

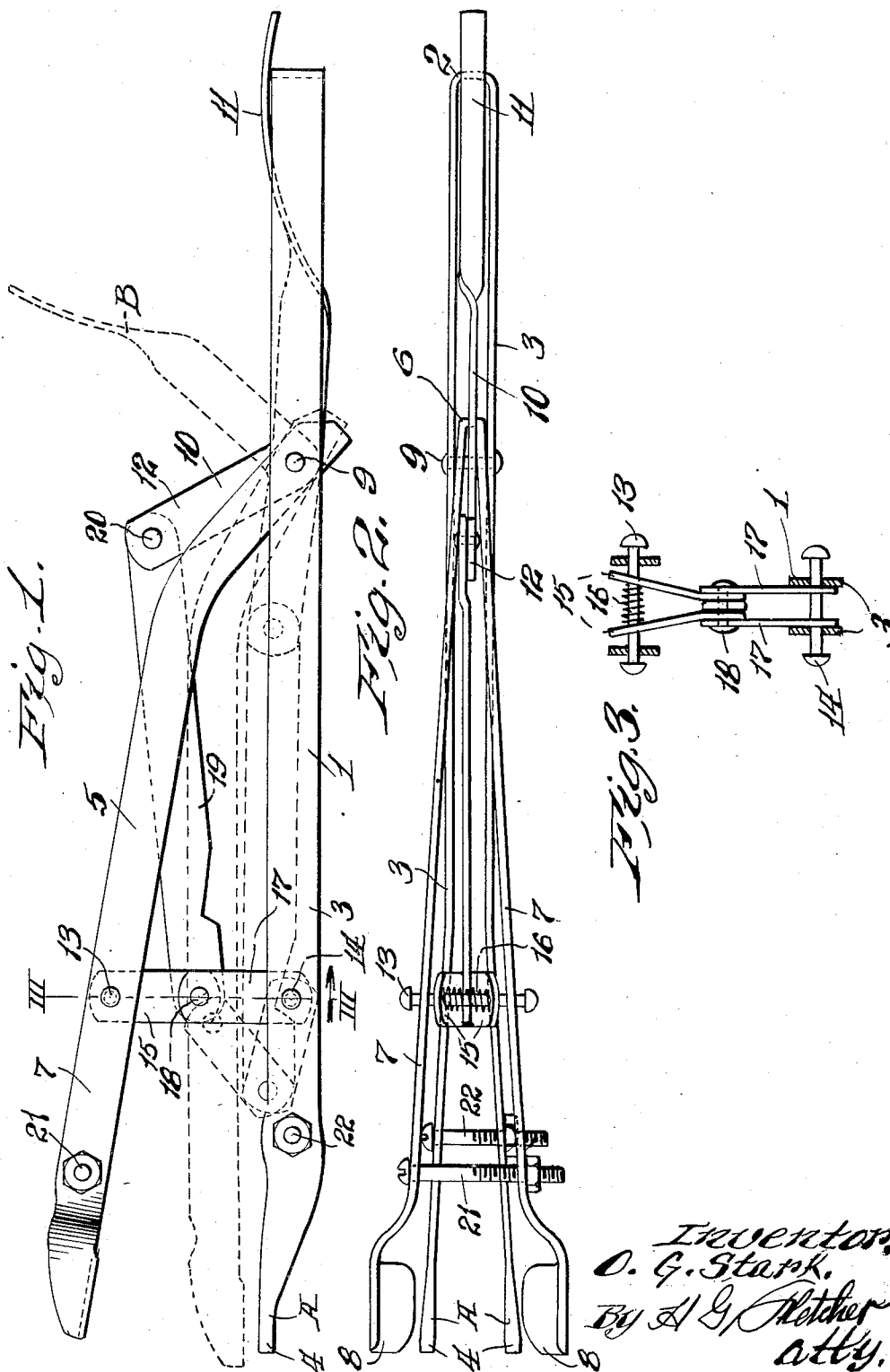
April 5, 1932.

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1,852,794

VALVE LIFTING TOOL

Filed Feb. 9, 1928



UNITED STATES PATENT OFFICE

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VALVE LIFTING TOOL

Application filed February 9, 1928. Serial No. 252,949.

This invention relates to a new and useful improvement in valve lifting tools, one of the objects of the invention being to provide a tool which is simple in its construction and efficient in its use and can be quickly operated.

Another object of the invention is in providing the lifting tool with improved means for locking the jaws in expanded position.

A further object of the invention is in providing the lifting or separating means of the jaws of a construction so as to provide an automatic locking means.

