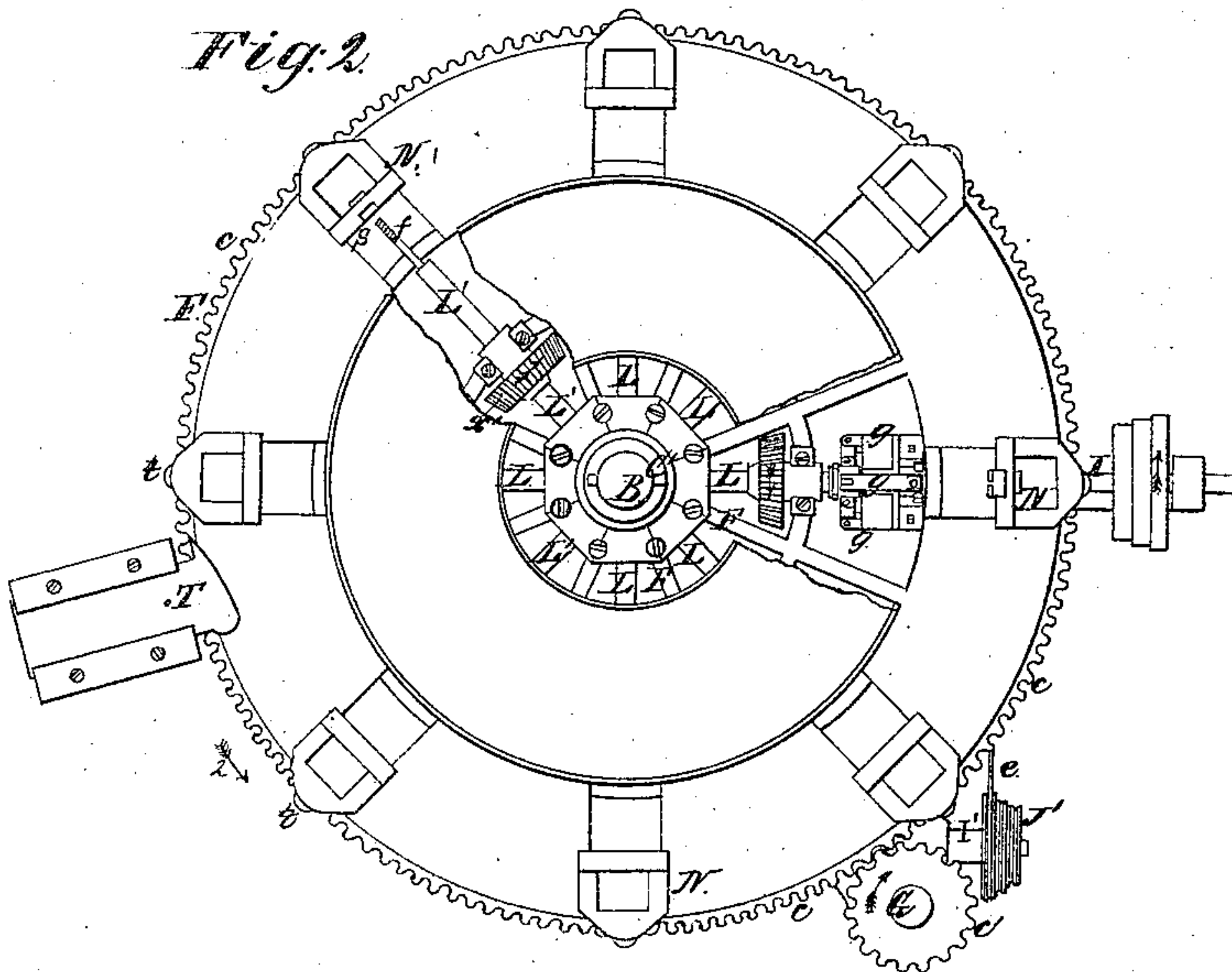
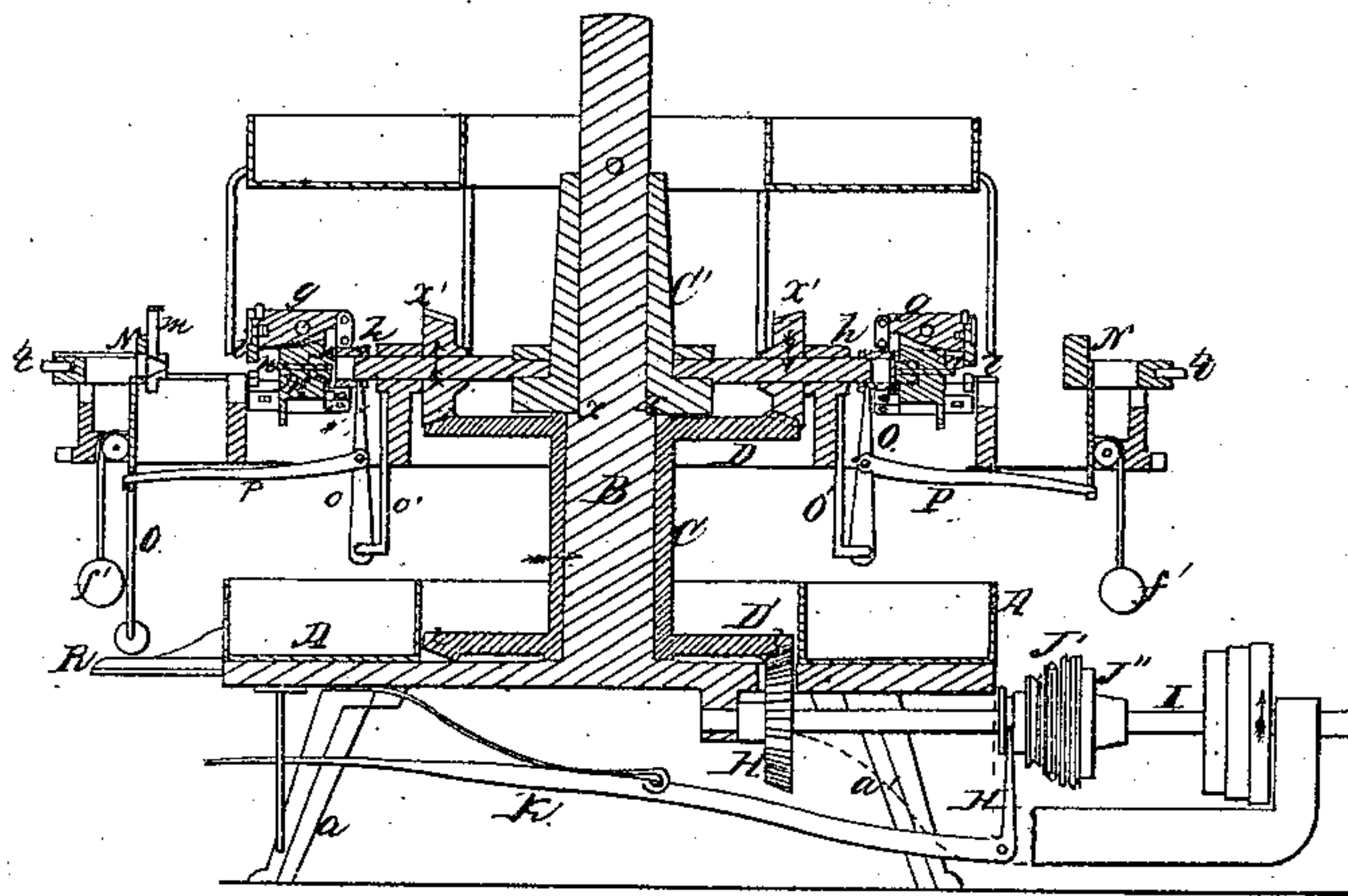
