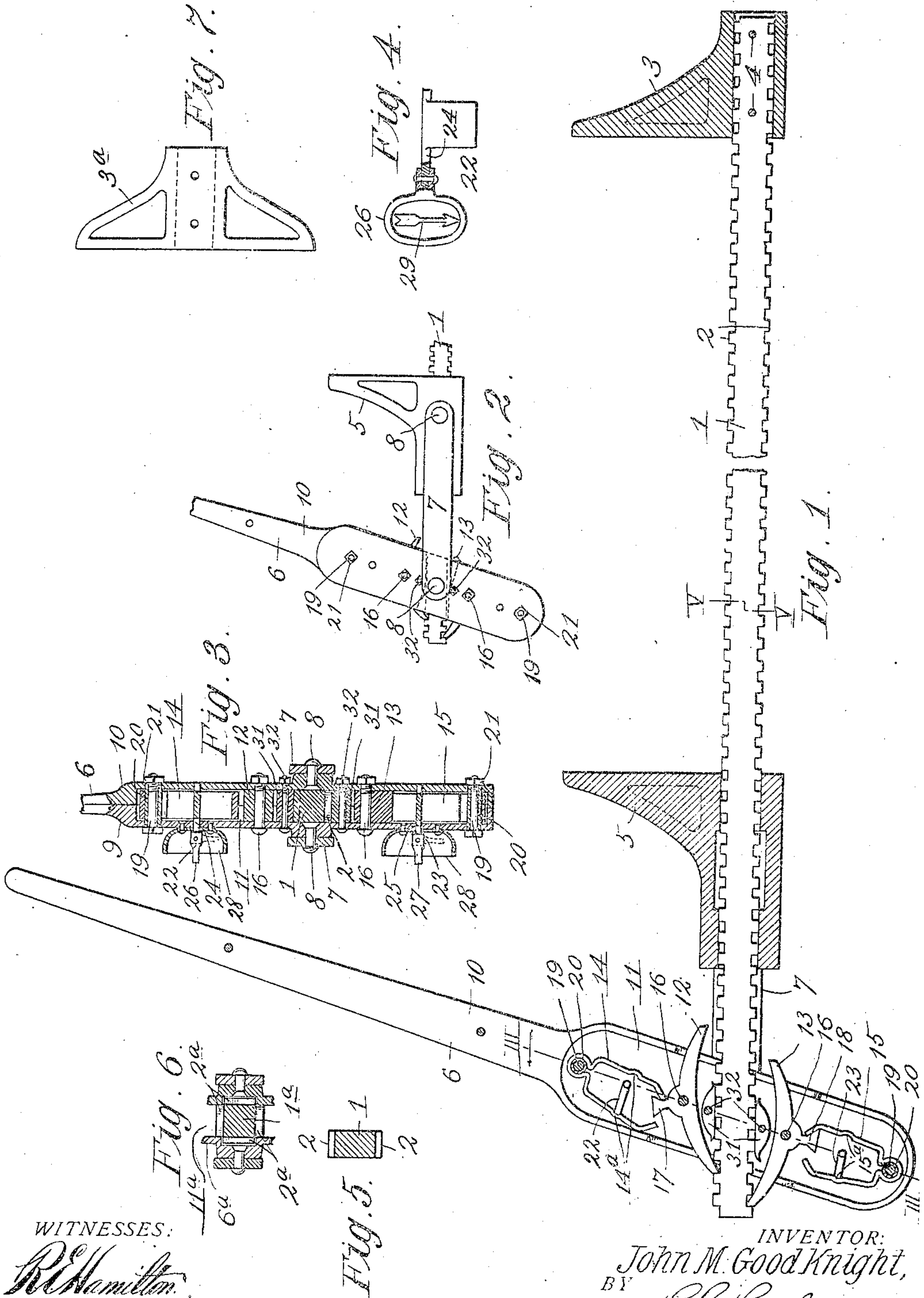


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DOUBLE ACTING CLAMP.
APPLICATION FILED APR. 30, 1908.

