K. S. CARLSTROM.

SAFETY ATTACHMENT FOR WATCH SPRINGS.

APPLICATION FILED NOV. 22, 1912.

1,091,561. Patented Mar. 31, 1914.

Fig. 1.

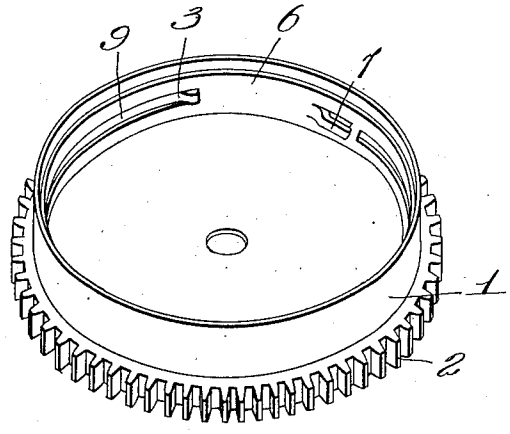


Fig. 2.

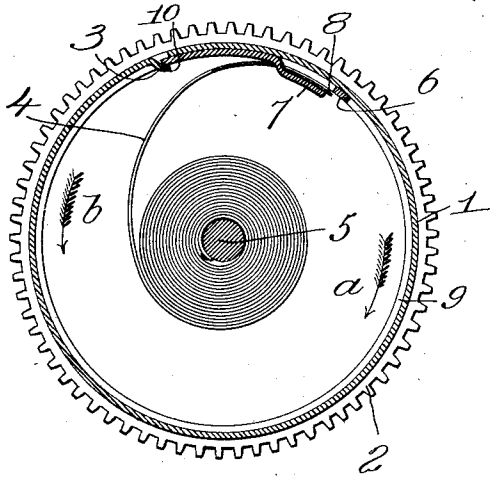
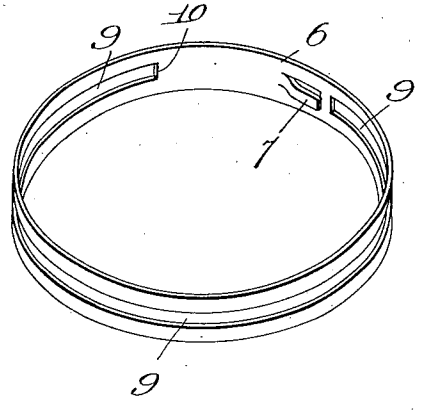


Fig. 3.



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SAFETY ATTACHMENT FOR WATCH-SPRINGS.

1,091,561. Specification of Letters Patent. Patented Mar. 31, 1914.

Application filed November 22, 1912. Serial No. 732,937.

To all whom it may concern:

Be it known that I, KNUT S. CARLSTROM, a citizen of the United States, residing at Waltham, county of Middlesex, State of Massachusetts, have invented an Improvement in Safety Attachments for Watch-Springs, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to watch springs and particularly to a novel device for preventing any injury to the watch when the spring breaks.

The main spring of a watch is usually received within a spring barrel and the outer end of the spring is fastened to the inner wall of the barrel, while the inner end of the spring is fastened to an arbor situated centrally of the barrel. When the main spring of a watch breaks, as not infrequently happens, the portion of the spring which is wound up will unwind or uncoil with a sudden movement and will expand outwardly against the inner wall of the spring barrel, and in doing so it will give the barrel a sudden impulse in a direction opposite to that in which the spring normally tends to turn the barrel, and such impulse is frequently of such strength that one or more of the jewels and other delicate bearings of the works of a watch become cracked or broken. In order to remedy this it has been proposed to provide a yielding connection between the outer end of the spring and the barrel, said connection being in the form of a ring fitting within the barrel and capable of turning therein and to which the spring is secured. In prior devices of this nature, however, the barrel has been a specially-constructed barrel in order to receive the ring, and such prior constructions, therefore, do not permit of this safety ring being inserted in a spring barrel of ordinary construction.

One of the objects of my invention is to provide a novel yielding connection between the main spring and the barrel of the watch which is so constructed that it can be readily placed into any watch, thus making it possible to convert any ordinary watch into one having my improvements without necessitating any change in the construction of the spring or its barrel.

