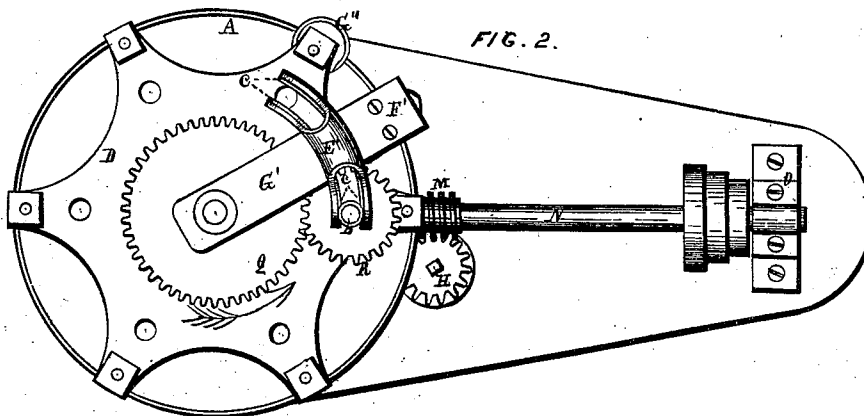
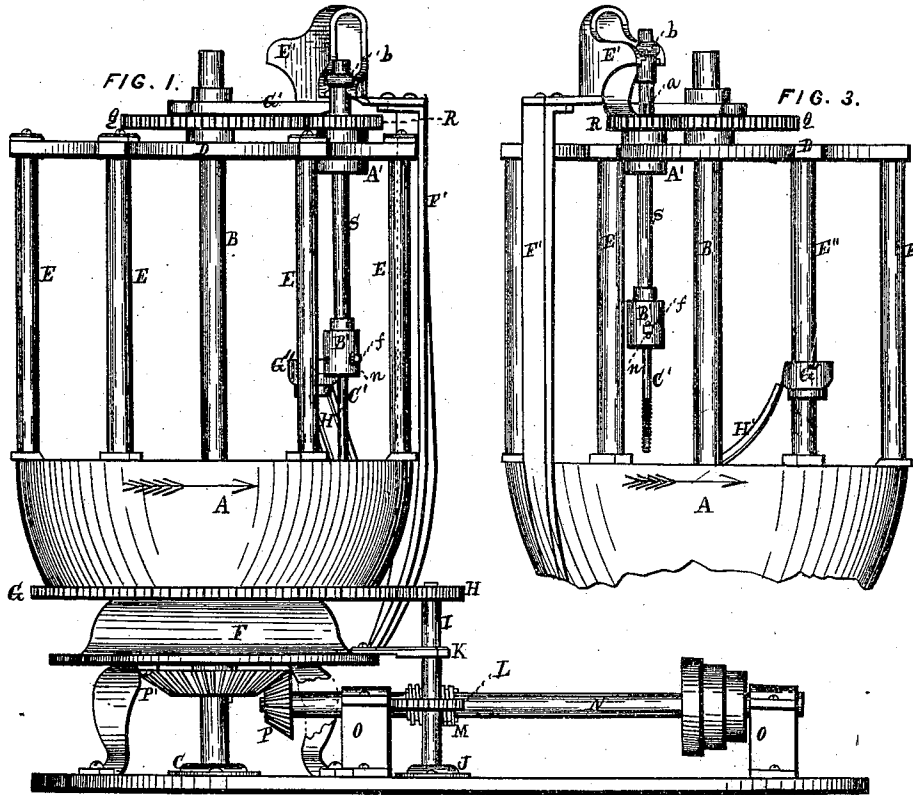


C. H. ROBISON.

MACHINES FOR TAPPING NUTS.

No. 179,222.

Patented June 27, 1876.



WITNESSES.

Atty Parky
Chas A. Noble

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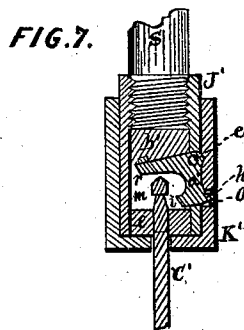
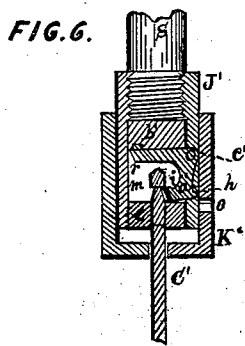
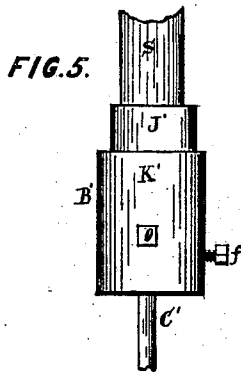
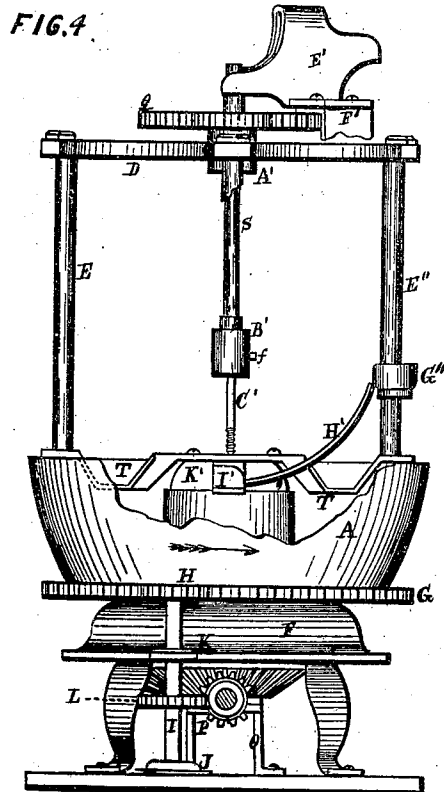
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UNITED STATES PATENT OFFICE.

