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(54) Modular construction watch.

(57) A modular-construction watch comprises a bottom element, or case, which holds the watch operating mechanisms, and a removable top element restraining, in addition to the watch glass, its holding frame and a personalized dial thereon there are reproduced images, figures and/or patterns, also the

watch pointers and gears for coupling the pointers to the watch operating mechanisms, the watch dial being arranged between the watch top gears and the watch glass (under the pointers), whereas the top watch gears are enclosed between the dial and a closing bottom plate.

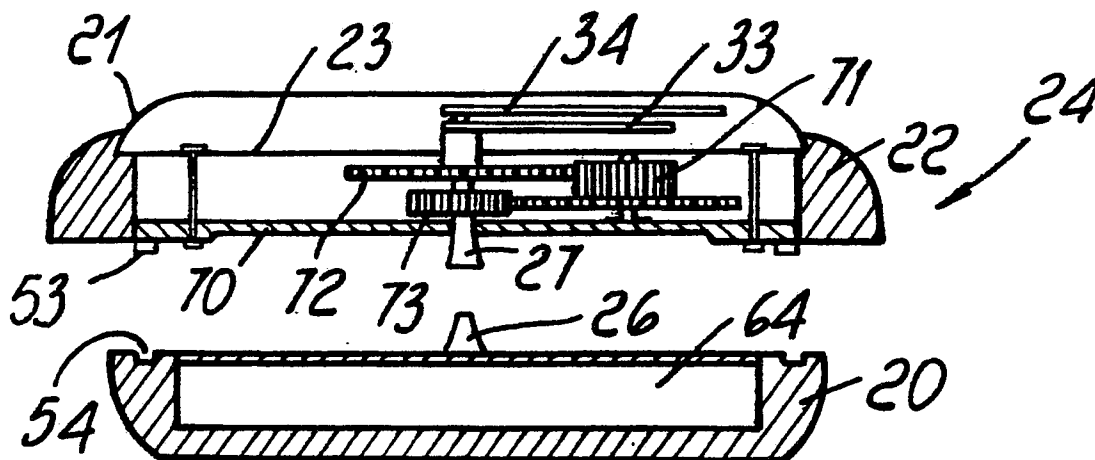


FIG. 1

EP 0 389 441 A2

BACKGROUND OF THE INVENTION

The present invention relates to a modular construction watch, that is a watch formed by interchangeable elements so designed and arranged as to receive personalizing images, figures or frames.

As is known, watches usually comprise a watch case which holds all of the operating operating watch mechanisms, and a covering glass which is affixed to the case by means of a case frame which is usually coupled to the case by pressure.

Also known is the fact that, in the last years, conventional watches have been transformed from high quality and high value objects into large consume articles to be frequently changed according to fashion requirements.

This changed trend, however, has the disadvantage of discarding watches which are yet able of perfectly operating.

SUMMARY OF THE INVENTION

The aim of the present invention is to overcome the above mentioned drawback, by providing a modular-construction easily changeable watch, that is a watch the aspect of which can be easily changed at will while preserving the starting watch operating mechanisms.

Within the scope of the above aim, a main object of the present invention is to provide such a modular construction watch the component parts of which can be mutually coupled and disassembled in a very simple way.

Another object of the present invention is to provide such a modular construction watch which includes a very reduced number of component parts which are very simple construction-wise and can be simply and quickly replaced.

According to one aspect of the present invention, the above aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a modular construction watch, characterized in that said watch comprises a bottom element or case holding the watch operating mechanisms, and a top removable element restraining, in addition to the watch glass, the holding frame of said watch glass and a personalizing watch dial, thereon there are reproduced images, figures and/or patterns, also the watch pointers and gears means for coupling said watch pointers to said watch operating mechanisms, said personalizing dial being arranged between the watch top gears and glass, under the watch pointer, whereas said top gears are enclosed between said dial and

a closure bottom plate.

In particular, in order to afford the possibility of easily reading the time indicated by this watch through one or more personalizing dials, these dials can be made of a transparent or translucent material and can be arranged at the mentioned top element, and coupled to the latter, the pointers directly coupled to the pointer driving gears being directly held within the watch case without the conventional intermediate dial.

According to a further embodiment, the personalizing dial is formed rigid with the watch strap; according to another embodiment, the removable portion of the watch can be applied on a similar watch having a fixed glass and the personalizing dial of which can be transformed into a brooch.

Moreover, in order to facilitate the coupling of the watch forming parts (which can be of any desired type such as a wrist watch proper, a table clock and so on), for mutually locking to one another said parts; there are provided specifically designed snap engaging devices.

Thus, owing to the above mentioned means, it is possible to assemble the watch or clock parts in a very quick and easy manner, and this operation does not require the intervention of skilled personnel and can also be carried out by the user.

Owing to the very reduced cost of the dial bearing the personalizing image or pattern, the user can easily change the watch configuration depending on requirements, while the watch sellers can hold in their stores a given number of complete watches or clocks, and a much greater number of personalizing deals or top watch or clock elements which can be replaced both at the selling time or successively upon requirement by the user.

The watch or clock dials according to the present invention are specifically designed for reproducing any subject matter such as famous persons, fancy patterns and the like and, moreover, they can be easily transformed into brooches.

Another characteristic of the present invention is the possibility of easily making frames with particular shapes; thus, for example, if the personalizing dial represents a famous picture, then the perimetrical portion of the removable top element can reproduce an ornamental frame or design fitting to the style of the picture itself.

It should be apparent that the personalizing frame can also be made with other fancy patterns, for example musical instrument patterns and the like.

