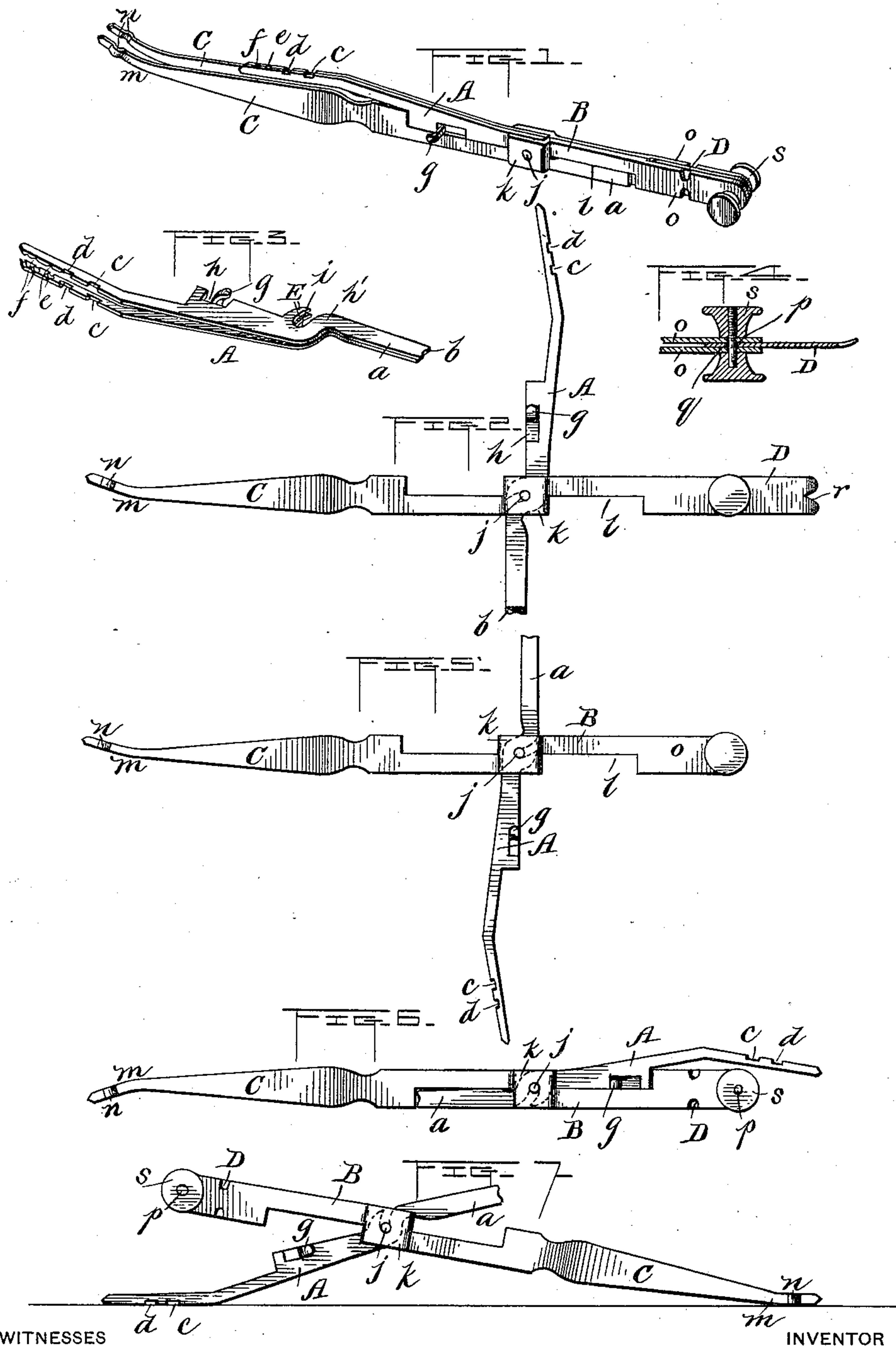


(No Model.)

