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CLOSURE FOR WRIST-WATCH CASES

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FIG. 1

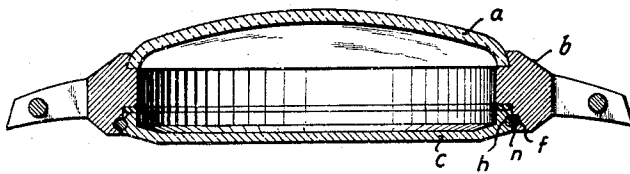


FIG. 2

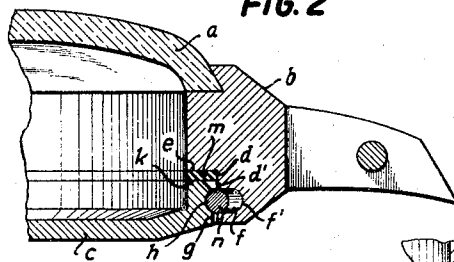


FIG. 3

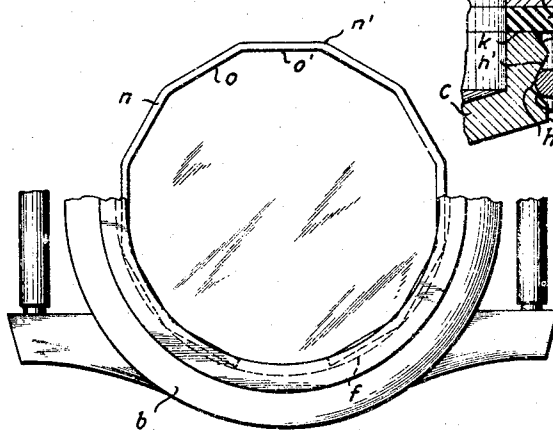
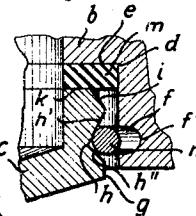


FIG. 4

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CLOSURE FOR WRIST-WATCH CASES

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1 Claim. (Cl. 58—90)

The present invention relates to wrist-watch cases, and more specifically to a closure for the bottom of wrist-watch cases. Hitherto the bottom of wrist-watch cases, irrespectively of their shape, was secured in position by pressing together snap edges on these parts engaging slightly one in the other, which could be effected simply and quickly but did not produce a water-proof closure; or, in the case of circular cases, flat annular surfaces are arranged thereon and on the bottom thereof, between which surfaces a packing is placed and the two parts of the case are provided with a screw thread, so that by screwing the bottom into the case the packing is clamped between the annular surfaces and constitutes a water-tight closure. The forming of the necessary screw threads in the last mentioned type of closure presents a certain amount of difficulty owing to the slight height of the thread. When screwing the bottom into the case it is not easy to bring the two threads into engagement and it can easily happen that they become damaged in so doing. Another objection is that a key is required for this purpose, which is frequently not available at all or not in the proper size, and, owing to the slight thickness of the case bottom, the notches for the engagement of the key are so shallow that it is difficult to screw the bottom into the case securely and it can easily become damaged. The invention offers a new solution to the problem set by the above-mentioned objections to the known closure means for watch cases.

According to the invention the closure for wristwatches comprises in combination with the watch case and the bottom thereof, a polygonal snap ring interposed between said case and said bottom. The polygonal snap ring has straight or inwardly curved segments and is clamped between grooves in opposing vertical inner and outer peripheral surfaces of the case and the bottom, respectively, whereby the individual segments bear at their junction points against the bottom of the groove in the case, while middle portions of said segments are situated under initial tension in the groove in the case bottom, and this last mentioned groove may be provided in its upper half with a zone narrowing in downward direction and in its lower half with a zone narrowing in upward direction and a peripheral surface above the groove may also narrow in upward direction.

This last mentioned surface on the case bottom enables the bottom to be easily pressed between the segments of the snap ring, thereby widening the snap ring or bending back its segments, and brought to bear against the packing. By this resilient bending back of the segments the case bottom is then automatically held in its closed or locked position under strong tension distributed around its entire circumference. By the downwardly narrowing zone formed by the upper half of the groove in the case bottom, cooperating with the inwardly directed resilient middle portions of the segments of the snap ring, the bottom is additionally forced strongly upwards and consequently the packing, located between flat bearing surfaces on the bottom and on the case proper, is corre-

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spondingly strongly clamped, thereby producing a water-tight closure of the watch case. It is also an advantage that it only takes a moment to open and close the case and no key is required for so doing.

