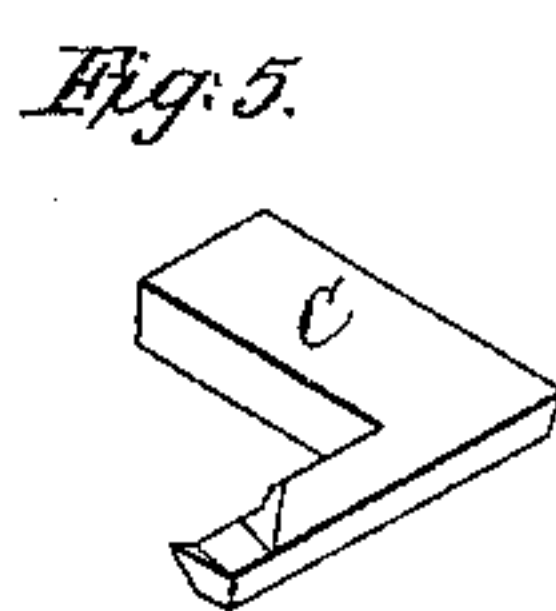
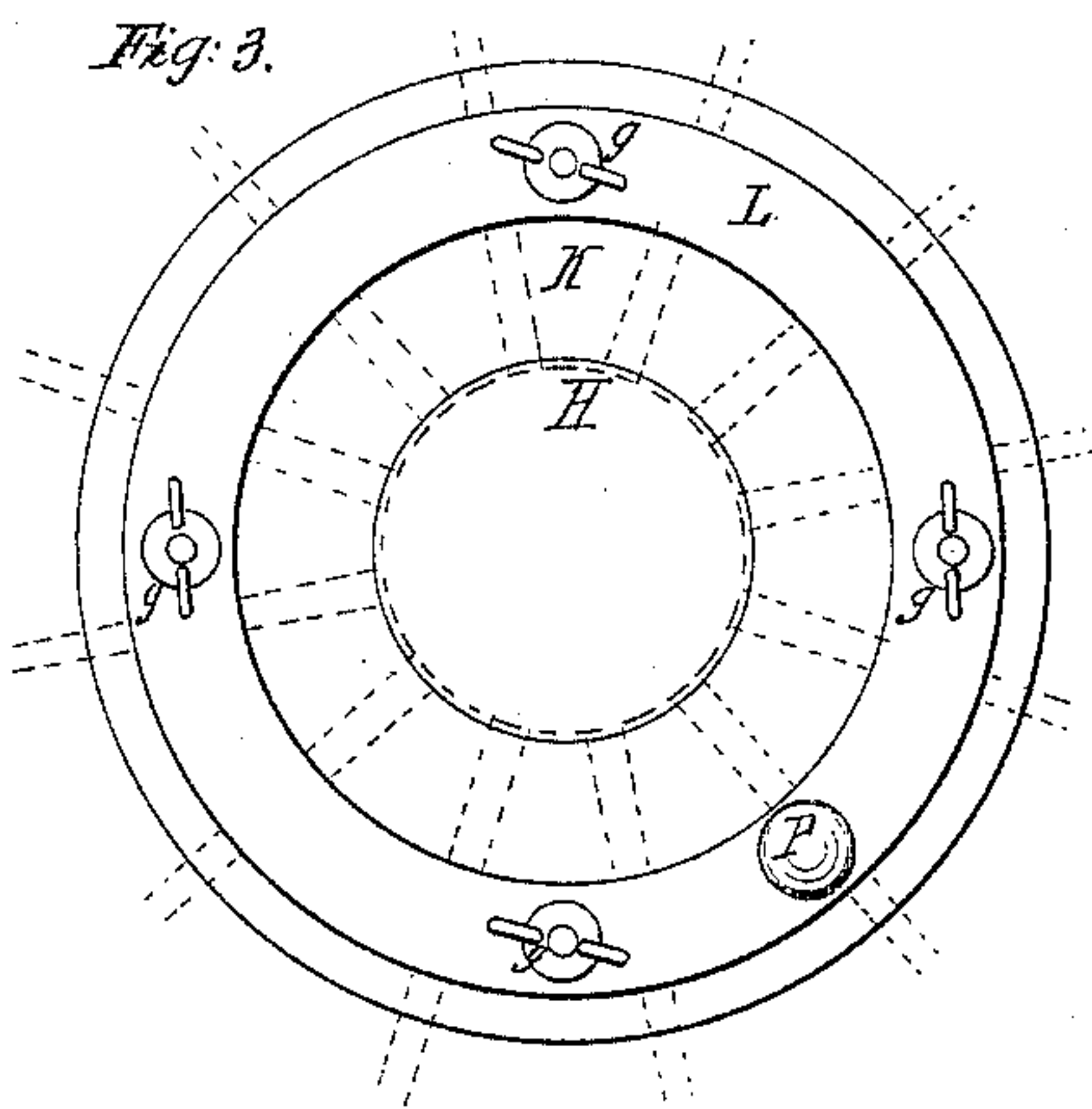
