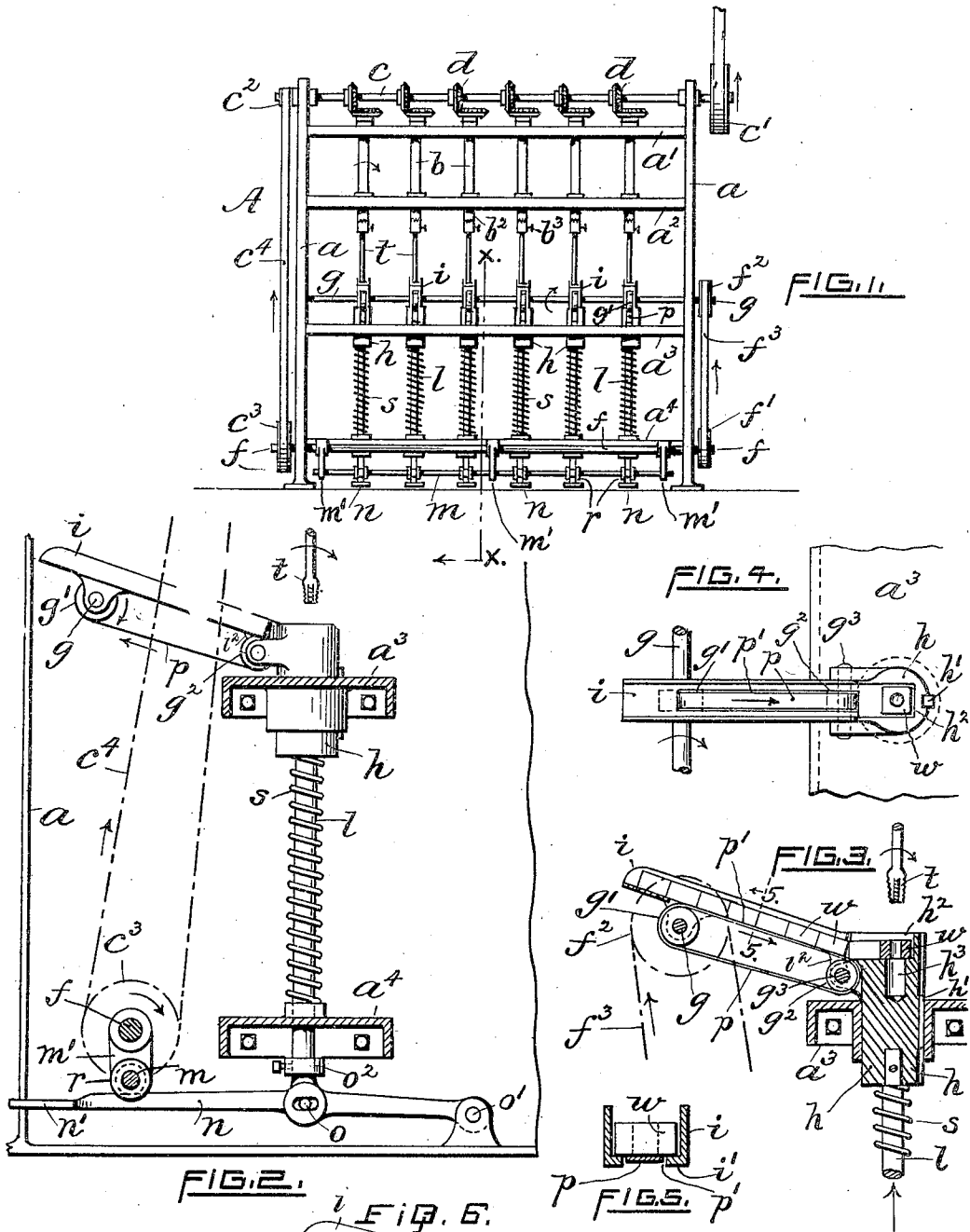


No. 810,054.

PATENTED JAN. 16, 1906.

S. H. HINTLIAN.
NUT TAPPING MACHINE.
APPLICATION FILED JAN. 10, 1905.



WITNESSES.

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SETH H. HINTLIAN, OF PROVIDENCE, RHODE ISLAND.

NUT-TAPPING MACHINE.

No. 810,054.

Specification of Letters Patent.

Patented Jan. 16, 1906.

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To all whom it may concern:

Be it known that I, SETH H. HINTLIAN, a subject of the Sultan of Turkey, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Nut-Tapping Machines, of which the following is a specification.

My invention relates to improvements in nut-tapping machines of the class or type in which the nut-blanks are fed to a series of vertically-movable blank-holders positioned with respect to a corresponding series of revoluble taps, which latter operate to tap the nuts and collect or accumulate them on the tap's shanks.

