(No Model.)

J. S. BIRCH.

WATCH KEY.

No. 282,606. Patented Aug. 7, 1883.

Fig. 1

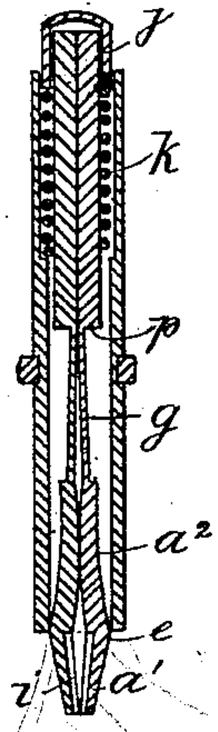


Fig. 2

Fig. 3

Fig. 4

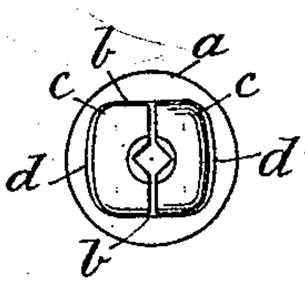


Fig. 5

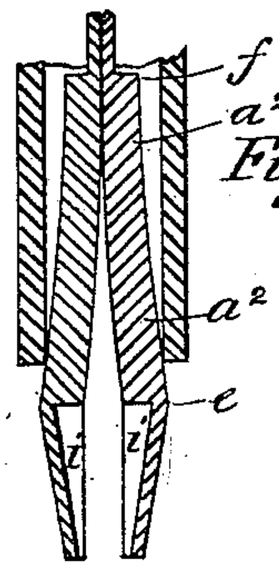


Fig. 6

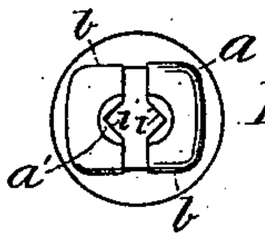


Fig. 7

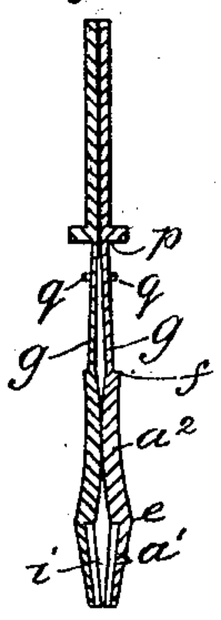


Fig. 8

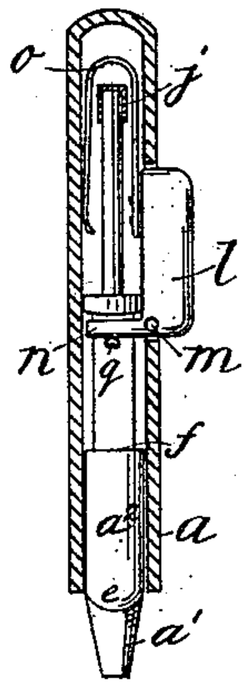
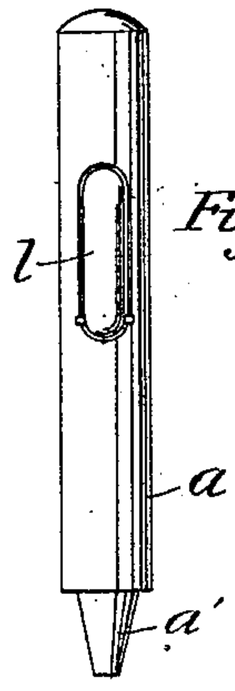


Fig. 9



WITNESSES:

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JOHN S. BIRCH, OF NEW YORK, ASSIGNOR OF ONE-THIRD TO CHARLES C. CUMMINGS, OF BROOKLYN, N. Y.

WATCH-KEY.

SPECIFICATION forming part of Letters Patent No. 282,606, dated August 7, 1883.

Application filed December 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. BIRCH, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented a new and useful Improvement in Watch-Keys, of which the following is a specification.

This invention relates to the adjustable watch-key in which the jaws are made to fit winding-posts of different sizes by sliding lengthwise in a tubular case, by which said jaws are made to close on the posts. It also applies to holding-tools of various forms for small objects.

In this case the invention consists of an improved construction of the jaws and the case in those parts having special reference to closing of the jaws on the post by the case, and the gripping of the post by the jaws for turning it, the said improved construction being to enable the key to be made more cheaply, and to be more efficient and durable.

The invention also consists of an improved contrivance of the spring and finger-bit for working the jaws, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a key in which the improvement of the jaws and the case is represented, the spring and finger-bit being of the form heretofore used. Fig. 2 is a side elevation of one of the jaws, looking at the inside. Fig. 3 is an outside elevation of one of the jaws. Fig. 4 is an end view of the key, the jaws being closed. Fig. 5 is a sectional elevation of a portion of the jaws and the case, the jaws being open. Fig. 6 is an end view of the key, the jaws being open, as in Fig. 5. Fig. 7 is a side elevation of the jaws and a portion of the said improved form of finger-bit. Fig. 8 is a sectional elevation of the case and side elevation of the rest, showing the improved form of the finger-bit and spring; and Fig. 9 is a side elevation of a key having the said improved form of finger-bit and spring.

