

C. PIQUEREZ.

WATCH CASE GRAVING LATHE.

No. 310,910.

Patented Jan. 20, 1885.

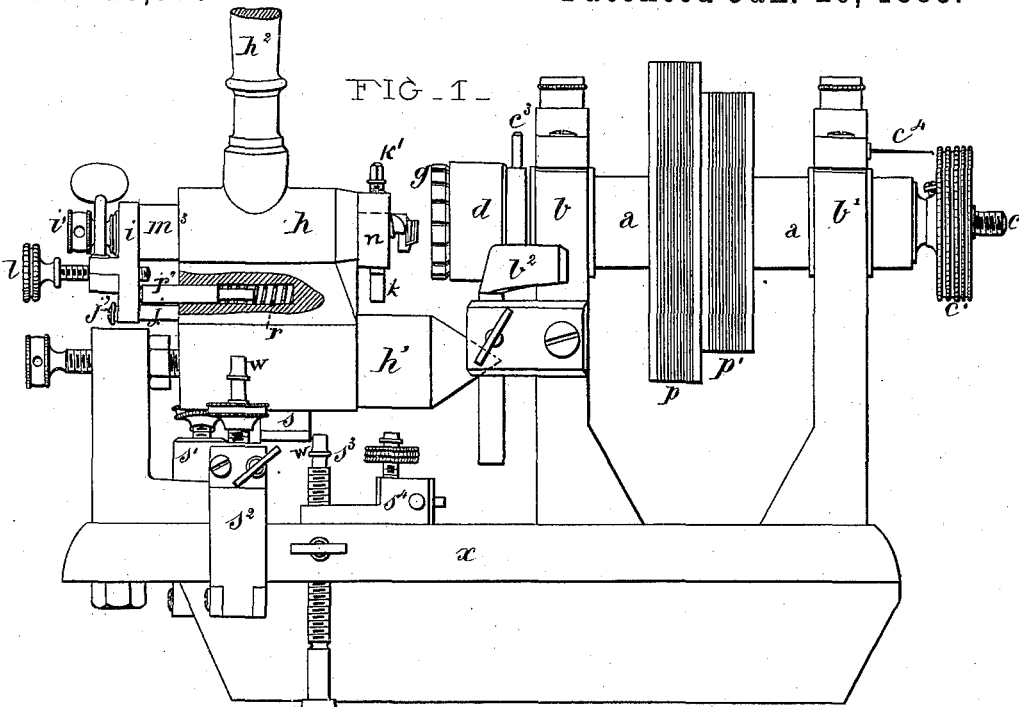


FIG. 3.

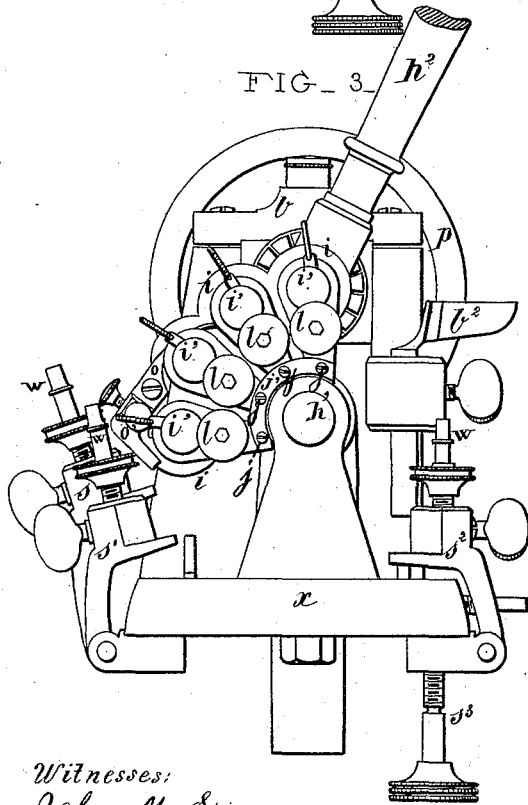
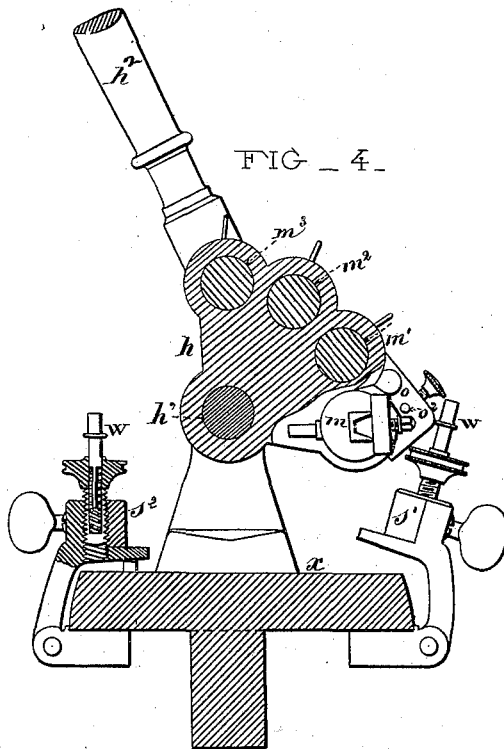