914,567.

Patented Mar. 9, 1909.



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JOHN M. GOODKNIGHT, OF KANSAS CITY, KANSAS.

DOUBLE-ACTING CLAMP.

No. 914,567.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN M. GOODKNIGHT, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Double-Acting Clamps, of which the following is a specification.

My invention relates to improvements in double-acting clamps; and my object is to provide a simple, inexpensive tool of this character for the use of carpenters, cabinet-makers, car-builders, and all mechanics having use for a tool of this character.

The tool embraces a stationary head-block and a movable head-block, and is double-acting,—that is its power may be exerted in a contractive or clamping manner by forcing its movable head-block toward its stationary head-block, or its power may be used in an expansive manner by forcing its movable head-block away from the stationary head-block.

The tool also embraces means for actuating the movable head-block, consisting of a hand-lever which may be operated either in a perpendicular or a horizontal position.

In order that the invention may be fully understood, reference will now be made to the accompanying drawing, in which:

Figure 1 represents a side elevation partly in section of the invention. Fig. 2 is a broken side elevation of the same. Fig. 3 is a section on line III—III of Fig. 1. Fig. 4 is a detail side elevation of a key employed in carrying out the invention. Fig. 5 is a detail cross section on line V—V of a rack-bar employed in carrying out the invention. Fig. 6 is a broken cross-section of a modified form. Fig. 7 shows a modified form of head-block.

1 designates a rack-bar provided with two rows of marginal teeth 2.

3 designates a stationary head-block detachably secured to one end of the rack-bar by bolts or pins 4, so that head-blocks of different shapes and suitable for different kinds of work may be substituted for the head-block 3.

5 designates a movable head-block slidably mounted upon the rack-bar so that it may be adjusted toward or away from head-block 3. Head-block 5 is actuated by means of an oscillatory hand-lever 6 connected thereto by a pair of links 7, secured to opposite sides of the head-block and the lever by studs 8. Hand-lever 6 consists of two sections 9 and

10 each of which has a recess in its lower portion forming a chamber 11 for the reception of mechanism whereby the lever and head-block 5 are advanced or retracted upon the rack-bar. This mechanism consists of two double-acting pawls 12 and 13, and two U-shaped springs 14 and 15, adapted, respectively, to engage the pawls 12 and 13. Springs 14 15 are provided with seats 14^a and 15^a to receive the bits of two keys, hereinafter described.

Pawls 12 and 13 are pivotally mounted upon bolts or pins 16, and have centrally-disposed T-shaped heads 17 18, respectively, adapted to be engaged by either of the terminals of their respective springs. Springs 14 15 are pivotally mounted upon two bolts 19 provided with sleeves 20 which extend transversely through the lever and abut at their ends against the heads of bolts 19 and their retaining-nuts 21. Sleeves 20 prevent the sides of chamber 11 from being forced by the retaining-nuts into frictional engagement with the pawls and the springs and thus interfering with their movements.

22 23 designate two keys the bits of which are arranged between springs 14 15, respectively, for the purpose of alternately adjusting the ends of the same into or out of engagement with the T-shaped portions of the pawls. The shanks 24 25 of the keys extend outward through one side of the chamber 11 and are provided with handles 26 27, respectively, pivotally secured thereto, so that said handles may fold beside the adjacent chamber wall, as indicated by dotted lines, Fig. 3, when not in use and be protected from injury by the surrounding flanges of two escutcheons 28, secured to the adjacent side wall of the chamber. The handles of the keys have arrows 29 which point in the same direction as the bits, so that the exact location of the latter can be readily ascertained preparatory to adjusting the springs.

