Dec. 30, 1930. W. THOMAS 1,787,343

SPRING WINDING CONTROL DEVICE

Filed May 28, 1929

Fig. 1.

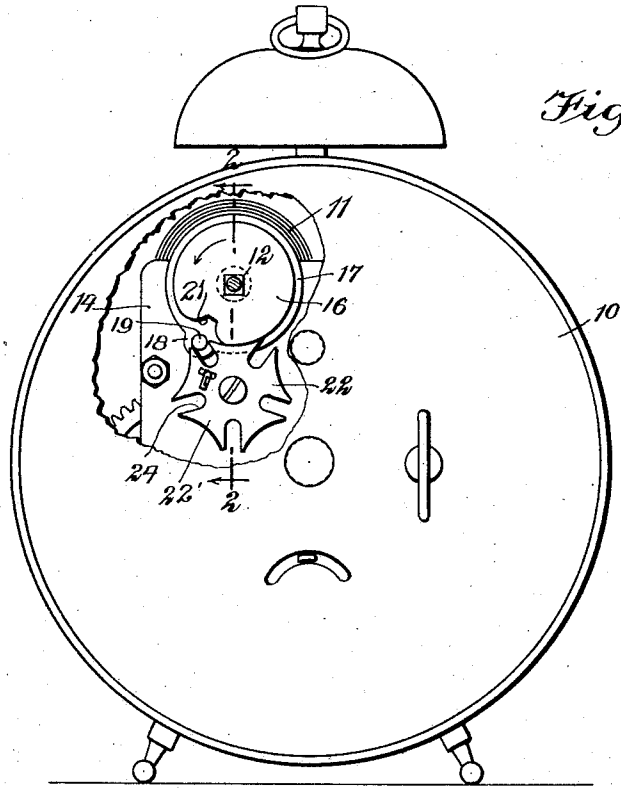


Fig. 2.

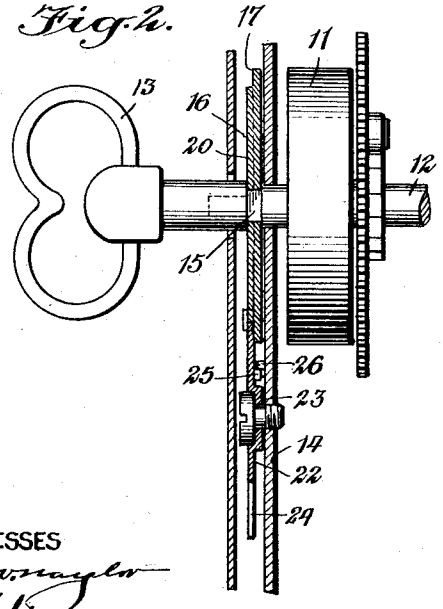
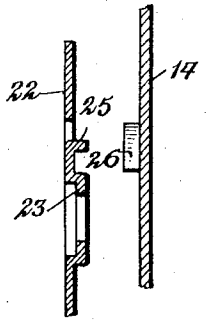


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE

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SPRING-WINDING CONTROL DEVICE

Application filed May 28, 1929. Serial No. 366,659.

This invention relates to spring winding control devices.

It is among the objects of the present invention to provide a novel and improved device for limiting the winding and unwinding of springs.

The present invention is particularly adapted for use in connection with springs of clocks, watches and the like, and provides means for limiting the extent to which the spring may be wound as well as the extent to which the spring may be unwound.

It is among the objects of the present invention to provide means operable in connection with the winding arbor of coil springs to limit the rotary movement of such arbor.

A further object of the present invention is to provide in combination with a spring arbor a Geneva wheel movable by the arbor for controlling the rotation thereof.

It is a further object of the present invention to provide in combination with a spring arbor a Geneva wheel and means on the wheel integral with a supporting structure to prevent the complete revolution thereof.

Other objects of the present invention include the combination and interrelation of parts whereby the whole provides a simple, convenient and efficient structure readily designed to meet the demands of economic manufacture.

Other objects and features of the present invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, in which—

Figure 1 is a rear elevation partly broken away of an alarm clock embodying one form of the present invention;

Figure 2 is a detail section taken on the lines 2—2 of Figure 1; and

Figure 3 is a detailed section in exaggerated spacing showing the Geneva wheel and its associated frame structure.