FIG. 4.



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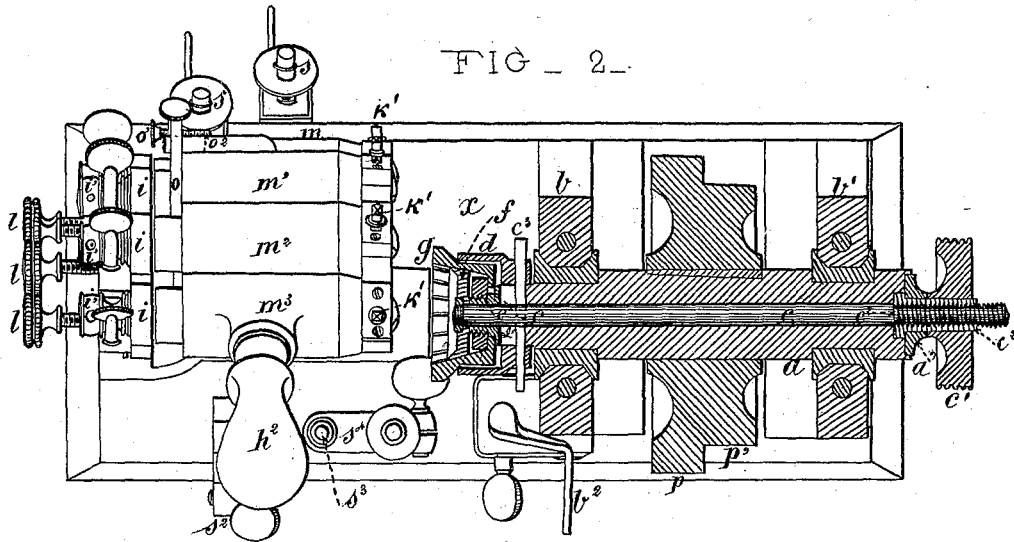


