

J. H. FRANKLIN.
HAND OPERATED TOOL AND IMPLEMENT.
APPLICATION FILED NOV. 16, 1910.

988,869.

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Fig. 6.

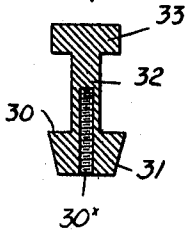


Fig. 1.

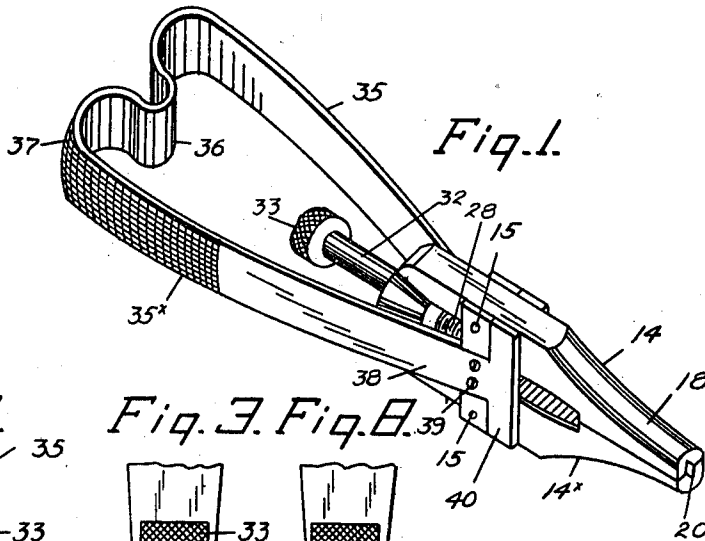


Fig. 2.

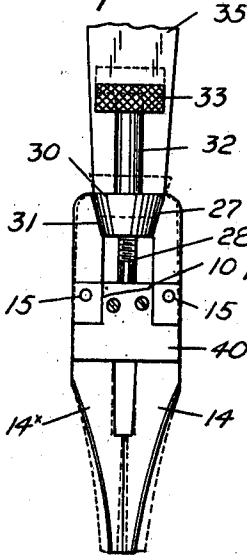


Fig. 3.

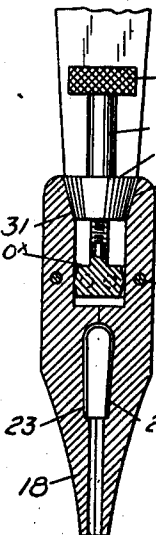


Fig. 4.

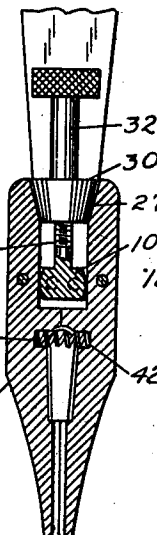


Fig. 4.

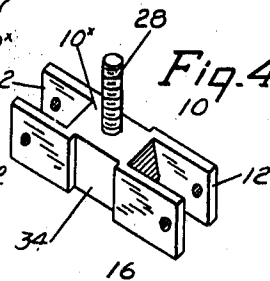


Fig. 7.

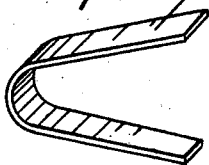
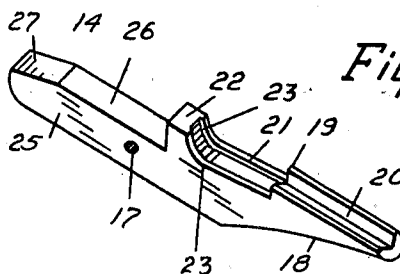


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH H. FRANKLIN, OF KANSAS CITY, MISSOURI.

HAND-OPERATED TOOL AND IMPLEMENT.

988,869.

Specification of Letters Patent.

Patented Apr. 4, 1911.

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To all whom it may concern:

Be it known that I, JOSEPH H. FRANKLIN, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Hand-Operated Tools and Implements; and I do hereby declare that the following is an exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of the invention is a hand operated tool or implement for universal application, and especially adapted to varying sizes of winding posts to the main spring of clocks, and to winding posts whose angles have become worn by use and difficult to grasp with the ordinary key. Second. A hand operated tool whose jaws are guarded from distortion in the torsion applied to the handle. Third. To obtain a non-yielding grasp of a winding post, whether the post be large or small.

