The present invention relates to improvements in tight watch cases, particularly of the type comprising a movement case, a backing and a back provided with a projecting rim, which three pieces are assembled by pressure exerted by means of a fixing member which is detachably mounted upon said movement case.

An object of the invention is to provide a fixing member which is not connected with the back of the watch and bears, in tightening position, exclusively upon a predetermined surface provided on said projecting rim, said fixing member presenting a surface closely adjacent to portions of said back and being shaped correspondingly thereto, so that the back is preserved by means of said fixing member from radial efforts.

As the back of the watch is separate from the fixing member, it is mainly the latter which will be subjected to efforts by the tightening or releasing operation, for instance by means of a key. Therefore, the back may be essentially thinner than any back which forms itself the fixing or tightening organ or which is combined therewith.

Another object of the invention is to constitute the back of the watch by a dome which has formed a projecting circumferential rim and to provide a comparatively thin, flat packing ring which is placed between respective flat tightening surfaces of the movement case and of the circumferential rim of the dome, these three pieces being pressed, in tightening position, upon one another by a threaded fixing ring, which is screwed on the movement case and bears exclusively upon a predetermined surface of the circumferential rim of the dome. This arrangement allows to tighten or release the fixing ring without affecting the subtle packing ring by friction, which would damage the same very soon.

A further object of the invention is to provide, particularly on watches in valuable metal, a second back which covers the dome and is comparatively thin in thickness. This outer back is only slightly spaced from the dome, so that it will most immediately be supported by the latter upon any substantial pressure from outside.

Still another object of the invention is to provide an outer, comparatively thin spring back, which covers the dome and the fixing ring and is equipped with a retaining edge engaged in a notch of the movement case.

Another object of the invention is to provide an outer, comparatively thin back, which is fixed upon the fixing ring, for instance by soldering.

Besides, the above cited features of the invention include the advantage, that the total thickness of tight watch cases is somewhat reduced.

The foregoing and other objects will be more fully indicated in the following description in connection with the annexed drawings.

In the drawings, wherein preferred embodiments of the tight watch case according to the invention are represented by way of example,

Fig. 1 shows a first embodiment of a tight wrist watch case, partly in axial section and partly in a lateral view.

Fig. 2 shows a second embodiment, partly in axial section and partly in a lateral view.

Figs. 3 and 4 illustrate modifications to the respective embodiments in Figs. 1 and 2, partly in axial section and partly in a lateral view.

Fig. 5 shows a third embodiment of a tight wrist watch case according to the invention, partly in axial section and partly in a lateral view.

The movement case of the wrist watch shown in Fig. 1 is illustrated in reversed position and has formed in the lower portion a notch, wherein the glass will be inserted, and comprises outside laterally extending arms for a bracelet.

The upper portion of the movement case is provided with an external thread and with an annular bed for receiving the packing ring and having a slightly elevated border. The back of the watch case is constituted by a dome, which has a projecting circumferential rim and bears with a flat, inner surface of the same upon the packing ring. A fixing ring, which is provided with an internal thread, is screwed upon the screw thread of the movement case and bears by means of a radial surface of the relieved portion of the thread upon the radial, external surface of the projecting rim, whereby pressing the latter axially upon the packing ring. The fixing ring presents a surface which, in tightening position, is closely adjacent to the cambered portion of the dome without touching the same and which is shaped correspondingly thereto for preserving the dome from radially exerted efforts. When assembling the watch case, the dome can be placed separately and independently from the fixing ring upon the packing ring and can be kept immovable during the screwing operation of the fixing ring, so that the packing ring is not subjected to friction by torsion efforts, which would damage the same. The packing ring consists of impermeable substance, for instance synthetic caoutchouc or specially prepared cork, and this ring can be comparatively very thin.
owing to the flat bearing surfaces of the bed 5 and of the projecting rim 9 and owing to the exclusively axial tightening or releasing effect. The dome 8, leaving the projecting rim 9 under axial pressure, is not submitted to any effort by the presence of the fixing ring 16 and, therefore, can be comparatively thin. The fixing ring 16 is provided with a knurled surface 13 for allowing to screw it by hand. In order to facilitate the engagement of the fixing ring 16 in the thread 4 of the movement case 14 and to prevent any damage of these threads, they each present at their beginning a conical surface.

The movement case 14 according to the second embodiment shown in Fig. 2 is provided with an internal thread 15 and an annular bed 16 for receiving the packing ring 17 and having a slightly elevated border 18. The back is constituted by a dome 10 which has formed a projecting circumferential rim 20 and bears therewith upon the packing ring 17. A fixing ring 21, having an external thread 22, is screwed in the thread 18 of the movement case 14 and bears upon the external radial surface of the projecting rim 20, whereby pressing the latter axially upon the packing ring 17. In order to protect the dome 10 from radially exerted efforts, the fixing ring 21 has formed a surface 23 which, in tightening position of the fixing ring, is closely adjacent to the cambered portion of the dome 10 without touching the same and which is shaped correspondingly thereto. The fixing ring 21 is provided with an annular projection 24 above the thread 22, which covers the latter, so as to prevent the dust from entering into the thread.

The fixing ring 21 can be screwed or unscrewed by means of a not illustrated wrench and has for this purpose in the upper surface four holes 25 arranged at 90 degrees to each other. The packing ring 17 used in this embodiment is equal to that one described above with the first embodiment and the pressure is as well axially exerted thereupon.