CHARLES H. ROBISON, OF CLEVELAND, OHIO.

IMPROVEMENT IN MACHINES FOR TAPPING NUTS.

Specification forming part of Letters Patent No. **179,222**, dated June 27, 1876; application filed November 20, 1875.

To all whom it may concern :

Be it known that I, CHARLES H. ROBISON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new Improvements in Nut-Tapping Machines; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making part of the same.

Figures 1, 3, and 4 are side elevations of the machine shown in different positions. Fig. 2 is a plan view; Fig. 5, a detached section. Figs. 6 and 7 are vertical transverse sections of Fig. 5.

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

This invention is an improvement on a machine for tapping nuts; and consists of a certain device for elevating the tap after passing through a nut, so that it may be in position for entering the nut following next in order of succession; and also of a certain socket or head, whereby the tap is held in combination with the spindle operating the tap, all of which are constructed and operated substantially in the manner as follows:

In the drawing, A represents a revolving bowl, loosely fitted to a shaft, B, Fig. 1, which forms its axis of rotation. The foot of said shaft rests upon a step, C. The upper end is held in position by a plate, D, supported on, and secured to, a series of standards, E, elevated on the rim of the bowl, as shown in the drawings. F is a stand, whereon is supported the bowl, and upon which it revolves. G, Fig. 1, is a cog-wheel, secured to the base of the bowl, from the sides of which it projects so far as to admit of its engagement with the pinion H on the upper end of the shaft I, which has its foot bearing in a step, J; its upper end being supported in position by an arm, K. On the shaft I, referred to, is also a pinion, L, made to engage a screw or worm, M, on the shaft N, having its bearings in the standards O. On the inner end of the shaft N is a miter-wheel, P, made to engage a miter-wheel, P', secured to the shaft B, and whereby said shaft is revolved by its engagement with the wheel-P. On the upper end of the shaft B is secured a cog-wheel, Q, Fig. 2, made to engage a pinion, R, secured loosely

to a spindle, S, so that the spindle may move vertically therein; but which is made to revolve said spindle by a feather, *a*, projecting from the side of the shaft into the pinion, and a sleeve to which the pinion is firmly secured. Said sleeve forms the axis or journal of the pinion, and has its seat in a thimble, A'.

The lower end of the spindle S is provided with a head, B', for holding the tap C'. The upper end of the spindle is provided with a rounded collar, *b*, the purpose of which will hereinafter be shown. E' is an elevator supported above the machine by a standard, F', and an arm, G'. The relative position of the elevator to the spindle S is such that as the spindle is carried around by the bowl A it will pass between its cheeks, and be carried up on the ledges *c*, Fig. 2, formed on the inner lower edges of the cheeks of said elevator, as shown in Fig. 2. To the standard F'', Figs. 3 and 4, is secured a hopper, G'', from which extends a conductor, H', down to and terminating in a box, I', directly under the tap C', as shown in Fig. 4. It will be seen in said figure that the box and the lower end of the conductor are supported on a radial hanger reaching from the standard opposite the spindle to the hub K' of the bowl. Said hanger is the same as are the hangers T, of which there are six, corresponding to the six standards E, and to which they are respectively attached.

It may be proper to remark here that there are to be six spindles carrying taps, to complete the full working capacity of this machine, each of which is constructed, arranged, and operated substantially as the one shown in the drawing, and herein described; all of which are not represented in the drawings, as the description of the one shown is descriptive of the others, and also of the conductors H', respectively, arranged in relation to them.

The tap-holder or head B', above referred to, consists of a socket, J', Fig. 6, loosely fitted in a thimble, K', so that it may slide therein. In said socket is pivoted a catch, *a'*, at the point *c'*, the shape of which is as shown in the Figs. 6 and 7. Immediately above the catch, and in contact therewith, is a block of rubber, *b'*, or a spring may be used instead. In the lower end of the socket is fitted a bush, *c'*, having a square hole therein for the admission

of the square end or shank of the tap. Said bush is retained rigidly in the socket, and the socket prevented from pulling out from the thimble by a set-screw, *f*, which is passed loosely through the side of the thimble in a slotted hole, *n*, Figs. 1 and 3, and screwed into the socket, and hard against the bush. The slotted hole allows the thimble a vertical movement over the socket the distance of the length of the hole, and prevents it from slipping therefrom. The tap is retained in the head *B'* by the lip *i* of the catch, which, when the tap is first pushed in, is in the position shown in Fig. 1.

