July 16, 1940. C. B. GREENBERG 2,208,419

WATCH CROWN

Filed June 3, 1938

Fig. 1.

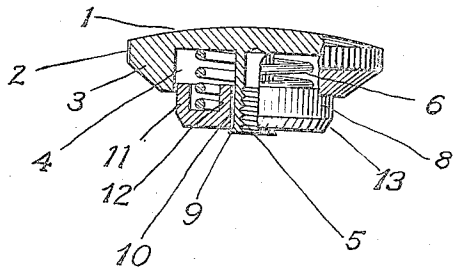


Fig. 2.

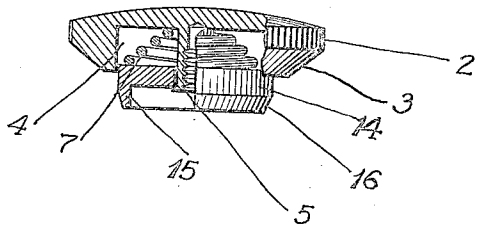


Fig. 3.

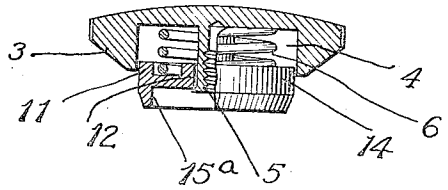
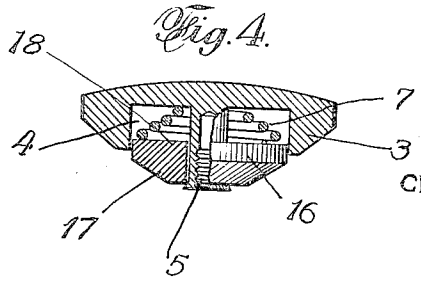


Fig. 4.



CHARLES B. GREENBERG
INVENTOR

BY William Wolff
ATTORNEY

Patented July 16, 1940 2,208,419

UNITED STATES PATENT OFFICE

2,208,419

WATCH CROWN

Charles B. Greenberg, New York, N. Y.

Application June 3, 1938, Serial No. 211,484

5 Claims. (Cl. 58—90)

My invention relates to watch crowns, and more particularly, to a watch crown unit having a movable bushing capable of protecting the watch stem opening.

In most watches, there is a slight opening between the watch case and the stem which permits dust to enter and deposit on the face, and eventually to seep through to the watch movement in the rear and interfere with the operation of the watch.

To prevent this seepage of dust into the watch, a common practice has been to place a collar on the watch case and position the crown close to the collar. This construction, however, does not give perfect results as the crown must be held free for winding and a certain play is necessary for setting the watch.

A second method of preventing the seepage of dust is to place over the stem a bushing and spring, and then screw the crown on to the stem. This method does not provide adequate protection as the bushing and spring become lost if the crown is unscrewed or taken off, and if partially removed, the spring can become dislocated and drop out. In addition, crowns are a watch finding which are produced and sold separately from the watch movement as the type of crown used depends not on the watch movement, but on the case in which the movement is placed. Therefore, crowns are individual elements and should be complete in themselves so that they can be directly attached and detached as a unit to the watch as soon as it is placed in the case and on detaching from the watch, the crown should come off as a unit and not as a couple of separate parts.

Therefore, it is my object to produce a crown unit which can be removable and held together by and of itself and which when positioned on a watch will function to close the opening between the watch and its case.

In addition, I intend to construct a strong, simple, inexpensive crown which will prevent dust from entering the watch case between the watch stem and its case either when the watch is being wound, set or simply running.

In order to accomplish these objects, I have constructed my crown with a hollow interior provided at its center with a projecting interior threaded tube, and positioned around the tube a coiled spring which is held in place in the hollow interior by an annular ring bushing secured from escaping completely from the hollowed interior by the outwardly flared end of the threaded tube.

Further and more specific objects, features and advantages will more clearly appear from the detailed description given below taken in connection with the accompanying sheet of drawings which form a part of this specification.

Figure 1 is a drawing of my crown partly in elevation, partly with the outer or head part removed, and partly in vertical section.

Figure 2 is a variation of my invention showing the same views displayed in Fig. 1.

Figures 3 and 4 are further variations showing my invention partly with the head removed, and partly in vertical section.

In the drawing my crown 1 is provided with the knurled head 2 having an angled and portion, or flange 3 attached to, or as an integral part of, the head near its periphery forming the well or seat 4 suitable for carrying the movable parts of the crown. At the center of the well 4, there is positioned the interior or female threaded tubular element 5 extending in the same direction as but beyond the flange 3. In the well and around the tubular element 5, there is placed either the coiled spring 6 which is shown in Figures 1 and 3, or the helical spring 7 shown in Figures 2 and 4. Either type of spring can be used, but the helical is preferable as it becomes more compact under pressure and so requires less space in which to function.

