

[54] MAGNETIC-RESISTANT WATCH CASE

[75] Inventor: Akio Nishizawa, Okaya, Japan

[73] Assignee: Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

[22] Filed: Oct. 15, 1974

[21] Appl. No.: 515,032

[30] Foreign Application Priority Data

Oct. 16, 1973 Japan..... 48-115321

[52] U.S. Cl..... 58/106.5; 58/94

[51] Int. Cl.<sup>2</sup>..... G04B 43/00; G04B 37/04

[58] Field of Search..... 58/94, 106.5

[56] References Cited

UNITED STATES PATENTS

1,247,470 11/1917 Turney..... 58/106.5

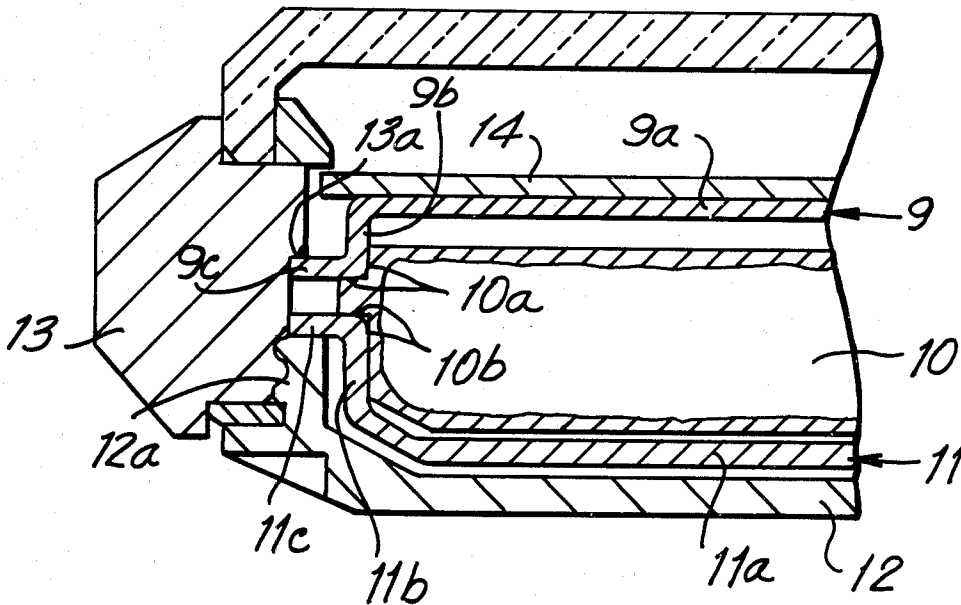
Primary Examiner—George H. Miller, Jr.

Attorney, Agent, or Firm—Waters, Schwartz & Nissen

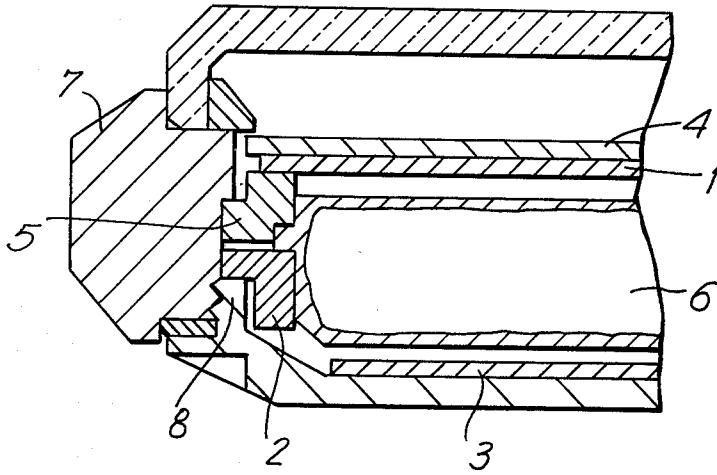
[57] ABSTRACT

A magnetic-resistant watch case assembly comprising a dial support and a casing-ring both made of a high-permeability material and surrounding a watch movement to position and fix the watch movement in the watch case.