Another main feature of the present invention is that it affords the possibility of also personalizing generic watches or clocks of very reduced cost.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become more apparent from the following detailed description of some preferred embodiments thereof, which are shown, by way of a merely indicative, but not limitative, example in the figures of the accompanying drawings, in which:

Figure 1 is a partial cross-sectional view illustrating a first embodiment of the watch or clock according to the present invention;

Figure 2 shows another partial cross-sectional view of another embodiment in which, as in figure 1, the personalizing watch dial is arranged between the watch glass and pointer driving gears, and in which the coupling with the bottom mechanisms of the watch case is performed through a transmission or driving auxiliary wheel;

Figure 3 is a top plan view showing a possible coupling diagram of the mechanisms shown in figure 2;

Figure 4 is a bottom view of the top element shown in figure 2;

Figure 5 shows a duplication example of a driving pin;

Figure 5A is a perspective view, on an enlarged scale, showing a detail of the driving pin of figure 5;

Figure 6 is a cross-sectional view illustrating a possible procedure for applying a personalizing dial provided with an image and which can be seen through a transparent screen;

Figure 7 is a top plan view of the personalizing dial of figure 6;

Figure 8 is a schematic view showing the arrangement of a desired image on a personalizing watch dial rigid with the watch strap;

Figure 9 is a cross-sectional view of a watch in which the image on the personalizing dial is rigid with a translucent element, under the glass-frame assembly;

Figure 10 is another cross-sectional view showing a watch in which the personalizing dial image is rigid with a translucent element arranged under the glass-frame assembly and also bearing a given image;

Figure 11 shows a further possible embodiment of a watch, in which the imaged personalizing dial can be transversely fitted;

Figure 12 shows a possible applying procedure for applying a transparent and/or translucent dial on a conventional watch provided with a watch case having a particular outer shape;

Figure 13 shows a possible procedure for transforming the personalizing dial of Figure 12 into a brooch;

Figures 14 and 15 show a first embodiment

of a locking system or assay for locking the watch parts to one another;

Figures 16 and 17 show an alternative embodiment of the lacking system for the watch parts;

Figures 18, 19 and 20 represents, in a schematic manner, corresponding modular wrist watches according to the invention, including, respectively, a single piece strap, a two-portion strap, restrained to the case, and a two-portion strap restrained to the personalized dial.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the figures of the accompanying drawings and, in particular, to figure 1, a modular watch is herein illustrated, essentially comprising a bottom element, or watch case 20, therein there are arranged the operating watch mechanisms 64, and a top element 24, including the watch glass 21, the glass restraining frame 22, the personalizing dial 23, pointers 33 and 34 and top gears, comprising a driving gear wheel 71 between the sleeve spool 73 and the hour wheel 72 for mutually coupling the hour 33 and minute 34 pointers.

Under the above mentioned watch pointers, there is arranged the imaged personalizing dial 23; between this personalizing dial and a bottom plate 70 there are enclosed the above mentioned mechanisms, while the coupling of the latter with the mechanisms housed in the watch case is carried by means of a male 26 and female 27 pin coupling assembly.

The top element 24 is coupled to the watch case 20 through pins 53 projecting from the bottom plate 70, which pins engage in corresponding seats 54 formed on the body of said watch case 20.

Preferably, this coupling is a snap type of coupling, which comprises a known spring system, or other devices which will be disclosed in a more detailed way hereinafter with reference to figures 14 to 17.

Figures 2, 3 and 4, show another possible coupling arrangement for coupling the top element 24 with the watch case 20, in which the axial pin 26 bearing the hour and minute wheels 72 and 73 (and possibly bearing also the second's wheel) is rigid, at its portion projecting at the bottom of the plate 70, with a gear wheel 58.

This gear wheel enters the watch case 20 through a slot 59 and engages with the watch mechanism, or sleeve spool 50, through an auxiliary wheel 60.

This wheel 60 is coupled, through a lever system 62 and 63, to an auxiliary ring gear 63 which is

adapted to displace the gear wheel 60 from its operative-position to a position 60' in which the watch operating mechanism is disactuated, for replacing the top element 24 without causing said mechanism to stop and, vice versa, for properly rearranging the component parts of the watch.

In figure 5 the top element 24 is closed at the bottom thereof by a personalizing dial 23, the pointers 33 and 34 being arranged between said personalizing dial 23 and the watch glass 21.

In order to operatively connect the watch mechanism 64 with the watch pointers, the pivot top pin 27' of the pointers comprises two concentric elements each of which is rigid with a respective pointer.

This two-portion pin snap engages on a pair of pin stud members, also concentric to one another indicated at 26', and projecting from the watch case 20.

This embodiment, which is clearly shown in the perspective view of figure 5A, has been specifically designed for allowing for both pointers to be easily driven.

According to a possible modified embodiment of the invention, in figure 5 the pins 53' and seats 54' are reversed with respect to the embodiment shown in figure 1, since they are respectively provided on the watch case 20 and on the top element 24.

Yet another modified embodiment, which provides the possibility of replacing in a very economic way the image on the watch personalizing dial, by the user, is shown in figures 6 and 7 which are respectively a cross sectional view and a top plan view of the personalizing dial 23".

At 23', in particular, there has been indicated a bottom dial of the top element 24, analogous to the dial 23 of figure 5 but which, in this case, is fully transparent.

The personalizing image or pattern, in this embodiment, is reproduced on an auxiliary personalizing dial 23" which can be removed from the top element 24 and which can be engaged from the bottom, as is clearly shown in figure 6.

The personalizing dial 23" is restrained by recesses 44 adapted to engage on restraining pins 45, for example four pins as shown in the drawings, which engage in corresponding holes 54 formed on the bottom case 20, as shown in figure 1 and figures 14 to 17.