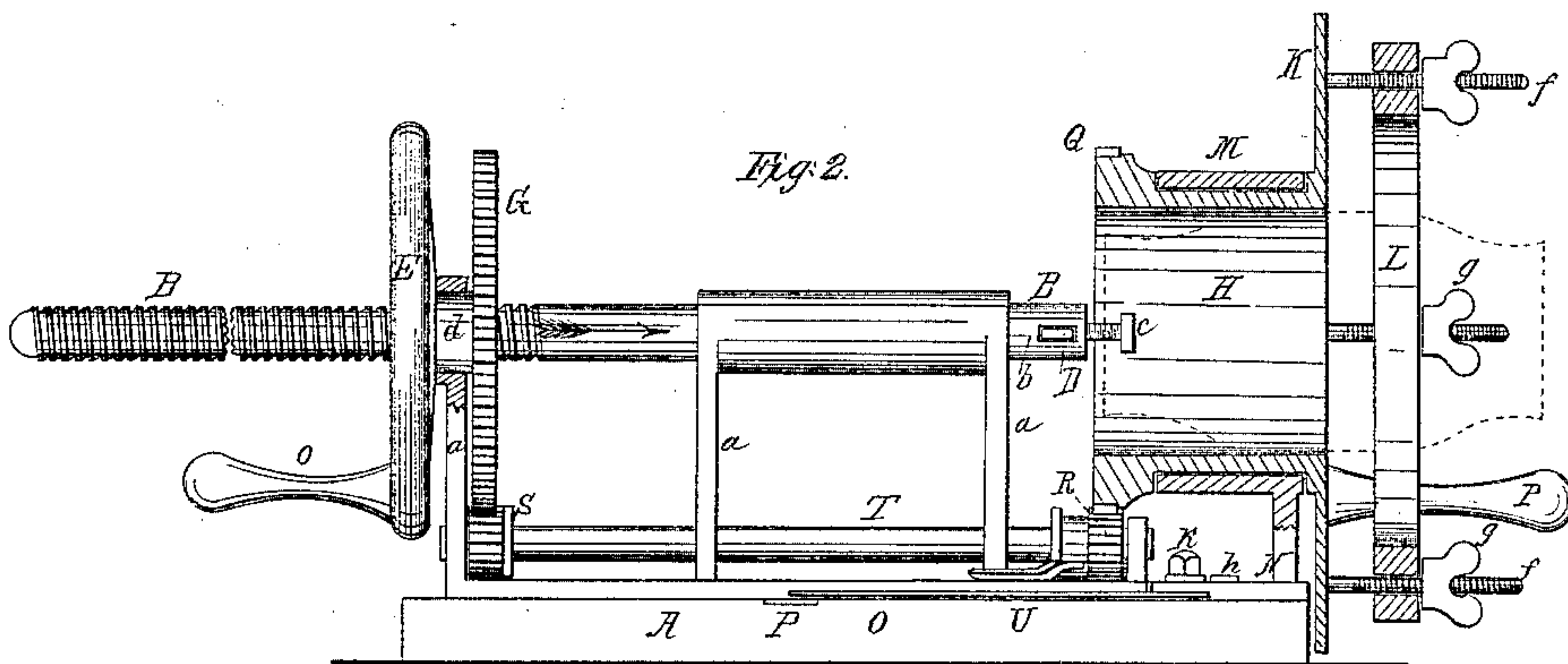
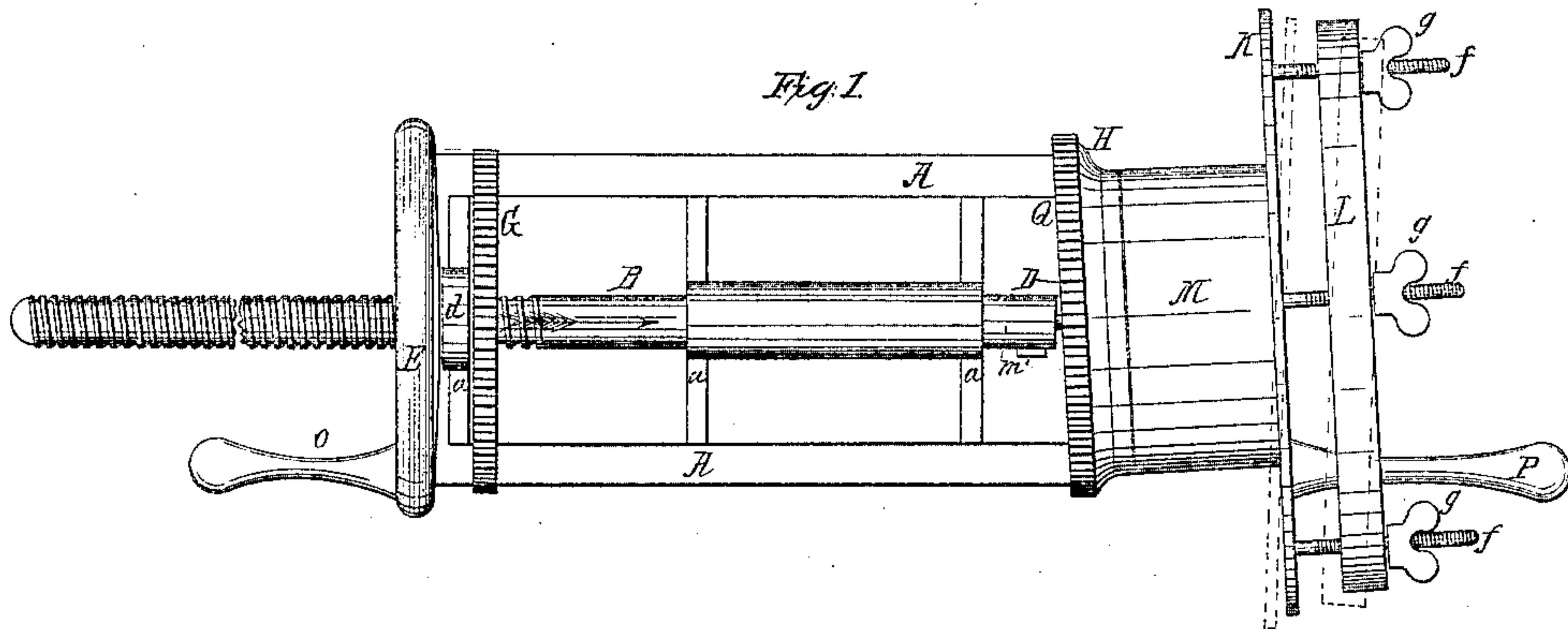