9 Claims, 8 Drawing Figures



**FIG. 1**  
PRIOR ART



**FIG. 2**

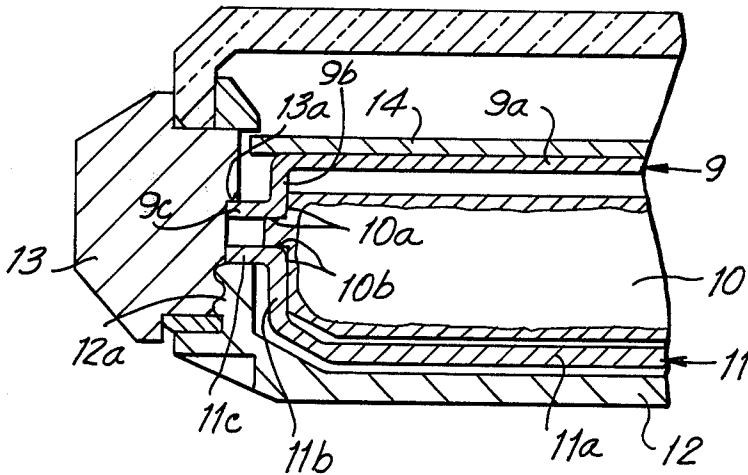


FIG. 3

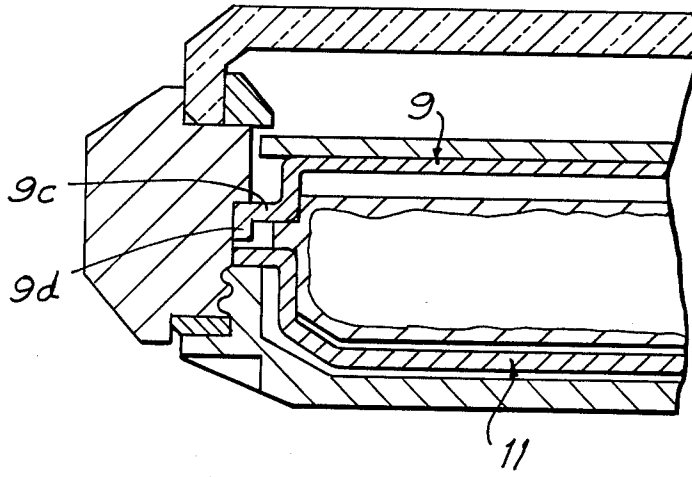


FIG. 4

