

Sept. 6, 1955

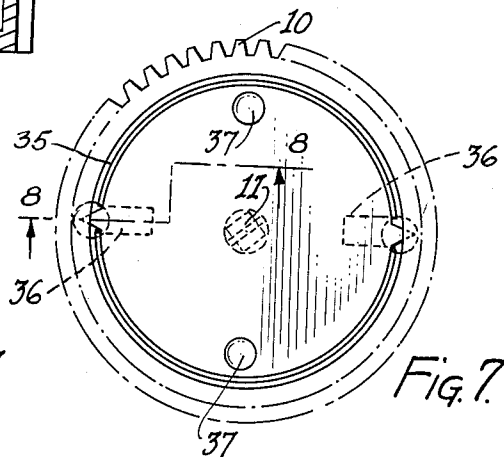
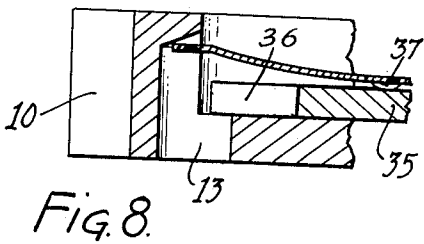
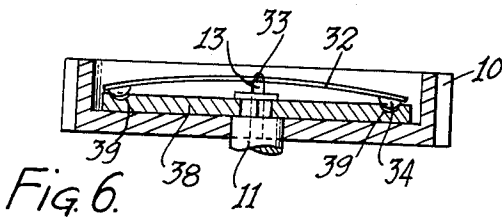
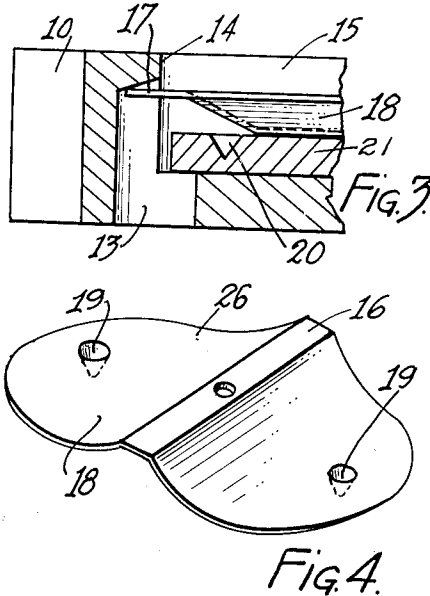
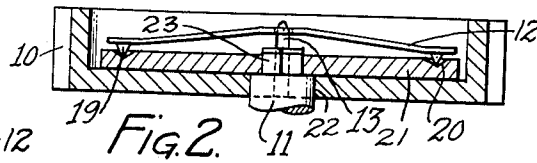
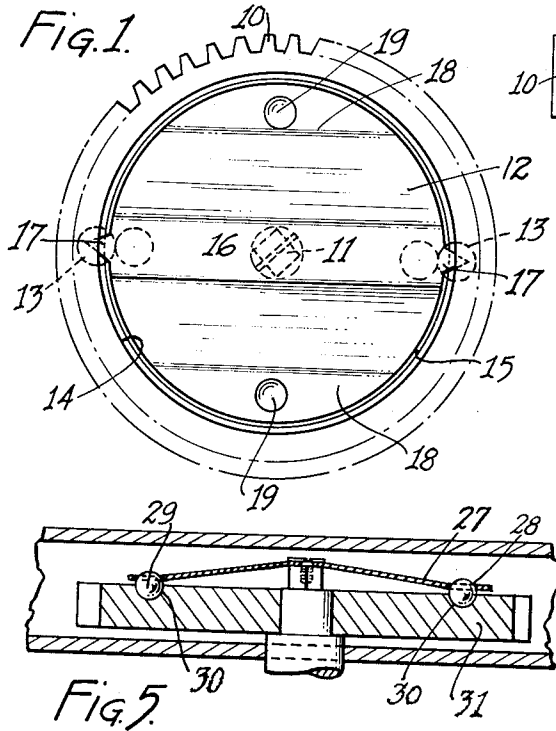
C. HILL ET AL

