(No Model.)

E. D. WETHERBEE.

APPARATUS FOR RECESSING WATCH DIALS.

No. 325,296. Patented Sept. 1, 1885.

Fig: 1.

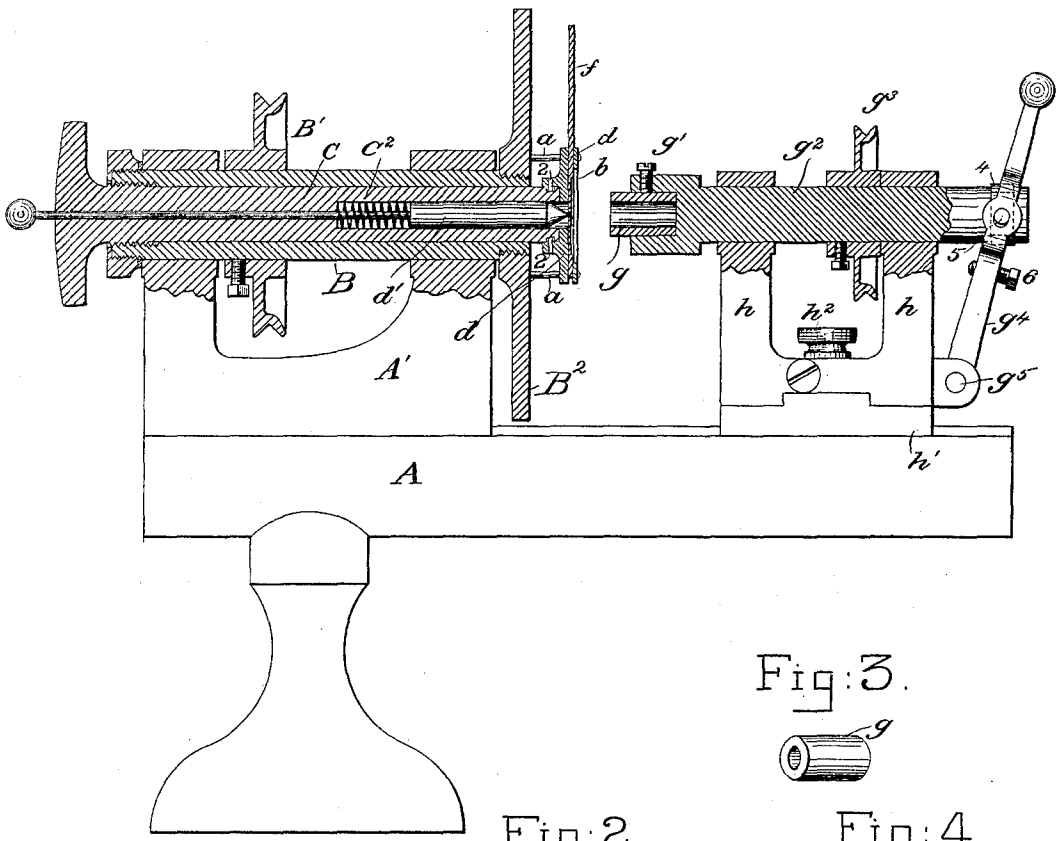


Fig: 3.

Fig: 2.

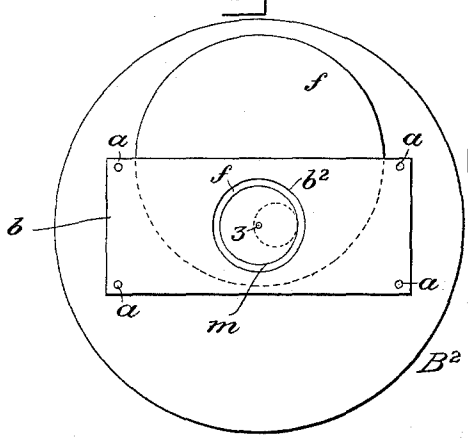
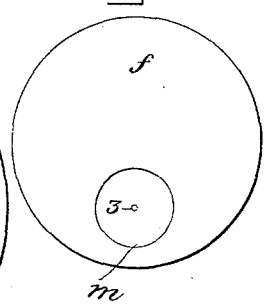


Fig: 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWIN D. WETHERBEE, OF WALTHAM, MASSACHUSETTS.

APPARATUS FOR RECESSING WATCH-DIALS.

SPECIFICATION forming part of Letters Patent No. 325,296, dated September 1, 1885.

Application filed March 31, 1885. (No model.)

To all whom it may concern:

Be it known that I, E. D. WETHERBEE, of Waltham, county of Middlesex, State of Massachusetts, have invented an Improvement in Apparatus for Recessing Watch-Dials, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In watch-dials as heretofore made, wherein the second-hand scale is depressed below the level of the face of the dial, it is customary to make the second-hand scale on a separate piece and fit it into a circular hole in the dial. In some instances the enameled face of the dial has been cut into by a hand-operated tool; but such mode of operation is slow and expensive.