J. FISHER.
WATCH MAKER'S TOOL.

No. 461,148.

Patented Oct. 13, 1891.



WITNESSES

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WATCH-MAKER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 461,148, dated October 13, 1891.

Application filed April 27, 1891. Serial No. 390,633. (No model.)

To all whom it may concern:

Be it known that I, JACOB FISHER, a citizen of the United States, residing at Elizabethtown, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Watch-Makers' Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved combined watch-maker's tool for removing the hands and hair-springs of watches, holding jewels and other small articles, and for other purposes. To this end I pivot two pairs of tweezers together midway of their lengths, as shown, the outer end of the shank of one of these tweezers being provided with a recessed rib for pushing in the dial-pins and the outer end of the shank of the other pair of tweezers being provided with a folding blade for removing the balance-spring, each pair of tweezers being, furthermore, especially adapted to the work which it is to perform.

In the accompanying drawings, Figure 1 represents a perspective view of the tool folded together. Fig. 2 represents a side elevation of the same with the jewel-holding tweezers and the blade for removing the balance-spring turned outward on their pivots. Fig. 3 represents a detail view in perspective, taken from below, of the jewel-holding tweezers open for closing on a jewel. Fig. 4 represents a detail view in cross-section of the pivoting and clamping devices for the balance-spring-removing blade. Figs. 5, 6, and 7 are side elevations of the tool, showing the jewel-holding tweezers in other positions.

A designates a pair of jewel-holding tweezers provided with a shank *a*, having on its outer end a rib *b*, slightly recessed in the middle and used for pushing in the dial-pins. The spring-plates or tweezers proper are curved or gently inclined, first forward and downward, then forward and upward to the tip. In this latter inclined face they are provided with recesses *c d*, respectively larger and smaller, for fitting upon and holding jewels of different sizes in their settings; also

they are provided in their faces, which come in contact with recesses or grooves *e f*, passing down from top to bottom, each opposite pair of grooves *e* or *f* presenting a socket for holding a plain jewel of larger or smaller size. For forcing these plates apart each of them is provided with a bent lug or thumb or finger piece *g*, which extends transversely through a recess *h* in the top of the opposite plate. The shank *a* is bent for convenience at *h'* into a higher plane than the greater part of the said tweezer-plates, but extends horizontally therefrom, the tool being in this position. The said shank and blades are provided about the point of junction with an open bearing *i*, which fits on a transverse pivot-pin *j* within an enlargement *k* of the shank B of a larger pair of tweezers. This shank is recessed at *l* to allow the shank *a* aforesaid to fit into it when the tool is folded together. Forward from this are the two spring-plates C, bent apart near their rear ends, but normally parallel throughout the greater part of their length, although separated by a little interval. Their tips are bent upward at *m* and provided with corresponding semi-cylindrical recesses *n*, which when brought together will fit on the arbor or pivot-pin of a hand or wheel. To remove a hand or wheel, slip the tips of the said blades under it, close them by thumb and finger pressure on the arbor, and then by a slight upward motion of the said tips dislodge the part or parts desired. The other end of the shank B is provided with two short parallel spring-plates *o*, which are perforated to allow the passage of a pivot-screw *p* through them, the smooth cylindrical part of this screw also passing through a hole *q* in the rear part of a hair-spring-detaching blade D, the outer end of which is deeply notched at *r*. The outer threaded end of said screw receives a clamping-nut *s*, whereby the said blade is held firmly either in its folded position (shown in Fig. 1) or in its outer and operative position, (shown in Fig. 2,) according to adjustment.

When the tool is to be used for removing hands or wheels, it is left in the position of Fig. 1, the only operative parts being then the spring-plates C, and the remainder of the tool serving as a handle. When the balance or

hair spring is to be removed, the blade D is turned into its outer position and there clamped. It is then slipped under the said spring, the notch *r* receiving the arbor thereof.