The above mentioned restraining pins 45, in particular, are rigid with the top element 24.

Thus, owing to the present invention, the user can exchange the single personalizing dial, and will have the possibility of providing the same watch with a lot of different image personalizing dials.

According to yet another modified embodiment, shown in figure 8 and based on the same

construction idea as that of the embodiment of figures 6 and 7, the personalizing dial 23" can be provided rigid with a strap 46, which can be strictly fitted, from an aesthetic standpoint, to the image on the person alizing dial.

According to yet another embodiment, shown in figures 9, 10 and 11, the top element 24 exclusively comprises the glass 21 and its supporting frame 22; under the glass 21 there is provided a personalizing dial 23 bearing a desired image or pattern.

In this embodiment, both the driving mechanisms 64 and watch pointers 33 and 34 are held in the watch case 20.

Since the watch pointers are directly coupled to the above mentioned watch operative mechanisms, without the conventional intermediate dial, the dial can be removed and possibly replaced without the need of removing the pointers. Thus, also the maintenance of the watch will be simplified.

The inter-exchangeable element of the personalizing dial has a very reduced cost since it is not affected by any gear wheels of the watch mechanisms.

In this connection it should be apparent that the imaged personalizing dial 23 must be of translucent type in order to show the time indicated by the watch.

The image on the personalizing dial will be a full and perfect image, since it is not interrupted neither by holes, for example by a hole for a central watch drive shaft or holes for supporting pins nor by the pointers.

Accordingly, this embodiment is particularly interesting for example for reproducing famous pictures; in this embodiment, the frame 22 will have the ornamental design of a picture frame.

Alternatively, as on the personalizing frame there is reproduced the image of a famous musician, then the frame 22 can have the aspect of a musical instrument and the like.

Moreover, in the watch a can be included, to be actuated for example by an actuating push button, in order to properly illuminate the watch pointers.

Such a lamp can be advantageously applied to the so-called digital watches which afford the possibility of directly seeing the time owing to the brilliancy of the liquid crystals included in these watches.

The above mentioned watch pointers can also be formed by transparent disc members, the time being indicated by fancy symbols provided on the perimetrical portions of the mentioned disc members; in this embodiment, the hour indicating symbols will be illuminated from the bottom in order to be projected on the personalizing dial.

Alternatively, the above mentioned pointers and fancy symbols can also be made starting from a phosphorescent material.

The embodiment shown in figure 10 provides for the use of an image arranged inside the top glass 21 and this image can be associated with another image, reproduced on the personalizing dial 23 so as to provide a double image with a possible relief effect.

According to the embodiment shown in figure 11, the personalizing dial 23 can be fitted by causing it to laterally slide under the watch glass 21.

In the exemplary embodiment of figure 12, a personalizing dial 23, made either of a transparent or of a translucent material, is applied on a watch which is substantially analogous to the watches of figures 9, 10, 11, but in which the watch glass 21 is affixed on the watch case

This case has a particular outer shape in order to receive from above the frame 22 supporting the watch dial 23.

In this embodiment, the watch pointers 33 and 34 have a greater length and project from the vertical edges 25 of the case 20, whereas the watch dial 23 is made of a translucent material and bears an image at its dashed central portion, said dial being transparent along a perimetrical band 65, so that the end portions of the watch pointers can be easily observed.

In order to properly indicate the hours, under the watch glass 21 a transparent film can be affixed by adhesion, said transparent film bearing the hour symbols.

Since, in this embodiment, the glass 21, which is affixed on the case 20, covers also the pointers 33 and 34, the watch shown in figure 12 can be used even without providing the personalizing dial.

According to a further aspect of the present invention, the personalizing dials can also be used as ornamental "brooches".

In this connection, figure 13 shows an element 67 which is complementary to the frame 22, and is provided with a related personalizing dial 23.

In order to transform the personalizing dial into a brooch, the element 67 must be firmly coupled by a pin 68 pivoted on a pivot member 69 and provided for closing by abutting against a stop member 74, in a known way.

The wrist watch according to the invention can be provided with a watch strap 46 which can be formed in a single piece passing through a suitable slot 85, shown in figure 18, radially formed through the watch case 20.

Alternatively (as shown in figures 19 and 20) the watch strap can be a conventional watch strap and it can be restrained at two diametrically opposite portions of the watch case 20 or frame 22 of the top element 24.

Figures 14 and 15 show an embodiment of a locking system for locking the inter-exchangeable components of the watch according to the invention.

More specifically, figure 14 shows the locking system in its closed or locking position, whereas figure 15 shows that same locking system in its open or unlocked condition, that is in a ready condition for disassembling the watch component parts.

Seats 54 are herein shown for receiving corresponding pins, for example of the type indicated at 53 in figure 1.

Moreover, a threaded crown 75 is made rigid with a small pull lever 76 which, in turn, is coupled to a circular spring 77 having pin or tooth members 78.

In particular, as the above mentioned threaded crown is withdrawn, to the position of figure 15, the pull lever 76, which is pivoted on a point 79 of the case 20, will bring its end portion 80 nearer to the axis of said crown, thereby entraining with it the circular spring 77 and tooth members 78.

Thus, as is shown in figure 15, the pins 53 will disengage from the above mentioned seats 54.

A reverse succession of events occurs by introducing the threaded crown 75 after having engaged the pins in the seats 54; by this operation, the end portion 80 of the pull lever will be moved away from the crown and the circular spring 77 will be displaced so as to cause the mentioned pins to engage in said seats 54.

Figures 16 and 17 show an embodiment the operation of which is analogous to that hereinabove disclosed, this embodiment including a plurality of crowns 75', one for each pin, while the circular spring has been omitted.

