No. 627,669. Patented June 27, 1899.

C. H. JENKINS.

WATCHMAKER'S TOOL.

(Application filed Dec. 2, 1898.)

(No Model.)

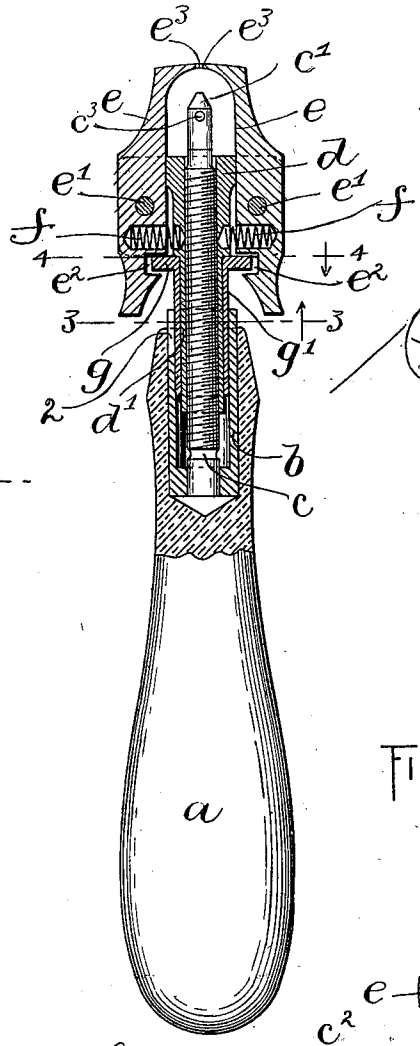

FIG. 1.

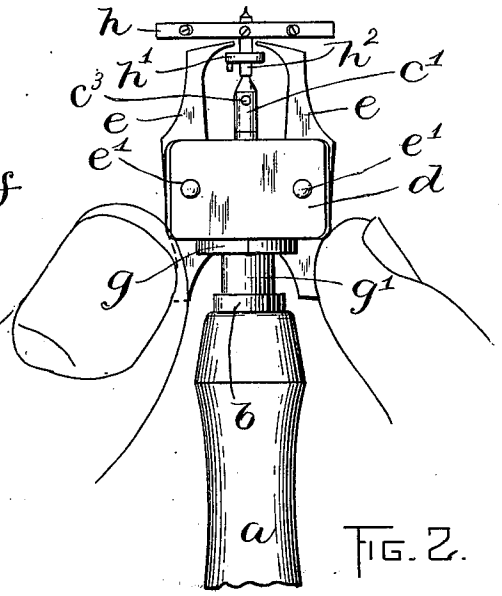

FIG. 2.

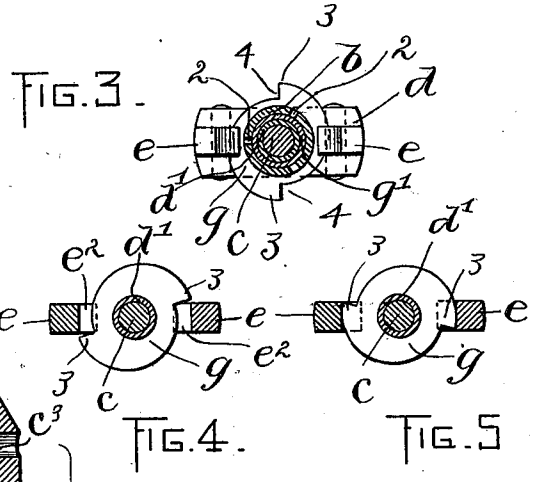

FIG. 3.

FIG. 4.

FIG. 5.

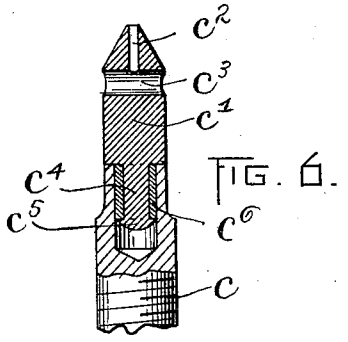

FIG. 6.