I will first describe one embodiment of my invention and then point out the novel features thereof in the appended claim.

Referring to the drawings, Figure 1 is a perspective view of a watch spring barrel with my improved safety attachment therein and with the spring, top plate and spring arbor omitted; Fig. 2 is a horizontal section through a spring barrel embodying my invention showing the spring and spring arbor in place; Fig. 3 is a perspective view of my improved safety attachment.

1 designates a spring barrel of usual construction such as is commonly used in watches, said barrel being open at one side, which open side is normally closed by a suitable cover (not shown) and having the gear teeth 2 formed integral therewith. The wall of the barrel is shown as having a finger or projection 3 extending inwardly therefrom to which projection the outer end of the main spring 4 is usually secured. The inner end of the main spring is fastened to the spring arbor 5 which is journaled in the barrel and its cover in usual manner. These are the parts which are usually found in a watch spring barrel and where the end of the main spring 4 is thus connected directly to the projection 3 and said spring breaks, the portion of the spring which is wound will uncoil suddenly, and when during its expanding movement it comes in contact with the wall of the barrel, it will give said barrel a quick impulse in the direction of the arrow *a* and such impulse not infrequently is of such strength as to cause injury to some of the jewels or other bearings of the watch.

To prevent any damage to the works of the watch when the main spring breaks, I propose to employ a novel yieldable connection between the main spring and the barrel which connection is in the form of a ring 6 that fits the wall of the barrel and is capable of turning therein in the direction of the arrow *a*. This ring is provided with an inwardly-extending finger or lug 7 to which the end 8 of the main spring is secured, and is also provided with an elongated slot 9 which extends circumferentially of the spring for a considerable distance and which is of a size to receive the projection 3 extending inwardly from the wall of the barrel 1. In the present embodiment of my invention the slot 9 extends nearly around the ring 6 although the length of the slot may vary more or less without departing from the invention.

When the parts are in operative position the end wall 10 of the slot engages the pro-

jection 3, as shown in Figs. 1 and 2, and since the end of the spring is secured to the lug 7 it will be observed that the unwinding movement of the spring will tend to turn the ring 6 in the direction of the arrow *b*, and because of the engagement of the shoulder 10 of the ring with the lug 3 this turning movement is communicated to the barrel.

Whenever the main spring breaks and the coiled-up portion unwinds suddenly and expands outwardly it will come into engagement with the inner wall of the ring 6 instead of with the barrel and will give said ring 6 a sudden impulse in the direction of the arrow *a*. This impulse will merely cause the ring to slide around within the barrel 1 during which turning movement of the ring the lug 3 merely moves along the slot 9. For the purposes of the present invention it is only necessary to make the slot 9 long enough to accommodate whatever movement will be given to the ring 6 by the impulse of the expanding portion of the broken spring, but in order to provide for all emergencies I prefer to make said slot to extend nearly around the ring.

My safety ring 6 can be put in any watch in which the spring barrel has the lug 3 extending inwardly therefrom for the attachment of the outer end of the spring by simply disconnecting the spring from the lug 3, inserting the ring in the barrel, and then connecting the spring onto the lug or finger 7 of the ring.

An important feature of the invention is that it does not require any special construction of spring barrel, and it can be applied to any watch having a spring barrel of this type.

My invention is capable of application to other springs than watch springs; in fact it may be applied to any spring which is confined in a spring barrel, whether the spring be used to operate a watch, a clock, a spring motor or any other device. I do not, therefore, consider my invention as limited to watch springs.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

In a spring, the combination with a spring barrel having a projection extending inwardly from its inner wall, of a spring arbor, a spring secured at one end to said arbor, and a ring fitting within the barrel and capable of turning therein, said ring being secured to the outer end of the spring and having an elongated peripheral slot situated to receive the projection on the barrel and against the end wall of which said projection normally bears whereby if the spring breaks the expanding movement of the coiled portion thereof will cause the ring to turn within the barrel.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

KNUT S. CARLSTROM.

Witnesses:
EMIL LUNDGREN,
AUGUST A. PETERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."