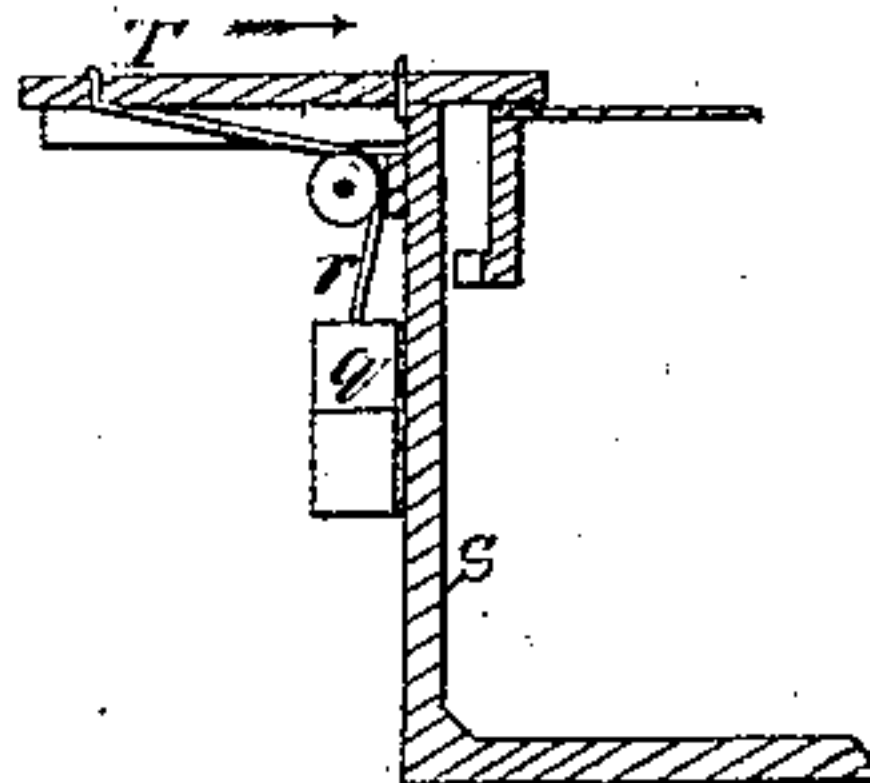