J. Kritch,
Boring Hubs,

No. 44,807,

Patented Oct. 25, 1864.



Witnesses:
Junius Erickson
Geo L Judson

Inventor:
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UNITED STATES PATENT OFFICE.

JACOB KRITCH, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN MACHINES FOR BORING WAGON-HUBS.

Specification forming part of Letters Patent No. 44,807, dated October 25, 1864.

To all whom it may concern:

Be it known that I, JACOB KRITCH, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Centering and Boring Hubs; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a plan of my improved machine; Fig. 2, a side elevation with the pivoted head that sustains the hub while being bored shown in section; Fig. 3, a front elevation of the pivoted hub-head with the wheel shown in red lines; Fig. 4, a plan of a portion of the bottom of the machine, showing more particularly the adjustable bed that supports the hub-head and the index for indicating the lateral adjustment; Figs. 5 and 6, perspective view of the cutters for boring and threading the hub; Fig. 7, a diagram showing the threading-cutter in the act of forming the screw-thread.

Like letters of reference indicate corresponding parts in all the figures.

My invention consists in the combination of a revolving hollow head or socket that holds the hub while being bored, with a stationary or non-revolving cutter that feeds gradually forward, said head or socket turning on a pivot or center in such a manner as to adjust laterally to any degree adapted to the boring or forming of the tapering hole in the hub for the reception of the box; also, in the employment of a tool adapted to the cutting of a screw-thread on the inside of the hub for the box to screw in.

I obtained a patent, dated September 9, 1862, in which a screw-thread is cut on the inside of the hub for the reception of the box.

My present machine is generally adapted to boring ordinary hubs requiring a smooth, tapering hole, but specially adapted to the forming of this screw-thread on the inside, a tool being used for that particular purpose.

As represented in the drawings, a frame, A, is provided, having standards *a a a*, which sustain a screw-shaft, B, to the head of which is secured a cutter, C or D, as occasion may require. A convenient means of securing the cutter in place is by passing through a socket, *b*, in the head of the shaft, and having a set-

screw, *c*, press against its side. The screw-shaft is kept from turning by any suitable means, but is fed forward by a turning nut, *d*, sustained in the rear standard, *a*, and having secured to it a driving balance-wheel, E, and a gear-wheel, G, whose use will presently be explained.