The rubber block *b'* or spring, by its elasticity, forces down the arm *r*, thereby throwing the lip *i* back from the head or shoulder *m* of the tap, as shown in said Fig. 7, in which position of the catch the end of the tap can be easily inserted in the socket, as shown.

In order to cause the lip *i* to advance to and under the head *m* the thimble falls downward by its weight, thereby drawing the hole *O* in the side of the thimble down and away from the nib *n* of the catch, lodged in said hole, which will force the nib inward from the hole, so far as to come to the inside of the thimble, and above the hole, as shown in Fig. 6, thus advancing the lip to and under the head *m* of the tap, and which is retained in this position by the side of the thimble, the weight of which being sufficient to hold itself down.

The tap thus secured in the head is shown in Figs. 4 and 6. Said figures are enlarged views.

The practical operation of the machine for tapping nuts is as follows: The nuts to be tapped are placed in the hopper *G''*, from which they descend, filling the conductor *H'* down to the nut-box *I'* under the tap. Let it be supposed that the conductor or conductors, the machine being supplied with a full compliment of taps, are filled with nuts, and that a nut to be tapped lies in the bottom of the box *I'*. The tap to enter the nut is raised up by the elevator *E'* to the position shown in Fig. 3. As the machine turns around in direction of the arrow the spindle drops from the end of the elevator, and the point of the tap falls into the eye of the nut, which the tap cuts, and which the threaded part of the tap passes entirely through, so that the threaded nut comes upon the shank of the tap above the thread. The next spindle and tap in order of succession enters the lower end of the elevator as soon as the preceding one leaves it, as will be seen in Figs. 1 and 2 at *b*, which, on arriving at the upper end of the elevator, drops therefrom, and enters the end of the tap in a nut held in its respective nut-box, which the revolving spindle drives the tap through, as the machine continues to revolve. By this time the third spindle is about entering the lower end of the elevator, as those preceding, which in like manner travels up the elevator and drops from the raised end,

so that its tap may enter the nut lying in its respective box, and so on as long as the machine continues to rotate. Each spindle in succession is carried up the elevator, and drops therefrom, so that its tap may enter the nut in the box, respectively, belonging to it.

When the shank of the tap (or that part between the thread and the head *B'*) becomes full of nuts the loaded tap is removed. This is done by the nuts strung thereon, which, by their number, push upward against the bottom of the thimble, thereby pushing it up, so that the hole *O* comes in open relation to the nib *n* of the catch, into which the nib will slip in consequence of the reaction of the compressed rubber block or spring *b*, thereby throwing the lip *i* of the catch from its engagement with the head of the tap, which will now drop out, or can be taken out by the attendant of the machine and the nuts turned off therefrom over the upper end, and again inserted in the head for further duty.

All the spindles are rotated by the center cog-wheel *Q*, around which they are respectively arranged and made to engage by means of pinions, as the one shown in the drawings and herein described, all of which operate harmoniously in succession, and essentially alike.

The cog-wheel *Q* not only operates the spindles, but by its connection therewith rotates the bowl, its rotation being controlled to a uniform movement by the cog-wheel *G*, pinions *H* *L*, and screw *M*, which exercise a restraining regulating power upon the revolving bowl, without which its movement would be irregular and impulsive.

The elevator is shown in the drawing as having a ledge or shoulder on each side of the pathway through which the spindle travels. One ledge, however, is sufficient—that on the outer side—as the rotatory movement of the spindle on its own axis causes the rounded collar *b* to ascend with great facility, and which continues its axial rotation while ascending by its feathered connection with the pinion *R*, as afore described.

The spindles, when raised to the highest point of the elevator, cease to revolve. This is owing to the feather *a* being withdrawn from the pinion *R*, whereby it was rotated. This inactive condition of the spindle is to facilitate the insertion of the tap in the head, which can be more readily done when the spindle is not revolving on its own axis.

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

1. The combination, substantially as herein shown and described, of the series of spindles or bars *E*, mounted on the revolving bowl *A*, and carrying the hoppers *G''*, the series of inclined ways *H'*, the series of nut-boxes *I'*, and the series of rotating tap-spindles *S*, all arranged to revolve with the bowl around the central shaft *B*, as and for the purpose set forth.

2. The thimble K', socket J', catch a', rubber or spring b', in combination with the spindle S' and tap C', in the manner substantially as described, and for the purpose specified.

3. The tap-polder B', consisting of the thimble K', socket J', catch a', and rubber block

or spring b', all constructed and arranged to operate substantially in the manner as described, and for the purpose set forth.

CHARLES H. ROBISON.

Witnesses:

J. H. BURRIDGE,
GEO. MOSBY.