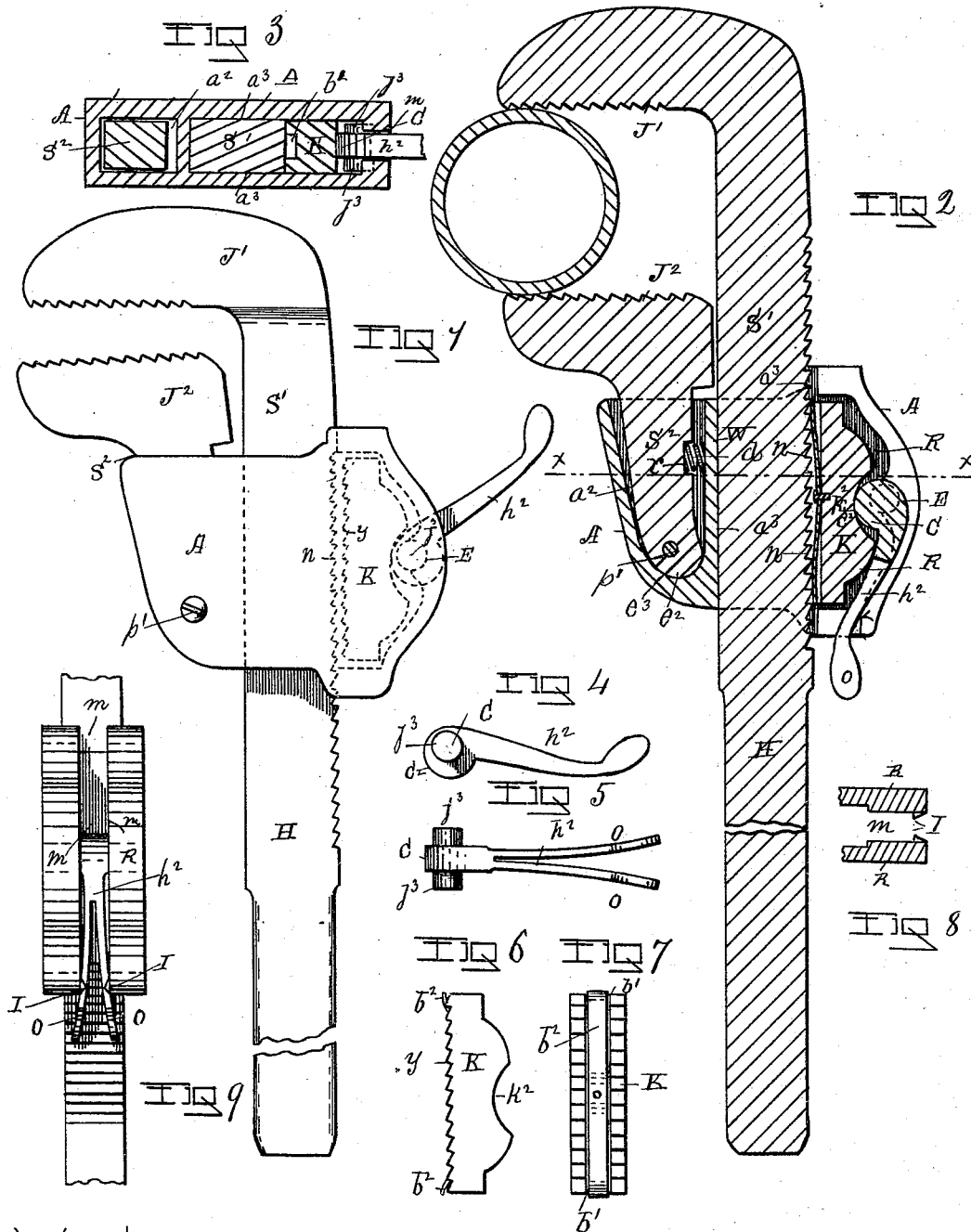


(No Model.)

F. B. IDE.  
HAND WRENCH.

No. 492,626.