While, as just stated, this invention relates to nut-tapping machines, the essential novelty consists of improved means or devices for automatically feeding the blanks to the holders, combined with means for automatically and simultaneously elevating the holders and contained blanks to engage the taps, the construction and arrangement being such that one or more of the holders, &c., may be manipulated by hand, if desired, and independently of said automatically-operating mechanism, all as will be more fully hereinafter set forth and claimed.

In the accompanying sheet of drawings, Figure 1 is a front elevation representing in reduced scale a nut-tapping machine embodying my improvements. Fig. 2 is a partial transverse sectional view, in enlarged scale, taken on line *x x* of Fig. 1. Fig. 3 is a vertical central sectional view taken through the nut-blank holder, &c., corresponding with Fig. 2. Fig. 4 is a plan view of the parts shown in Fig. 3. Fig. 5 is a cross-sectional view, enlarged, of the feed-chute or runway, taken on line 5 5 of Fig. 3; and Fig. 6 is a detail side elevation of the feed-chute or runway.

The nut-tapping machine A (represented in Fig. 1) shows in general a machine in which my present improvements are incorporated. Certain features of construction are, however, old—as, for example, the frame *a*, ties *a'* *a''* *a'''*, &c., the vertical spindles *b*, the belt-driven pulley *c'*, shaft *c*, and pairs of bevel-gears *d* for rotating the spindles, to which latter the taps *t* are removably secured by means of clutches *b''* and set-screws *b'''* in a well-known manner. Treadle-controlled spring-pressed holders or anvils for receiving

the nut-blanks singly and holding the latter in position while being tapped have also been employed heretofore. In my improved nut-tapping machine the blank-holders and treadles are modified so as to adapt them to the present requirements—that is to say, the holders *h* are vertically movable in the horizontal girder or tie *a''*, stationary keys or featherers *h'* serving to maintain the holders in position axially at all times. The upper end of each holder has an open socket or recess *h''*, arranged to receive the nut-blanks *w* singly, a central hole *h'''*, Fig. 3, permitting the passage of the lower or cutting portion of the revolving tap *t*. The holder has also a lateral opening in direct communication with said socket and with the blank-receiving chute or runway *i*. To the under side of the holder is secured a central guide-rod *l*, passing downwardly through the lower tie *a'''* and jointed at *o* to a treadle-lever *n*, in turn pivoted to the base at *o'*. A helical spring *s*, interposed between the tie and holder, operates to automatically raise the latter when pressure upon the treadle is removed. A stop *o''*, secured to said rod *l*, may be employed to limit the upward movements of the latter. (See Fig. 2.)

The runway or chute *i* has vertical sides and an apertured blank-supporting base *i'*, united at each end, the opening *p'*, just referred to, being arranged to receive a suitable flat flexible belt *p*, passing over small revoluble pulleys or wheels *g'* *g''*, located under the chute. The idler or lower pulley *g''* revolves on a short shaft or pin *g'''*, mounted in ears secured to the holder, the other pulley being secured to a continuously-revoluble long shaft *g*, mounted in the frame *a*. As thus constructed it will be seen that the runway swings or vibrates up and down in unison with the holder, the feeding or runway belt *p* traveling continuously with the revolving pulleys, the said shaft *g*, as drawn, forming the pivotal point. The holder when elevated to its limit places the runway in a substantially horizontal position, the belt *p* meanwhile slackening slightly.

The shaft *g'''* extends through lugs or ears *i''*, depending from the bottom plate *i* of each of the holders *e*, these lugs or ears being provided with slots *i'''* to receive said shaft and permit a slight play of the shafts in said lugs or ears. It is obvious, therefore, that since the pin *g'''* is mounted in the holder member

itself any changes in the distance between the centers of the two members g and g^3 , due to the vertical movements of the holder, produces a corresponding change in the tension of the belt; the latter greatly slackening as the holder moves upwardly.

At the front lower part of the machine is mounted a continuously slowly revoluble horizontal shaft f , the latter, as drawn, taking its motion from a pulley c^2 , secured to the upper driving-shaft c , a power-transmitting belt c^4 , and pulley c^3 , the latter being secured to the outer or left end of shaft f . On this last-named shaft are secured laterally-separated cranks m' , through the eyes of which extends a horizontal shaft or rod m , arranged parallel with shaft f and above the several treadle-levers n , as clearly shown in Figs. 1 and 2. The function of shaft f in each revolution is to cause the rod m to engage the said spring-resisted levers n , thereby gradually depressing them, together with the holders h and feed-chutes i . A loosely-turning spool r may be mounted on rod m opposite each lever n and engaging with it. During said downward movement of the holders the traveling belts p of said chutes feed the next succeeding blanks into the sockets h^2 . This feed action is effected mainly by means of a belt f^3 , driven by a pulley f' , secured to the right end of shaft f . Said belt passes over a pulley f^2 , secured to the outer end of shaft g , carrying the pulleys g' , which latter impart movement to the feed-belts p .

