

H. H. BOYCE.
ALARM CLOCK.
APPLICATION FILED AUG. 31, 1910.

Patented Feb. 7, 1911.

983,672.

Fig. 1

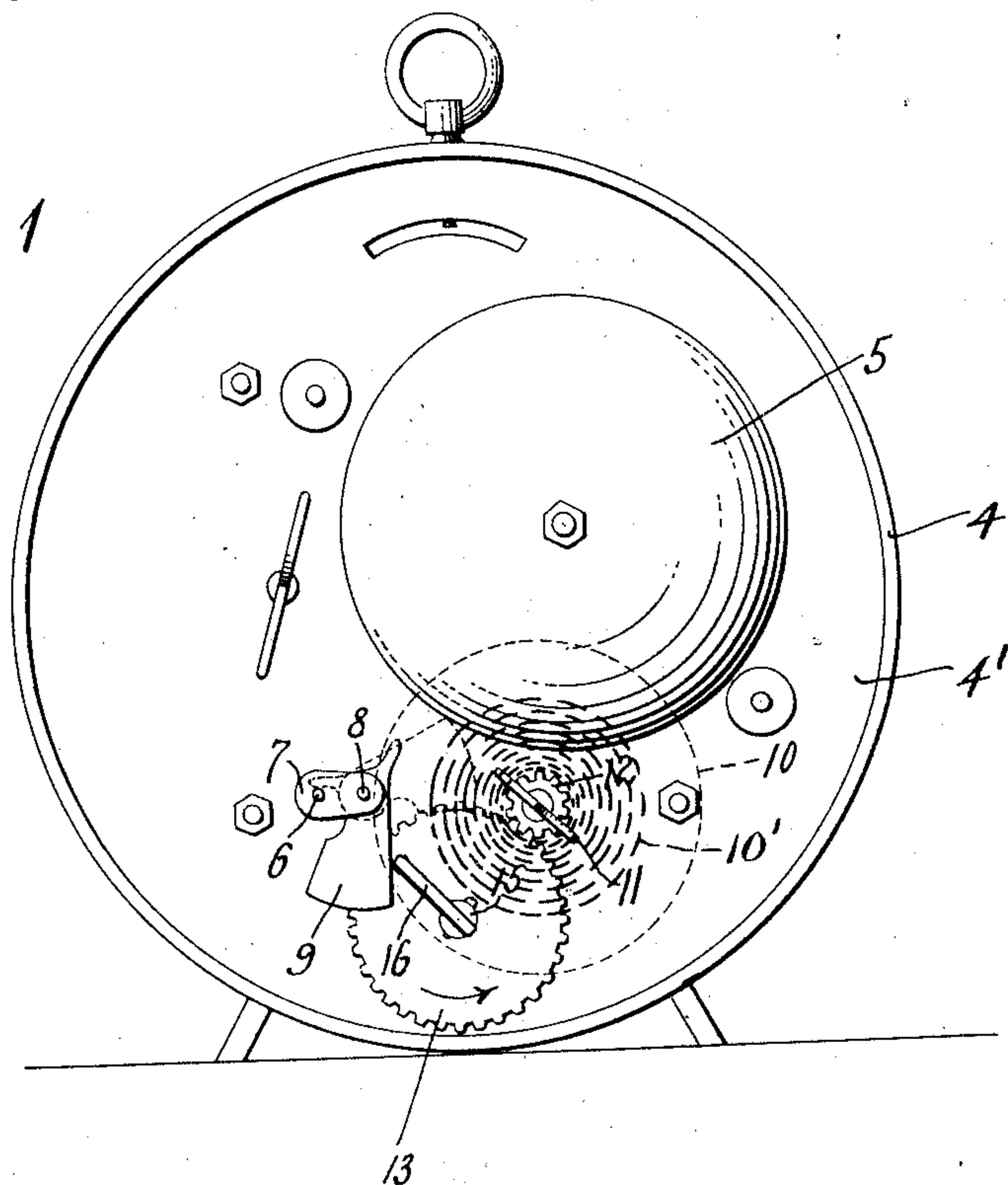


Fig. 2

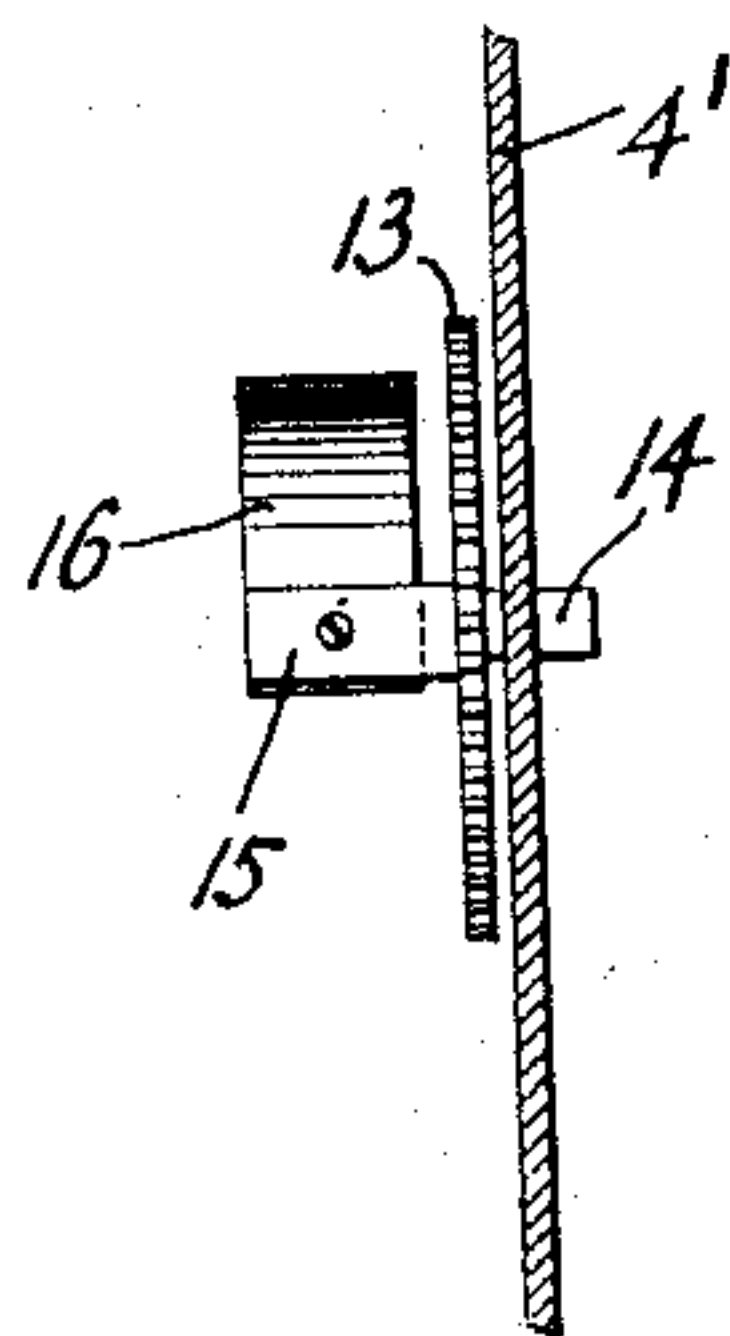
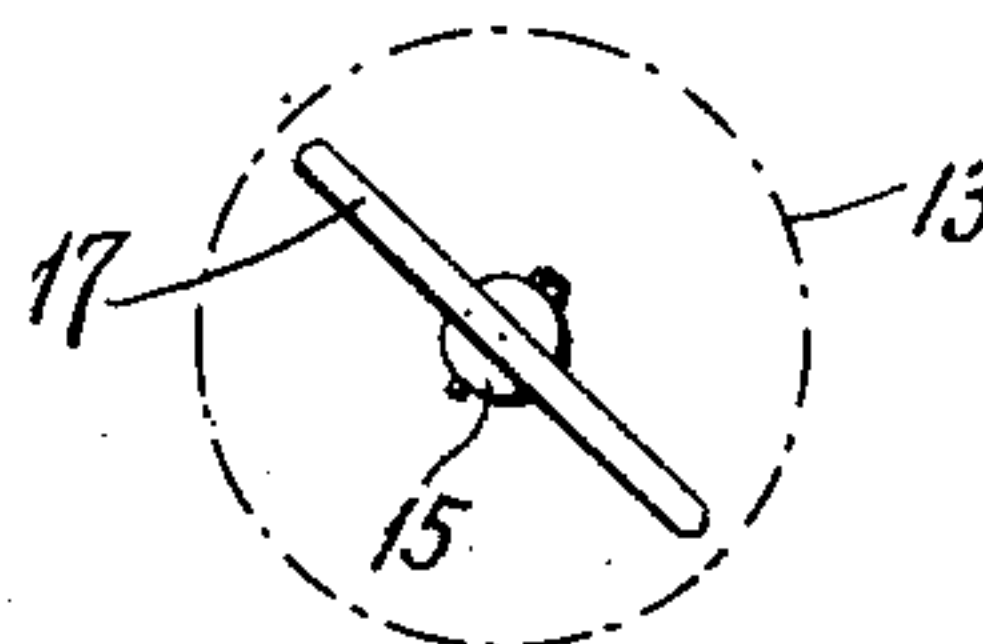


