Sept. 23, 1947. M. GROUP ET AL 2,427,961

WATCH DIAL CONSTRUCTION

Filed July 1, 1946

Fig. 1.

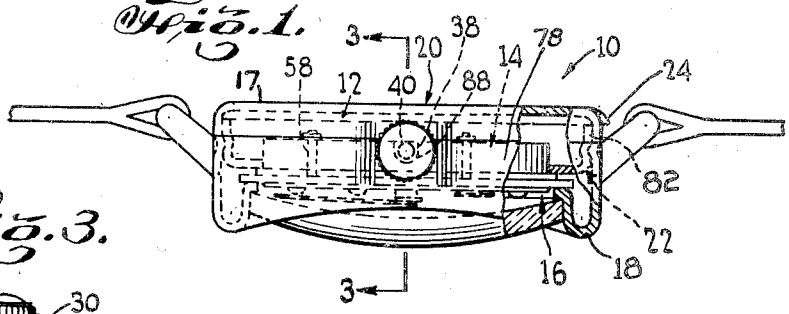


Fig. 3.

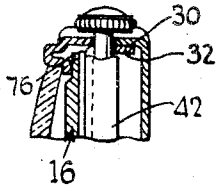


Fig. 2.

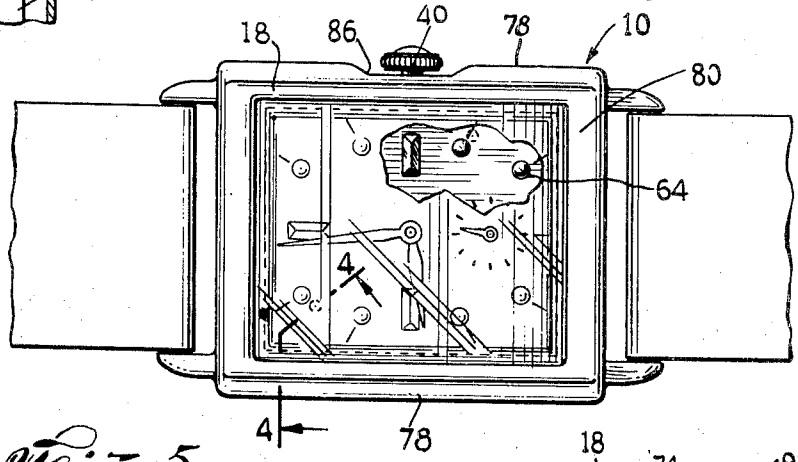
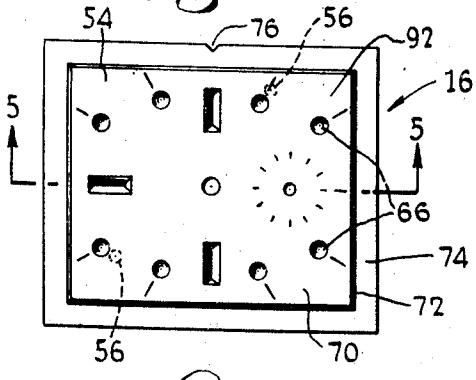


Fig. 5.



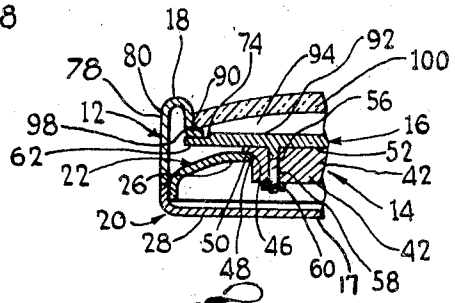
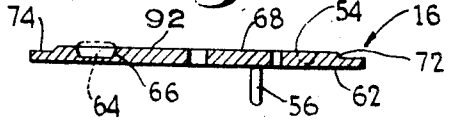


Fig. 4.

Fig. 6.



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UNITED STATES PATENT OFFICE

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WATCH DIAL CONSTRUCTION

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5 Claims. (Cl. 58—57)

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This invention relates to watch dial construction.