2,716,875

WATCH WINDING MEANS

Filed March 20, 1953

2 Sheets-Sheet 1



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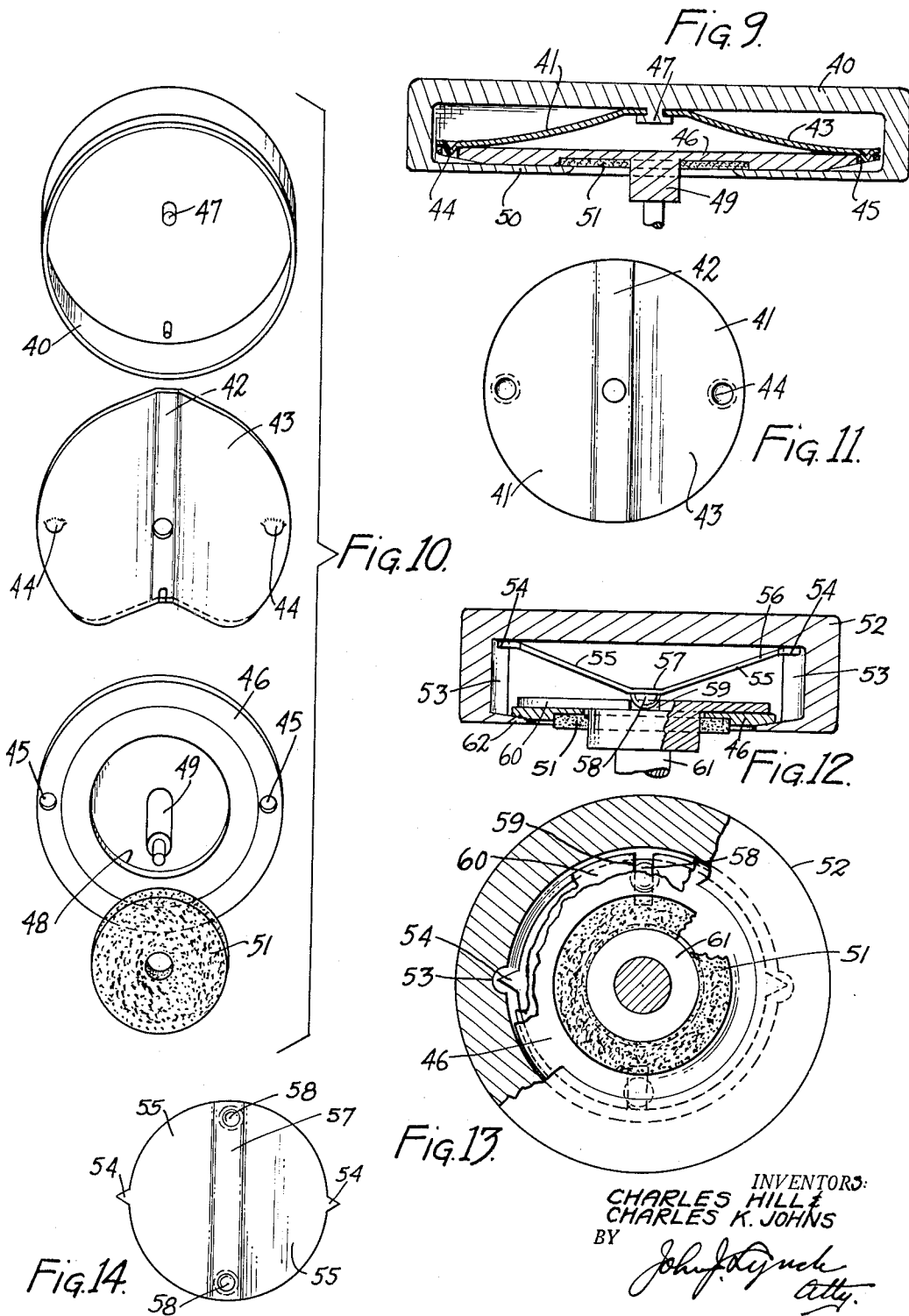
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WATCH WINDING MEANS

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2 Sheets-Sheet 2



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2,716,875

WATCH WINDING MEANS

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Application March 20, 1953, Serial No. 343,624

5 Claims. (Cl. 64—29)

This invention relates to watch winding means and in particular to a type that can be applied to the crown or winding gears of a watch.

A particular object of the invention is to provide means that will guard against overwinding of the watch spring, stripping of the winding gears, excess strain on the main spring, and rupture of the parts involved in the winding action so that the watch is protected and the person winding the same is prevented from overwinding the spring.

A still further object of the invention is to provide in the very small and compact watches in present day use, a combination winding member and release mechanism that can be applied to the smallest watches in use, to the crown or winding gears thereof or the crown itself without the necessity of providing special equipment for the assembly of the parts and to provide a device of the character referred to which will give an audible click and also make itself felt by the fingers of the person winding the watch so that warning is given that the spring is fully wound.

