

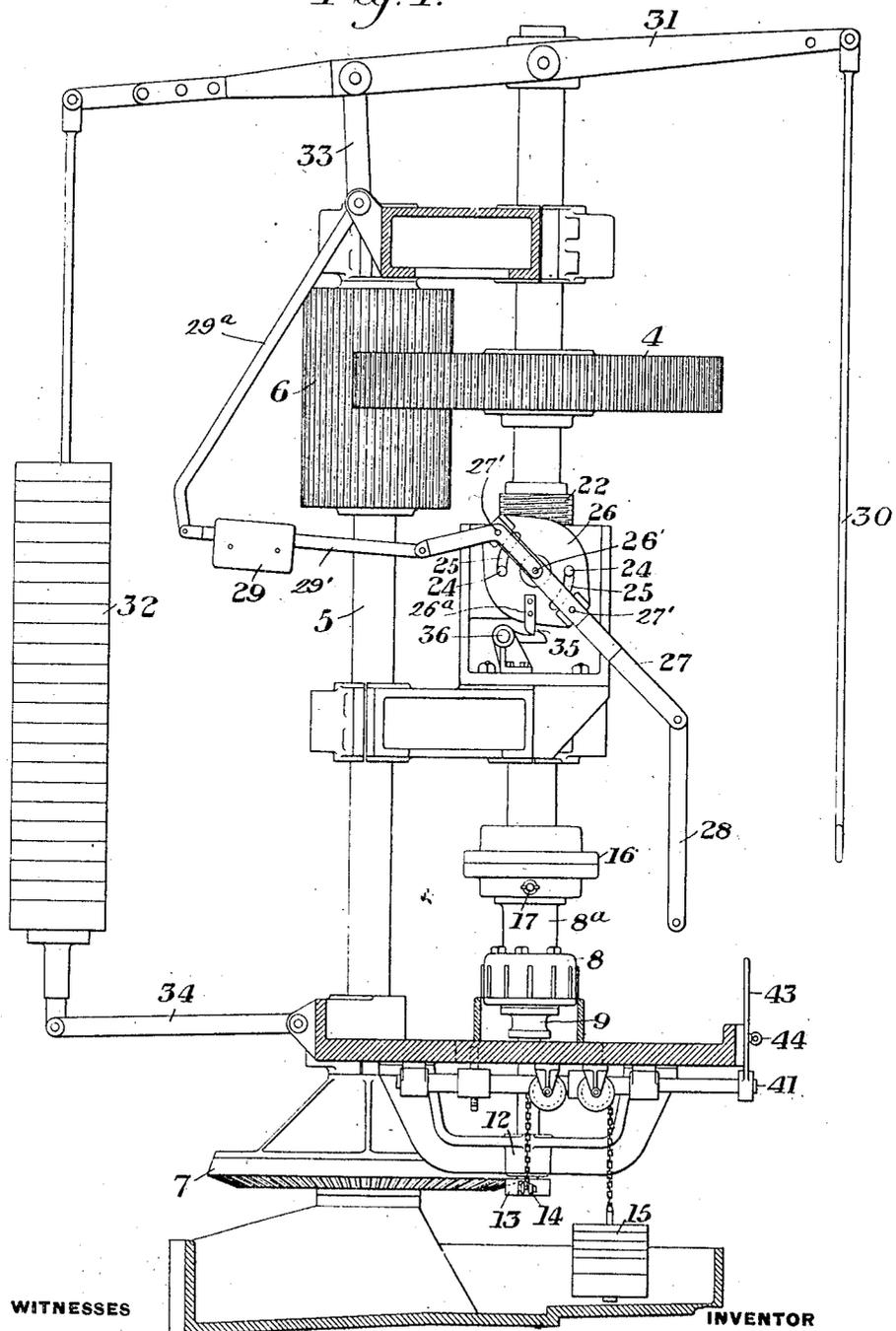
No. 871,069.

PATENTED NOV. 12, 1907.

R. SCHOLZ.  
VERTICAL TAPPING MACHINE.  
APPLICATION FILED JUNE 12, 1906.

8 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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INVENTOR

*Richard Scholz*  
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Fig. 3.