Patented Feb. 28, 1893.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## HAND-WRENCH.

SPECIFICATION forming part of Letters Patent No. 492,626, dated February 28, 1893.

Application filed November 10, 1892. Serial No. 451,490. (No model.)

### *To all whom it may concern:*

Be it known that I, FRED B. IDE, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Wrenches, of which the following is a specification.

My invention relates to improvements upon hand wrenches, and more particularly to that class of them in which the shanks of the gripping jaws are made at right angles to the latter, one of them being arranged in advance of the other, with the outer jaw shank adapted to slide in the wrench stock, and the other jaw shank at its inner end hinged to the stock within a socket; the object and purpose of my improvement upon this class of wrenches being to adapt them by construction so that the sliding shank may interlock with the stock when adjusted as to gripping area, by means of a key-piece, a cam, and an interlocking or latching spring lever operating the cam and key-piece.

Accompanying this specification to form a part of it there is a plate of drawings containing nine figures illustrating my invention with the same designation of parts by letter reference used in all of them.

Of these illustrations Figure 1 is a side elevation of a wrench containing my improvement, with the handle shank shown as broken apart for convenience of illustration, and with the cam lever shown as thrown up, and the key-piece illustrated as moved away from the serrated edge of the sliding jaw shank. Fig. 2 is a central vertical section taken from end to end through the shanks, stock, jaw, key-piece, cam, and lever. Fig. 3 is a cross-section taken on the line  $x, x$ , of Fig. 2. Fig. 4 is a side view of the cam and bifurcated latch lever, shown as detached. Fig. 5 is a top view of the bifurcated cam lever, connected cam and its journals, shown as detached. Fig. 6 is a side elevation of the key-piece shown as detached. Fig. 7 is a bottom view of the key-piece and spring. Fig. 8 is a section taken transversely through the slot-part of the socket at the latching end of the same, showing the latch catches on each side of the slot in which the cam lever is operated to latch or interlock. Fig. 9 is a top view of part of the stock showing the slot made therein for the cam lever,

showing also the latter with its bifurcated ends latched beneath the latch catches.

The several parts of the wrench thus illustrated are designated by letter reference and the function of the parts is described as follows:

The letter  $J'$  designates the outer jaw, and  $S'$  its shank made to be at right angles to the latter, and prolonged to form the handle  $H$ .

The letter  $J^2$  designates the inner jaw, and  $S^2$  its shank, also made to be at right angles to the latter.

The letter  $A$  designates the stock made with the socket  $a^2$ , the slide-way  $a^3$ , the key-piece recess  $R$ , and the slot  $m$ , formed in the side of the latter. The shank of the inner jaw  $J^2$ , at  $p'$ , is pivoted to the socket and is made with the rounded journaling end  $e^2$ , adapted to partially rotate in the rounded bearing face  $e^3$ , formed at the inner end of the socket.

The letter  $d$  designates a spiral spring, made to seat in a recess  $r$ , formed in the inner face of the shank  $S^2$ , and at its other end to bear against the socket side wall at  $W$ ; and the function of this spring is to engage with the side of the shank  $S^2$ , and to force the jaw  $J^2$  outwardly so that its jaw face will open out away from alignment with the serrated face of the jaw  $J'$ , to better adapt the entrance of a pipe between the jaws. The jaw shank  $S'$  is arranged within the slide-way  $a^3$  formed in the socket in which it may be moved outwardly or inwardly to adjust its gripping capacity to the jaw  $J^2$ . The shank  $J'$  is serrated on its outer edge where within the socket as indicated at  $n$ .

The letter  $K$  designates a key-piece that is arranged within the socket recess  $R$ . This key-piece has its face where adjacent to the face of the shank  $S'$ , serrated at  $y$  so that when forced to engage with the latter the serrated faces of the shank and key-piece interlock.

The letter  $b'$  designates a slot made centrally in the serrated face of the key-piece, and  $b^2$  a leaf spring arranged in said slot, and the function of this spring  $b^2$  is to force the key-piece  $K$  away from its serrated engagement with the shank  $S'$ . The outer face of this key-piece is made with a curved recess  $k^2$ , and the recess  $R$  is made with bearing sur-

faces E, interiorly placed at each side of the slot *m*.