Fig. 3



WITNESSES

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ALARM-CLOCK.

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To all whom it may concern:

Be it known that I, HARRISON H. BOYCE, a citizen of the United States, and a resident of Oyster Bay, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Alarm-Clocks, of which the following is a specification.

The present invention relates to improvements in alarm clocks.

It is a well known fact that in devices of this character, heretofore in use, the bell of the alarm is sounded suddenly at a predetermined point in the movement of the hands of the clock and at its full tone. The sleeping person is thereby awakened by an intense sound, which in many cases throws the person in a state of fear or fright.

One of the objects of the invention is to overcome the defects of the alarm clocks heretofore in use, and to provide a simple and efficient alarm which is sounded at a gradually increasing tone, starting with a hardly perceptible buzz and going up to the full tone of the bell.

Another object of the invention is to construct an alarm mechanism which sounds an interrupted or intermittent alarm.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in the construction, arrangement and combination of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that various changes may be made in the size and proportion of the several parts and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a rear elevation of an alarm clock constructed in accordance with the present invention; Fig. 2 is a side elevation of a detail of construction; and Fig. 3 is a front elevation of a modified detail.

Referring to the drawings, the numeral 4 designates the casing or housing of the clock, which may be of any suitable construction and size, and which may contain a clock mechanism of any suitable type.

To the outer side of the cover 4' of the casing is attached an alarm bell 5, in the usual manner. In the frame of the clock is arranged rotatably a spindle 6, to the outer end of which is fixedly attached a lever 7, to which, in turn, is pivoted at 8 the striker 9 of the alarm. The spindle 6 is driven by a train of gears, which is actuated by a spring motor 10 located inside of the housing of the clock. The spring 10' of this motor can be wound up by means of a key 11, which is mounted upon the motor shaft in the usual manner.

Thus far the construction and operation of the device does not vary from those heretofore in use.

As soon as the minute-hand of the clock reaches in its movement a predetermined point upon the dial, the alarm mechanism is released, and the motor 10 rotates the shaft 6 and thus the striker 9 connected therewith, whereby the bell 5 is sounded in a manner well known. This sound, of course, would be a continuous one, starting suddenly and lasting with the same intensity and pitch as long as the motor 10 rotates the shaft 6.

The means for gradually increasing the tone of the bell from zero to a maximum comprises a pinion 12, fixedly attached to the key 11 and meshing with a gear 13, secured to a pin 14, which is rotatably mounted in the clock cover. Upon this pin is arranged a, preferably, split post 15, to which is attached a resilient strip, such as a rubber strip 16, adapted to be brought into the path of the striker 9. The relation between the pinion 12 and gear 13 is such that, whenever the spring of the alarm device is wound up to the full extent, the resilient strip 16 is brought into the position shown in Fig. 1 of the drawings, or in other words fully into the path of the striker 9.

It is to be noted that, as the spring of the motor 10 of the alarm mechanism is unwound in its operation, the key 11 is rotated and thereby also the gear 13. Since the resilient strip participates in the rotation of the gear 13, the same will be brought a number of times in its revolution into the path of the striker 9, for a purpose which will be presently explained.