Particularly, the invention will be described in connection with the commonly termed, wrist watch, in which a movement, set into the back of a watch case, supports a dial over which the hands track. The case may include a bezel which interfits with the back of the case and the dial to frame the dial and, in most cases, to hold the dial and the movement against vibration.

A problem arises in connection with a dial ornamented with set stones to indicate the hours, the stones being fitted in the dial plate. Recesses must be formed in the metal of the dial plate to receive the jewels. It follows that metal sufficient for the formation of such recesses to receive the jewels must be provided. This, in turn, creates a problem propertly to nest the dial and the portions of the case together, so that the movement and the dial are located properly within the bezel.

It is an object of the invention to construct a dial to permit the association of stones or jewels therewith, and yet permit its use with an ordinary watchcase and movement, requiring no change in any one of the ordinary parts of the watchcase, and yet one in which the parts will interfit in the usual manner when the dial bearing the stones and the associated movement are fitted into the case.

It has been the practice heretofore, where a dial is ornamented with jewels to mark the hours, to gouge out the opening in the movement-supporting ring or flange which may form a part of the case in order that the movement may be seated deeper into the ring, and thus compensate for the additional thickness of the dial required for such stone mounting, so that the bezel might then cooperate properly with the back.

It is an object of the invention to provide a dial intended to be adorned with stones or jewels for marking the hours, where, although the dial must be of increased thickness to receive such jewels, no change need be made in the parts of the case or the movement.

Other objects of the invention will be set forth hereinafter, or will be apparent from the description and the drawings, in which is illustrated an embodiment exemplifying the invention.

The invention, however, is not intended to be restricted to any particular construction, or any particular arrangement of parts, or any particular application of any such construction or arrangement of parts, or any specific method of use, or any of the various details thereof, even where specifically shown and described herein, as the same may be modified in various particulars, or may be applied in many varied relations, which do not depart from the spirit and scope of the claimed invention.

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On the drawings, in which the same reference characters refer to the same parts throughout, and in which is disclosed such a practical construction,

Fig. 1 is an elevational view of a wrist watch, embodying the features of the invention, and positioned bottom up, a portion of the case and dial being broken away to indicate the internal construction, and the strap being broken away;

Fig. 2 is a bottom plan view of the watch shown in Fig. 1, a part of the so-called "crystal" being broken away to show the positioning of the jewels;

Fig. 3 is a detail vertical cross-sectional view on the line 3—3 of Fig. 1, and illustrating the disposition of the parts embodying the invention;

Fig. 4 is a detail cross-sectional view substantially on the line 4—4 of Fig. 2, illustrating certain details of the construction;

Fig. 5 is a plan view of a dial embodying features of the invention, without the stones; and

Fig. 6 is a detail cross-sectional view substantially on the line 5—5 of Fig. 5, the jewels being removed.

On the drawings, is shown a wrist watch 10, the wrist watch including a case 12 and a movement 14 to which is secured a dial 16. The case comprises a back 17 and a bezel 18. Back 17 may consist of two sections, that is, a bottom section 20 and a movement-supporting ring or flange 22. Section 20 is dished in the usual fashion, and is provided with a projection 24 for assisting in opening the case. Ring 22 is dished in like fashion, and is fitted into section 20 so that wall 26 of ring 22 is spaced above wall 28 of section 20 a distance sufficient to keep movement 14 spaced above wall 28 when the movement is assembled with ring 22.

Section 20 and ring 22 may be secured to each other by brazing. Indentations 30 and 32 are formed in the side walls of section 20 and ring 22, respectively; when these parts are interfitted, indentations 30 and 32 interlock to form a common recess, at which a slot 38 is formed in the side wall of ring 22 for the reception and location of a stem 40 carried by movement 14.

The parts of the movement need not be shown; they have no specific significance here. Move-

ment 14 may be in the form of an integral member 42 which provides a mounting or support for the different gear wheels and other parts of the movement, and also such counter bearings, where necessary, for the parts of the movement.