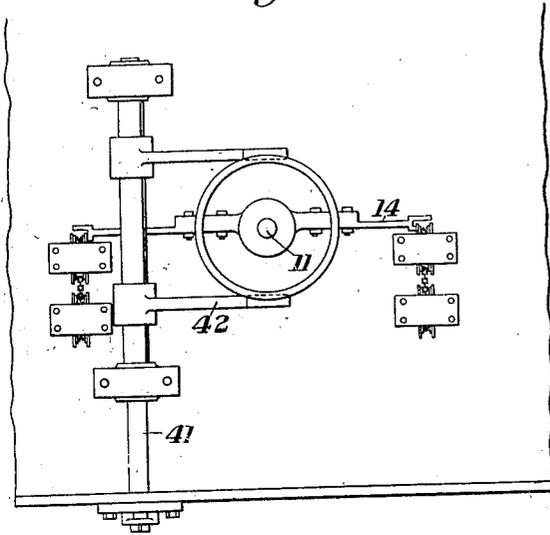


Fig. 4.

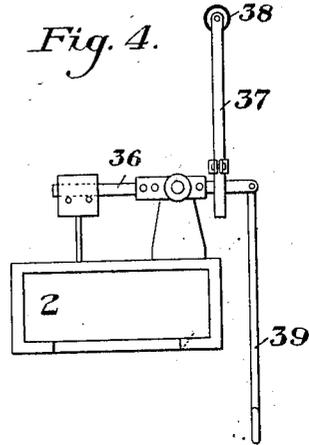


Fig. 5.

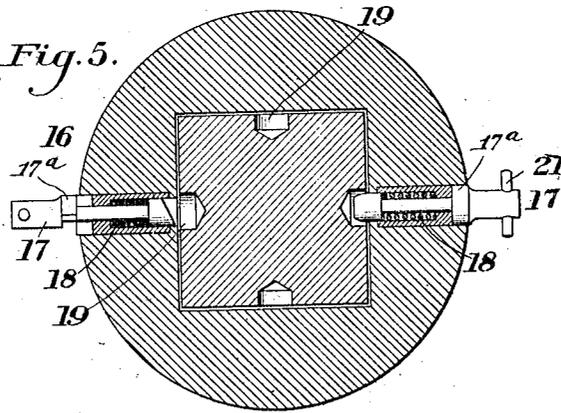
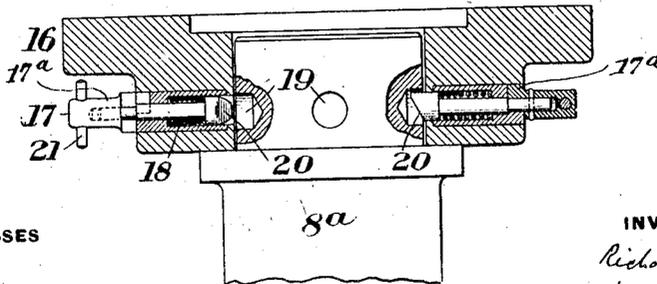


Fig. 6.



WITNESSES

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# UNITED STATES PATENT OFFICE.

RICHARD SCHOLZ, OF LORAIN, OHIO, ASSIGNOR TO THE NATIONAL TUBE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## VERTICAL TAPPING-MACHINE.

No. 871,069.

Specification of Letters Patent.

Patented Nov. 12, 1907.

Application filed June 12, 1906. Serial No. 321,353.

To all whom it may concern:

Be it known that I, RICHARD SCHOLZ, of Lorain, Lorain county, Ohio, have invented a new and useful Vertical Tapping-Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section of a tapping machine embodying my invention the coupling gripping mechanism being omitted; Fig. 2 is a front elevation also showing certain parts in section; Fig. 3 is a plan view showing the tap catcher and coupling stop; Fig. 4 is a detail view of the safety device; Fig. 5 is a section on the line V—V of Fig. 2; and Fig. 6 is a sectional elevation showing the tap grip.

