J. M. Cayce,

Watchmakers' Tool.

No. 70,074. Patented Oct. 22, 1867.

Fig. 1.

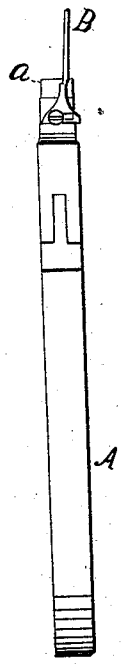


Fig. 2.

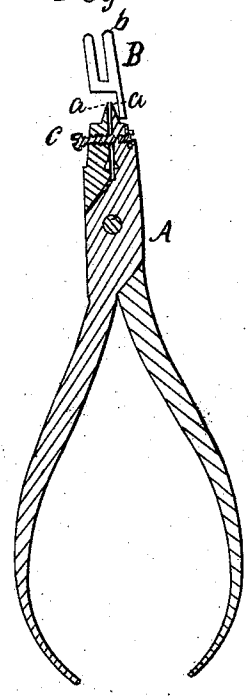
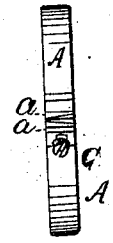


Fig. 3.



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JOHN M. CAYCE, OF FRANKLIN, TENNESSEE.

Letters Patent No. 70,074, *dated October* 22, 1867.

IMPROVEMENT IN WATCHMAKERS' TOOLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN M. CAYCE, of Franklin, in the county of Williamson, and State of Tennessee, have invented a new and improved Watchmakers' Tool; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 shows the edge of my instrument in elevation.

Figure 2 is a side elevation of my invention.

Figure 3 is an end view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This instrument is designed for rectifying and reshaping the cogs of watch-wheels, in order to make the gearing run better, and for other purposes.

In many new watches the cogs of the wheels are of irregular shapes, the spaces between them being very uneven, both in width and depth, from which cause the watch runs irregularly, and often the gearing becomes so badly out of order that the watch stops. The work of resetting or reshaping these cogs so as to adjust properly the width and depth of the spaces between them, and make them gear accurately with their companion wheels, is one of extreme difficulty, requiring exceeding great care, and consuming a great deal of time. In many cases it is found better even to reset the wheel itself than to undertake to adjust each separate cog upon it. The want of an instrument to do the work of regulating such cogs has long been felt by every watchmaker, but has never been supplied. In the absence of it they have resorted to various means for effecting the purpose, some using saws, some files, some swaging down the sides of the cogs so as to elongate them, and others, as above described, being obliged to reset the whole wheel. I claim to have provided the craft, in this invention, with an instrument by which such cogs can be perfectly remodelled and adjusted without difficulty in less than a quarter part of the time required therefor by any of the processes above referred to.

In order that others skilled in the art to which my invention appertains may be enabled to make and use the same, I will proceed to describe it in detail.

In the drawings, the body of the instrument is designated by A A, and is in shape like a pair of common pliers. At the extremity of its jaws they are provided with knife-like blades *a a*, between which, when the instrument is closed, the cog is grasped. The terminal edges of these blades are wedge-shaped, the thick ends of such edges being opposite to each other. By this shape the blades may be inserted, at their thin or narrow end, between the finest cogs, and where coarse or heavier cogs are used the thick stout end of the blades may be used. The design of the instrument is to grasp the cog between these blades just as a person would grasp anything with a pair of pliers, and holding it in this position, to press the cog into the shape required. In most instances the cogs require to be elongated. This can be done almost instantly by such an instrument as mine, the working faces of the cogs being preserved smooth and regular by the process. If the cog is not only flattened and elongated, but also widened by the pressure, it may be filed down to the proper width. Cogs of different sizes may be operated upon, as above explained, at different points upon the blades *a a*, so that the thinness of the blades may be proportioned to the fineness of the cogs. Delicate cogs with very minute intervals between them could not be grasped, perhaps, at the thick end of the blades, for the reason that the blade could not at that point be inserted between them, while, on the other hand, the delivery of the blades at their opposite end is too great to admit of their being applied at that point to large cogs. If the instrument were left simply as above described, however, it would answer but half the required purpose. It would press the cogs, elongating them and enlarging the spaces between them, but with no regularity of action. The last state of the cogs would, perhaps, be worse than the first. To insure perfect regularity of action and effect, I attach first the guide B, which slides along the blades *a a*, and is adjustable by means of slot and set-screw. It will now be only necessary to determine the point upon the blades *a a* at which you wish to apply them to the cogs, and set the guide B at that point. Then insert the instrument so that the guide shall bear against the side of the cog, and at once you insure perfect uniformity in the application of the instrument to its work. The cogs may still, however, be elongated too much or too little. To obviate this I have provided the gauge-screw C, running laterally through one jaw of the instrument, and acting against the other jaw. Now determine the precise effect you wish to produce upon the imperfect cog, and set the gauge-screw C so as to produce that effect.

The instrument will not only now be applied at the same point to every cog upon the wheel, but it is so gauged as to produce precisely the same effect upon every cog, rendering them all of perfectly uniform thickness. The slot *b* in the guide B is intended to receive the shaft of the wheel while the watchmaker is operating upon the cog. A moment or two will enable the operator to determine the points at which to set the guide and the gauge, and when this is done the rest of the work is simple and easily performed, requiring but little time, and calling for but little skill.

In the old method of resetting these cogs, the edges are strained excessively, the most delicate touch being required at every period of the operation. In my instrument, however, the guide and gauge take the place of eyes to a great extent, after they have once been properly adjusted, and render it as difficult to produce the wrong effect as it is by the old-fashioned method to produce the right one. My instrument has been tested thoroughly in the watchmaker's shop, and is found to be perfectly adapted to the purpose for which it was invented.

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

The instrument above described, having the blades *a a*, the guide B, and the gauge-screw C, substantially as and for the purpose specified.

To the above specification of my improvement I have signed my hand this 24th day of May, 1867.

JOHN M. CAYCE.

Witnesses:

CHAS. A. PETTIT,

SOLON C. KEMON.