Further objects of the invention are to provide a safety device that has a minimum number of parts, that can be manufactured as a part of the watch or as a separate unit and one that can be put into the very narrow space allowed in thin small watches without impairing the efficiency thereof; and to provide a tension member whose action and position are coplanar with the parts with which it is associated for release action; and a device that can be made at minimum cost and applied with accuracy.

With the foregoing and other objects in view, the invention comprises certain constructions hereinafter described and then particularly pointed out in the claims, and a preferred embodiment of our invention is illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a winding gear of a watch to which our invention is applied,

Figure 2 is a cross section through the gear or winding member shown in Figure 1 with the tension disk shown in full lines,

Figure 3 is an enlarged fragmentary view of an edge portion of the winding member showing the connection thereto of the tension disk;

Figure 4 is a view in perspective of one form of tension disk employed;

Figure 5 is a fragmentary section through a part of a watch showing the application of our invention to the face of a gear or winding member;

Figure 6 is a view in cross section through a gear showing a modified form of tension member,

Figure 7 is a plan view similar to Figure 1 showing a modified form of tension disk and arbor rotating plate;

Figure 8 is an enlarged section on the line 8—8 of Figure 7 showing the edge of the gear and the tension member with respect to the plate;

Figure 9 is a cross section through a crown showing the attachment thereto of a tension member;

Figure 10 is an exploded view of the parts of the device shown in Figure 9;

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Figure 11 is a plan view of a tension disk as used with the crown illustrated in Figure 9,

Figure 12 is a view in sectional elevation through a crown showing the parts thereof;

Figure 13 is a sectional view looking at the bottom of Figure 12, and

Figure 14 is a plan view of the tension member used in the form of the invention illustrated in Figures 12 and 13.

This application is a continuation-in-part of applications Serial No. 729,300 filed February 18, 1947, now Patent No. 2,637,987, May 12, 1953; Serial No. 27,654, filed May 18, 1948, now Patent No. 2,632,993, March 31, 1953 and Serial No. 222,699, filed April 24, 1951, now Patent No. 2,669,833, issued February 23, 1954.

Reference is made to our Patent No. 2,563,112 for a showing of a conventional watch structure to which our present invention may be applied, the watch representing a pocket watch or wrist watch.

Referring to the drawings in detail, 10 indicates the winding gear of a watch which along with the crown piece may be designated as a winding member, which through an arbor 11 is used to convey winding action from the gear to a spring to be wound. The spring is not shown but may be wound directly from the arbor or through intermediate gears. The gear 10 is shaped to provide a hollow receptacle portion in which is coaxially positioned a tension member 12. The gear is bored or otherwise formed at diametrically opposed points with cavities 13 constituting slots in the inside cylindrical wall 14 of the gear chamber 15.

The tension member 12 is a thin tempered metal or plastic disk of circular form shaped to provide a central diametrically extending flat narrow zone portion 16 having prongs 17 extending from the ends thereof for engagement with the slots 13 of the wall of the gear so that the plate is turned by the gear or winding member. The disk is shaped to present semi-circular obliquely disposed portions 18 constituting yieldable sections flanking said flat zone 16 in which dimpled protuberances 19 are formed for detachable engagement with similar depressions or pockets 20 in the face of a winding plate 21 or arbor rotating member disposed beneath said disk on the wall of the gear. The closed side of the gear is provided with an opening 22 through which extends the upper end of winding arbor 11 or shaft to whose upper square end 23 the winding plate 21 is attached.

In mounting the tension plate or disk 26 on the face of a gear such as 31 (Fig. 5), it will be evident that pockets 30 formed directly in the face of the gear will receive the protuberances 19 of the disk 26 shown in Figure 4 for release of the disk when the spring is fully wound. As also seen in Figure 5, the disk 27 is provided with openings 28 instead of with the protuberances 19 so that balls 29 may be used in the pockets 30 of the gear 31 to provide the driving connection between the winding member and the disk.

In the form of the invention shown in Figure 6, a disk 32 is tempered so that it is diametrically bowed, and like the disk 12 presents oppositely disposed pairs of high and low peripheral areas in which the prongs 33 and the protuberances 34 are formed. In Figure 7, the plate 35 or arbor rotating member is provided with slots 36 or other pocket forming openings acting as a detent for the protuberances 37 formed therein. In Figure 6, the plate 38 is shown with pockets 39.