When it is desired to move head-block 5 toward head-block 3 for the purpose of clamping the different portions of a piece of work together, keys 22 23 are adjusted to the position shown in Fig. 1, to throw the forward ends of springs 14 15 into contact with the T-shaped heads 17 and 18 of the pawls. The pressure of the springs against said T-shaped heads forces the rear ends of the pawls into engagement with the teeth of the rack-bar, hence when the upper end of the lever is swung back and forth the pawls alternately

act as fulcrum points therefor so that it may move head-block 5 forward. When it is desired to move head-block 5 backward the position of the springs and the pawls is reversed, so that the rear ends of the latter will engage the teeth on the rack-bar. When it is desired to slide head-block 5 for any distance upon the rack-bar, both ends of the pawls are thrown out of engagement with said rack-bar by adjusting the bits of the keys to a neutral position between the arms of the springs. This permits rapid adjustment of the clamp for either large or small work. In order that the lever may operate smoothly and rapidly upon the rack-bar, I provide said lever with a pair of guides 31 secured thereto by pivots 32, so that the straight edges of said guides may remain parallel to the rack-bar while the lever is being oscillated. The rack-bar is of the same size throughout its length, so that when desired the lever may be easily removed therefrom. The movable head-block 5 may likewise be removed when it is desired to substitute another of different form therefor, one for instance like the head-block 3^a, shown by Fig. 7.

In the modified form, Fig. 6, 1^a designates the ratchet-bar which is provided with ratchet-teeth 2^a on all four of its sides.

6^a designates the hand-lever, and 11^a the chamber in the lower portion thereof.

By making the ratchet-bar square in cross-section and providing its four sides with teeth 2^a, the hand-lever may be placed thereon either in a vertical or a horizontal position. This is a decided advantage as it permits the hand-lever to be operated in situations it would be impossible to operate in; in case it had to extend either in a vertical or a horizontal position.

Having thus described my invention, what I claim is:—

1. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block and adapted to travel therewith on the rack-bar, and a pair of double-acting pawls carried by the lever which engage the rack-bar and alternately act as fulcrum points for said lever.

2. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block and adapted to travel therewith on the rack-bar, a pair of double-acting pawls engaging opposite sides of the rack-bar and pivotally secured to said lever, and yielding means for holding the ends of the pawls in engagement with the rack-bar.

3. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever arranged to travel on the rack-bar, links connecting said lever and the movable head-block, a pair of pawls carried

by the lever which engage the rack-bar and alternately act as fulcrum points for said lever, and guides pivoted to the lever engaging opposite sides of the rack-bar.

4. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block and adapted to travel therewith on the rack-bar, a pair of double-acting pawls engaging opposite sides of the rack-bar and pivotally secured to said lever, yielding means for holding the ends of the pawls in engagement with the rack-bar, and keys carried by the lever for reversing said yielding means.

5. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block and adapted to travel therewith on the rack-bar, a pair of reversible pawls engaging opposite sides of the rack-bar and pivotally secured to the lever, a pair of springs pivoted to the lever and provided with terminals adapted to alternately engage the pawls, and means carried by the lever for reversing the springs.

6. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block and adapted to travel therewith on the rack-bar, a pair of reversible pawls engaging opposite sides of the rack-bar and pivotally secured to the lever, a pair of springs pivoted to the lever and provided with terminals adapted to alternately engage the pawls, keys for reversing the springs provided with folding handles at one side of the lever, and means on said side of the lever for protecting the handles.

7. A clamp consisting of a rack-bar which is substantially square in cross-section and provided with teeth on its four sides, a lever adapted to operate on said rack-bar either in a perpendicular or a horizontal position, pawls carried by the lever which engage the rack-bar and alternately act as a fulcrum for said lever, and stationary and adjustable head-blocks on the rack-bar, said adjustable head-block being suitably connected to the lever.

8. A clamp consisting of a rack-bar, stationary and adjustable head-blocks thereon, an oscillatory-lever connected to the adjustable head-block, a pair of double-acting pawls adapted to engage opposite sides of the rack-bar and provided with centrally-disposed heads, and means engaging said heads adapted to either reverse the pawls or hold them out of engagement with the rack-bar.

In testimony whereof I affix my signature, in the presence of two witnesses.

JOHN M. GOODKNIGHT.

Witnesses:

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