In the front of the machine is situated a hollow head or socket, H, in the form of a cylinder or frustum of a cone, of sufficient size to receive the end of the hub. This head is provided with a disk, K, at its outer end of sufficient size for the wheel to rest against, and from the face of this disk project four or more screw-bolts, *f f*, which support a rim or ring, L, and outside this ring nuts *g g* turn on the screw bolts, so that the ring may be adjusted forward or backward, as desired. The balance-wheel E is provided with a winch, *o*, and the disk K with a winch, *p*, the former for gradually feeding the cutter-shaft up to its work, and the latter for quickly retracting the cutter-shaft after its work is accomplished.

The head or socket H rests and turns in a hollow bearing, M, supported by a bed-plate, N, Figs. 2 and 4. This bed-plate is pivoted at *h*, so that it may be turned laterally in either direction, and at a suitable position it is provided with a concentric slot or slots *i*, through which passes a tightening screw or screws, *k*, by which means the said bed-plate can be fixed in any desirable angular adjustment.

For the purpose of allowing an easy adjustment the edges of the bed-plate that come in contact with the main bed may be made angular or beveled, as shown at *l*, Fig. 4. To the bed-plate, on one side, is screwed an index-hand, O, whose point moves over a scale, P, by which means any amount of angular or lateral adjustment to produce the taper of the hole in the hub may be indicated.

The inner end of the head or socket H is provided with a cog-wheel, Q, into which gears a pinion, R, on the end of a shaft, T, passing back and having a pinion, S, at the opposite end gearing in a similar manner with the cog-wheel G. Thus when the cog-wheel G is turned, the head H also receives motion, and consequently the hub which it holds. The pinion R is made to move in and out of gear with the cog-wheel Q by sliding on its shaft by means of a clutch or lever, U. This is for the purpose of enabling the screw to be fed

back without revolving the head H after the hub has been bored.

The cutter C is similar in construction to others used for the same or similar purposes. The cutter D, however, is peculiar in its formation and action. It is provided at a suitable distance apart with cutting-points m and m' , set at such an inward angle as will correspond with the desired bevel or inclination of the sides of the screw-thread to be cut on the inside of the hub. As the cutter is gradually fed along and as the hub is revolved the forward point, m , cuts one side or bevel of the screw-thread, while the rear point, m' , following up and being set at the opposite angle, cuts the opposite side or bevel of the screw-thread, as clearly represented in the diagram, Fig. 7. The screw-thread is thus cut in the simplest manner and with the greatest accuracy—a result that cannot be accomplished by hand or by any other device with which I am acquainted. It is necessary that the thread should be cut with the greatest exactness, in order not only to admit the box easily, but also that when admitted it shall fit closely and tightly and truly.

The operation of the machine is as follows: The wheel is placed between the ring and disk K L, with the hub resting in the socket H, and in this position it is centered by turning or loosening the nuts g exactly as described. When this is accomplished, by loosening the set-screw k the head H is turned upon the pivot h in a lateral or angular position (red lines, Fig. 1) until the index O indicates the amount of adjustment necessary to produce the required taper of the hole to be bored in the hub. In this position the screws K are tightened and the head H made rigid. This angular position of the head brings the axis of the inner end of the hub (or that next the cutter) at a greater distance from the axis of the cutter-shaft B than the outer end; consequently, at first the cutter strikes deeper, but gradually cuts shallower and shallower as it approaches the outer end, in this manner forming a true and regular taper. The head H

being thus adjusted, the nut d is turned and the cutter fed forward, while at the same time, through the medium of gearing G, S, R, and Q, the revolving motion is imparted to the hub-head.

I am not aware that a device has ever been employed before mine in which the cutter is stationary, or, rather, non-revolving, while the head or socket that supports the hub is revolved. This special arrangement is necessary to cut the screw-thread as before described, for in accomplishing this the cutter cannot be allowed to turn, while the hub must to produce the effect desired. In ordinary machines the process is reversed—the cutter revolving while the hub is stationary. This special arrangement is adapted to the cutting of a screw-thread. At the same time the means I employ to produce the taper of the hole is of the simplest and most effective character, for it is only necessary to set the head H at an angle.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the adjustable revolving hub head or socket H, capable of being set at any angle laterally, and the non-revolving feeding cutter-shaft B, the whole so arranged as to cut a tapering hole, substantially as herein described.

2. The arrangement of the adjustable revolving hub head or socket H, disk K, ring L, and centering screws and nuts f g , for centering and sustaining the hub while being bored, substantially as herein set forth.

3. The threading cutter D, provided with the angular cutting-points m m' , for producing the threads on the inside of the hub, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JACOB KRITCH.

Witnesses:

R. F. OSGOOD,
SIDNEY B. ROBY.