My invention has relation to a tapping machine designed for forming threads in pipe couplings and the like, and is designed to provide an efficiently practical machine of this character which will insure the formation of a thread of true pitch, means being provided for preventing the weight of the tap from shaving or shearing the threads. The invention is also designed to reduce the time and labor required to handle the taps and thereby increase the output.

With these objects in view, my invention consists in the novel construction, arrangement and combination of parts all substantially as hereinafter described and pointed out in the appended claims.

In the accompanying drawings, the numeral 2 designates the frame of the machine, 3 the vertically movable tap spindle having the driving gear wheel 4, 5 the main driving shaft or spindle having the elongated pinion 6 engaged by the gear wheel 4, the shaft or spindle 5 being driven in any suitable manner, as by the beveled gear wheel 7. 8 designates the tap and 9 a cap for the tap to rest on, said cap having a rotary cone bearing at 10 on the upper end of a vertically movable stem 11, which is guided by bracket 12 depending from the bed or table 2<sup>a</sup> of the machine frame. At the lower end of the stem is an adjustable collar 13 for the purpose of limiting the stroke of the stem, said collar having arms 14, to which are connected the counterweights 15.

The shank portion 8<sup>a</sup> of the tap is squared and is connected to the spindle 3, by means of the flange coupling 16 having a socket therein which fits over the squared portion of the tap shank as shown in Figs. 5 and 6. The flange coupling 16 is provided with oppositely arranged latch pins 17, which are engaged by springs 18 tending to hold the pins in engagement with holes 19 drilled in the squared faces of the shank. The inner ends of these pins are beveled as shown at 20 so as to permit the tap to push them back until the holes 19 are in registering position. The projecting stems of the latch pins are provided with operating handles

21, having shoulder portions 17<sup>a</sup> which normally enter the recesses provided in the flange coupling when the ends of the pins are in the holes 19 in the shank portion 8<sup>a</sup> of the tap. By retracting these pins and giving them a quarter turn, as shown at the left of Figs. 5 and 6, the shoulder portions 17<sup>a</sup> engage with the sides of the openings and hold the pins 17 so as to be out of the holes 19, located in the shank 8<sup>a</sup> of the tap.

The spindle 3 is provided with the lead screw 22, and a split nut 23 is provided to act as a feed for the tap.

The opposite ends of each of the two parts of the split nut 23 are provided with projecting pins 24, these pins engaging with the eccentrically formed slots 25 located in the pivoted disks or plates 26 arranged at opposite sides of the nut. The plates 26 are arranged to be partially rotated on their pivots 26<sup>7</sup> by the levers 27 actuated by a handle 28, these levers being secured to the plates 26 by the pins or bolts 27<sup>7</sup>. The upper end of the lever 27 is connected to the counterweight lever 29<sup>7</sup>, on which the counterweight 29 is adjustably secured, the opposite end of the counterweight lever 29<sup>7</sup> being supported from the frame of the machine by the link 29<sup>a</sup>. With the handle 28 in the position shown in Figs. 1 and 2 the pins 24 have been actuated by means of the slots 25 in the plates 26 to close the two parts of the split nut 23 upon the lead screw 22 and the nut is held in its closed position by engagement of the stop 26<sup>a</sup> with the latch 35 carried by the rocker shaft 36. The counterweight 29 acts to open and hold the split nut 23 so as to be disengaged from the lead screw 22 when the main spindle is moved up and down by means of the hand lever 30. This lever 30 is connected to the lever 31 which engages the upper end of the spindle 3, and is provided with the counterweight 32.

33 and 34 are compensating link connections for steadying the movement of the lever 31 and weight 32. The nut 23 is secured in engaged position with the lead screw by means of the latch 35 carried by a rocker shaft 36. Secured to the shaft 36 is an arm 37 having a roller 38 at its upper end which is located below and in the path of movement of the driving gear wheel 4. When the tap has finished cutting, the under side of the gear wheel 4 contacts with the roller 38, thereby moving the arm 37, the rocker shaft 36, and disengages the latch 35. This immediately opens the split nut and relieves the main spindle, which is immediately drawn up by the counterweight 32. The latch 35 can also be disengaged at any time by means of the lever 39.