Other and further objects will appear in the specification and be specifically pointed out in the appended claims, reference being had in the accompanying drawings, exemplifying the invention, and in which:—

Figure 1 is a side elevation of this improved valve lifting tool in extended position.

Figure 2 is a plan view of Fig. 1.

Figure 3 is a transverse vertical section taken approximately on the line III—III of Fig. 1.

With reference to the accompanying drawings, 1 designates the lower jaw member which is made of a single piece of strap metal which is bent at 2 intermediate of its ends so as to provide a pair of forwardly extending legs 3, each leg at its extending end being flattened as designated at 4 so as to provide a pair of jaws A.

Disposed upwardly of the jaw member 1 is a jaw member 5 which is made of a single piece of strap metal which is bended intermediate of its ends as designated at 6 so as to provide a pair of forwardly extending arms or legs 7, the free end of each arm being formed into a jaw 8.

The bended end 6 of the arms 7 is mounted between the legs 3 of the jaw member 1 and is pivoted between said legs by the pivot or rivet 9 and mounted on said pivot between the arms 7 of the jaw member 5 is a bell crank lever 10 having a hand engaging portion 11 formed at one end and a connecting portion 12 formed at its opposite end.

Supported transversely in the arms 7 of the jaw member 5 is a relatively long pin 13 and transversely mounted in the legs 3 of the jaw member 1 is a relatively long pin 14 and

mounted on the pin 13 is a pair of depending spaced links 15 having a coil spring 16 located there between and mounted on the pin 13, and mounted on the pin 14 and extending upwardly therefrom is a pair of spaced links 17, said links 15 and 17 being swingingly secured at their opposite ends by the pivot 18. Mounted on the pivot 18 between the lower ends of the links 15 is a connecting rod 19, said rod being pivotally secured at its opposite end to the connecting portion 12 of the bell crank lever 10 by the rivet 20.

Transversely mounted in the arms 7 of the jaw members 5 adjacent the jaws 8 is an adjusting bolt 21 and transversely mounted in the legs 3 of the jaw member 1 is an adjusting bolt 22.

In the operation of this improved valve lifting tool, the jaw members 1 and 5 are operated to contracted positions as shown in Fig. 1 in which the jaws A and 8 will be adjacent one another so that they can be engaged against the lower end of the valve spring and the seat thereof and upon engaging and pressing down the end 11 of the bell crank lever 10, the jaws A and 8 will be moved to expanded positions thereby compressing the spring so that the valve can be removed and in which the spring can subsequently be displaced.

In operating the hand engaging portion 11 of the bell crank lever 10 downwardly for swinging the pairs of links 15 and 17 in their vertical positions, this movement of the bell crank lever and the links 15 and 17 expands the jaw members 1 and 5 and the links 15 and 17 when moved to vertical positions will provide an automatic lock for holding the jaw members in the expanded positions. For moving the jaw members to contracted positions, the hand engaging portion 11 is elevated from its abutting position against the bended end 2 of the lower jaw member and swung to the approximate position shown in dotted lines at B in Fig. 1, this elevating movement of the bell crank lever 10 pushing the pivot 18 out of vertical alinement with the pins or pivots 13 or 14 of respective links 15 and 17 and consequently moving said links from locking position.

In order to accommodate the pair of jaws A and the pair of jaws 8 to valve springs of different widths, the adjusting bolts 21 and 22 are provided, and in which when respective nuts of said bolts are manipulated in a tightening or loosening direction, the jaws can be drawn together or moved farther apart by reason of the jaw members 1 and 5 being made of a resilient material.

From the disclosure of this improved valve lifting tool it is obvious that a simple, efficient and inexpensive tool is provided and which provides locking means which are co-operable with the actuating lever and in which said locking means is automatic in its operation.

What I claim is:

1. A valve lifting tool comprising a pair of pivoted together jaw members, a lever mounted on the pivot of said jaw members, toggle links connecting said jaws members, and a rod connecting said lever and the joining pivot of said links.

2. A valve lifting tool comprising a pair of pivoted together jaw members, a bell crank lever mounted on the pivot of said jaw members, a pair of pivoted together links each being connected to a respective jaw member, and a rod connected to said lever and the connecting pivot of said links.

3. A valve lifting tool comprising a pair of cooperable jaw members, each of said jaw members being formed of a piece of strap metal which is bent on itself intermediate of its ends forming paralleling legs, the bent portion of the upper jaw member being inserted between the legs of the lower jaw member, a pivot passing through the inserted portion of said upper jaw member and the legs of said lower jaw member for securing said members together, a bell crank lever mounted on said pivot between the legs of said upper jaw member, a pair of connected together links each being connected to a respective jaw member between the legs thereof, and a rod connected to said lever and the connecting pivot of said links.

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