In this embodiment, in fact, the pull lever 76' is directly used for holding the respective pin in the seat 54 or for disengaging said pin from said seat.

In particular, figure 16 is an overall view in which there are provided three pins, whereas figure 17 is an enlarged view specifically showing the closed condition C and the open condition D.

While the invention has been disclosed and illustrated with reference to particular embodiments thereof, it should be apparent that the disclosed embodiments are susceptible to several modifications and variation all of which will come within the spirit and scope of the appended claims.

Claims

1. A modular construction watch, characterized in that said watch comprises a bottom watch case holding watch operating means and a top removable element restraining, in addition to a watch

glass, a frame for holding said watch glass and a personalizing dial bearing personalizing patterns, also pointer means and top mechanisms for coupling said pointer means and said watch operating means, said personalized dial being arranged between said top mechanisms and said glass, under said pointer means, said top mechanisms being enclosed between said personalizing dial and a bottom plate.

2. A modular construction watch, according to claim 1, characterized in that said pointer means and watch operating means are coupled in said case by a mail-female pin type of coupling.

3. A modular watch construction according to claim 1, characterized in that said watch construction comprises an axially extending pin supporting said top mechanisms for said pointer means, said axially extending pin being provided with a projecting portion which projects under said plate, said projecting portion being rigid with a gear wheel entering inside said case through a slot and meshing with a watch sleeve spool member, through an auxiliary gear wheel, said auxiliary gear wheel being coupled, through a lever system, to an auxiliary crown adapted to be driven so as to allow for said top element to be replaced without stopping operation of said watch.

4. A modular watch construction according to claim 1, characterized in that said top removable element houses said glass, a glass frame and a bottom locking element, said bottom locking element comprising said personalizing dial, and in that between said personalizing dial and glass said pointer means are arranged and in that said watch further comprises a pivot pin for said pointer means, said pointer means pivot pin comprising concentric elements each of which is rigid with a respective pointer means, said pointer means pivot pin engaging with corresponding concentric pin portions projecting from said case.

5. A modular watch construction according to claim 4, characterized in that said bottom locking element of said top element is a fully transparent element, a further auxiliary dial being provided, on said auxiliary dial being reproduced a given pattern, said auxiliary dial being removable from said top element, said auxiliary dial being held by recesses adapted to engage on restraining pins rigid with said top element, said restraining pins engaging in corresponding holes formed on said case.

6. A modular watch construction according to claim 5, characterized in that said auxiliary dial is rigid with a watch strap.

7. A modular watch construction according to claim 1, characterized in that under said watch glass there is provided a translucent personalizing dial, said pointer means being held in said case and being directly coupled to said watch operating

means, and in that said translucent dial is engaged by causing it to laterally slide.

8. A modular watch construction according to claim 1, characterized in that said pointer means have such a length as to project from vertical edges of said case, said translucent dial being provided with a pattern in a central portion thereof and being transparent along a perimetral band thereof, under said glass there being arranged a transparent adhered film bearing hour indicating symbols.

9. A modular construction watch according to claim 8, characterized in that said watch further comprises an element complementary to said frame and adapted to restrain said frame and personalizing dial, said complementary element being firmly coupled by a pin pivoted about a pivot member.

10. A modular watch construction according to claim 1, characterized in that said watch comprises a strap made in a single piece and extending through a slot radially formed through said case.

11. A modular watch construction according to claim 1, characterized in that said watch comprises a conventional strap restrained at two diametrically opposite portions of said case.

12. A modular watch construction according to claim 1, characterized in that said watch comprises locking pins and locking pin engaging seats, formed on said top element and said case.

13. A modular watch construction according to claim 12, characterized in that said locking pins are locked in said locking pin seats by a threaded crown rigid with a pull lever coupled to a circular spring, said circular spring being associated with tooth members.

14. A modular watch construction according to claim 12, characterized in that each said locking pin is locked in each said locking pin seat through a further threaded crown rigid with a further pull lever pivoted on said case.

15. A modular watch construction according to claim 1, characterized in that said watch further comprises an illuminating lamp for illuminating said dial.

