





# UNITED STATES PATENT OFFICE.

LESTER J. WILLIAMS, OF LEBANON, NEW HAMPSHIRE, ASSIGNOR TO  
KENDRICK AND DAVIS, OF LEBANON, NEW HAMPSHIRE, A FIRM.

## WATCH ROLLER AND HAND REMOVER.

No. 797,999.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed February 8, 1905. Serial No. 244,716.

*To all whom it may concern:*

Be it known that I, LESTER J. WILLIAMS, of Lebanon, in the county of Grafton and State of New Hampshire, have invented certain new and useful Improvements in Watch Roller and Hands Removers, of which the following is a specification.

This invention relates to tools for separating parts of watches, and has for its object to provide a convenient tool of this character which may be used to remove from the staff of a balance the disk known as the "roller" or to remove the hands of a watch-movement.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a tool embodying my invention. Fig. 2 represents an enlargement of Fig. 1, the handle being shown in section and partly broken away. Fig. 3 represents a side view taken from a different point of view. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents a section on line 5 5 of Fig. 4. Fig. 6 represents a section on line 6 6 of Fig. 4. Fig. 7 represents a section on line 7 7 of Fig. 2. Fig. 8 represents a section on line 8 8 of Fig. 2. Fig. 9 represents a section similar to Fig. 8, showing a different adjustment of the jaws. Fig. 10 represents a side view of a portion of the tool, showing the jaws closed upon a watch-balance staff. Fig. 11 represents a perspective view of the jaw-guiding head. Fig. 12 represents a perspective view of one of the jaws. Fig. 13 represents a side elevation showing a different device for operating the plunger.

The same reference characters indicate the same parts in all the figures.

In the drawings, 15 represents a head which is provided internally with a guide 16.

17 17 represent jaws formed to engage the roller 18 on the staff 19 of a watch-balance or to engage the hands of a watch-movement, each jaw being provided with a slide 20, formed to have an accurate sliding fit in the guide 16. Means are provided for moving the jaws simultaneously toward and from each other, the said means comprising a rotary device mounted in the head 15 and having provisions for simultaneously moving the jaws either toward or from each other. In this embodiment of my invention I employ a ro-

tary stud 21, which is journaled in a bearing 22, formed in the head 15 and extending parallel with the guide 16, the said guide and bearing being connected by a longitudinal opening 23. The stud 21 is provided with two continuous oblique grooves 24 24, which engage pins 25 25, affixed to the jaw-shanks 20 and projecting through the opening 23 into the bearing 22.

To the head 15 is affixed a shank 26, in which a plunger 27 is longitudinally movable, said plunger being adapted to be projected between the jaws 17.

Means are provided for securing the stud 21 against endwise movement in its bearing 22, said means being preferably such as to enable the stud to be adjusted endwise to insure a uniform distance between the jaws and the center of the pin 27. To this end I preferably employ an expansible split ring or bushing 28, which is interposed between a shoulder 29, formed on the stud 21, and a head or thumb piece 30, detachably secured to the stud, as shown in Fig. 9. The reduced portion of the stud within the bushing 28 is adapted to rotate in the bushing, the latter having a constant tendency to expand by its own resilience, and thus frictionally engage the bearing 22. This frictional engagement prevents endwise movement of the stud 21, the stud being at the same time free to rotate in the bushing 28. In assembling the parts the bushing 28 is adjusted until the stud 21 has the exact longitudinal position required to hold the jaws equidistant from the center of the plunger 17, the bushing being held by friction in any position to which it may be adjusted in the bearing 22.

The pins 25 have screw-threaded portions which are engaged with the jaw-shanks 20, as shown in Figs. 8 and 9. The head 15 is provided with orifices 32 32, which are arranged to coincide with the pins 25 when the jaws are in their position of closest approach to each other, as shown in Fig. 9, the pins being inserted through the holes 32 into the jaws and into the grooves of the stud when the parts are in the position last mentioned.

It will be seen that when the jaws are engaged with a roller, as shown in Fig. 10, and the plunger 27 is projected the pressure of the pin will force the staff 19 outwardly from the roller. The operation of removing the hands of a watch-movement is similarly per-



formed, as will be well understood by those skilled in the art.