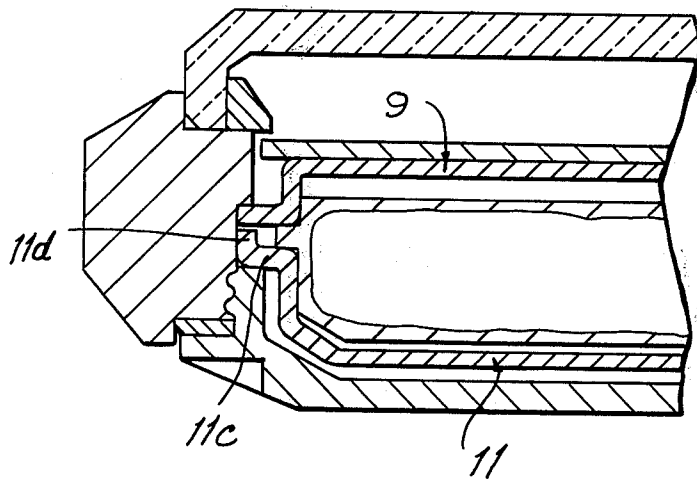


FIG. 5

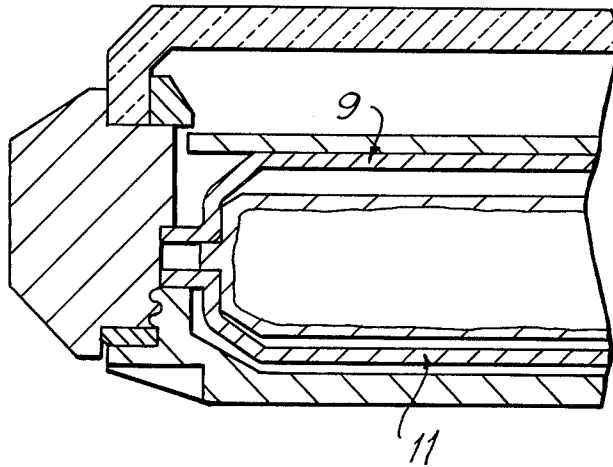
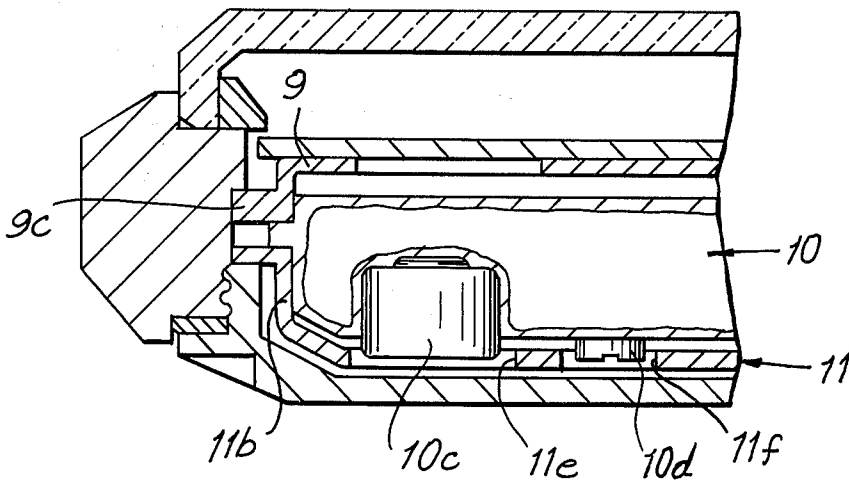
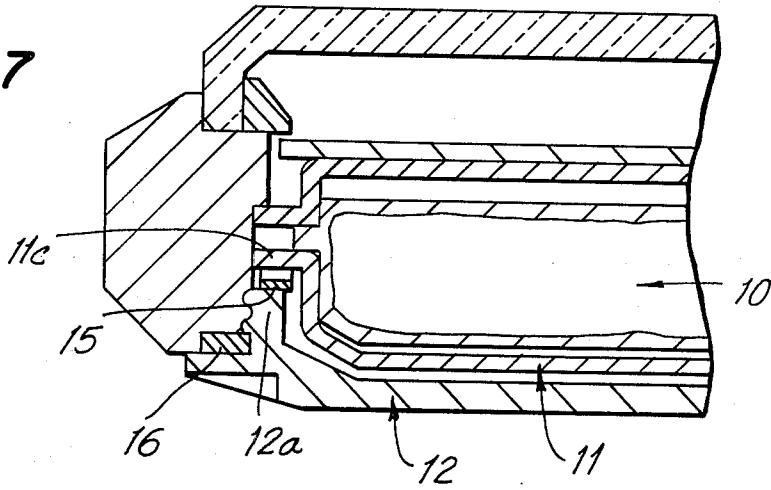