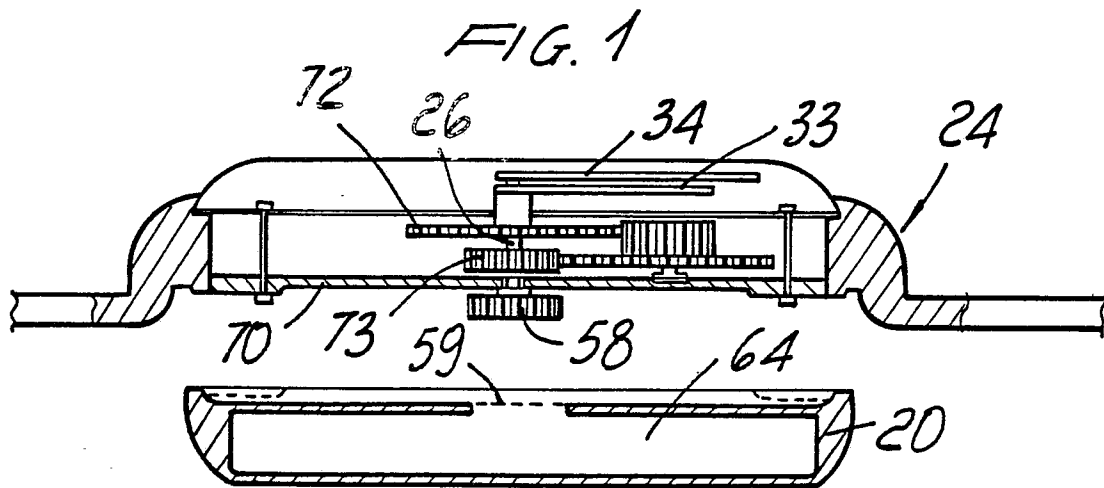
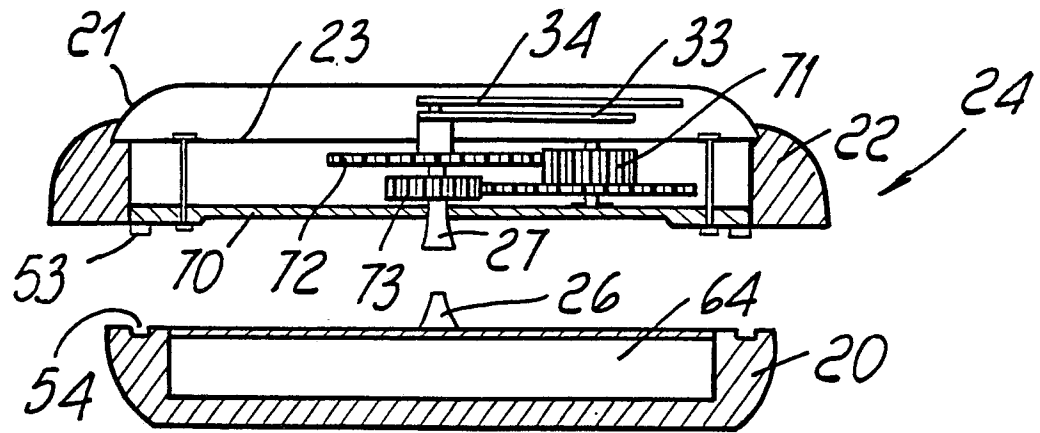