The invention consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings: Figure 1, is a view in perspective of the invention. Fig. 2. is a side elevation, in respect to the jaws, the near portion and also the rear upper portion of the handle being broken away to show the operative parts. Fig. 3. is a view similar to that seen in Fig. 2, the jaws being shown in vertical section. Fig. 4. is a detail view, in perspective, of the jaw piece. Fig. 5 is a detail view, in perspective, of one of the jaws. Fig. 6. is a detail view of the internally screw-threaded post and cam. Fig. 7 is a detail view of the spring operating the jaws. Fig. 8. is a view similar to that seen in Fig. 3, showing an alternate view of the spring between the jaws.

Similar numerals of reference indicate corresponding parts in all the figures of the drawing.

Referring to the drawing, 10 indicates the jaw-supporting plate or member, of the implement, which consists of a rectangular-shaped body or forging, of suitable thickness, in the ends of which are the vertical, rectangular-shaped openings 12, which extend inwardly a distance about one-third the length of the block from each end, respec-

tively, to the central portion 10^x, of the body, at which point the body is inclined or cut away at the top and bottom.

Within the openings 12 are pivoted the grasping jaws 14 and 14^x, of the implement, the pivots 15 upon which the jaws are fulcrumed passing transversely through the perforations 16, forming the sides to the openings 12, in the jaw piece, and also through the registering perforations 17, in the respective jaws 14, 14^x, at points a short distance below the line of the upper surface of said jaw piece 10. Each jaw is formed from a straight bar, of considerable length, the outer surfaces and lower end portions of the bars from points a short distance below a line horizontal with the lower surfaces of the jaw piece to the line of the lower ends of the jaws being cut away as at 18, inwardly and downwardly, the reduced portions of the said ends being outwardly-curved in cross section and of the proper dimensions to enter the opening in a clock face leading to the mainspring winding post.

The inner surfaces of the jaws 14 from the line of their lower ends to a point upwardly about one-half the distance in the direction of the jaw piece 10 or the point 19, are provided with longitudinal-shaped grooves 20, the depth of the grooves being such as to grasp a winding post or other like article of small dimensions, the opposite grooves forming a double triangle when the jaws are in a closed position. Above the point 19, the inner surfaces of the jaws are cut away in a gradual upwardly-extended, inwardly-curved line, as at 21, terminating at the shoulders 22, which shoulders are positioned a slight distance below the line of the lower surface of the jaw piece 10, and from the vertical line extending through the pivots 15, to within a slight distance of the body 10^x, at the inner end of said opening 12. In the curved portions 21, of the jaws, are recesses or depressions 23, extending the length of said curved portions and a slight depth inwardly, as seen in section in Fig. 3. In the recesses 23, of the jaws, is inserted a U-shaped leaf spring or spring plate 24, the side portions fitting within the recesses, the ends of the spring plate extending downwardly and terminating adjacent to the point 19, at the upper end of the grooves 22, in the lower ends of the jaws. The upper end portions 25, of the jaws, extend a considerable distance upwardly the

line of the shoulders 22, to obtain the greatest possible leverage above the pivot or fulcrum point 15, and these portions reduced in dimension as at 25, from the lines
 5 of the inner, vertical surfaces of the shoulders 22, outwardly nearly to a vertical line extending through the pivots 15, supporting the said jaws. The said inner surfaces 25, at the extreme upper end of the portion
 10 25, of the jaws, are inclined from the line of said surfaces upwardly and outwardly, as at 27, for the purpose described herein-after.

With the upper surface of the body portion 10*, of the jaw piece, at a point equidistant from the line of the inner ends of the openings 12, is rigidly connected a screw-threaded pin 28, which extends upwardly a short distance above the lines of the upper
 20 end portions 25, of the jaws 14, 14*.

30 indicates a circular rotative casting or cam, having a downwardly and inwardly-inclined surface 31, which comes into contact with the inclined surfaces 27, of the
 25 portions 25, of the jaws 14, 14*, and act as a wedge.

With the upper surface of the cam 30 is rigidly connected the lower end of a post 32, which extends upwardly a short distance
 30 from the central portion of the cam, and is provided with a milled cap 33. In the lower surface of the cam 30 is a screw-threaded opening 30*, in line with the vertical axis of the cam, and which extends upwardly a short distance within the post 32,
 35 this opening being fitted to receive the screw-threaded pin 28 and to move forcibly the cam into contact with the inclined surfaces 27, of the jaws, as before described. In the
 40 opposite sides of the body 10* of the jaw piece 10, are depressions or recesses 34, the sides of which recesses are in vertical lines.