An opening 46 is pierced in wall 26 for the reception of movement 14. That pierced opening will have the same contour as that of the particular movement to be assembled with the case. In the side face 48 of member 42 a shoulder 50 is formed. When movement 14 is pressed into opening 46, and into the back, shoulder 50 will seat upon wall 26 at opening 46. The thickness of shoulder 50 thus will determine the depth to which the movement will sink, and the level at which face 52 of movement 14 will be disposed with relation to the outside of the back.

Dial 16 may take the form of a plate 54; a pair of pins 56 may be secured to plate 54 by brazing, or other suitable means. These pins are inserted through openings 58 in member 42. Then, suitable securing means engage projecting ends 60 of pins 56, and thus retain movement 14 secured to the dial. Since face 62 of the dial is thus held flat against face 52 of the movement, the distance of face 62 above wall 26, when movement 14 is seated in opening 46 and shoulder 50 is in abutment with wall 26, will be determined by the thickness of plate 54 and of shoulder 50.

Where plate 54 is intended, as here, for the reception of ornamental stones 64 to mark the hours, or for similar purpose, recesses 66 must be formed in face 68 for setting the stones. These recesses are produced by upsetting the metal of plate 54 with proper upsetting punches. After the upsetting step, and the formation of recesses 66, face 62 must be smoothened off so that it may again seat flat against face 52 of the movement.

It is necessary to provide a plate 54 of a thickness so that, on upsetting recesses 66 therein, there will be sufficient metal to prevent complete distortion of the plate. It has been found, for instance, that, at the point where recesses 66 are to be formed, a minimum suitable thickness in the neighborhood of 0.025 inch is required. A lesser thickness does not permit efficient formation of recesses 66 without distortion of plate 54. Such thickness, however, is in excess of the usual thickness of a dial plate, which generally is in the neighborhood of 0.015 inch.

This difference of 0.01 inch is important since, in the usual case, case, movement and dial plate, together with frame 18, are conditioned to fit snugly together with great precision. Where a plate of the order of thickness of 0.025 inch has been used in the usual assembly of case, dial, movement and frame, the mechanic found it necessary to gouge out opening 46 in order to bevel the edge of the opening. In this manner, he provided means whereby shoulder 50 would sink deeper into the case, and thus compensate for the additional thickness of dial plate.

This is an undesirable condition. In addition to the factor of additional labor, the fitting was a "cut and try" procedure, capable of great inaccuracies, and, of course, produced loose movements. There was always the possibility of relative movement of dial and case, aside from possible damage from small bits of metal scraped off into the case.

In dial 16, a minute track 70 has been imprinted on face 68 and in association with recesses 66. An outline 72 has thus been produced.

Beyond outline 72, plate 54 has been champered or flanged, or reduced in section, as at 74, so that this portion of plate 54 is of the thickness of approximately 0.015 inch. Also in this portion of the flange, a small nick or opening 76, to accommodate stem 40 of the movement, is formed.

Now, after plate 54 has been secured to movement 14 by engagement of devices with pins 56, the movement can be pressed into back 17 so that shoulder 50 will seat against wall 26 in the usual manner, and without any scraping or cutting at opening 46.

Bezel 18 may now be seated over the assembled dial and movement within the back, and the frame will now properly nest with the associated parts. Bezel 18 may be made up in the usual manner to include side walls 78 and end walls 80. Walls 78 and 80 are dimensioned so that they will be received snugly around side walls 36 and end walls 82 of ring 22. One side wall 78 of bezel 18 may be provided with an indentation 86 to seat in indentation 32 in the side wall of ring 22 and to cooperate with indentation 30 for the reception of stem 40. A notch 88 cooperates with slot 38 in receiving stem 40. Walls 78 and 80 come to rest against the top edges of section 20, thus forming a closed case.

When this end position is reached, an inner flange 90 on bezel 18 will come to rest against flange 74 on dial plate 54. In this case, however, flange 74 is of the same dimension as that of a dial of uniform thickness. Bezel 18, designed to interfit with a dial of uniform thickness, will be spaced properly as if the dial were of uniform thickness throughout. The increase in thickness in that portion 92 within outline 72, exposed through opening 94 in the bezel, will require no change in the operations of assembling the different parts of the watch, nor, for that matter, will the formation of recesses 66 and the positioning of the assembled jewels in those recesses affect the assembly of the frame with the case.

