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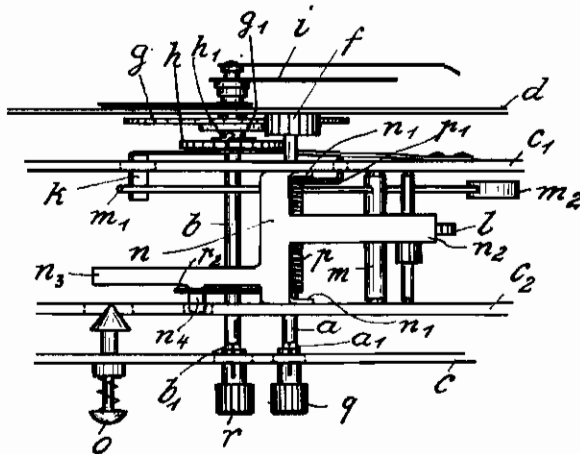
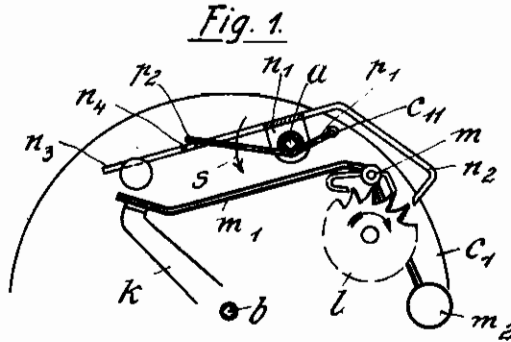


Fig. 2.

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ALARM CLOCK MOVEMENTS

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This invention relates to an alarm clock movement, and has for its object to prevent return motion of the alarm setting spindle.

In the known alarm clock works in which the alarm locking or click spring is controlled by a member attached to the alarm setting wheel and having a recessed edge cooperating with a catch the alarm setting spindle must be rotated in one direction only so as to insure relative displacement of the attached member and the catch in the same direction. If the spindle is turned in opposite direction, the catch strikes the inclined edge of the recessed portion of the attached member and during further rotation the movement is driven backward by the change gears. Due to the gearing up effected in this case, the frictional resistances are usually so great that the alarm setting means break.

Various proposals have been made to prevent return motion of the alarm setting spindle in a positive manner, and one of them provides for instance a screw-on setting knob which will unscrew from the end of the setting spindle when an attempt is made to turn the latter in the wrong direction. This arrangement is, however, open to the objection that the knob is often lost and two kinds of knobs and fastening means are required for the alarm setting and the minute spindles.

It has further been suggested to interpose clutch couplings between the alarm setting spindle and the toothed wheel supporting the attached member mentioned, but the practical application of this suggestion was found to require too many additional structural elements.

According to the invention, the difficulties are eliminated by connecting the alarm setting spindle with a fixed point of the clock through the medium of a Schwarz coupling spring which is of the volute type and so wound upon a plain shaft as to hug it with a certain initial tension. One end of this spring has a tangential continuation which is engaged by the other coupling member, and the other end thereof is cut off closely to the shaft. Notwithstanding its small dimensions in the present instance, a coupling spring of this type is capable of transmitting relatively great forces and of offering so great a resistance to any attempt to turn the alarm setting spindle in the wrong direction that instantly and effectively attention is called to this faulty manipulation without injuring the clock.

The use of such a coupling spring for the alarm setting spindle affords the advantage that the alarm setting knob like the hand setting knob can be secured to its spindle by means of a square and that both knobs can be made alike and interchangeable. In clocks provided with the widely used shut off members which at the winding of the alarm driving spring are

disengaged from the alarm escapement wheel by a restoring spring, the Schwarz coupling spring on the alarm setting spindle may serve also for another purpose. Instead of cutting off one end thereof as mentioned, it is allowed to stand off from the spindle and to act thus as restoring spring for the alarm stop. The coupling spring is preferably initially tensioned when installed between the alarm stop and the fixed point of the clock.

One form of the invention is illustrated by way of example in the accompanying drawing, in which

Figure 1 is a front view of alarm setting and stopping parts required for understanding the invention; and

Fig. 2 is a top view thereof.

a is the alarm setting spindle, b the hand setting spindle, c_1 is the front plate and c_2 the rear plate, in which plates the two spindles and the other parts of the clockwork are arranged. d is the dial, and e designates the back wall of the casing. On the alarm setting spindle a a pinion f is disposed which engages the alarm setting wheel g having an attachment g_1 . h is a toothed wheel which is rotated once every 12 hours through intermediate gears, not shown, and which is firmly connected with the hour-hand i . The wheel h cooperates in known manner with the alarm locking spring k and also with the attached member g_1 through the nose or catch h_1 . From the alarm escapement wheel l the hammer rod m is driven in the usual way. m_1 is the stop arm cooperating with the locking spring k , and m_2 is the hammer.

The stop lever n is freely oscillatably disposed on the spindle a with the aid of two perforated flaps n_1 whose distance corresponds to the width of the frame. Through its arm n_2 it can engage the escapement wheel l in known manner, and its arm n_3 is engaged by the stop o .

A Schwarz coupling spring p is closely wound upon the alarm setting spindle a with initial tension. One end of the spring, designated p_1 , engages a hole c_{11} of the front plate c_1 so as to effect a coupling between the spindle a and a fixed point of the clock. The other end p_2 of the spring p lies on a continuation n_4 of the stop lever n . The spring p is arranged with initial tension between the plate c_1 and the stop lever n in such manner that the lever n is subjected to spring pressure which urges it into releasing position. Both setting spindles a and b are provided with squares a_1, b_1 of the same type to which setting knobs, q, r , also of equal construction, are attached. The coupling spring p is built in so that the spindle a can be turned only in the direction of the arrow s , Fig. 1.

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