FIG. 2

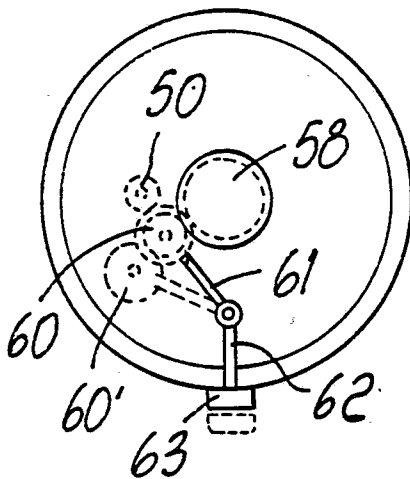


FIG. 3

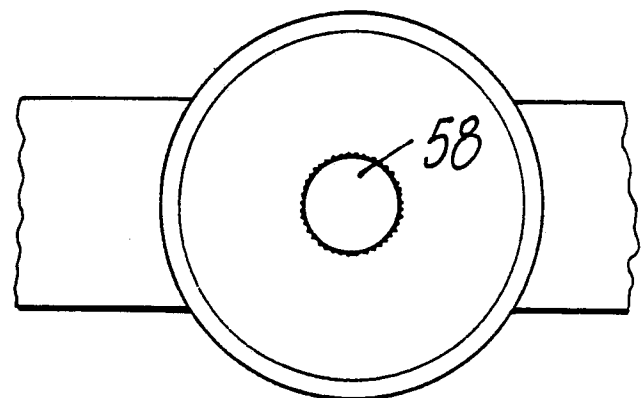


FIG. 4

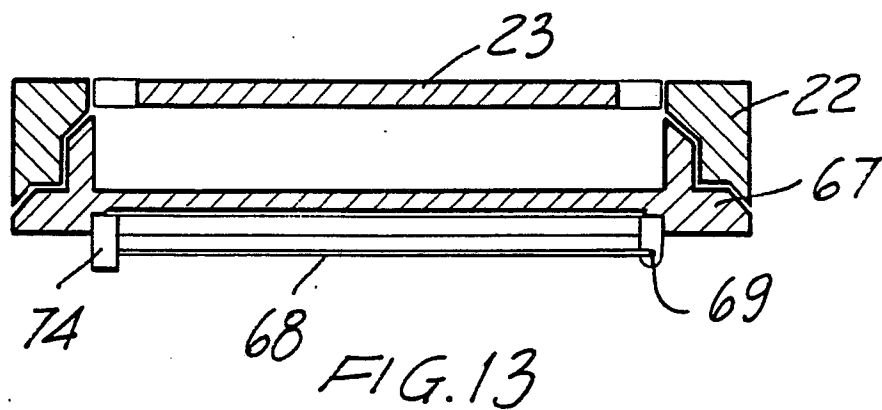
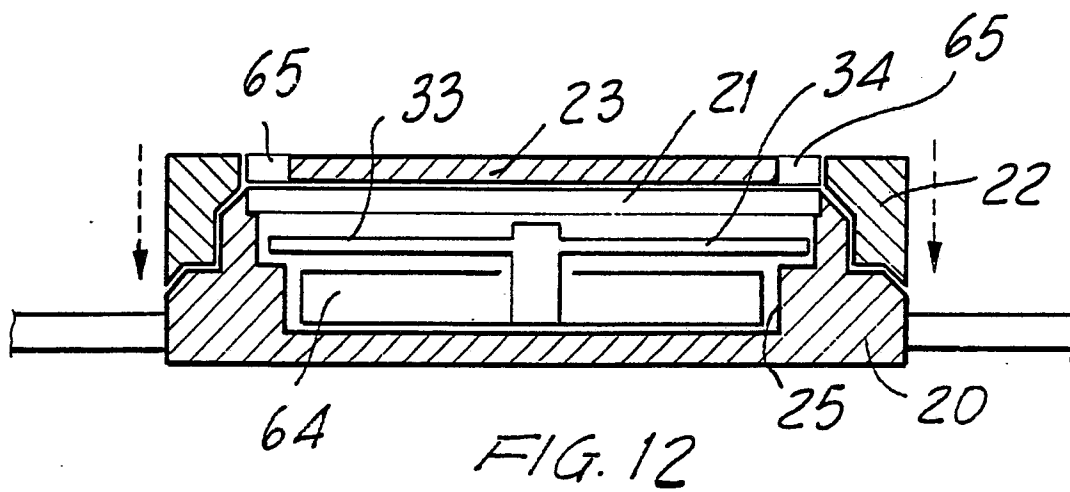
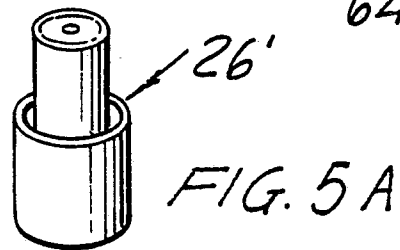
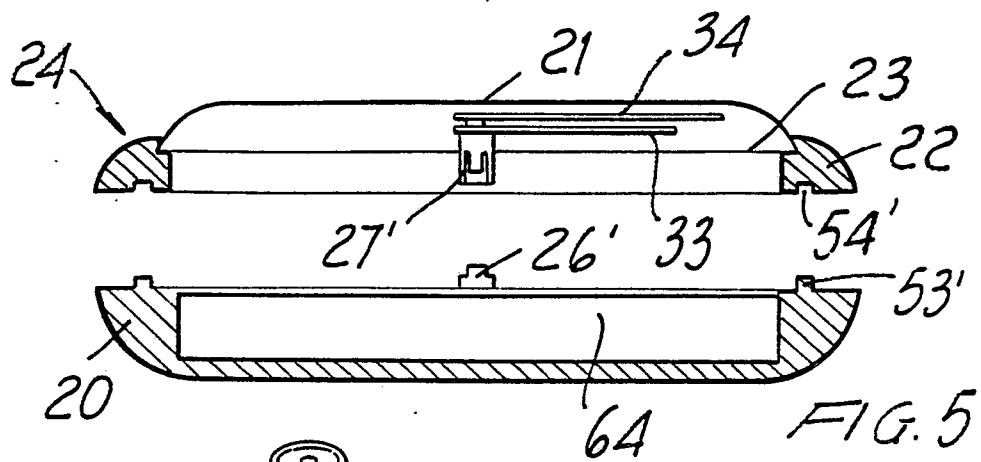


FIG. 6

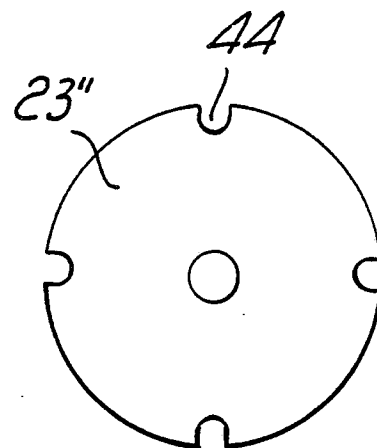
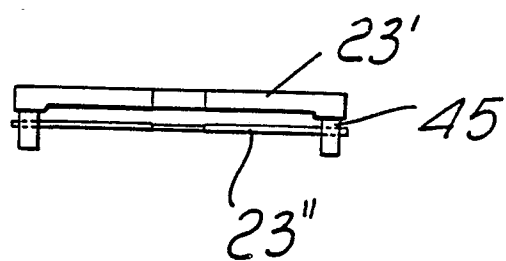