A suitable inturned edge 98 is provided on frame 18 within opening 94 for the reception of the usual so-called crystal 100, which may be of glass or any other suitable material. Since this crystal is spaced upwardly away from the hands and the jewels, it will not be a hindrance to the assembly of the parts of the watch.

Many other changes could be effected in the particular construction, and in the methods of use and construction, and in specific details thereof, hereinbefore set forth, without substantially departing from the invention defined in the claims, the specific description being merely of an embodiment capable of illustrating certain principles of the invention.

What is claimed as new and useful is:

1. In combination, a watch case for a wrist watch including a back comprising a back wall, and a face wall held in spaced relation to the back wall, a watch movement for association with the case, said face wall having an opening, said movement being received snugly in the opening, a dial fitted to the movement, the dial comprising a body portion having recesses formed therein to provide settings for ornamental stones, said body portion being bounded by edge portions of lesser thickness than the body portion, and a bezel for seating over the back and the dial, the bezel having portions to cooperate with said edge portions to hold said dial in place and to house said edge portions.

2. In combination, a watch case for a wrist

watch including a back comprising a back wall, and a face wall held in spaced relation to the back wall, a watch movement for association with the case, said face wall having an opening, said movement being received snugly in the opening, a dial fitted to the movement and resting against the face of the movement, the dial comprising a body portion having indicia thereon arranged with relation to a predetermined outline, said body portion within the outline having recesses formed therein for settings for ornamental stones, said body portion being bounded by edge portions outside the outline of lesser thickness than the body portion, and a bezel, the bezel having portions for seating over and encasing the dial and a portion of the back, and other portions to cooperate with and engage said edge portions to hold the dial in place.

3. In a watch construction, wherein a watch movement is supported in a watch case which comprises a back and a bezel, and wherein a dial is provided, and wherein said dial is fitted to the movement so that the movement carrying the dial rests upon and is suspended from and within the back, and wherein said bezel is frictionally received upon said back so that the bezel holds said dial in position with relation to the case, said dial providing means for retaining jewels therein, the dial, at the position where the jewels are retained, being of a thickness sufficient to provide for the formation of recesses in the material of the dial for settings for the jewels, the dial, at portions cooperating with the bezel, being of lesser thickness and substantially of the thickness of a dial not requiring excess material for the formation of jewel receiving recesses so that the bezel will engage the dial at the reduced thickness and hold the dial snugly and with relation to the back.

4. In a watch construction, wherein a watch movement is secured to a dial, and wherein a watch case includes a back and a bezel, and the back has a wall including an opening, and wherein a movement is inserted into position within the opening, and wherein said dial is fitted to the movement so that the movement carrying the dial rests upon and is suspended from and within said back with the dial positioned on the outside of the back, and wherein said bezel is frictionally received upon the back, said bezel providing means for retaining a crystal in relation to said dial, the bezel and the dial being constructed so that the bezel holds the dial in position with relation to the case, said dial being

constructed to provide means for retaining jewels set therein, the dial, at the position where the jewels are set, being of a thickness sufficient to provide for the formation of recesses in the material of the dial for settings for the jewels, the dial, at portions cooperating with the bezel, being of lesser thickness and substantially of the thickness of a dial not requiring excess material for the formation of jewel receiving recesses so that the bezel will engage the dial at the reduced thickness and hold the dial snugly with relation to the back.

5. In a watch construction, wherein a watch movement is secured to a dial, and wherein a watch case includes a back and a bezel, and the back has a wall including an opening, and wherein a movement is inserted into position within the opening, and wherein said dial is fitted to the movement so that the movement carrying the dial rests upon and is suspended from and within said back with the dial positioned on the outside of the back, and wherein said bezel is frictionally received upon the back, the bezel providing means for retaining a crystal in relation to the dial, said bezel and said dial being constructed so that the bezel holds the dial in position with relation to the case, said dial consisting of a plate having at least two thicknesses, the greater thickness having recesses formed therein to provide settings for jewels, the dial, at the portions of lesser thickness, being engaged by the bezel to hold the dial snugly and with relation to the watch case.

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