Referring more particularly to the drawings the invention has been shown by way of illustration in connection with the coil spring of an alarm clock, the alarm clock being designated generally by the numeral 10, and including the usual coil spring 11 and spring arbor 12 with which the winding key 13, shown in Figure 2, may be readily associated in the conventional manner.

It will be understood that the present invention is not confined to use in connection with either clocks or watches, and that the present illustration depicts only one form of numerous uses to which the invention may be put.

In the present embodiment of the invention it will be understood that the spring 11 is supported in the conventional manner within the clock train housing, the rear plate 14 of which overlies the spring. Mounted for rotation with the spring arbor 12 by engagement over the squared shaft 15 thereof a double disc 16 is provided which includes a lower portion 17 of generally round configuration with an extending ear 18, upon which is mounted for rearward extension therefrom a Geneva pin 19. Integral with the portion 17 an upper portion 20 is provided of round configuration less in diameter than the portion 17, and adjacent the pin 19 the portion 20 is cut away, as at 21, to receive the extended ends of the furcations of the Geneva wheel. The double disc 16 is adapted to be secured to the squared portion 15 of the arbor 12 by the conventional threaded engagement of the winding key 13.

For association with the wheel 16 and for movement in response to engagement by the pin 19, a Geneva wheel 22 is provided, centrally depressed and apertured as at 23 for rotary mounting upon the member 14. The type of Geneva wheel used and illustrated includes five furcations 22′ spaced by intermediate recesses 24 which are adapted to receive the pin 19 and to give the wheel 22 a one-fifth turn in response to each revolution of the arbor 12.

It will be readily understood that the invention is not confined to the specific configuration of Geneva wheel here illustrated, and that any number of furcations and corresponding number of recesses may be provided.

For limiting the amount of rotation of the member 16 the Geneva wheel has a struck-out portion 25 which at the termination of the

rotation of the Geneva wheel in either direction is adapted to abut an angularly related struck-out portion 26 on the member 14. The arrangement is such that in the fully wound position the arrangement will be as shown in Figure 1 with the struck-out portion 25 abutting the under side of the struck-out portion 26. As the spring unwinds the arbor 12 will move in clockwise direction thus periodically moving in counterclockwise direction the Geneva wheel 22, the fractional rotation thereof being in response to the full rotation of the arbor 12.

It will be readily understood that this rotation of the Geneva wheel is in response to the rotation within the recesses 24 of the pin 19 as it passes thereover, and that the projecting ends of the furcated portion of the Geneva wheel is each received within the recesses 21, thus permitting the wheel to rotate.

At the expiration of five revolutions of the arbor 12 the Geneva wheel will have been moved approximately one complete revolution, and the projection 25 thereof will abut the upper face of the projection 26, thus preventing further rotation of the Geneva wheel and consequently preventing further rotation of the arbor 12. Thus unwinding of the spring is readily controlled and further unwinding is prevented. Thus, in reverse operation in winding the spring it will be seen that only five revolutions of the arbor may be imparted thereto, at which time the stop 25 contacts with stop 26, as shown in Figure 1, and further winding is prevented.

From the foregoing it will be readily seen that the invention provides novel and improved means for controlling the winding or unwinding of a coil spring. It will be understood that the invention is not confined to the specific usage or configuration of structure here shown. The Geneva wheel may be designed in any desired manner and include any desired number of furcations. It will also be understood that the full use of equivalents may be utilized without departing from the spirit or scope of the present invention as outlined in the appended claims.

I claim:

1. In a device of the character described, the combination with a coil spring and an arbor therefor of a wheel carried by said arbor, a projection on said wheel, a Geneva wheel mounted adjacent said first mentioned wheel engageable with said projection for periodic rotation thereby, a supporting frame for said arbor and wheels, a projection on said supporting frame adapted to limit rotation of said Geneva wheel, and a projection on said Genervа wheel engageable with the projection on said supporting frame.

2. In a device of the character described, the combination with a coil spring and an arbor therefor of a wheel carried by said arbor, a projection on said wheel, a Geneva wheel mounted adjacent said first mentioned wheel engageable with said projection for periodic rotation thereby, a supporting frame for said arbor and wheels, a projection on said supporting frame adapted to limit rotation of said Geneva wheel, and a projection on said Geneva wheel engageable with the projection on said supporting frame, said projections being engageable to terminate rotation of said Geneva wheel in either direction.

Signed at New York, in the county of New York and State of New York, this 25th day of May, A. D. 1929.

WILLIAM THOMAS.