40 designates any suitable or usual coupling gripping device or jaw for gripping the coupling X which is to be tapped. This is not shown and described in detail, as it forms no part of my invention.

41 is a rocker shaft to which are secured arms 42, which form a seat for the coupling X to rest on before being gripped. These arms are secured to the shaft 41

so as to be adjustable toward and away from each other, in order that couplings of various sizes may be supported thereon, while the jaws of the gripping mechanism are being clamped around the coupling to hold and prevent its rotating with the tap 8. The shaft 41 is provided with an operating lever 43, which is secured by means of the pin 44 in the lever and a suitable registering hole in the frame, to hold the arms 42 in the position shown in Fig. 2 so as to support the coupling while it is being grasped by the clamping jaws. The levers 42 are moved out of contact with the coupling during the tapping operation, the levers 42 being held by means of the pin 44, which in this case, is inserted in the hole in the lever 43 and the hole 44' in the side of the frame.

The operation is as follows:—The coupling is placed in position, as shown in Figs. 1 and 2; the nut 23 is closed upon the lead screw 22, and the coupling is tapped, the stem 11 moving downwardly against the action of the counterweights 15, and the cap 9 rotating freely on the stem. The handles 21 are moved to withdraw the latch pins from engagement with the tap shank, while the tap is in action, so that after the tap has ceased cutting, the tap spindle 3 may be raised permitting the shank to drop out of the coupling flange 16. A slight pressure on the stem 11 from the bottom will raise the tap to its upper position. The main spindle 3 is then again lowered to catch the tap, which is easily done, as it stays in the center line of the main spindle at all times. After the tap has been thus caught, it is held suspended at its extreme raised position to permit the insertion of a new coupling into the grips.

By the split-nut arrangement shown and described, I avoid the necessity for reversing the movement of the tap spindle to clear the tap to permit the spindle to be raised, and thus permit the rapid removal of the threaded coupling and the insertion of a new one.

A further advantage consists in the fact that the lead screw and nut insure the formation of a thread of true pitch, the weight of the tap being prevented from shaving or shearing the threads in the coupling. The construction also prevents damage to the tap chasers while

passing up and down through the grip blocks. The time and manual labor is greatly reduced as compared with old methods, thereby enabling a large increase in the output of the machine.

Various changes may be made in the details, construction, and arrangement of the parts, without departing from the spirit and scope of my invention, since

What I claim is:—

1. A tapping machine having a vertically movable tap spindle, a driving gear vertically movable with said spindle, a feed screw secured to and rotated by the spindle, a split feed nut for the screw, mechanism for clamping the sectional nut on said screw and means in the vertical path of movement of said driving gear and connected to the nut clamping mechanism and arranged to be operated by the gear for actuating the clamping mechanism to release the spindle; substantially as described.

2. In a tapping machine the combination of a spindle adapted for carrying a tap, a driving gear wheel movable with the spindle, a detachable feed mechanism for the spindle, with a tap, means supporting the underside of the tap and means for holding said support in contact with the tap; substantially as described.

3. In a tapping machine, the combination of a vertically movable spindle adapted for carrying a tap, a driving gear wheel movable with the spindle, with a tap, a rotatable support on which said tap is mounted while tapping the coupling and yielding means connected with and carrying the support; substantially as described.

4. In a tapping machine, a rocker shaft having coupling supporting arms, means for moving the shaft into its operative position and positive means for holding said shaft in such position; substantially as described.

5. In a tapping machine, a vertically movable tap, a cap for the tap to rest on, a vertically movable stem carrying the cap and counterweights for said stem; substantially as described.

6. In a tapping machine, a vertically movable tap, a cap for the tap to rest on, a vertically movable stem on which the cap is rotatably mounted, means for limiting the movement of the stem and counterweights for the stem and cap; substantially as described.

In testimony whereof, I have hereunto set my hand.

RICHARD SCHOLZ.

Witnesses:  
CHAS. FELL,  
H. J. ELLEN.