FIG - 2 -

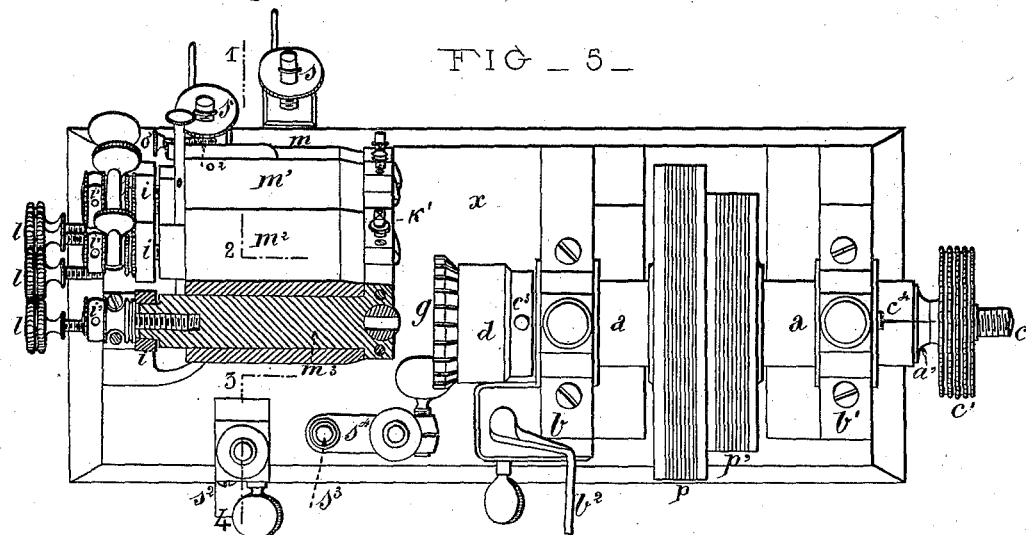


FIG - 5 -

FIG - 9 -



FIG - 6 -



FIG - 10 -

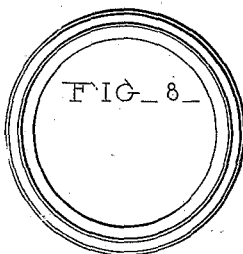
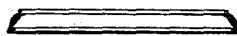


FIG - 8 -

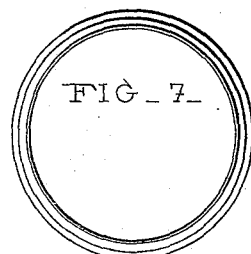


FIG - 7 -

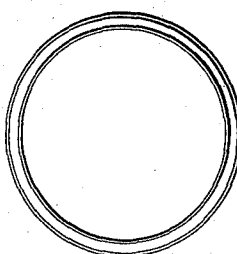


FIG - 3 -



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FIG. 11. 12. 13. 14. 15. FIG. 16.



FIG. 17. 18. 19. 20. 21. FIG. 22.

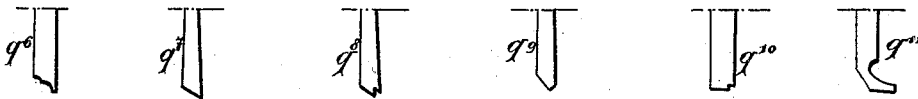


FIG. 24. 25. 26. 27. 28.



FIG. 29. FIG. 30.

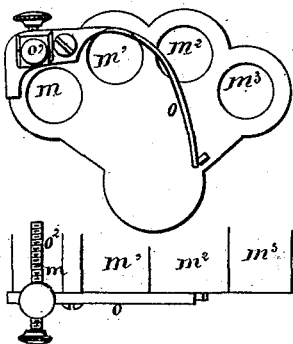
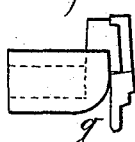


FIG. 23.



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UNITED STATES PATENT OFFICE.

CAMILLE PIQUEREZ, OF SAINT URSANNE, SWITZERLAND.

WATCH-CASE-GRAVING LATHE.

SPECIFICATION forming part of Letters Patent No. 310,910, dated January 20, 1885.

Application filed August 24, 1883. (Model.)

To all whom it may concern:

Be it known that I, CAMILLE PIQUEREZ, a citizen of Switzerland, residing at Saint Ursanne, Switzerland, manufacturer of watches, have invented a Lathe for Turning Gold and Silver Watch-Cases; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention consists of an improved lathe intended for making the exterior and interior fillets and moldings of watch-cases and the like, and generally for giving the desired profile to the different parts of such cases. Said lathe comprises four gravers, which are arranged concentrically around a common axis, so that they can be moved to carry either one of them in line with the case to be turned. The gravers are arrested by elastic stops in any desired position. With the aid of my improved lathe one operator is able in the space of one hour to properly turn one hundred and forty-four silver centers, thus exceeding by fifty per cent. the result obtained on the most improved lathes at present employed by watch-case makers.