*Screw-Cutter.*

*Patented Feb. 6, 1866.*



Wm Albert Steel,  
John Parker

Inventor:  
W. W. Hubbard  
By Witness  
J. Howard



# UNITED STATES PATENT OFFICE.

WILLIAM W. HUBBARD, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVED BOLT-SCREWING AND NUT-TAPPING MACHINE.

Specification forming part of Letters Patent No. 52,415, dated February 6, 1866.

*To all whom it may concern:*

Be it known that I, WILLIAM W. HUBBARD, of Philadelphia, Pennsylvania, have invented an Improved Bolt-Cutting and Nut-Tapping Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain mechanism, fully described hereinafter, for cutting screw-threads on bolts, and for tapping nuts, the mechanism being such that a number of nuts and bolts are operated on at the same time without the aid of more than one attendant.

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

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my improved nut-tapping and bolt-cutting machine; Fig. 2, a plan view; and Figs. 3 and 4, detached sectional views.

A is the base-plate of the machine, which is supported on suitable legs *a a*, and in the center of which is an upright stationary shaft, B.

On the lower portion of the shaft B revolves a sleeve, C, at the upper end of which is a bevel-wheel, D, and at the lower end a bevel-wheel, D'.

On a shoulder, *x*, of the shaft B rests the lower end of a sleeve, C', which revolves on the shaft, and to which is connected a circular plate, F, having on its outer edge teeth *c*, into which gear those of a pinion, *c'*, on the upper end of a vertical shaft, G, the latter turning in suitable bearings secured to the base-plate A.

Into the bevel-wheel D' gears a bevel-pinion, H, on a driving-shaft, I, a cord, *e*, passing round a grooved pulley, J, which is loose on the said shaft I, and round a pulley, J', secured to a shaft, I', a worm-wheel on the latter gearing into a pinion on the lower end of the shaft G.

In one side of the pulley J is a recess, adapted to receive a beveled friction-clutch, J'', secured to the shaft I, the pulley J being moved to or from the clutch by means of a bell-crank lever, K, the short forked arm of

which projects into a groove in the pulley J, the long arm extending beyond the opposite edge of the base-plate.

In bearings in the plate F turn a number of shafts, L L', which radiate from the center of the plate, and on the inner end of each shaft is a bevel-wheel, *x'*, the teeth of which engage with those of the bevel-wheel D.

In the outer ends of the shafts L' are sockets for the reception of screwing taps *f*, and on the end of each shaft L is a head, M, in which are hung three levers, *g g g*, and to the outer ends of the latter are secured cutting-dies *i*, while the inner ends are connected by links to a sleeve, *h*, which slides on the shaft L.

A rod, *n*, passes through the center of the head M and bears against a pin which passes through the sleeve *h* and through a slot in the shaft, and into a groove in this sleeve *h* projects the upper forked end of a lever, O, which is hung to a hanger, O', on the plate F, and to which is jointed a rod, P, the latter being bent at the end and passing through a slotted hanger projecting from a carrier, N, which is arranged to slide in an opening in the plate F to and from the head M.

