Aug. 14, 1928. 1,680,700

M. A. STANDOW

ELECTRICALLY OPERATED CLOCK

Filed Aug. 21, 1925 2 Sheets-Sheet 1

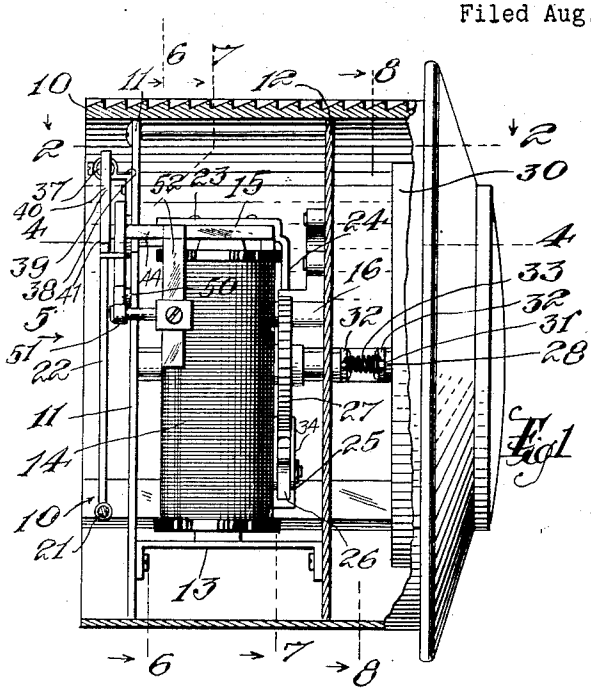

Fig. 1

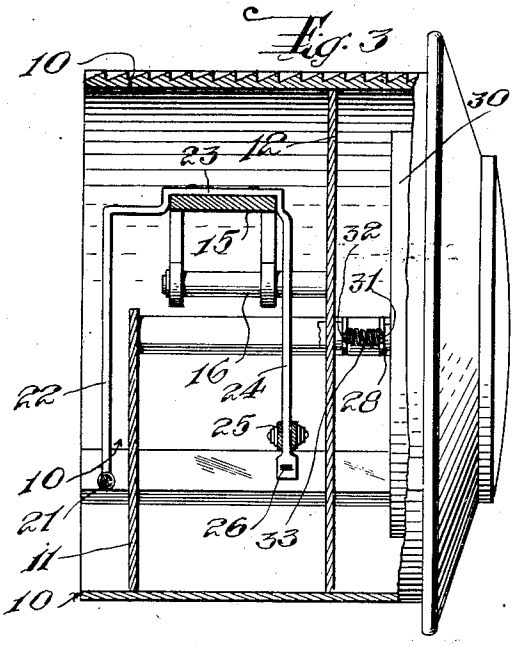

Fig. 3

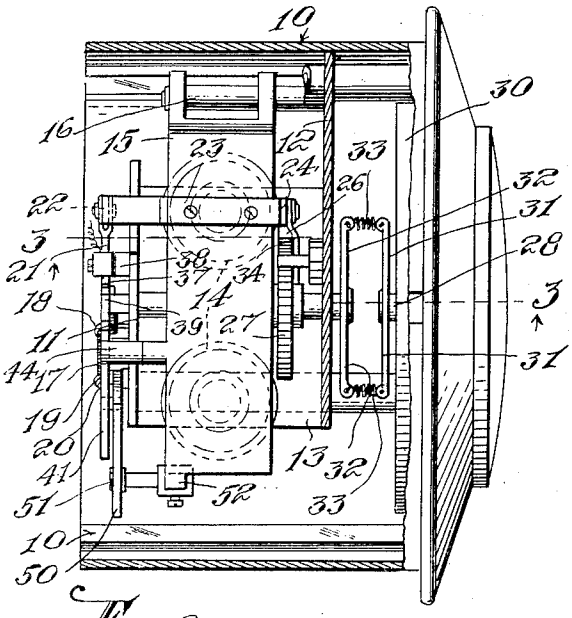

Fig. 2

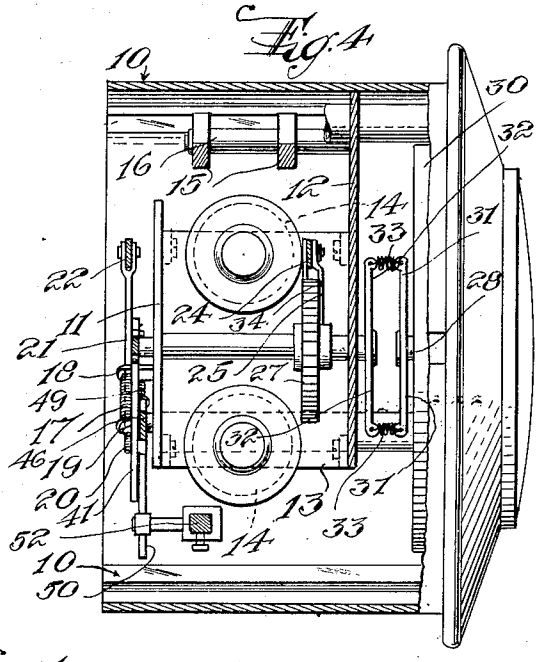

Fig. 4

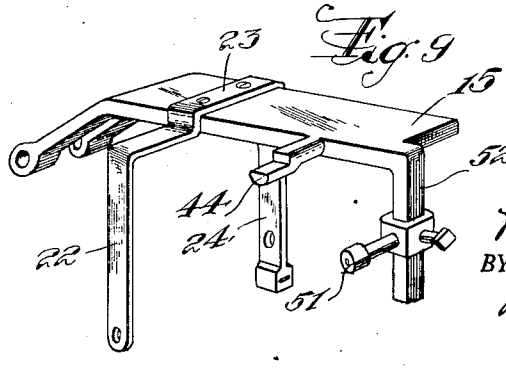

Fig. 9

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Fig. 5

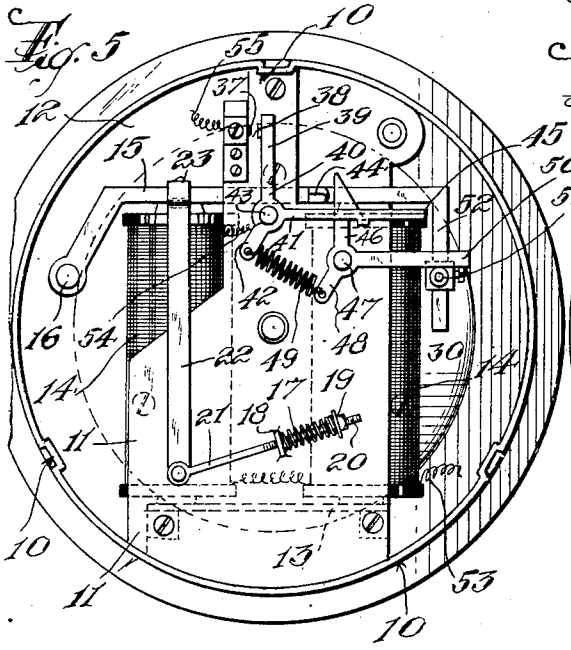


Fig. 6

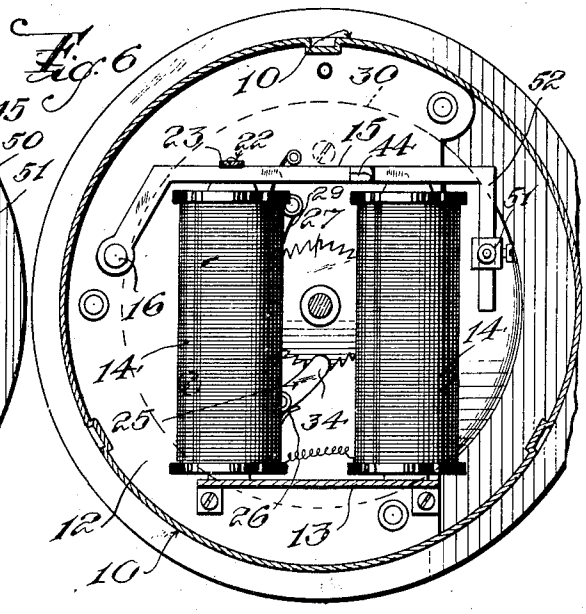


Fig. 7

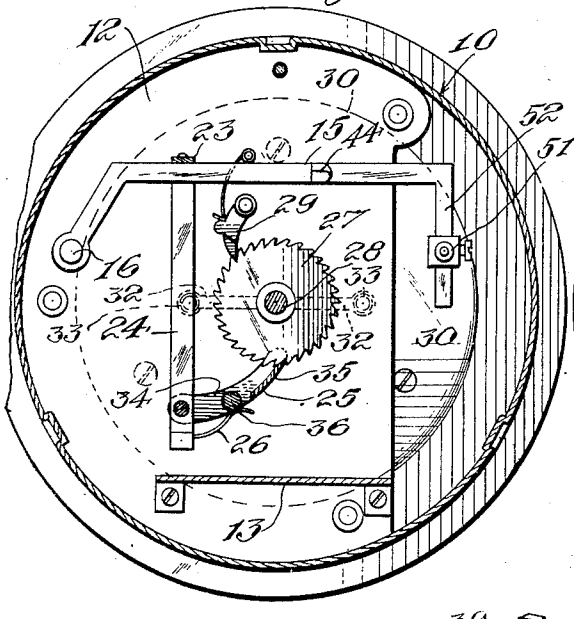


Fig. 8

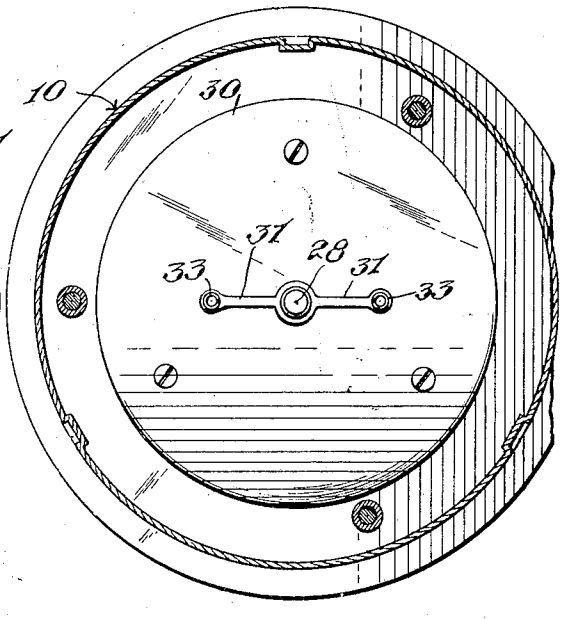
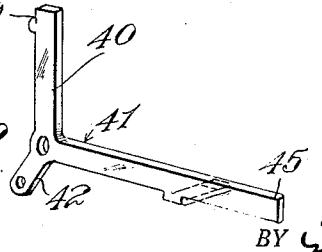


Fig. 10



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Patented Aug. 14, 1928. 1,680,700

UNITED STATES PATENT OFFICE.

MARK A. STANDOW, OF NEWARK, NEW JERSEY.

ELECTRICALLY-OPERATED CLOCK.

Application filed August 21, 1925. Serial No. 51,574.

The present invention relates to an improved clock which is of the type that is electrically operated and that embodies a magnetic actuating unit that automatically operates to make and break the circuit actuating the magnet so that an intermittent application of electric power operates the unit and this in turn operates an ordinary clock train, the unit thus replacing the spring of an ordinary clock.

The invention resides in certain details of construction which are simple in their operation and which occupy but a small space, thus making the clock applicable for automobiles and similar uses and in which the adjustment of the parts, when such becomes necessary, is easily done.