A preferred embodiment of the invention is illustrated by way of example in the accompanying drawing, in which:

Fig. 1 shows a wrist-watch case in vertical longitudinal section;

Fig. 2 is a similar view showing on a larger scale the right half of the case;

Fig. 3 shows a modified construction of the bottom closure in vertical section and on a large scale, and

Fig. 4 is a bottom plan view of half of the case formed by dividing along the central longitudinal line of the case, with a snap ring fitted partly therein.

The wrist-watch case consists, in the case of the round or circular form of construction illustrated, of a case ring *b* closed by a watch glass *a* water-tightly cemented therein and of a case bottom *c* closing the opening in the underside of the case. At the lower part of the inner periphery of the case ring *b* a recess *d* is formed having a vertical inner peripheral surface *d*¹ and a downwardly facing flat annular bearing surface *e*. In the vertical inner peripheral surface *d*¹ an annular groove *f* is cut having, for example, an inner end wall *f*¹ which is of semi-circular shape. The case bottom *c* has on its outer periphery at the lower end thereof a narrow vertical surface *g*, above which there is an annular groove *h*, from which an annular conical surface *i* narrowing in upward direction extends, and at the top thereof a flat annular bearing surface *k* facing upwards. Provision is made for placing a washer or packing ring *m* between the annular bearing surface *e* of the case ring *b* and the annular bearing surface *k* of the case bottom *c*. The cross section of the annular groove *h* in the case bottom *c* can be substantially semi-circular as shown in Figs. 1 and 2. The cross section of the annular groove *h* can, however, also be triangular so that it has an upper zone *h*¹ narrowing in downward direction and a lower zone *h*¹¹ narrowing in upward direction as shown in Fig. 3. A polygonal snap ring *n* of resilient wire of circular cross section is placed in the annular groove *f* of the case ring *b*. Individual segments *o* of this polygonal snap ring *n* may be straight or curved inwards. The snap ring bears at junction points *n*¹ of its segments *o* against the inner end wall *f*¹ of the case groove *f* and middle portions *o*¹ of its straight or inwardly curved segments *o* project inwards beyond the inner peripheral surface *d*¹ of the recess *d* cut in the case ring.

The case bottom *c* is pressed from below into the recess *d* in the casing, and during this process its upper conical annular surface *i* forces back the segments *o* of the snap ring *n*, bending them outwards. When the upper flat annular bearing surface *k* of the bottom *c* bears against the packing ring *m*, the middle portions *o*¹ of the segments snap into the annular groove *h* in the case bottom *c*, owing to the tension produced by their being bent back, and firmly hold the bottom *c* in the case ring *b* in closing position as shown in Figs. 1 and 2. If, however, the annular groove *h* of the case bottom *c* is of triangular cross section as shown in Fig. 3, the bottom *c*, by the cooperation of the upper downwardly narrowing groove zone *h*¹ with the middle portions *o*¹ of the snap ring segments acting inwardly in radial direction, will be forced upwards so strongly that it tightly clamps the packing ring *m* between the flat annular bearing surface *k* of the bottom *c* and the flat annular bearing surface *e* of the case ring *b* so that a water-tight closure of the case is attained. At the same time the lower upwardly narrowing groove zone *h*¹¹ is still at a distance

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from the middle portions o^1 of the segments of the snap ring.

The snap ring closure above described can also be employed for watch cases of oval shape, and especially when providing the snap ring n with inwardly curved segments o , also for square, rectangular and polygonal cases with similarly shaped bottoms.

From the above detailed description of the invention, it is believed that the construction will at once be apparent, and while there is herein shown and described a preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

A closure for wrist-watches, comprising in combination with the watch case and the bottom thereof, a polygonal snap ring forming a plurality of segments and interposed between said case and said bottom, the watch case having a downwardly facing flat bearing surface to bear against a packing and a vertical inner peripheral surface provided with a groove for receiving the polygonal snap ring,

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and the case bottom having on its outer periphery a groove with an upper zone narrowing in downward direction and a lower zone narrowing in upward direction, the upper zone cooperating with middle portions of the segments of the snap ring to press the case bottom strongly in upward direction and clamp the packing between the upwardly facing flat surface of the case bottom and the downwardly facing flat surface of the case, the lower zone of the groove in the case bottom narrowing in upward direction being still at a distance from the middle portions of the segments of the snap ring.

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