A carrier, N', slides in an opening in the plate F, opposite each shaft, L', and in each of the said carriers is a recess, *s*.

To the face of each carrier N are hung the jaws *m m*, Fig. 3, against the side of one of which bears a cam, *p*, on a shaft, to which is secured a weighted arm, Q, there being a recess in each jaw, so that the stem of a bolt may be inserted between the two through an opening in the head of the carrier.

To one side of the bed-plate A is secured a curved plate, R, for the purpose described hereinafter.

In the upper end of an upright, S, Fig. 4, secured to the bed-plate A, slides a cam-plate, T, the end of which is of the shape shown in Fig. 2, and which is drawn forward in the direction of its arrow by a weight, *q*, secured to a cord, *r*, connected to the said cam-plate.

In the outer edge of each carrier is a pulley, *t*, which bears against the curved edge of the cam-plate T as the carriers are brought opposite the latter.

A rotary motion in the direction of the arrow is imparted to the driving-shaft I, causing the sleeve C to revolve in the direction of its



arrow, and the spindles L L' to be turned rapidly in the direction of their arrows, while the plate F is carried slowly round in the direction of the arrow 2, Fig. 2.

The attendant, provided with a suitable number of blank bolts and nuts, stations himself at the side of the machine, near the plate R, (adjacent to the point X, Fig. 2,) and as each carrier N' is brought opposite to him he inserts a blank nut into the recess s. As the carrier N' is brought opposite to the cam-plate T it is pressed toward the tap *f*, and the nut is thus forced onto the tap, which cuts the screw in the nut in the usual manner. The cam-plate, which accommodates itself to the action of the tap, continues, through its weight *g*, to exert a gentle pressure against the carrier until the nut passes onto the plain portion of the tap. When the carrier has passed the inclined end of the cam-plate, the latter is then moved forward by its weight *g* to the position from which it has receded, and the carrier is restored, by the weight *f'*, to its former position, the nut being left behind on the tap. As the carriers N are brought over the plate R, the lower end of the lever Q strikes the end of the said plate and is raised to the position shown in Fig. 3, thereby turning the cam *p*, so as to open the jaws *m m*. The attendant now inserts a blank bolt between the jaws, which, however, do not grasp the bolt until the end of the lever Q passes onto the level portion of the plate R, when the jaws will be brought together and grasp the bolt, but not with such force as to prevent the adjustment of the latter, if necessary. As, however, the lever Q is carried away from the plate R, the jaws will be brought together so as to confine the bolt firmly between them. As the carriers N are brought opposite the cam-plate T they are moved forward in the same manner as the carriers N', and the bolts are introduced between the revolving cutters *i i*, which form a thread on the same and draw the carrier and bolt toward the head M. When the bolt strikes the rod *n*, the latter and the sleeve *h* are moved back, the cutters being thereby raised from the bolt which is carried from the head as the weight *f'* draws back the carrier to its first position. These operations of the carriers and

cutters are similar to those described in Letters Patent of the United States granted to me on the 8th day of November, 1864.

As the plate F revolves the levers Q will be again brought over the plate R, and the jaws *m* will be opened, so as to allow the bolts to be withdrawn.

The movement of the plate F may at any time be discontinued without interrupting that of the spindles by the attendant depressing the outer end of the lever K, and thereby moving the pulley J from contact with the clutch J''.

It will be seen that in the above-described machine a single attendant may readily superintend the operation of a large number of cutters and taps, and it will be apparent that the same result may be obtained without departing from the main features of my invention, when devices different from those described are used for cutting and feeding the blanks. It will also be seen that by the use of the cam-plate T and the weight *g* the carriers will be moved toward the taps or cutters only to the extent required to place the nut on the tap or the bolt between the cutters, the injury to the threads which would result if the bolts or nuts were forced too far or too rapidly forward by a stationary cam being thus avoided.

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

1. The revolving plate F, with its rotating spindles L L', in combination with the within-described cutting and feeding devices or their equivalents, the whole operating substantially as specified.

2. The carriers N, with their jaws *m m*, in combination with the cam *p*, lever Q, and plate R, the whole being arranged and operating substantially as and for the purpose described.

3. The cam-plate T, and its weight *g*, or its equivalent, in combination with the revolving plate F, and its carriers N N'.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. HUBBARD.

Witnesses:

JOHN WHITE,  
W. J. R. DELANY.