While the Figures 1 to 8 show the device as applied to a gear, it is evident that the gear showing could as well be a crown member as illustrated at 40 in Figure 9 and we intend that the expression "winding member" will embrace either the crown or the gear. In Figure 9, the tension disk 41 is shaped to present the narrow diametri-

cally extending flat zone portion 42 flanked by the downwardly curved side wing portions 43 in the latter of which are formed the dimples 44 which coact with pockets 45 formed adjacent the periphery of a wall plate 46 closing the bottom of the crown 40. The disk 41 is riveted as at 47 to the crown or otherwise attached thereto. The wall plate 46 is recessed as at 48 to receive a cork gasket for sealing the arbor portion 49 of the plate and the peened over edge 50 of the crown. The gasket 51 may be of any waterproof material.

In the form of the invention shown in the Figures 12 to 14, the crown or winding member 52 is diametrically fluted to provide slots 53 into which extend the prongs 54 formed in the semi-circular flanking portions 55 of a tension disk 56 whose diametrically extending flat narrow zone 57 is provided with protuberances or dimples 58. The latter are arranged to engage the slots or other pocket forming detent openings 59 in a wall plate 60 whose under side is recessed to receive a sealing gasket that fits closely about the arbor portion 61 of the plate 60, the latter of which is retained by the turned over edge 62 of the crown 52. The prongs 54 and the dimples 58 are positioned in the oppositely disposed pair of high and low peripheral areas provided by the zone and its flanking wing portions that make up the disk 56.

Our invention is not to be restricted to the precise details of construction shown since various changes and modifications may be made therein without departing from the scope of the invention or sacrificing the advantages to be derived from its use.

What we claim is:

1. A spring winding means for a watch comprising a hollow cylindrical winding member presenting a closed side and a cylindrical interior wall, diametrically opposed slots in said wall, a spring winding arbor passing into said winding member, a rotary plate member fixed to said arbor and presenting detent openings adjacent the periphery thereof, a free flexible disk coextensive with and adjacent said rotary plate member and presenting protuberances for yielding engagement with said openings, and prongs on the periphery of said disk engaging said slots for rotating the disk with said winding member.

2. A spring winding means for a watch comprising a hollow cylindrical winding member presenting a closed side and a cylindrical interior wall, diametrically opposed slots in said wall, a spring winding arbor passing into said winding member, a rotary plate member fixed to said arbor and presenting detent openings adjacent the periphery thereof, a wall plate for closing said hollow member and supporting said plate member, a free flexible disk coextensive with and adjacent said rotary member and pre-

sented protuberances for yielding engagement with said detent openings, prongs on the periphery of said disk engaging said slots for rotating the disk with said winding member, and a sealing member in sealing contact with said arbor and said wall plate.

3. A spring winding means for a watch comprising a hollow cylindrical winding member presenting a closed side and a cylindrical interior slotted wall, a spring winding arbor passing into the winding member, a rotary plate member fixed to said arbor and presenting detent openings adjacent the periphery thereof, a free flexible disk coextensive with and adjacent said rotary member and shaped to provide a diametrically extending flat zone across the center thereof terminating in prongs for engaging said slots and obliquely disposed semicircular portions flanking said flat zone having protuberances therein for driving connection with said detent openings, and said flanking portions being yieldable to break said driving connection under moving pressure of said disk.

4. A spring winding means for a watch including a hollow cylindrical winding member formed to provide slots in the interior wall thereof, a rotary plate in the member having detent openings therein, a winding arbor secured to the plate and a free flexible disk coextensive with and adjacent said plate and shaped to provide oppositely disposed pairs of high and low peripheral areas, and prongs and protuberances in the high and low areas of the disk for engagement respectively with said slots and said detent openings for providing a releasable driving connection between said member and said arbor.

5. A spring winding means for a watch or the like including a hollow cylindrical winding member formed to provide slots in the interior wall thereof, a rotary plate in the member having detent openings therein, a winding arbor secured to the plate, a free flexible disk coextensive with and adjacent said plate and shaped to provide oppositely disposed pairs of high and low peripheral areas, prongs and protuberances in the high and low areas of the disk for engagement respectively with said slots and said detent openings for providing a releasable driving connection between said member and said arbor, a wall plate fitting about said arbor for closing said hollow member and having an annular seat therein, and a gasket in said seat closely fitting about said arbor for sealing said member.

References Cited in the file of this patent

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