In the annexed drawings, Figure 1 is a side view, partly in section, of my improved lathe. Fig. 2 is a plan view, partly in section, of the same. Fig. 3 is an end view of the same. Fig. 4 is a vertical cross-section of the same on the broken line 1 2 3 4, Fig. 5. Fig. 5 is a plan view, partly in section, of the same. Fig. 6 is a cross-section of a watch-center. Fig. 7 is a plan view of the same. Fig. 8 is a plan view of a glass bezel, and Fig. 9 a cross-section of the same. Fig. 10 is a cross-section and plan of a bottom bezel. Figs. 11 to 23, inclusive, are side views of different gravers that are employed in the lathe for making the pieces shown in Figs. 6 to 10. Figs. 24 to 28, inclusive, are central sections of different clasps by which the several pieces to be turned in the lathe are retained in position. Figs. 29, 30, 31, and 32 are detail views, hereinafter referred to.

The lathe comprises two distinct parts, one part being arranged for receiving the article to be turned, which part is termed by me the

“lathe proper,” while the other part carries the gravers and the means for adjusting the same, and is termed by me the “revolver,” yet the two said parts combined constitute one organism, which is sustained by the frame *x*, of suitable form and dimensions.

The lathe proper consists of a horizontal hollow shaft, *a*, revolving in bearings *b* *b'*. Within the hollow shaft *a* is the spindle *c*. Beyond the inner bearing, *b*, the hollow shaft *a* is fitted with a box, *d*, which in part embraces the clasp *g*, that is secured to the inner end of the spindle *c* by the nut *e* and hollow screw *e'*. On its outer end—that is to say, beyond the bearing *b'*—the spindle *c* is fitted with a knob, *e'*, which connects by a screw (shown in Fig. 1) with a nut, *e''*, that engages the threaded end of the spindle *c*. By turning the knob *e'* and nut *e''* the spindle *c* is moved lengthwise, the said nut *e''* being prevented from sliding by a ring, *a'*, which projects over a collar of said nut, and is secured to the outer end of the shaft *a*. The spindle *c* participates in the rotary motion of the shaft *a* (which motion is imparted to the latter by a belt passing over the one or the other of two pulleys, *p p'*) by the medium of a pin, *e''*, which passes transversely through the box *d*, shaft *a*, and spindle *c*, the shaft *a* being slotted where said pin *e''* passes through it, as shown in Fig. 2. This permits the spindle *c* to move lengthwise without disturbing the shaft *a*. The box *d* embraces part of the clasp *g*, which is slightly conical, and slit lengthwise, so as to be springy at its mouth. A disk, *f*, mounted on the inner end of the spindle *c*, serves, when required, to open the clasp *g*, and also to press the piece to be treated against the interior of the clasp. The extent to which the knob *e'* is turned to regulate the opening or closing of the clasp is gaged by a needle, *e''*, on the bearing *b'*. That part of the frame *x* which carries the bearing *b* serves also to support the rest *b''*, intended for supporting the ordinary hand-graver, which is employed to remove the seams, which may be produced by the gravers in the revolver. The revolver part of the machine is that which contains the principal or machine gravers, and regulates their position by means of a peculiar stop system. A block, *h*, mounted on an axle, *k*, which rotates horizontally in proper sup-

ports, is perforated horizontally and concentrically with the axle h' . Four such perforations are shown. They receive four pistons, $m m' m^2 m^3$, each of which is susceptible of sliding longitudinally, but prevented from turning by a plate, i , which, at its upper part, is fastened to its piston by a screw, i' , while its forked or perforated lower part embraces a rod, j , that projects rearward from the block h . The outer or rear ends of the several rods j are united by a curved plate, j' . Each piston is drawn back by a spiral spring, r , which lies in a chamber of the block h , and is compressed by a small plunger, r' , the outer end of which is in contact with the corresponding plate, i . Beyond the said block h each of the pistons $m m' m^2 m^3$ is fitted at its inner end with a support, n , suitably shaped for receiving the graver-holder k , which has its upper part horizontally grooved, Fig. 30. A screw, k' , Fig. 1, holds the shank of the graver in place in the groove of the graver-holder.

The graters are of several forms. Figs. 11 to 16 show the profiles of the graters required for turning the center that is shown in Figs. 6 and 7. Figs. 17 to 22 show the profiles of the graters for forming the bezels that are represented in Figs. 8, 9, and 10. In Fig. 29 I show a circular graver by which good results may be obtained.

