June 26, 1928. 1,674,644

S. HELFGOTT

HAIR SPRING REMOVER

Filed Nov. 15, 1926

Fig. 1

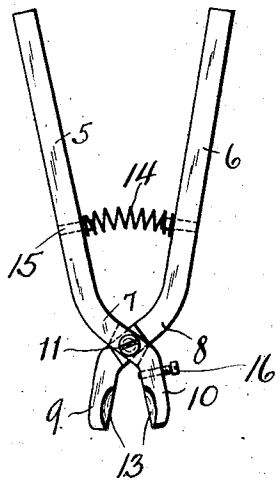


Fig. 2

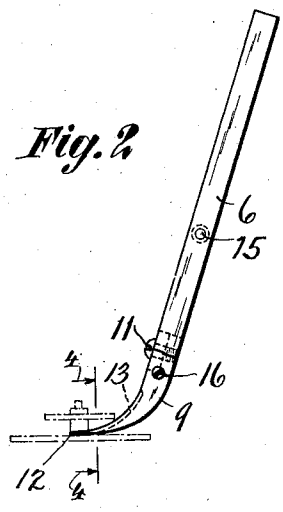


Fig. 3

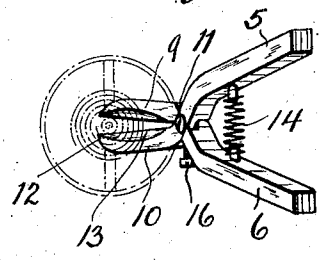
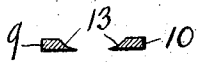


Fig. 4



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UNITED STATES PATENT OFFICE.

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HAIRSPRING REMOVER.

Application filed November 15, 1926. Serial No. 148,389.

This invention relates to a hair spring remover employed in watch repairing and watch mechanism assembly as has for its primary object to provide a novel and improved simple tool or implement whereby the said spring may be easily removed without distortion from the balance staff.

One of the objects of my invention is to provide a hair spring remover for watch makers' use constructed and arranged with a pair of complementary, knife edge jaws adapted to ride beneath the hair spring collet and gradually force it upwardly to remove the hair spring from the balance staff.

A further object of my invention is to provide a hair spring remover for watchmakers' use embodying a pair of jaws gradually tapering toward their ends and having a beveled knife edge on the inner edge of each of the jaws in which the hair spring collet may be gradually forced upwardly as the jaws are closed or moved toward each other.

To enable others skilled in the art to more fully comprehend the underlying features of my invention, reference is had to the accompanying drawing in which

Fig. 1 is a perspective view showing the tool in its normal position.

Fig. 2 is a side view.

Fig. 3 is a top view showing the tool and its manner of use to remove the hair spring.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2, through the jaws of the tool.

Referring now to the drawings 5, 6 designate the handles of the tool which are bent or curved inwardly at 7, 8 and terminate in cooperating, complementary curved jaws 9, 10 disposed at an obtuse angle relative to the handles. One of the handles is provided with an undercut recess for the opposite handle, said handles being pivotally connected by a pivot screw 11.

Each jaw gradually tapers toward its extremity terminating in a very thin curved tip 12. The inner edges of the jaws are each beveled at 13 so that when the jaws are closed, a shallow, dished seat is formed for the hair spring whereby the extreme outer convolutions of the spring are curved slightly upwardly.

It will be noted and observed that the inner edges of the jaws do not overlap but may be brought together so that the collet of the hair spring may be engaged and as it rides up on the dished seat, the hair spring may fly off from the balance wheel. The handles and incidentally the jaws of the tools are normally separated by the spring 14 held by two pins 15 and the closing movement of the jaws may be further regulated by a stop screw 16.

I wish to clearly point out that the above described tool is unlike the common form of pincers, wire cutter pliers or grippers in that the jaws of the tool do not overlap and that the hair spring collet is not actually engaged by the instrument. In other words, the knife edges of the curved jaws and the beveled edges forming the seat permits the hair spring collet and hair spring to ride up on the dished seat and consequently moved upwardly and is disconnected from the watch mechanism. In using the tool, the handles are held in the fingers at an angle of substantially sixty degrees to the horizontal so that the lower surfaces of the complementary jaws are somewhat below the plane of the tips of said jaws. The thinness of the extreme outer ends of the jaws permits the tool to ride beneath the hair spring as suggested by Fig. 3 so that as the jaws are gradually moved toward each other against the resistance of the spring, the collet and the spring will ride upwardly on the dished top surface of the jaws and will fly off the balance.

Having shown and described my invention what I claim as new and desire to secure by Letters Patent is:

1. A hair spring remover comprising a pair of pivotally connected handles having curved closing jaws operable from a point above the pivotal connections, a spring between said handles for normally maintaining said jaws in spaced relation, said jaws being disposed at an obtuse angle relative to the handles and provided with inner upwardly beveled edges forming a dished seat when closed and terminating in a thin tip whereby the said jaws may ride beneath the hair spring and engage the hair spring collet.

2. A hair spring remover comprising a pair of pivotally connected handles having inwardly directed bent portions terminating in complementary jaws and operable from

a point above the pivotal connection, a spring between said handles for normally maintaining said jaws in spaced relation, said jaws being disposed at an obtuse angle relative to said handles and provided with upwardly beveled edges forming a dished seat when closed and terminating in a thin tip whereby the said jaws may ride beneath the hair spring and engage the hair spring collet and stop limiting means comprising a set screw for said jaws.

In testimony whereof I affix my signature.

SOLOMON HELFGOTT.