

# PATENT SPECIFICATION



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195,596

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## COMPLETE SPECIFICATION.

### Improvements in the Manufacture of Watches.

We, the TAVANNES WATCH COMPANY, S.A., of Tavannes, Switzerland, a Swiss company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Our invention relates to improvements in blanks for watch movements. As operations concerning uprighting and jewelling movement blanks are usually performed by the aid of working holes, said operations are generally most difficult due to the fact that they have to be executed after some intervening manufacturing process which, requiring more force, has distorted the blank causing the working holes to be deformed, and the distances between their centres to be varied. This deformation and variation is in practice irregular owing to the metal not being homogeneous. Consequently a uniform correction cannot be provided in order to obviate such drawbacks in all cases. In consequence, operators have to resort to numbering the bridges and plates and to work on two corresponding parts by means of the same working holes, so as to obtain borings and pivotings having the same defects as to their respective positions within the movements, but maintained nevertheless in a co-axial direction.

The object of our invention is to provide thorough interchangeability of the pieces in a complete series whatever the strain on the metal and notwithstanding any deformation the working holes may have sustained during the process of milling and turning.

In our Specification No. 195,595, we have described a process for forming a blank for watch movements wherein the jewel insetting and/or plug holes, and the foot holes of the various pieces are

simultaneously rectified by means of a die punch.

Now, according to the present invention, the rectification of the jewel insetting and/or plug holes and the rectification of the foot holes for the pieces are effected by separate die punching operations at different times. If desired one of said operations may be performed on the basis of the other of said operations when the latter has been completed.

The basis for the present rectification processes may be differently chosen according to the particular needs of the work. For instance, two additional working holes may be drilled in the plates when the operator thinks it most advisable, *i.e.* when the work on said plate is considered to be at a sufficiently advanced state, it being understood that the holes shall not be subjected to any subsequent strain. These working holes are thereafter used in accordance with the present invention as guiding-marks (gauging devices) either for rectifying the jewels in-setting and/or plug holes, or for rectifying the foot-holes, or for the rectification of the various borings and adjustments required for certain parts of the movement. The original working holes may also be used as guiding-marks for one of the said rectifications after having been themselves rectified by the aid of the additional working-holes. After having rectified the jewel in-setting and/or plug holes, the foot-holes, previously drilled, may be rectified according to the guiding-marks comprised by the aforesaid rectified jewel in-setting holes.

In the bridges, either the screw holes or the foot-holes or the plug holes, or either one foot-hole and one plug-hole combined; or one foot-hole or one plug-hole combined with a portion of the

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periphery may be used as guides or gauging devices for a rectifying operation, as found most convenient.

In the cases both of plates and bridges the plug or jewel in-setting holes may be formed in the first place (before rectification) either by drilling or punching according to the diameter of the hole.

In the accompanying drawings,

10 Fig. 1 shows a plate and

Fig. 2 a bridge-piece, the latter being also indicated in Fig. 1.

15 Fig. 3 shows a tool for rectifying the plate and Fig. 4 a tool for rectifying the bridge-piece.

The plate as here illustrated is already formed with the recesses  $a^1$ ,  $a^2$ ,  $a^3$ , the bridges  $b$  and  $c$  being indicated in dotted lines in the positions they will occupy.

20 For mounting a plate on to various machines a disc having three pintles which correspond with the working holes  $d$ ,  $e$ ,  $f$  is provided. The holes are subject to distortion as previously explained,

25 and after the plate has been worked, two additional holes  $g$ ,  $h$  are formed in the plate by the intermediary of which the holes  $i$ ,  $k$ ,  $l$  for adjusting the setting of the stones are rectified. This operation is effected by means of a matrix illustrated in Fig. 3 having pintles  $g^1$ ,  $h^1$  adapted to engage in the holes  $g$ ,  $h$  to provide correct centering, and pintles  $i^1$ ,  $k^1$ ,  $l^1$  of shorter length which thereafter enter the holes  $i$ ,  $k$ ,  $l$  which are thereby sharpened and rectified.

30 Fig. 2 is an underside view of a bridge  $c$ , Fig. 1, having the holes  $i^2$ ,  $k^2$ ,  $l^2$  for stone setting which are required to correspond with the holes  $i$ ,  $k$ ,  $l$ , Fig. 1. These holes  $i^2$ ,  $k^2$ ,  $l^2$  are rectified by the operation of the punch illustrated in Fig. 4 which is centred by lugs  $m$ ,  $n$  shaped to fit parts of the outline of the bridge.