5 The end of this blade, bifurcated by said notch, is slightly bent upward, considering it as in operative position, and the operation of detachment is the same as in using the spring-plates C.

10 The tool as a whole serves as a handle, but is held with its side uppermost.

When the jewel-holding tweezers A are to be used, they may be turned into the position shown in Fig. 2, or they may be detached and
15 reversed in position, as shown in Fig. 5, or, as shown in Fig. 6, they may be reversed and turned nearly in line with the body of the tool and extend out beyond the end of it, where are the spring-plates C; or the said
20 tweezers A may be given the position shown in Fig. 7, the jewel-holding tweezers A, extending toward the same end of the tool and inclining obliquely downward, with its jewel-holding recesses *cd* presented downward also.

25 The convex curvature of the tips *m* at the other end of the tool may then rest on the table, affording great assistance to a nervous workman in picking up the jewels. A spring may be attached to the shank B, within enlarge-
30 ment *k*, and arranged to bear on shank *a* near its pivotal point to hold it folded against accidental displacement. This spring is not indispensable, however.

The advantages of this tool are many. It
35 will pick up very quickly and satisfactorily a jewel of any size or thickness, in settings or plain, ruby pins or roller-jewels, or a pin or pins for fastening a watch-dial, or almost any similar small article. While held by it and
40 being fitted on a pivot, a jewel cannot turn sidewise or fall over or spring away. In fitting a ruby-pin jewel or pinning a dial to a movement-plate there is no sidewise shaking nor shaking of the end. The hair-spring also
45 is easily taken from its balance. The jewel-holding tweezers may be set to almost any angle found convenient by choosing one or another of the arrangements illustrated. The two tweezers may also be separated and used
50 independently.

When the tool is arranged as shown in Fig. 7, the most nervous workman can pick up a jewel at the first attempt.

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

1. As a new article of manufacture, a watch-maker's tool consisting of a pair of spring-tweezers provided with a shank, and a second pair of spring-tweezers pivoted to the shank
60 of the first pair, substantially as set forth.

2. As a new article of manufacture, a watch-maker's tool consisting of two pairs of tweezers pivoted together, but detachable from each other, for the purpose set forth. 65

3. As a new article of manufacture, a watch-maker's tool consisting of a pair of tweezers having a shank provided with open bearings, and a second pair of tweezers having a pivot-pin which fits into the said bearings, allow-
70 ing the easy separation of the said pairs of tweezers, as desired, substantially as set forth.

4. As a new article of manufacture, a watch-maker's tool consisting of two pairs of tweezers, one pair having a shank constructed with
75 a hollow enlargement *k* and a pivot-pin *j* and the other pair having a shank provided with open bearings which fit on the said pin within the said enlargement, substantially as set forth. 80

5. In combination with a pair of tweezers having the tips thereof turned upward for dislodging watch-hands and gear-wheels, a pair of jewel-holding tweezers pivoted to the former pair and having jewel-holding recesses
85 in their curved or inclined faces presented downwardly, the curved tips of the former pair affording a rest for the latter pair to insure the accurate picking up of jewels, substantially as set forth. 90

6. As a new article of manufacture, a watch-maker's tool consisting of two pairs of tweezers pivoted together, one pair having a shank which terminates in a recessed rib for push-
95 ing out dial-pins, substantially as set forth.

7. As a new article of manufacture, a watch-maker's tool consisting of two pairs of tweezers pivoted together, the shank of one pair ending in two spring-plates and having a blade pivoted between them to fold inward
100 or turn outward, as shown, the said plates being also provided with clamping devices which hold said blade securely in either position, the outer end of the said blade being notched and curved to adapt it for removing
105 a balance-spring, substantially as set forth.

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

JACOB FISHER.

Witnesses:

J. H. BRUBAKER,
H. G. FOSTER.