My invention has for its object to produce a machine for recessing the enameled face of the dial for the reception of the second-hand.

In accordance with my invention I have provided a lathe-spindle with a dial-holding chuck having preferably a pump-center, and co-operating with the same I employ a second spindle, the axis of which is eccentric to that of the spindle which rotates the dial, the second spindle having a stone or equivalent cutting or abrading tool, the diameter of which is about half that of the recess to be cut for the second-hand. A sleeve having a pivoted head acts as a clamp for the rear side of the dial, the said head supporting nearly all that part of the dial opposite which the tool to reduce the face acts, the head acting on the back of the dial about the pump-center, which enters the hole for the arbor of the second-hand, the said head adapting itself to any inequalities of thickness or unevenness of thickness of the dial. These defects almost always exist in watch-dials because of the difficulty of coating the metal dial with a uniform thickness of enamel and of making the dial perfectly true and keeping it so while the enamel is being baked upon it.

Figure 1 in side elevation represents a sufficient portion of a lathe of usual construction with my improvements added to enable my invention to be understood; Fig. 2, an end view of the dial-clamp with a dial in place; Fig. 3, a detail of the stone or equivalent abrading-tool; and Fig. 4, a face view of the dial as left by my improved machine.

The bed A of the lathe has a head-stock, A′, bored or provided with suitable bearings for the reception of the hollow spindle B, having attached to it the belt-pulley B′ and the disk B^2, the latter being screwed upon the said spindle and serving to carry the receptacle *b*.

The disk B^2 has attached to its front side by posts *a a* and the opened centered or rest plate *b*, provided with a hole, b^2, the same posts and plate constituting what I denominate the "chuck," the sleeve C and the head *d*, to be described, constituting the chuck-back.

The spindle B receives within it a sleeve, C, provided at its outer end with a hand-nut and with a screw-thread to engage corresponding screw-threads at the interior of the spindle B, the sleeve C being horizontally adjustable in the spindle B by the screw-threads referred to, thereby placing on the outer face of the head *d* a metal or other disk loosely connected with the sleeve C by means of two pins, 2 2, entering an annular groove in the said sleeve, the said groove being wider than the diameter of the pins 2 2, the head being thus held loosely, so as to adapt itself to the dial. The sleeve is bored out to receive the pump-center *d′*, it having a conical point to enter the hole 3 of the dial *f*, supported in the central opening of the sleeve C against a spring, C^2. The dial *f* is clutched or held steadily in position between the pivoted head *d* and the plate *b*, the point of the pump-center *d′* entering the dial-hole 3, which is to receive the arbor of the second-hand, the dial being clamped more or less tightly by turning the sleeve C and by its screw-thread moving it longitudinally in the hollow spindle B.

The abrading-tool *g*, of stone or other usual abrasive material capable of grinding away the enameled face of the watch-dial, and made preferably tubular, as shown, is confined by a suitable screw, *g′*, in a socket of a rotating tool-carrying shaft, g^2, having its bearings in a yoke, *h*, made adjustable by screw h^2, or in other usual manner, upon the carriage *h′*, so that the center of rotation of the tool *g* and its shaft g^2 may be adjusted more or less out of line with relation to the axis of the pump-center and the center of rotation of the spindle B. By this arrangement the tool acts on the dial at one side of the hole 3 as the dial is also rotated, the tool thus acting on differ-

ent parts of the dial-face adjacent to the hole 3, and forming the recess *m* for the reception of the second-hand.

The spindle g^2 has a pulley, g^3, a lever, g^4, pivoted at g^5, being employed to move the spindle g^2 longitudinally, the connection between the said lever and spindle being, by means of a collar, 4, loose on the spindle in an annular recess, the collar having pins 5 entering holes in the lever in the usual manner.

The screw *b* determines the extent of forward movement of the spindle g^2.

In Fig. 2 the dotted circle represents the tool attaching the dial, and as the dial is rotated it will be obvious that different parts of the dial about the hole 3 will be carried rapidly under the rotating tool, enabling the latter to reduce or cut out all that part of the disk within the circle *m*.

I claim—

1. In a machine for recessing the face of watch-dials for the reception of the second-hand, the rotating spindle and its attached chuck-face, and the longitudinally-adjustable sleeve C, and the head *d*, loosely pivoted thereon and located at the rear side of the chuck-face, combined with the rotating spindle g^2, provided with the tool having its center of rotation out of line with relation to the center of rotation of the said sleeve C and chuck-face holding the dial, to operate substantially as and for the purposes described.

2. The spindle B, the open plate *b*, carried by it, and the sleeve C and its loosely-connected head, and the pump-center, combined with the rotating spindle g^2, provided with the tool having its center of rotation out of line with the center of rotation of the spindle B, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN D. WETHERBEE.

Witnesses:

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