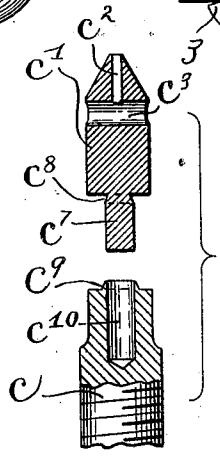

FIG. 7.

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WATCHMAKER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 627,669, dated June 27, 1899.

Application filed December 2, 1898. Serial No. 698,044. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. JENKINS, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Watchmakers' Tools, of which the following is a specification.

This invention relates to tools for removing rollers from watch-balance staves and for analogous uses.

The invention relates more particularly to tools of the character specified, comprising a pair of coacting jaws adapted to be opened and closed to engage the staff-roller or other part and a pusher stem or bar movable transversely of said jaws and adapted to engage the end of the staff in the removing operation.

The invention has for its object to provide mechanism whereby the initial operative movement of this stem in one direction or the other acts to hold the jaws closed or permit the same to be open, according to the direction in which the pusher-stem is moved.

The invention further has for its object to improve the general construction of tools of the character indicated.

It consists in the novel features of construction and arrangement which I shall now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal sectional view of a tool embodying my invention. Fig. 2 represents a side elevation thereof, lacking the lower end of the handle. Fig. 3 represents a reverse plan view of the jaws and adjacent parts, being a section on the line 3 3 of Fig. 1. Figs. 4 and 5 represent sectional views on the line 4 4 of Fig. 1, showing two positions of the jaw-controlling cam. Fig. 6 represents an enlarged sectional view of the pusher-stem tip. Fig. 7 represents a sectional view illustrating a modification in the manner of attaching the tip to the pusher-stem and showing the parts separated.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* is the handle of the tool, constructed of wood, vulcanite, or other suitable material and recessed at its upper end to receive a bush or sleeve *b*, which is frictionally held in the handle and is longitudinally split at its upper end, as represented at 2 2. Through a hole in the bottom of this sleeve is driven a screw-threaded stem *c*, which is thus held rigidly in the handle and turns therewith when the same is rotated. The upper end of the stem *c* passes centrally through a block *d*, which is screw-threaded to engage the screw-threads on the stem, said block having on each side ears, between which the jaws *e e* are pivoted on studs *e' e'*. Springs *f f*, interposed on each side between the jaws and the block *d* and occupying sockets bored in said block and jaws, operate to normally hold the upper ends of the jaws in contact.

The block *d* is formed with a downwardly-extending sleeve *d'*, and loosely surrounding said sleeve and frictionally held in the bush *b* is a second sleeve *g'*, at the upper end of which is provided a double cam *g*, which is formed as a lateral flange on the sleeve. The cam, as shown in the plan views, is formed with two projections or teeth 3 3 and with two depressed portions or recesses 4 4. The two jaws *e e* are provided below their pivotal points with recesses or notches e^2 e^2, occupied by the edges of the cam *g*. The projections of the cam are so directed that on turning the sleeve *g'* to the right in a direction which would screw the stem *c* into the block *d* they come into line with the lower ends of the jaws *e e* and prevent said jaws from being opened to their widest extent. At the end of the movement of the cam its widest diameter lies in line with the jaws, as shown in Fig. 5, and the upper or operative ends of said jaws are thereby positively locked together. A reverse movement of the sleeve *g'* rotates the cam in an opposite direction and brings it to the position represented in Fig. 4, in which the jaws are permitted to be opened to their fullest extent. In this position of the cam the tips of the projections 3 impinge against the sides of the jaws *e e* and prevent further rotation of said cam.

The lower ends or heels of the jaws *e e* are suitably formed to be engaged by the thumb and forefinger of the operator, as represented in Fig. 2, and pressed toward each other against the tension of the springs *f f*, so as

to separate the upper ends of the jaws and permit the work to be inserted or removed. The jaws at their upper ends are formed with shallow notches e^3 e^3 for receiving the balance-staff or other part inserted in the jaws.