The letter C designates a cam roller having short journals *j*<sup>3</sup>, made to rest in the bearing surfaces E, with the cam C bearing upon and within the curved recess *k*<sup>2</sup>.

The letter *h*<sup>2</sup> designates a lever that is projected from the cam roller, and this lever is bifurcated so as to have spring arms O, with this lever adapted to be moved in the slot *m*, so that when the cam roller on its eccentric face C<sup>2</sup> is made to engage with the curved recess *k*<sup>2</sup>, and by pulling down on the lever *h*<sup>2</sup>, it forces the key-piece K toward the shank S', so that the serrated faces of the latter engage with those of the key-piece.

The letters I designate catches formed on each side of the slot *m*, under which by pinching together the spring arms O, the latter are latched to thus hold the interlocked surfaces of the key-piece and shank S', in a rigid engagement.

The parts thus arranged are operated as follows: When the jaw J' has been moved out by operating its shank in the socket slide, until a desired width of grip area is had between the two jaws, the lever *h*<sup>2</sup> is then pulled down, with the arms O forced together, and latched under the catches I, at each side of the slot *m*. When this is done the serrated face of the key-piece is caused to engage with that of the shank S', and the parts are firmly connected. When it is desired to set the jaws at another width of grip, the lever *h*<sup>2</sup> is unlatched and thrown up, when the spring *b*<sup>2</sup>, in the bottom of the key-piece forces the latter away from its engagement with the shank S'.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wrench, the combination with a stock made with a socket, a slide-way, and key-piece recess having a slot at its outer side, of an outer jaw having a shank that is hinged at its inner end to the stock within the socket; an outer jaw provided with a shank made with a serrated face on its side next adjacent to said recess, and arranged in said slide-way; a key-piece constructed with a serrated inner face and having therein a slot and spring, and made with a rounded bearing surface on its

outer face, and arranged within said stock recess; a roller cam constructed to journal in the inner face of said key-piece at each side of its slot, and to bear on the top of said key-piece; and a lever made with spring arms connected to said cam roller, and constructed to latch into said slot and to be operated substantially in the manner as and for the purposes set forth.

2. The combination, with the stock A, having the socket *a*<sup>2</sup>, slide-way *a*<sup>3</sup>, and slotted key-piece recess R, of the jaw J', made with the shank S', serrated at *n*, and arranged in said slide-way; the jaw J<sup>2</sup>, made with the shank S<sup>2</sup>, hinged at *p*' to the stock within said socket and having the spring *d*, arranged between the side of said socket and said shank S<sup>2</sup>; the key-piece K, made with the serrated face *y*, slot *b*<sup>2</sup>, spring *b*<sup>2</sup>, and curved recess *k*<sup>2</sup>; the cam roller C, having short shafts *j*<sup>3</sup>, adapted to turn in bearing surfaces E, made in the inner faces of the recess slot at each side thereof, and to bear upon the tip of said key-piece; and the lever *h*<sup>2</sup>, connected to said cam roller, and at its outer end having formed arms O, O, adapted to latch into said slot, substantially in the manner as and for the purposes set forth.

3. In a wrench the combination with a stock having a socket, slotted key-piece recess, and slide-way, substantially as described; of an outer jaw having a shank arranged in said slide-way, and thereat made with a serrated face; a key-piece having a serrated face constructed to engage with a serrated face of said shank and having a spring arranged in a slot made on its serrated face; a cam roller arranged between said key-piece and the inner wall of the key-piece recess, said roller having a lever adapted to latch into said key-piece and constructed to be operated substantially in the manner as and for the purposes set forth.

Signed at Troy, New York, this 1st day of November, 1892, and in the presence of the two witnesses whose names are hereto written.

FRED B. IDE.

Witnesses:

CHARLES S. BRINTNALL,  
W. E. HAGAN.