

(No Model.)

W. B. LEARNED.

MEANS FOR FACING WATCH AND CLOCK PINIONS.

No. 358,402.

Patented Feb. 22, 1887.

Fig. 1.

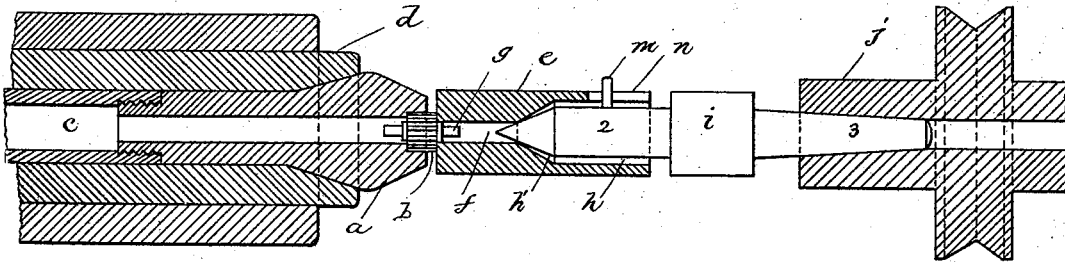


Fig. 2.

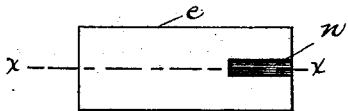


Fig. 3.

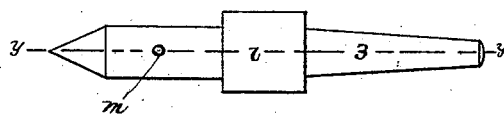


Fig. 4.

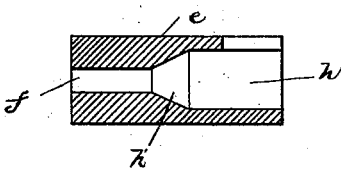
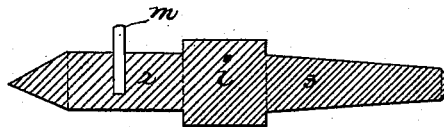


Fig. 5.



WITNESSES:  
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Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM B. LEARNED, OF BOSTON, MASS., ASSIGNOR OF ONE-HALF TO THE  
E. HOWARD WATCH AND CLOCK COMPANY, OF SAME PLACE.

## MEANS FOR FACING WATCH AND CLOCK PINIONS.

SPECIFICATION forming part of Letters Patent No. 358,402, dated February 22, 1887.

Application filed July 21, 1886. Serial No. 238,617. (No mod.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. LEARNED, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Means for Facing Watch and Clock Pinions, of which the following is a specification.

This invention relates to the operation of finishing or polishing the ends of the leaves or teeth of watch and clock pinions, said operation being technically called "facing."

The invention consists in the facing-shell adapted to face a pinion and a holder adapted to rotate the shell and engaged therewith in such manner that the shell is capable of rocking slightly while in contact with the pinion, the object of the invention being to imitate in a power-driven machine the action of the devices used in facing pinions by hand, as I will now proceed to describe.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section through a head-stock, which holds and rotates the pinion to be faced, and the tail-stock, which holds and rotates the facing-shell and its holder. Fig. 2 represents a top view of the facing-shell. Fig. 3 represents a top view of the holder of the facing-shell. Fig. 4 represents a section on line *x x*, Fig. 2. Fig. 5 represents a section on line *y y*, Fig. 3.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a chuck, adapted to grasp and rotate a pinion, *b*, and present one end of the same to the facing-shell. Said chuck may be of any suitable construction. It is here shown as secured to a draw-in spindle, *c*, which, by pulling a conical enlargement on the outer end of the chuck into a conical recess in a head-stock, *d*, causes the split end of the chuck to close upon and grasp the pinion, the head-stock and chuck being rotated by any suitable means, so as to rotate the pinion.

*e* represents the facing-shell, which may be of soft steel, bell-metal, bone, box-wood, or any other suitable material, and has at one end an orifice, *f*, of sufficient size to receive the projecting end of the staff or arbor *g* of the pinion, the end of the shell surrounding said ori-

face being flat and formed to bear on the ends of the pinion-leaves, as shown in Fig. 1. In the opposite end of the shell is formed a larger orifice or socket, *h*, which at its inner end is tapered, as shown in Figs. 1 and 4, said tapered portion *h* preferably joining the orifice *f*, as shown.

*i* represents the holder which supports and rotates the facing-shell. Said holder comprises a rod, 2, of lesser diameter than the orifice or socket *h* of the shell, and a shank, 3, which is inserted in and rotated by a tail-stock, *j*, in line with the head-stock *d*. The rod 2 is tapered or reduced at its end, so that when inserted in the socket *h* of the shell it will be in contact with the shell only near the extremity of its tapered portion, the diameter of the main portion of the rod being such that it does not fill the socket *h*, but leaves the shell free to rock on said rod. A pin, *m*, affixed to the rod 2, projects laterally therefrom into a slot, *n*, in the shell and engages the shell with the rod, so that the two will necessarily rotate together without depriving the shell of its capability of rocking on the rod.

In facing a pinion, the chuck *a*, with the pinion, is rotated in one direction, and the facing-shell is rotated in the opposite direction. A suitable polishing-powder is applied to the acting end of the facing-shell, and the latter, rocking slightly while it rotates, acts on the pinion in a manner similar to that of a facing-tool held by the hand of an operator against the end of a rotated pinion, and performs the facing operation more perfectly than it could if it were rigidly attached to its holder and not capable of rocking.

Heretofore the best results in facing pinions have been produced by a tool held only by the operator's hand against the pinion, the flexibility of the hand and the impossibility of maintaining it rigidly in a given position causing a slight rocking motion, which produces the most perfect facing. My improved devices successfully imitate this hand action and enable the operation to be performed as well and much more rapidly than by a facing-tool held by the hand.

I do not limit myself to the exact details of construction of the facing-shell and its holder shown and described, nor to the devices for

holding and rotating the pinion and the facing-shell holder, as said details and devices may be variously modified without departing from the spirit of my invention.

5 I claim—

1. As a means for facing pinions, the combination of a holder adapted to be attached to a lathe tail-stock or other device whereby it may be rotated, and a facing-shell rotatively engaged with said holder and adapted to rock thereon, as set forth.

2. The holder having a shank adapted to be engaged with a lathe tail-stock and a rod having a laterally-projecting pin and a reduced or pointed end, combined with the facing-shell having a socket of greater diameter than said

rod, a slot to receive said pin, and a contracted bearing for the reduced end of the pin, as set forth.

3. The combination of the pinion-holding 20 chuck *a*, the holder *i*, the tail-stock *j*, and the facing-shell *e*, engaged, as described, with said holder and adapted to rock thereon, as set forth.

In testimony whereof I have signed my name 25 to this specification, in the presence of two subscribing witnesses, this 8th day of July, 1886.

WILLIAM B. LEARNED.

Witnesses:

C. F. BROWN,

ARTHUR W. CROSSLEY.