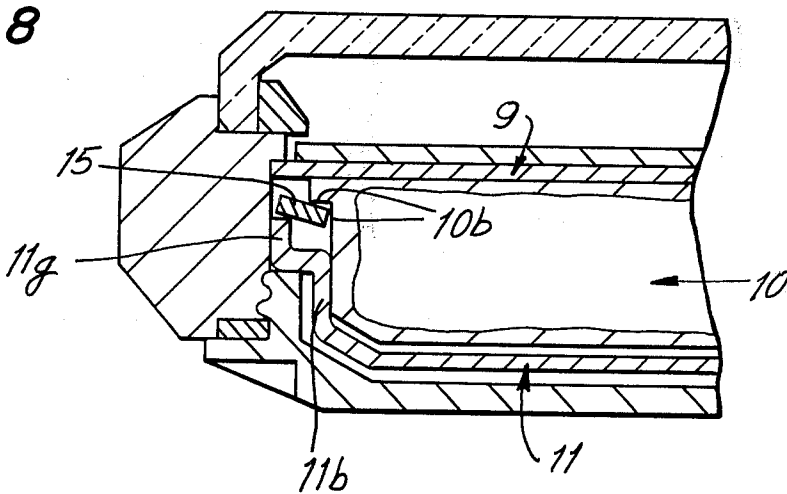
FIG. 6



**FIG. 7**



**FIG. 8**



# MAGNETIC-RESISTANT WATCH CASE

## FIELD OF THE INVENTION

This invention relates to a magnetic-resistant watch case which has high magnetic-resistance and low cost.

## BACKGROUND

In electric or electronic timepieces, a high-permeability material is sometimes provided inside its case and around its movement to improve its magnetic-resistance. In a timepiece driven by a mainspring, similar provision may be taken if the magnetic-resistance must be particularly improved. Conventional magnetic-resistant watch cases used in such cases are not suitable because their magnetic-resistant effect is relatively low and their price is high.

## SUMMARY OF THE INVENTION

According to the invention, a watch case assembly is provided which comprises a case structure, a watch movement disposed in said case structure, a dial support covering said movement on one side thereof, and a casing ring covering the movement at the other side thereof, said dial support and casing ring both being made of high permeability material and cooperatively surrounding said watch movement and including means positioning and securing the watch movement in the case structure.

At least one of the dial support and casing ring includes an integral cylindrical portion laterally encircling the watch movement and projecting towards the other.

In a particular embodiment both said dial support and casing ring include respective cylindrical portions projecting towards one another and lateral rim portions are provided on said cylindrical portions at the ends thereof.

The watch movement can have steps formed therein at its top and bottom peripheral portions and the dial support and casing ring can be seated in said steps to secure and position the watch movement.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a vertical section showing a portion of a conventional watch,

FIG. 2 is a vertical section showing a corresponding portion of an embodiment according to the invention, and

FIGS. 3 to 8 are vertical sections of other embodiments of the invention.

## DETAILED DESCRIPTION OF DRAWING

Referring to FIG. 1 which shows an embodiment of a conventional magnetic-resistant structure, therein high-permeability material is used at three places, i.e. at a plate 1 below a dial, a casing-ring 2 and a back plate 3. The plate 1 is held between a dial 4 and a ring 5 for supporting the dial. The casing-ring 2 is inserted between a movement 6 and a case band 7 to center the movement as well as to fix the movement with the use of upward force of a back cover 8. The back plate 3 is fixed to the inner surface of the back cover 8.

Such a conventional magnetic-resistant watch structure is high in cost because the high-permeability material is distributed to three members and the casing-ring requires a pressing process and a cutting process. Furthermore, the magnetic-resistance of such structure is

not sufficient because the members constituted of the high-permeability material have wide gaps therebetween, and thereby the movement is readily influenced by an external magnetic field.

This invention eliminates the above defects and will be described with reference to the embodiment shown in FIG. 2.

Therein a dial support 9 is formed of a plate member of high-permeability material by means of a drawing press to include a disc portion 9a, a depending cylindrical portion 9b and a rim portion 9c. The support 9 covers the upper portion of a movement 10. Similarly, a casing-ring 11 is formed of a plate member of high-permeability material by means of a drawing press to include a disc portion 11a, a cylindrical portion 11b and a rim portion 11c. The ring 11 covers the lower portion of the movement 10.

The movement 10 is provided with recesses defining shoulders 10a and 10b at its periphery at positions corresponding to the cylindrical portions and the rim portions of the dial support and the casing-ring respectively. The movement is held between the rim portions of the dial support and the casing-ring. The rim portions are held between an upper cylindrical portion 12a of a back cover 12 and a shoulder 13a of an inner step portion of a case band 13 by the upward force of the back cover. Thus the movement is fixed. A dial 14 is fixed to the movement so that the dial support is sandwiched therebetween.