In Fig. 4 I have shown as the means for projecting the plunger 27 a nut 33, engaging a screw-threaded portion of the plunger 27, said nut having an operating device 34, whereby it may be rotated. The said operating device is preferably a small wheel or disk affixed by a set-screw 36 to the nut 33, its periphery projecting through openings in the sides of an enlargement of the shank 26, as shown in Figs. 1, 2, 3, and 6. The plunger is preferably made in sections, as shown in Fig. 4, the nut-engaging screw-thread being formed on one section, which is provided with a shank 38, entering a socket in the other section, which is the operative portion of the plunger. The section on which the screw-thread is formed is preferably provided at its upper portion with an enlargement 39, on which a spring 40 exerts pressure to maintain a frictional connection between the threads of the plunger and the nut and prevent the nut from turning too freely. Rotation of the enlargement 39 with the nut is prevented by means of a key 41, affixed to the shank and entering a longitudinal groove in the enlargement 39. When the nut 34 is rotated backwardly, the plunger is retracted.

The sectional construction of the plunger enables the outer operative portion thereof to be removed to permit the re-forming of its staff-engaging cavity in case the latter has become worn or to permit another operative portion having a cavity of different size to be substituted for it.

In Fig. 13 I show as the plunger-projecting device a lever 42, pivoted at 43 to an ear on the shank 26, said lever having a shorter arm (not shown) projecting into the shank and engaging the plunger 27. When the longer arm of the lever 42 is pressed toward the shank, the plunger is projected by the shorter arm of the lever. When the lever is pressed away from the shank, the plunger is retracted.

I claim—

1. A tool of the character stated, comprising a head having a jaw-guide, and a stud-bearing parallel with the guide and connected therewith by a longitudinal opening, a pair of jaws having shanks fitted to slide in the guide, and pins projecting through said opening into the bearing, a rotary stud journaled in the bearing and having oppositely-arranged continuous oblique grooves engaging said pins and adapted to move the jaws simultaneously in opposite directions, a shank affixed to the head, a plunger movable longitudinally

in the shank and between the jaws, and means for projecting and retracting the plunger.

2. A tool of the character stated, comprising a jaw-guiding head, a pair of jaws having shanks fitted to slide in the guiding portion of the head, a rotary stud journaled in the head and having oppositely-arranged continuous oblique grooves engaging pins attached to the jaw-shanks, means for rotatively engaging the stud with the head in different longitudinal positions, a shank affixed to the head, and a plunger movable longitudinally in the shank and adapted to be projected between the jaws.

3. A tool of the character stated, comprising a jaw-guiding head, a pair of jaws having shanks fitted to slide in the guiding portion of the head, a rotary stud journaled in the head and having oppositely-arranged continuous oblique grooves engaging pins attached to the jaw-shanks, and an expansible split bushing engaged with the stud and adapted to be frictionally engaged with the head in different positions.

4. A tool of the character stated, comprising a head having a jaw-guide, and a bearing parallel with said guide, the socket and guide being connected by a longitudinal opening or passage, jaws having shanks movable in said guide, said shanks having pins projecting through said opening into the bearing, a stud journaled in the bearing and having oppositely-arranged continuous oblique grooves engaging said pins, a shank affixed to the head, and a plunger movable longitudinally in the shank and adapted to be projected between the jaws.

5. A tool of the character stated, comprising a head having a jaw-guide, and a bearing parallel with said guide, the socket and guide being connected by a longitudinal opening or passage, jaws having shanks movable in said guide, said shanks having pins projecting through said opening into the bearing, a stud journaled in the bearing, and having oppositely-arranged continuous oblique grooves engaging said pins, a split expansible bushing rotatively engaged with the stud and frictionally engaged with the bearing, a shank affixed to the head, and a plunger movable longitudinally in the shank and adapted to be projected between the jaws.

In testimony whereof I have affixed my signature in presence of two witnesses.

LESTER J. WILLIAMS.

Witnesses:

HENRY F. KNAPP,  
SCOTT SLOANE.