As before stated, the taps may be operated singly or simultaneously, as desired, the spindles b being adapted to receive and hold the taps and capable of being thrown out of action in a well-known manner—that is to say, the construction is such that each holder may be depressed by the operator or attendant and independently of the rod m by means of the corresponding treadle and connections by simply pressing downwardly upon the free end n' of the treadle, the spring s automatically elevating the holder when the pressure upon the treadle is removed.

The operation of a nut-tapping machine embodying my improvements may be described as follows: The continuously-traveling belts b , aided more or less, say, by gravity action, feeds a blank w from the respective chute i into each of the empty sockets h^2 , the holders meanwhile being depressed below the end of the revolving taps by means of the contact action of the moving rod m with the levers n . After the rod has passed the vertical or "dead" center the action of springs s forces the holders upwardly to engage the blanks with the taps. The latter now cut their way through the blanks, the thus-threaded nuts collecting on the stem or shank of the taps. At or about this time the slowly-revolving shaft f causes the rod m to reengage with and depress the levers n , thereby forcing the hold-

ers away from and below the taps and through the medium of belts p , &c., feeding the next succeeding blanks from the chutes into the then empty sockets, as before described. It will be seen that the inwardly-facing flanges i' of the chute assist in supporting the blanks contained therein, the moving belt p at the same time imparting a forward movement to the column of blanks by its engagement with their under side, thereby insuring that the blanks do not stop or clog in the runway until the advance blank is properly positioned in the holder with respect to the tap. I may add that the slowly-moving feed-belts p are practically inoperative upon the columns of abutting blanks in the chutes while the blanks in the holders are being tapped, but immediately become active to agitate and advance the columns again when the last-tapped nuts and taps are disengaged from the holders. The attendant, it may be observed, keeps the chutes supplied with blanks and removes the accumulated nuts from the taps.

A nut-tapping machine provided with my improvements enables the attendant to easily tend one hundred per cent. more spindles as compared with machines of this class as usually constructed. The relative cost of the machines is comparatively small. It is readily accessible, simple, and safe, and not liable to get out of order.

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

1. In a nut-tapping machine, the combination with a series of suitably-mounted revoluble taps and a corresponding series or number of spring-pressed holders for the nut-blanks arranged with respect to said taps, of chutes from which the nut-blanks are fed to said holders, treadle-levers operatively connected with and arranged to retract the several blank-holders, and a power-actuated device adapted to engage with and control the movements of the treadle-levers, substantially as described and for the purpose set forth.

2. In a nut-tapping machine, the combination with a vertically-movable nut-blank holder, a revoluble tap arranged in alinement with said holder and a rocking blank containing a chute communicating with and taking its movement from said holder.

3. In a nut-tapping machine, having a revoluble tap, the combination therewith of a vertically-movable spring-pressed nut-blank holder located below and in alinement with the tap, and a vibratory feeding-chute connected with the holder and taking its movement therefrom.

4. In a nut-tapping machine, the combination with a plurality of revoluble taps, and a corresponding number of endwise-movable mechanically-actuated holders adapted to receive nut-blanks singly therein and subject them to the cutting action of said taps, of a revoluble shaft g , a plurality of chutes pivot-

ally connected to the holders and mounted to vibrate or swing on said shaft having their inner ends directly communicating with said holders, and traveling belts *p* mounted in the base of the chutes for feeding the blanks therefrom into the holders, said belts being driven by power transmitted from said shaft.

5. In a nut-tapping machine, the combination with a revoluble tap, a nut-blank holder movable endwise relative to said tap, a swinging chute taking its motion from said holder, and a downwardly-slanting continuously-traveling belt mounted upon two rollers, one fixed and the other mounted on the movable holder, said belt extending through an opening formed in the base of the chute, of means for automatically depressing the holder after the blank therein has been tapped, thereby at the same time increasing the tension upon said belt and causing it to mechanically feed

the next succeeding nut-blank from the chute into the holder, substantially as described.

6. In a nut-tapping machine, the combination with a revoluble tap, of an endwise-movable holder for the nut-blank, a vibratory feed-chute pivotally connected to the holder and taking its movement therefrom, and a feed-belt, a plurality of rollers, said belt being mounted upon said rollers, one fixed and the other mounted on the movable holder, the tension of said belt being affected by the movement of said holder and regulating the feed of the nut-blanks to the holder as the position of the latter varies.

Signed at Providence, Rhode Island, this 7th day of January, 1905.

SETH H. HINTLIAN.

Witnesses:

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JOHN A. BARSAMIAN.