FIG. 7

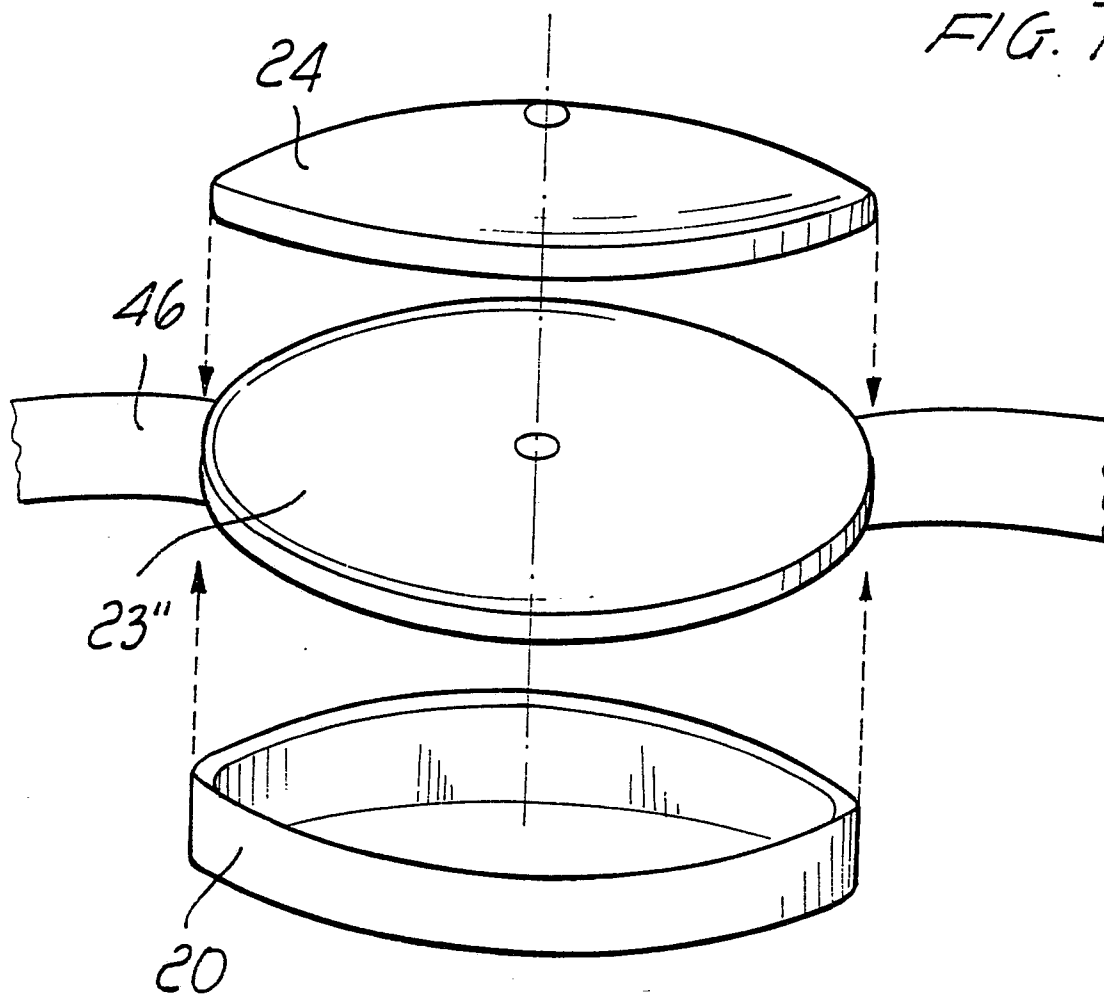
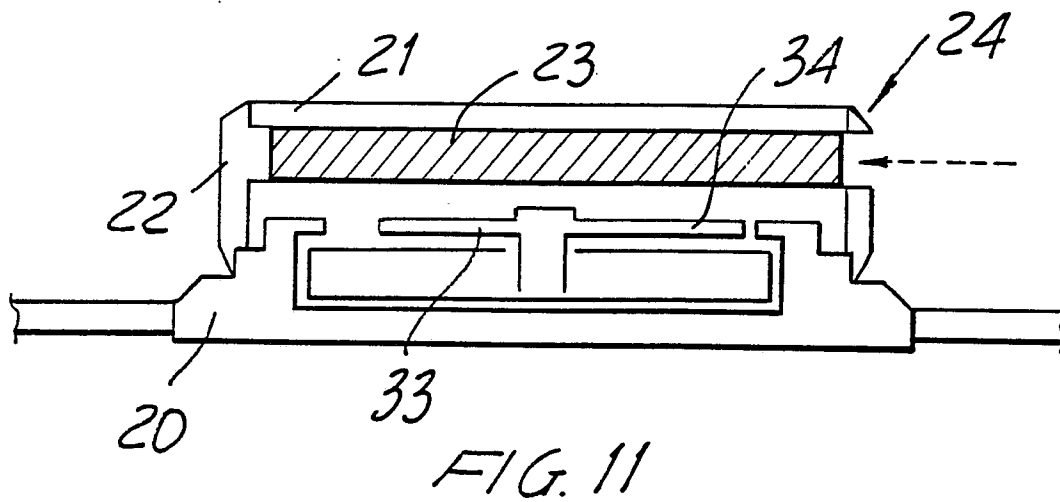
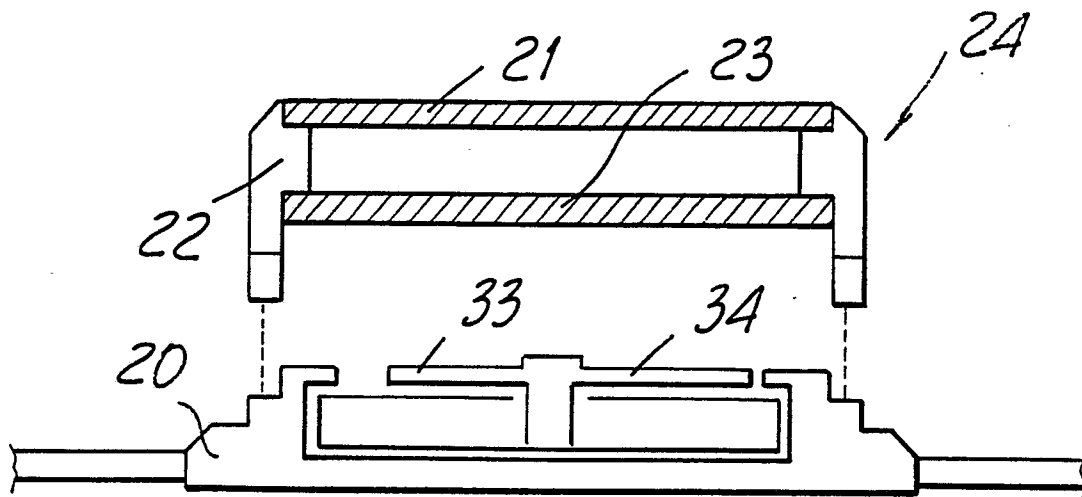
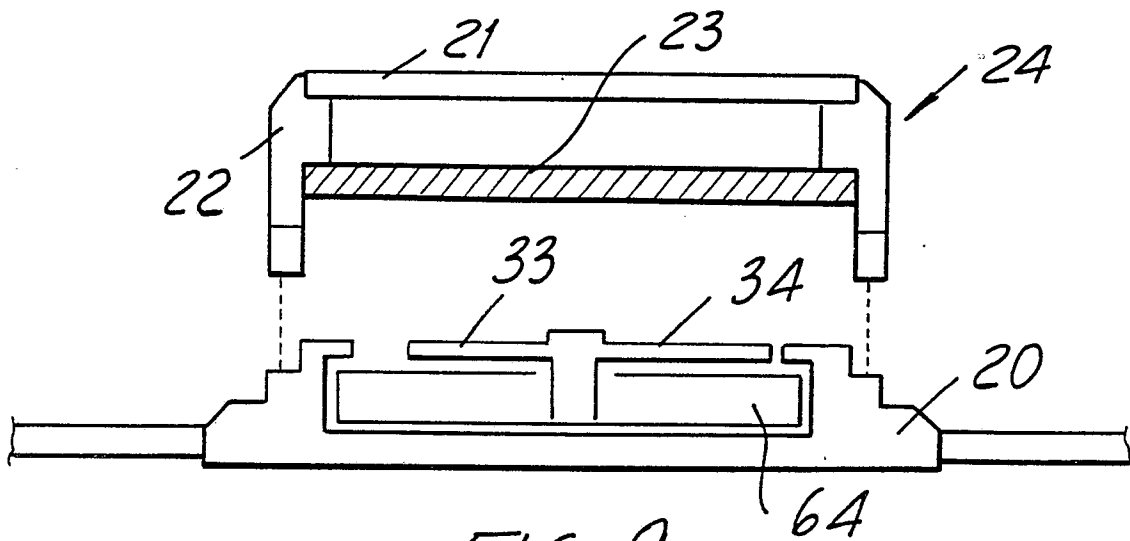