The modifications shown in the Figs. 3 and 4 constitute an adaptation of the two described tight watch cases particularly to valuable metals, such as gold or platinum. Upon the fixing ring 10 or 21, respectively, consisting of valuable metal is soldered a very thin back plate 26 of the same metal, which then covers the dome 8 or 19, respectively. The bearing surfaces between the fixing ring 10 or 21, respectively, and the circumferential projecting rim 8 or 20, respectively, remain the same as shown and described above in connection with the two embodiments of the watch case. When the pieces are assembled and the fixing ring tightened, the outer back is only slightly spaced from the dome, so that, upon any substantial pressure from outside, it will almost immediately be supported by the dome, that means already after a very slight deflection.

While the outer surface of the watch case appears entirely in a valuable metal, the dome, which must resist to the mentioned efforts in order to protect the watch movement, can preferably be made of ordinary metal of sufficient strength, as for instance copper or steel, so that the dome may be comparatively thin.

The third embodiment shown in Fig. 5 constitutes another adaptation of the tightening device, similar to that one shown in Fig. 2, to watch cases consisting of valuable metal. The movement case 14 provides the annular bed 16 for the packing ring 17 as well as the internal thread 15 for the threaded fixing ring 27 and further

an annular notch 32 at the upper end for engaging the retaining edge of an outer spring cover 31, which covers the dome 18a and the fixing ring 27. The dome 18a has also formed the circumferential projecting rim 20, by the lower radial surface of which it rests upon the flat and comparatively thin packing ring 17. Upon the upper radial surface of the projecting rim 20 bears the fixing ring 27, whereby pressing the dome 18a exclusively in axial direction. The fixing ring 27 has, in tightening position, the upper surface in level with the upper surfaces of the dome 18a and of the movement case 14 and has therein four kerfs 33 arranged at 90 degrees to each other and adapted for giving hold to a wrench by means of which the fixing ring can be screwed and unscrewed. The fixing ring 27 is also provided with a protecting surface 29, which, in tightening position of the fixing ring, is closely adjacent to the cambered portion of the dome 18a without touching the same and which is shaped correspondingly thereto. The outer back plate 31 is very little spaced from the upper surface of the dome 18a and will almost immediately be supported by the latter already upon very slight pressure from outside. Therefore, the back plate 31 which may consist of valuable metal like the movement case 14, can be very thin, whereas the dome 18a and the fixing ring 27 can consist of ordinary metal presenting sufficient strength, as for instance steel or copper, that the dome 18a may be made comparatively thin.

What I claim is:

1. A tight watch case comprising a movement case, which has formed thereon a thread and an annular flat bed, a comparatively thin and flat packing ring disposed on said bed, a dome having a cambered portion and a projecting circumferential rim and being disposed with a flat face surface thereof on said packing ring, a threaded fixing ring screwed on said movement case and bearing axially upon said projecting rim on the face thereof opposite from said face of said rim which is disposed on said packing ring, so that pressure exerted by said threaded fixing ring against said projecting rim is transmitted through said rim to said packing ring, said fixing ring bearing against said projecting rim exclusively along a flat surface thereof, said fixing ring being provided with engaging means for screwing the same onto the case and with a cambered portion at the inner side thereof having a surface situated closely adjacent to said cambered portion of said dome shaped correspondingly thereto, and an outer back covering said dome and being comparatively thin, said outer back being only slightly spaced from said dome, so as to be supported by the latter upon any substantial pressure from outside.

2. A tight watch case comprising a movement case having formed thereon an external thread and an annular flat bed with an inner, slightly elevated border, a comparatively thin and flat packing ring disposed on said bed, a dome having a cambered portion and a projecting circumferential rim and being disposed with a flat face surface thereof upon said packing ring, a fixing ring internally threaded and screwed on said movement case and bearing axially upon said projecting rim on the face thereof opposite from said face of said rim which is disposed on said packing ring, so that pressure exerted by said threaded fixing ring against said projecting rim
is transmitted through said rim to said packing ring, said fixing ring bearing against said projecting rim exclusively along a circular radial surface thereof, said fixing ring being provided with a knurled surface for screwing the same by hand onto the case and with a cambered portion at the inner side thereof having a surface situated closely adjacent to said cambered portion of said dome shaped correspondingly thereto, and an outer back plate covering said dome and being comparatively thin, said back plate being fixed upon said fixing ring and only slightly spaced from said dome, so as to be supported by the latter upon any substantial pressure from outside.

3. A tight watch case comprising a movement case having formed thereon an internal thread and an annular bed with an inner, slightly elevated border, a comparatively thin and flat packing ring disposed on said bed, a dome having a cambered portion and a projecting circumferential rim and being disposed with a flat face surface thereof upon said packing ring, a fixing ring externally threaded and screwed on said movement case and bearing axially upon said projecting rim on the face thereof opposite from said face of said rim which is disposed on said packing ring, so that pressure exerted by said threaded fixing ring against said projecting rim is transmitted through said rim to said packing ring, said fixing ring bearing against said projecting rim exclusively along a circular radial surface thereof, said fixing ring being provided on the upper surface with kerfs arranged at 90 degrees to each other for receiving a wrench for screwing the same onto the case and with a cambered portion at the inner end thereof having a surface situated closely adjacent to said cambered portion of said dome shaped correspondingly thereto, said fixing ring having an annular projection above the thread for preventing the dust from entering into the thread, and an outer back plate covering said dome and being comparatively thin, said back plate being fixed upon said fixing ring and only slightly spaced from said dome, so as to be supported by the latter upon any substantial pressure from outside.

4. A tight watch case comprising a movement

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