In the present case I make the interior of the end of the case *a*, out of which the jaws *a'* project for engaging the post of the watch, in the form represented in Figs. 4 and 6—that is to say, straight and parallel along the lines *b* to the corners *c*, which are curved for a short distance on or about the radius of the case, and between said corners the part *d* is curved on a much longer radius than that of the said case; and, together with the case thus formed, I construct the jaws to fit closely in the lines *b* and the corners *c*, but so as not to bear along the lines *d*, the said jaws being made on a still larger radius between corners *c* than the line *d* of the case is. This form of the jaws must extend as far along them in the parts a^2 as the jaws are to slide in and out of the case; but said jaws are here represented in that form from the points *e*, where the taper of the ends begin, to the shoulders *f*, where said jaws are reduced in thickness to form the springs *g*, which is preferable, because of uniformity. From the bulge *e*, where the jaws have the greatest thickness, to the springs *g* said jaws are so curved that they always have contact with each other at some point along parts a^2 between said bulge and said springs, whether extended to grip the watch-post or not, the said contact being a fulcrum on which the springs *g* spring out the jaws into the corners *c*, wherein they are so confined that the torsional strain of the case, turned by the fingers of the operator, causes them to grip and hold the post with the requisite power, while the form of said jaws and case *b c* prevents the jaws from turning in the case, thus avoiding the labor and expense of providing any special device for that purpose: The corners *c* might be angular, instead of curved, with corresponding angular corners of the jaws, and still would hold the jaws against turning in the case; but such arrangement is not so desirable, because the sharp angles of the steel jaws would cut the soft metal of the case and enlarge the mouth of the case so as to make the jaws slack, while the curved form avoids the cutting of the angles; and, besides, they form eccentric lines in which the jaws turn slightly, and are thus bound more firmly in their grip on the post than is due to the power of the spring by which they are closed on said post, thus being more efficient in operation by reason of said curved corners. The jaws will be suitably formed for producing the shapes from the springs *g*, or thereabout, downward, and making the angle-creases *i* in the gripping-

faces to engage the watch-post, said creases being made slightly increasing in depth upward to be parallel, or thereabout, with the sides of the post, of average size when the jaws are opened sufficiently to grip said post. I have in this case represented the spring portions *g* of the jaws as made by stamping or filing away the metal on the back; but it is immaterial which side is reduced, and the reduction may be partly on both sides, if preferred.

I have here represented the jaws as made in two separate pieces, and connected at the top by a thimble, *j*, said thimble forming the finger-piece or cap in Fig. 1, by which to press down and thrust out the jaws; but it is to be understood that the jaws may be formed on the ends of a single piece that may be bent double at the place where said thimble is applied.

While the improved jaws constructed and arranged as above described may be used with push-piece *j* and retracting-spring *k*, as heretofore arranged, I now prefer to employ a lever finger-bit, *l*, located in a slot in the side of the case on a pivot, *m*, with an arm *n*, connected with the jaws, and having a U-spring, *o*, attached to its free end, and located in the case so that pressure on the said lever will thrust the jaws out and the spring will draw them back. The spring is extended up from the lever along the case and bent around the upper ends of the jaws to bear against the case for a rest from which to react the lever; but it is not connected to the case, the only connection being with the lever, to which it may be made fast before said lever is put in its place.

The arm *n* may be connected with the jaws in any approved way; but I have here represented it with a slit, in which the springs *g* are inserted just below the shoulders *p*, on which said arm acts to raise the jaws, with spurs *q* thrust out from said springs below the arms by indenting the opposite sides for bearings under said arm; but I do not limit myself to such method of connection.

It will be seen that for utilizing the device like a pin-vise for a holder of pinion-wire, and other small objects of similar form, I have only to groove the jaws along the middle from above the creases *i* to the upper ends of said jaws, as I have represented at *x*, Fig. 2.

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

1. In a watch-key having jaws that open and close by sliding out and in the end of the case, the end of the case and the back of the jaws bearing thereon having curves by which the turning of the key, in winding watches, binds said jaws more tightly on the watch-post, substantially as described.

2. In a watch-key having jaws that open and close by sliding out and in the end of the case, the said jaws fitted to bear on the straight or substantially straight lines *b*, and in the curved corners *c* of the mouth of the case, but without contact along the sides *d*, substantially as described.

3. In a watch-key having jaws that open and close by sliding out and in the end of the case, the said jaws fitted to bear on straight or substantially straight lines *b*, and in the curved corners *c* of the mouth of the case, and having contact with each other below springs *g*, substantially as described.

4. The combination, in a watch-key, of a case having straight or nearly straight and parallel sides *b* and curved corners *c* in the mouth, sliding jaws fitted therein to bear on said sides *b* and corners *c*, without contact along the sides *d*, and means for projecting and opening said jaws, and also means for withdrawing and closing said jaws, substantially as described.

5. The combination, in a watch-key in which the jaws are arranged to slide out and in a case for opening and closing, of a lever finger-bit, *l*, and a spring, *o*, with said case and jaws, substantially as described.

6. The combination, in a watch-key in which the jaws are arranged to slide out and in a case for opening and closing, of a pair of jaws having springs *g*, and a fulcrum at a^2, and being grooved along the inside at *x*, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN S. BIRCH.

Witnesses:
W. J. MORGAN,
S. H. MORGAN.