Sept. 4, 1928. 1,683,009

R. E. AMIDON

HAIRSPRING ADJUSTMENT RETAINER

Filed March 1, 1926

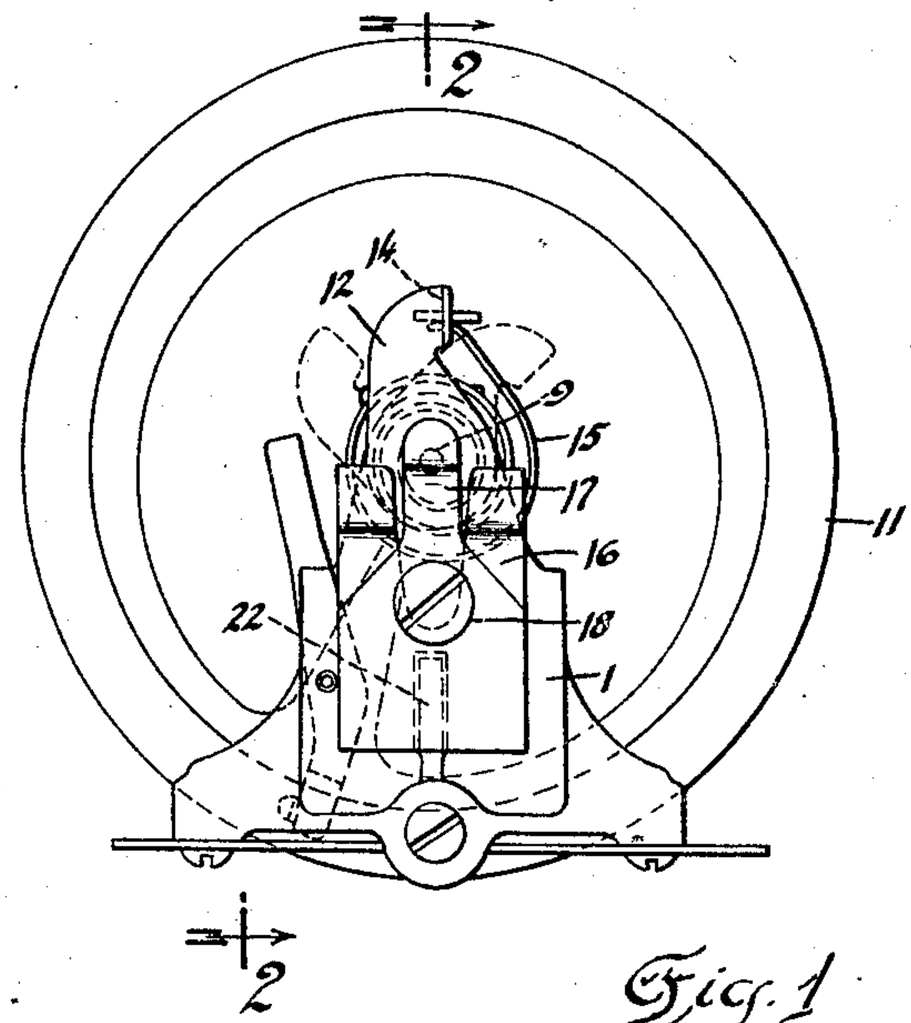

Fig. 1

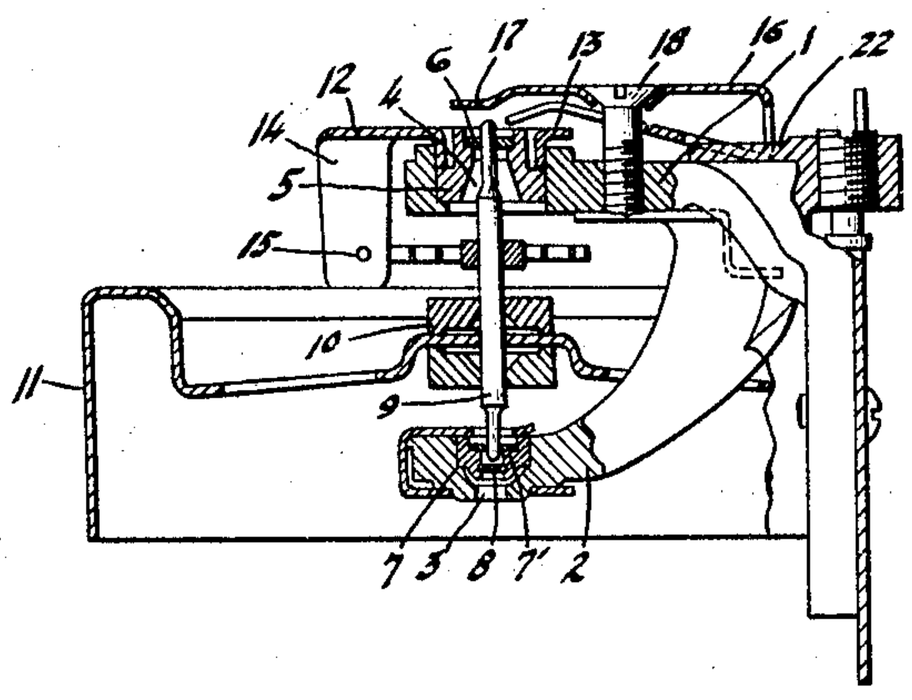

Fig. 2

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HAIRSPRING-ADJUSTMENT RETAINER.