45 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

50 1. A process for manufacturing a blank for a watch movement consisting in rectifying by means of a die-punching process the various holes in the plates and bridges, the rectification of the jewel in-

55 setting and/or plug holes of a given piece being effected separately in a different operation from the rectification of the foot holes.

2. A process as claimed in Claim 1 wherein the first rectification operation is performed on the basis of additional working holes as guiding marks or gauging devices. 60

3. A process as claimed in Claim 2 in which a second rectification operation is performed on the basis of the holes rectified in the first operation as guiding marks or gauging devices. 65

4. The manufacturing process of a blank for a watch movement according to Claim 1, characterised by separate die-punching of the jewel in-setting or plug holes according to additional working holes. 70

5. The manufacturing process of a blank for a watch movement according to Claim 1, characterised by separate die-punching of the foot-holes according to additional working holes. 75

6. The manufacturing process of a blank for watch movement according to Claim 1, characterised by separate die-punching of the borings in the blank according to additional working holes. 80

7. The manufacturing process of a blank for watch movement according to Claim 5, characterised by the rectified foot-holes being used as guiding-marks for rectifying the jewel in-setting holes. 85

8. The manufacturing process of a blank for watch movement according to Claim 7, characterised by the rectified foot-holes being used as guiding marks for rectifying the borings in the blank. 90

9. A watch movement blank in which any or all of the holes are rectified by a process according to any of the preceding claims. 95

10. Improvements in manufacturing watch movement blanks substantially as described. 100

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Fig. 1.

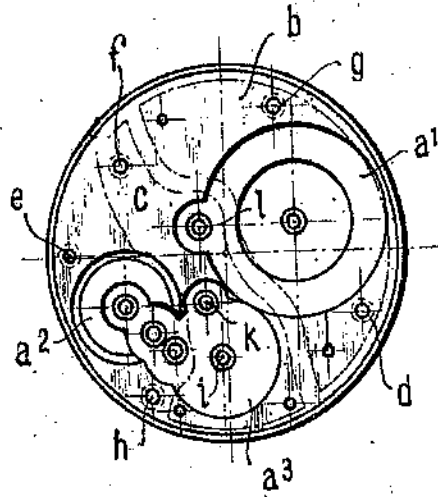


Fig. 2.

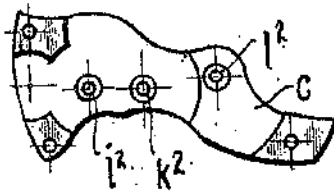


Fig. 3.

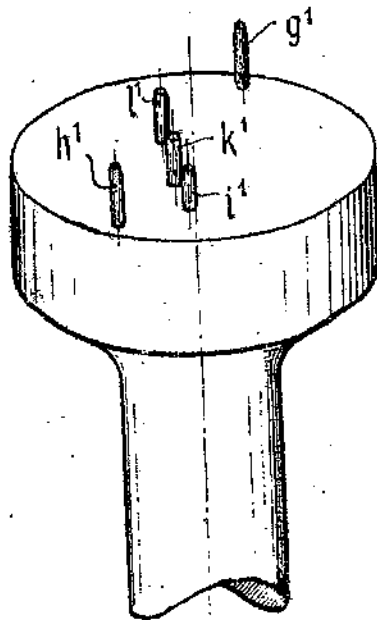
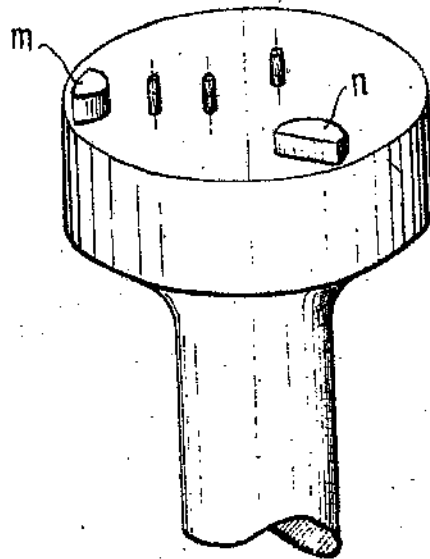


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]