According to this invention, only two members are made of high-permeability material and only the two members require the use of a drawing press. Accordingly, the cost price is reduced. Furthermore, the members of high-permeability material which cover the movement have only a relatively small gap therebetween and the movement is not substantially influenced by an external magnetic field. Thus, the invention provides an excellent magnetic-resistant watch case.

In FIG. 3, a depending cylindrical lip portion 9d is provided at the periphery of the rim 9c of the dial support 9. In this structure, the high-permeability members covering the movement have substantially no gap. The magnetic-resistance of the watch case is even greater thereby.

In FIG. 4, an upward cylindrical lip portion 11d is provided at the periphery of the rim 11c of the casing-ring 11 to achieve the same effect as in FIG. 3.

As shown in FIG. 5, if the watch is designed so that the dial support 9 and the casing-ring 11 have the same shape and size, both members can be interchangeable and can be manufactured in equivalent manner so that the cost price is further reduced.

In FIG. 6, the casing-ring 11 is provided with openings 11e and 11f at positions corresponding to projected portions 10c and 10d of the movement 10. In this case, the height of the cylindrical portion 11b of the casing-ring can be reduced so that the total thickness of the watch case can be reduced. Additionally, the high-permeability member may be locally thickened or thinned as shown at the rim 9c of the dial support 9, for the purpose of providing increased strength or the like.

As shown in FIG. 7, if a shock-absorbent member 15 is provided between the rim 11c of the casing-ring 11 and the upper cylindrical portion 12a of the back cover 12, variation of interference of a gasket 16 of the back cover can be reduced as much as possible because the shock-absorbent member 15 absorbs various kinds of size variation of the members which fix the movement

10.

As shown in FIG. 8, the same effect as in FIG. 7 can be obtained by disposing the shock-absorbent member 15 between a peripheral stepped portion 10b of the movement 10 and an upper cylindrical portion 11g of the casing-ring 11, with the cylindrical portion 11b of the casing ring 11 being further stepped to form the upper cylindrical portion 11g. The same effect is obtained even if the dial support 9 is not provided with the cylindrical portion nor the rim portion as in the previous embodiments.

The construction according to this invention improves the magnetic-resistance of a watch case and reduces its cost price and it is very effective in practice applicable to all sizes and shapes of watches.

What is claimed is:

1. A magnetic-resistant watch case assembly comprising a case structure, a watch movement disposed in said case structure, a dial support covering said movement at one side thereof, and a casing-ring covering the movement at the other side thereof, said dial support and casing-ring both being made of high-permeability material and cooperatively surrounding said watch movement, at least one of the dial support and casing-ring including an integral cylindrical portion laterally encircling the watch movement and projecting towards the other, and a lateral rim portion on said cylindrical portion at the end thereof, said watch movement having a step therein, said cylindrical portion and rim portion being seated in said step to position and secure the watch movement in the case structure.

2. An assembly as claimed in claim 1, wherein both said dial support and casing-ring include respective cylindrical portions projecting towards one another and lateral rim portions on said cylindrical portions at the ends thereof.

3. An assembly as claimed in claim 2 wherein said watch movement has a plurality of steps therein, said cylindrical portion and rim portion of the dial support and the casing-ring being seated in respective of said steps.

4. An assembly as claimed in claim 3, wherein one of said dial support and casing-ring includes a cylindrical lip portion on the rim portion thereof, said lip portion encircling the watch movement in the region between the rim portions of the dial support and casing ring.

5. An assembly as claimed in claim 3, wherein at least one of said dial support and casing-ring includes a local portion of different thickness from the remainder thereof.

6. An assembly as claimed in claim 3, wherein at least one of said dial support and casing-ring has an aperture to accommodate a projection provided on said watch movement.

7. An assembly as claimed in claim 3, further comprising a back plate and a shock-absorbing member engaged between said back plate and said casing-ring.

8. An assembly as claimed in claim 3, further comprising a shock-absorbing member engaged between said casing-ring and said watch movement.

9. An assembly as claimed in claim 3, wherein said dial support and casing-ring are symmetrical and interchangeable.

\* \* \* \* \*

35

40

45

50

55

60

65