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This invention relates to speedometers, and similar instruments. In such instruments there is commonly employed a delicately mounted speed cup carried by a spindle having upper and lower bearings in fixed parts of the instrument. The movements of the speed cup are usually influenced by a rotor element mounted for rotation between the poles of a magnet. Reverse rotation of the speed cup is controlled by a hair spring.

It is an object of this invention to provide improved means for holding the adjusting mechanism for the hair spring. A further object is to provide improved means for limiting the axial movement of the speed cup spindle.

It will be obvious that the invention may be used elsewhere than with the magnetic speedometer for which it is primarily designed.

The following description and the accompanying drawing will give a full understanding of the invention.

Figure 1 is a top plan view of the frame and speed cup of a magnetic speedometer wtih my invention applied. Figure 2 is a sectional view on line 2—2 of Figure 1.

Referring by reference characters to the drawing numeral 1 represents a frame member which is constructed to carry the various parts of a speedometer and its associated odometer. It will be understood that this frame member is enclosed in a suitable casing having a dial on its front face. The frame member has a depending part 2 within which and within an overhead part are aligned shouldered bearing openings 3 and 4. Within the upper bearing opening 4 is shown the upper jewel carrier 5 and a bearing 6. Within the lower bearing opening are shown the lower jewel carrier 7 mounting a hole jewel 7′ and a thrust bearing 8. These jewel carriers and bearing members furnish a pivotal connection for a spindle 9. Secured to the spindle by convenient means as 10 is a speed cup 11. It will be understood that this speed cup is rotatable under the influence of a rotor and magnet, and that the speed cup is provided with suitable designating characters. These features of the speedometer constitute no part of the invention and are therefore not illustrated.

Rotatably mounted for pivotal action within the upper bearing opening is a lever member 12. It will be seen that at the pivot, the lever is provided with an apertured depressed portion 13 which engages the walls of the bearing opening and rests upon the upper portion of the jewel carrier 4. At its outer end this lever has a depending portion 14 to which is connected the outer end of a hair spring 15. The inner end of the hair spring is secured in any convenient way to the spindle 9.

For the purpose of retaining the spindle 9 from excessive axial movements there is employed a resilient member 16. This member 16 has an upper arm 17 overlying the end of the spindle 9. Connecting this upper arm with the frame member is a screw 18, the head of which engages an apertured depression in the member 16. The member 16 is of U shape, a notch in the bend of the U engaging a rib 22 on the frame member as shown in Figure 2, to prevent rotation of 16 around the screw 18. The lower leg of the resilient member 16 is forked. The forked portion straddles the fastening means 18 and its ends engage the lever member 12 on each side of its pivot.

By the provision of this resilient member 16 and its adjusting screw 18 I am enabled to provide a variable clearance at the end of the spindle 9, and at the same time make use of the resilient pressure of the spring to hold the lever 12 in its bearing and also in any selected position of adjustment.

I claim:

1. A rotary spindle, means for biasing the spindle to rotation in one direction, movable adjusting means for controlling the said biasing means, yielding means to retain the spindle against axial movement and to hold the adjusting means in its position of adjustment.

2. A combination set forth in claim 1 wherein the mechanism is in the form of a substantially U shaped resilient member, one arm positioned over the spindle, the other engaging the adjusting means.

3. A frame having a bearing opening therein, a spindle, a bearing for the spindle in said opening, a biasing spring connected to said spindle, an adjusting member pivoted in said bearing opening and engaging the other end of the spring, a U shaped resilient means one arm positioned over the spindle, its other arm engaging the adjusting means to hold it in the bearing opening and in any selected position of adjustment, means for adjustably securing the U shaped means to the frame.

4. A spindle biased to rotation in one direction by a spring, adjusting movable means for said spring, resilient means positioned in adjustably spaced relation to the end of the spindle and having a portion engaging the adjusting means to hold it in any position of adjustment.

5. Means for limiting the axial movement of a spring controlled spindle and for holding its spring adjusting means in position for adjustment, comprising a U shaped resilient member, its upper arm overlying its spindle, its lower arm engaging the adjusting means, means to vary the tension of the resilient means to adjust the clearance at the end of the spindle and the pressure upon the adjusting means.

6. A frame, a bearing opening therein, a spindle mounted for rotation in said bearing opening, a lever pivoted in said bearing opening, resilient means for retaining said spindle from axial movement and for holding said lever in adjusted position comprising a U shaped member, its upper arm overlying the spindle and being held by securing means to said frame, its lower arm being forked to straddle the securing means and to engage the lever on the sides of its pivot, adjustment of the securing means varying the clearance at the end of the spindle and pressure upon the lever.

7. In a measuring instrument, a speed cup, a spindle therefor, bearings for said spindle, a biasing spring secured to said spindle, spring adjusting means rotatable coaxially with said spindle adjacent one of said bearings, said adjusting means connected to said spring, yielding means positioned adjacent one end of said spindle to limit axial movement of said spindle, said yielding means engaging said adjusting means to retain it in any position of adjustment.

In testimony whereof I affix my signature.

RAY E. AMIDON.