The graters are brought against the piece to be turned by means of the longitudinally-sliding pistons. The exact extent of said sliding motion is obtained by screws l , which have their bearings in the plates i , and can be turned more or less to arrest the inward motion of each piston. The block h has a handle, h' , to be seized by the operator for working the tools, the said working requiring the use of the five stops $s s' s^2 s^3 s^4$. The stops $s s'$ are hinged to the frame x on that side of the machine which is farthest away from the operator, and each is turned up when it is to be used and let down when not to be used. The stops $s^2 s^3 s^4$ are on that side of the machine which has the rest b^2 , and is nearest the operator, the stop s^2 turning on a horizontal pivot like the first two. The stop s^3 is an upright screw, and the last stop, s^4 , turns loosely around the screw s^3 , which forms its vertical axle. Each of these stops has an upright cushioned piston, v , fitted in a screw-shank, by which its height can be regulated.

In order to turn a watch-center of the profile shown in Figs. 6 and 7, I place the rough center in the clasp g , Fig. 28, so that the side which is intended to receive the two seams $v' v^2$ of the back may project from the clasp. I next secure the graver q , Fig. 11, to the piston m and the graver q' , Fig. 12, to the piston m^2 . I then advance the piston m until the graver q is brought into the interior of the center, the block h meanwhile resting on the stop s^3 . The shaft a revolving, the graver q causes the center to assume the bulging form at v^3 and form the lap v^4 . I now withdraw the graver q and swing the block h upon the stop

s' , so as to bring m^2 in line with a . This allows the graver q' to work, and to produce the two fillets or seams $v' v^2$. These two operations, with the tools q and q' , are to be made on all the centers before changing the position of the clasp. I next withdraw the clasp g , Fig. 28, and substitute for it the clasp g' , Fig. 26. I also withdraw the two graters q and q' . I next place the graver q^2 , Fig. 13, on the piston m , the graver q^3 , Fig. 14, on the piston m' , the graver, q^4 , Fig. 15, on the piston m^2 , and the graver q^5 , Fig. 16, on the piston m^3 . I clasp the center in g' by its back seam, v' . I next advance the piston m and get its graver q^2 working, and afterward the other graters in the desired order. Whenever I depress the spring-stop o (see Fig. 3^o) I thereby bring its horizontal screw o' in the way of a projection of the plate i that pertains to the piston m , and thereby prevent said piston from being advanced as far as it otherwise would be advanced. This permits the use of the same graver at different distances from the inner face of the block h . The seams, if any, that are left by the machine-gravers will be taken off by means of the hand-graver resting upon the support b^2 .

For turning the bezel, Figs. 8 and 9, I place the clasp g^2 , Fig. 27, in the box d , and secure the graver q^6 , Fig. 17, on the piston m and the graver q^8 , Fig. 19, on the piston m^3 . After having used these tools I next introduce the clasp g^3 , Fig. 25, into the box d , and employ the graver q^7 , Fig. 18, on the piston m' , q^9 , Fig. 20, on the piston m^2 and q^{10} , Fig. 21, on the piston m .

Fig. 22 shows a graver, q^{11} , for turning over the top of the bezels.

Fig. 31 shows the complete watch-case—that is to say, the joining of the center, Figs. 6 and 7, with the bottom bezel, Fig. 10, and glass bezel, Figs. 8 and 9.

I claim—

1. In a lathe, the combination of the hollow shaft a with the spindle c , mechanism, substantially as described, for turning said shaft and said spindle jointly, and with the clasp g , box d , disk f , and mechanism, substantially as described, for moving the spindle c longitudinally independent of the shaft a , as specified.

2. The combination of the block h , shaft h' , and a series of pistons, $m m' m^2 m^3$, with the graver-holders k , shaft a , spindle c , clasp g , box d , disk f , and plates i , substantially as herein shown and described.

3. The combination of the pistons $m m' m^2 m^3$ with the screws $l l$, spring-stop o , and screw o' , substantially as herein shown and described.

4. The series of stops s, s', s^2 , arranged as described, and combined with the piston-revolver h , carrying the graver-holding pistons m, m', m^2 , and m^3 , substantially as herein shown and described.

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