FIG. 8



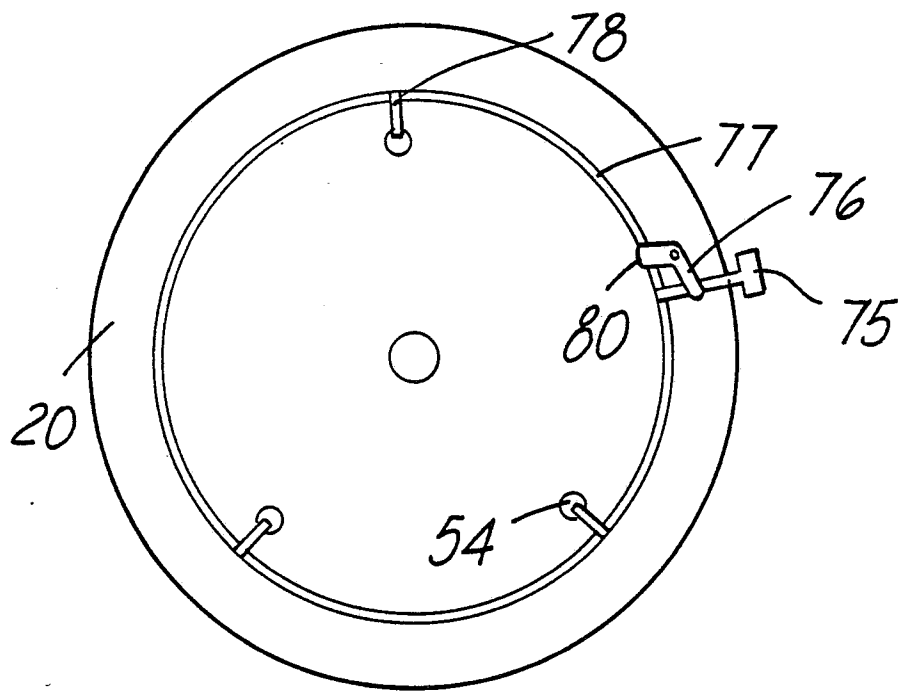


FIG. 14

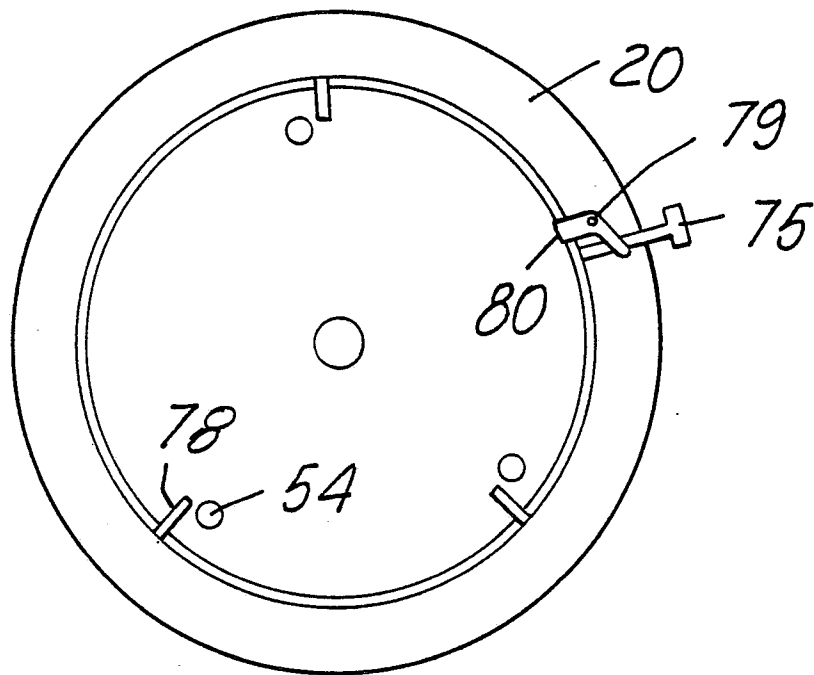


FIG. 15