The handle of the implement as shown is divided into two parts 35, and 35*, narrow in width and curved outwardly in cross
 45 section. The upper ends of the portions 35 and 35* are as shown connected together by a connecting plate or portion 37, the intermediate portion being bent downwardly in
 50 a curved line, as at 36. The lower ends 38, of the portions 35 and 35*, of the handle, are extended within the recessed portions 34, of the body 10*, of the jaw piece to which the
 55 said ends are secured by the screws 39. Upon the lower portions of said ends 38, of the plate or handle 35, are connected the jaw braces 40, consisting of transverse flat plates, which extend across the flat side portions of the jaws 14, 14*, immediately below
 60 the lines of the lower surfaces of the jaw piece 10, and with their outer surfaces lying in the same plane with that of the outer surfaces of the sides to the openings 12, for the jaws 14, 14*.

65 The portions 35, 35*, of the handle of the

implement when in use is seized by one hand, the thumb and index finger being so situated as to grasp the milled head or cap 33, on the post 32, which is integral
 70 with the cam 30. In this position of the aforesaid thumb and finger the milled cap or head is turned so as to draw adjustably the cam 30 in an upward direction, thus permitting the spring 24 to spread apart the
 75 jaws 14, 14*, as far as required, or into the position as seen in Fig. 2, in order to grasp the winding post of a clock and at the same time enter the opening adjacent to the post in the clock face. The entry being made
 80 the milled head 33 is again rotated by the thumb and finger, and the cam 30 moves downwardly in contact with the inclined surfaces 27, on the upper end portions 25, of the jaws, and the cam acts as a wedge
 85 forcing the lower portions of the jaws inwardly toward each other, and grasping the winding post within the grooves 21, in the jaws 14, 14*. The winding spring is then wound in the rotative movement imparted
 90 to the implement by the hand, the ends of the spring 24 being consequently drawn inwardly. In this rotative movement of the implement the braces 40 prevent the lower
 95 ends of the jaws from being distorted and afford a support for the jaws, while permitting their proper outward and inward movements.

The grooved portions 20, of the lower ends of the jaws, are capable with the action
 100 of cam 30 to grasp without yielding winding posts, which have become worn from use and the corners rounded, and at the same time the implement affords the greater convenience of being universally adapted to the
 105 various sizes of winding posts found in the various clock mechanisms. The invention is also applicable for various uses in shop work, such as is required in watch or clock
 110 repairing and for the various uses in wire working in which the power of the implement is demonstrative in the grasp of the wire for its various manipulations, and may be applied in its details to forceps, pliers
 115 and various other tools.

I have shown leaf spring 24, in Fig. 1, as
 115 a preferred form of spring for the action of the jaws, but instead of the leaf spring I may employ a spiral spring 41, as seen in Fig. 8. In this connection the ends of the
 120 spiral spring extend within depressions 42, in the inner surfaces of the lower portions of the jaws, the position of the spring being transverse in respect to jaws 14, 14*. The
 125 portion 27, of the handle serves to strengthen the handle, but this portion may be removed for pliers and similar tools.

I am aware that the pivoted fulcrumed jaws to wrenches and like implements have
 130 been closed by the aid of cams and wedges, but I am the first to employ a rotary cam

to accomplish the object of closing the jaws thereby enabling the fixed pin on the jaw supporting member in engagement with the cam and post to obtain a centering movement of the cam and an equal bearing on both upper inclined surfaces of the jaws with more simplicity than in the devices hitherto employed. Furthermore I am enabled by the aid of the fixed screw threaded pin on the jaw supporting member co-operating with the rotary movement of the cam to impart a nonreleasable wedging action of the cam on the inclined upper ends of the jaws with greater power than in any other tool or implement of like nature. Such other modifications may be employed as are within the scope of the appended claims.

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

1. In a hand operated tool or implement, the combination with the jaw-supporting members, and with pivotally-connected, fulcrumed grasping jaws on said member having outwardly-inclined upper terminal portions, of a rotary cam, a post connected with

said cam, and a head on said post, a fixed screw-threaded pin on said jaw-supporting member, said rotary cam and post having an internal screw-threaded opening adapted to receive the screw-threaded fixed pin on said jaw-supporting member.

2. In a hand operated tool the combination with the jaw-supporting plate having openings at each end, of grasping jaws pivoted to said plate within said openings, the upper end of said jaws extending above the line of the upper surface of said jaw-supporting plate and having said ends outwardly-inclined, a jaw-operating spring beneath said plate for opening said jaws, a fixed screw-threaded pin on said jaw-supporting plate, and a rotary cam and a post on said cam having a screw-threaded opening adapted to receive said screw-threaded fixed pin on the jaw supporting plate and co-acting with the inclined upper ends of said jaws, and a handle connected with the jaw-supporting plate.

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Witnesses:

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