The upper end of the stem c is provided with a tip c', which has a vertical aperture c^2 bored in its end to receive the pivot of a balance-staff, and a transverse aperture c^3 bored below said aperture c^2. The said tip is rotatively mounted with respect to the stem c, and a preferred method of attaching it to said stem is represented in Fig. 6. By this method the upper end of the stem c is bored for a short distance, and into the recess formed is forced a tightly-fitting sleeve or bush c^6. The tip c' is formed with a reduced stem c^4, which is passed through the bush c^6 and headed, as at c^5, at its lower end before the bush is forced into the aperture in the stem. If it is desired to substitute a tip of different form for the tip c', the latter, with the bush c^6, is removed by employing pliers or other suitable tool and another tip and bush inserted.

The operation of the tool will be readily understood. In removing a roller from a watch-balance staff the block or jaw carrier d is grasped between the fingers of one hand and with the other hand the handle a is rotated until the stem c is brought to its approximate adjustment. The ends of the jaws are then separated by pressing their heels together, as represented in Fig. 2, and the watch-balance h is inserted, its lower pivot occupying the aperture c^2 in the tip c'. The jaws are then allowed to close over the roller h', and the handle a^2 is turned to the right. As the sleeve g', carrying the cam g, is frictionally held in the handle a, the initial rotation of said handle causes the cam to assume the position shown in Fig. 5 and hold the jaws closed against the balance-staff h^2 above the roller h'. The operator continues to turn the handle a to the right and screws the stem c toward the tips of the jaws, thus drawing the roller off the staff, as will be readily understood, the bush b and handle meanwhile slipping around the sleeve g'. When the balance is to be removed from the tool, the handle a is turned to the left, which brings the cam f to the position shown in Fig. 4 and permits the jaws to be opened.

Fig. 7 represents a modified method of attaching the tip c' to the pusher-stem c. In this instance the tip is provided with a stem or shank c^7, adapted to loosely fit the socket c^{10}, bored in the top of the pusher-stem, and at the top of said shank is formed a circumferential groove c^8. The pusher-stem c, at the mouth of its socket c^{10}, is provided with a projecting-flange c^9, which is bent over and into the groove c^8, to affix the tip to the pusher-stem. The said tip is then permitted to rotate, while at the same time being safely secured in place.

Having thus explained the nature of my invention and described a way of constructing and using the same, although without having attempted to set forth all the forms in which it may be embodied or all the modes of its use, I declare that what I claim is—

1. A tool of the character specified, comprising a jaw-support, a pair of jaws carried thereby, a cam for engaging said jaws, a rotatable pusher-stem screwing through the jaw-support and held stationary against longitudinal movement relatively to the stem, and a frictional connection between said stem and the cam, whereby the initial rotation of the stem operates the cam.

2. A tool of the character specified, comprising a jaw-support, the jaws e e pivoted thereto, the double eccentric cam g for engaging said jaws said cam being mounted to move only in a plane at a right angle to the stem, a rotatable pusher-stem screwing through the jaw-support, and a frictional connection between said stem and the cam g, whereby the initial rotation of the stem rotates the cam.

3. A tool of the character specified, comprising a jaw-support, a pair of jaws carried thereby, a rotary cam for engaging said jaws, said cam having a sleeve or stem, a handle, a screw-stem secured to said handle and engaging the jaw-support, and a split bush secured to the handle and frictionally engaging the cam-stem, whereby the initial rotation of the handle rotates the cam.

4. A tool of the character specified, comprising a jaw-support, a pair of jaws carried thereby, and having rearwardly-extending heels in position to be pressed together by the operator's fingers, springs normally holding the jaws closed, a cam for engaging said jaws and held stationary against longitudinal movement relatively to the stem, a rotatable pusher-stem screwing through the jaw-support and means whereby the initial rotation of the stem operates the cam.

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

CHARLES H. JENKINS.

Witnesses:

ALBERT S. KOENIG,

RICHARD PEELS.