In Figure 1 the coiled spring acts against the ring or washer 8 which fits partly inside the well 4, and is slidably mounted about the tube 5. In order that the washer cannot escape from its position under the pressure of the spring, the end 9 of the tube 5 is flared or spread to a size greater than the washer hole 10. The washer or ring 8 shown in Figure 1 is provided with the angled concentric flanges or shoulders 11 and 12 at the outer and inner edges respectively of the washer. The flanges are positioned on the under side of the washer and form a seat for the spring, as well as providing material thickness to the washer so that it can rest evenly against the sides of the flange of the head and tube, and permit an extended range of movement of the washer. The outer face of the concentric shoulder 11 is provided with the sloping side 13 adjacent the washer face to provide a seat for the washer against or in the opening in the watch case.

The washer shown in Figure 1 and just described, is used in a crown suitable for watch cases having a simple opening in the case through which the stem extends. The stem of the watch movement extends through a hole in the case

and is threaded into the threaded part of the tube, while the washer extends into the hole about the stem and rests against the edge of the hole. Thus, when the crown is raised to set the watch, the spring of the crown forces the washer forward and provides, or continues to force the washer against the watch case, and when the crown is pushed forward to wind the watch, or in its normal running position, the washer maintains its position against the watch case and seals the opening, preventing any dust from seeping into the movement.

The crown shown in Figure 2 is provided with a helical spring 7, and with a washer 14 having a flange or shoulder 15 at its outer edge extending away from the crown. The outer face of this flange may, if desired, be provided with the sloping side part 16. This type of crown having the washer 14 is to be used with watch cases having collars about the opening through which the watch stem projects. The collar of the watch case rests inside the flange or shoulder 15 against its sides, and abuts the washer face, thus forming a double seal.

Figure 3 shows a variation of the crown described in Figure 2 using the washer 14, but with the addition of the concentric flanges or shoulders described in relation to the washer 10 of Figure 1. Thus, the washer in Figure 3 is provided with the exterior flange 15*a* so that the crown may be used with a watch case having a collar, and with the flanges 11 and 12 so that it can provide a seat for the spring.

The variation shown in Figure 4 is suitable for use with watch cases having a simple opening through which the stem projects. The washer 16 in this case is provided with the sloping sides 17 to fit into the hole of the watch case, and with the solid or flat under surface 18 against which the helical spring 7 rests.

These crowns are constructed by placing the solid head in a lathe, reaming out the well 4 and leaving the tube in position in the center of the well. The tube is then reamed out and threaded. The spring and washer are then inserted and the end of the tube is flared to secure the spring and washer in their resting place. Thus, there is provided a completed, finished article which acts and functions as a unit in and of itself, and after this completed construction is not separated or removed part by part.

While I have described my improvement in great detail and with respect to a preferred form thereof, I do not desire to be limited to such details and forms since many changes and modifications may be made and the invention embodied in widely different forms without departing from the spirit and scope thereof in its broader aspects. Hence I desire to cover all modifications, forms and embodiments coming within the language or scope of any one or more of the appended claims.

What I claim is:

1. A watch crown for use with a watch and watch case provided with a head part, a flange extending from said head part forming with the head part a well, a female threaded tube extending from the center of the well in the direction of the flange, a spring in the well about the tube, a washer partly in the well resting against the spring and having a sloping side face for contacting the watch case about the watch stem opening and securing means on the tube holding the washer from being forced from the well by the spring.

2. A crown for use with a watch and case provided with a head part, a flange on the head part at its periphery, a female threaded tube on the head part at its center extending in the same direction as the flange, a spring resting against said head part encircling said female threaded tube, and a washer resting against the spring and having its periphery resting against the inner wall of the flange, and said washer mounted about the tube and having concentric flanges facing the head part and carrying the spring, and means on the tube and washer whereby the washer is prevented from escaping from its position on the tube.

3. A watch crown provided with a cup-like head part, a female threaded tube extending in the center of the cup, a spring in the cup, a washer partly within the cup about the tube resting against the spring, securing means on the tube holding the washer from being forced from the cup by the spring, and a flange on the exposed outer part of the washer adapted to act as a seal in conjunction with the collar of a watch case adjacent its stem opening.

4. A crown for use with a watch case having a collar, said crown being provided with a head part, a peripheral wall on the head part forming a cup shaped structure, a female threaded tube on the head part at its center extending in the same direction as the peripheral wall, a flared end on the tube, a spring resting against said head part encircling the female threaded tube, a washer, concentric flanges on said washer facing the head part one flange at either extremity of the washer and said flanges and washer forming a seat for the spring, and the flanges providing bearing surfaces for the washer against the peripheral wall and tube and said washer being held in position when non-functioning by the flared end of the tube, and a third flange on said washer opposite the concentric flanges and of a diameter suitable to fit about the collar of a watch case and be held thereagainst by the force of the spring.

5. A crown for a watch comprising a head part having a back and side extending walls, a threaded element extending from the back at its center, a bushing within the side extending walls about the threaded element, a spring disposed between the back and the bushing, and stop means on the threaded element, said stop means being at such a position on the threaded element as to prevent the escape of the bushing from the side walls.

CHARLES B. GREENBERG.