The operation of the device is as follows: The time for sounding the alarm is set in the usual manner. When this time arrives, the

spring motor is released, and, by rotating the spindle 6, the striker 9 is actuated. Since, however, the resilient strip 16, which has been brought by winding up the spring 10' of the motor 10 into the position shown in Fig. 1 of the drawings, that is into the path of the striker 9, the latter will be deflected and will not sound the bell 5. As now the gear 13 rotates in the direction indicated by the arrow shown in Fig. 1 of the drawings, the strip 16 moves therewith, offering thereby a gradually decreasing resistance to the striker 9, which will, after the strip 16 has moved through a certain angular distance, start to strike the bell, but not with its full force, since the strip 16 is still in the path of the striker. As soon as, however, in the continuous rotation of the gear 13, the strip 16 is removed from the path of the striker, the bell will be sounded at its full tone. It will be observed that the alarm starts thus with a hardly perceptible buzz, and goes up to the full tone of the bell, since the latter is struck by the striker 9 first with little force which is gradually increased until the resilient strip 16 is fully removed from the path of the striker, after which the bell is sounded at its full tone. The bell will be sounded at its full tone until, in the rotation of the gear 13, the resilient strip 16 is brought back into the path of the striker 9, when the play now described is repeated. The mechanism sounds thus an intermittent alarm of the character described. The speed of the striker is obviously increased as the strip 16 is gradually removed from the path of said striker.

If it is desirable to decrease the time during which the bell is actuated at its full tone, the device illustrated in Fig. 3 of the drawings may be made use of. In this case a resilient strip 17 is mounted upon the post 15, which strip extends, preferably, from a point of the gear 13 to a diametrically opposite point thereof.

What I claim is:

1. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and means whereby the tone of said bell is increased as the spring of said motor is unwound.
2. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and resilient means whereby the tone of said bell is increased as the spring of said motor is unwound.
3. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and

means normally in the path of said striker adapted to be gradually withdrawn by said motor, whereby the tone of said bell is increased as the spring of said motor is unwound.

4. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and resilient means normally in the path of said striker adapted to be gradually withdrawn by said motor, whereby the tone of said bell is increased as the spring of said motor is unwound.

5. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, resilient means normally in the path of said striker adapted to be gradually withdrawn by said motor, whereby the tone of said bell is increased as the spring of said motor is unwound, and means for bringing said resilient means back into its normal operative position.

6. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and rotary resilient means adapted to be intermittently brought into the path of said striker, whereby the latter is deflected and said bell is sounded intermittently.

7. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and means normally in the path of said striker adapted to be gradually withdrawn by said motor, whereby the speed of said striker is increased as the spring of said motor is unwound.

8. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and resilient means normally in the path of said striker adapted to be gradually withdrawn by said motor, whereby the speed of said striker is increased as the spring of said motor is unwound.

9. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, resilient means normally in the path of said striker to be gradually withdrawn by said motor, whereby the speed of said striker is increased as the spring of said motor is unwound, and means for bringing said resilient means back into its normal operative position.

10. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by

said motor adapted to sound said bell, and means whereby the speed of said striker is increased as the spring of said motor is unwound.

- 5 11. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and resilient means whereby the speed of said
10 striker is increased as the spring of said motor is is unwound.

12. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said
15 motor adapted to sound said bell, and rotary means adapted to be intermittently brought into the path of said striker and to be gradually withdrawn, whereby the alarm is intermittently sounded and the tone of said

bell is increased as the spring of said motor is unwound.

13. In an alarm clock, the combination with an alarm bell, of the spring motor of an alarm mechanism, a striker actuated by said motor adapted to sound said bell, and rotary resilient means adapted to be intermittently brought into the path of said striker and to be gradually withdrawn, whereby the alarm is intermittently sounded and the tone of said bell is increased as the spring of said motor is unwound.

Signed at New York, in the county of New York and State of New York, this 24th day of August A. D. 1910.

HARRISON H. BOYCE.

Witnesses:

SIGMUND HERZOG,
S. BIRNBAUM.