The invention is illustrated in the accompanying drawings in which Figure 1 is a section through the casing of the device showing the magnetic portion of the clock in elevation. Figure 2 is a section on line 2—2 in Figure 1. Figure 3 is a section on line 3—3 in Figure 2. Figure 4 is a section on line 4—4 in Figure 1. Figure 5 is a back view of the device. Figure 6 is a section on line 6—6 in Figure 1. Figure 7 is a section on line 7—7 in Figure 1. Figure 8 is a section on line 8—8 in Figure 1. Figure 9 is a perspective view of the armature of the magnet and Figure 10 is a perspective view of a swinging contact of the make and break device.

The drawing illustrates a casing 10 which is usually cylindrical and which contains the frame of the magnetic unit, the frame comprising parallel plates 11 and 12 which act to support by the cross piece 13 the coils 14 of the magnets which are of the usual type containing cores which, when energized, attract the armature 15 which is pivoted at 16.

The armature 15 is thus swung in one direction by the energized coils and is pulled in the other direction by a spring 17 which abuts on the ear 18 on the plate 11 and abuts on the nut 19 which fits on the screw-threaded end 20 of the stem 21 which is pivoted to the arm 22 of the stirrup 23 which is fastened to the armature, the other arm 24 of the stirrup carrying a pawl 25 which is pressed by the spring 26 into engagement with the ratchet 27 on the shaft 28. The retaining pawl 29 holds the ratchet 27 against reverse movement.

It will be seen that an intermittent energizing of the magnets will cause the armature to rock back and forth and thus advance the ratchet 27 by means of the spring 17. To make this intermittent movement relatively steady in the clock train, I connect the clock train, which can be mounted in the casing 30 and which is not shown in detail, by having on the shaft 28 the arms 31 and opposite the arms 31 are similar arms 32 on the shaft for the clock train, the extremities of these arms being connected by the coiled springs 33 so that enough cushioned tension is provided to make the movement of the clock train steady.

The pawl 25 is made of a sheet of metal bent up to form side pieces that flank, as at 34, the ratchet 27 thus holding it in alignment. The pawl is thus made from a single sheet of metal connecting a cross portion 35 which forms a tooth for engaging the teeth of the ratchet and preferably also comprising a roller 36 which acts as an abutment for the spring 26.

The circuit is intermittently made and broken by a device, actuated from the armature, being pressed down to break the circuit when the armature is attracted by the magnet and being released or tripped to close the circuit when the spring 17 overcomes the influence of the magnet.

The make and break device consists of a fixed contact 37 mounted on the extension 38 of the plate 11 and the movable contact 39 is on the arm 40 of the lever 41 which is in the form of a bell crank with an ear 42 extending beyond the pivotal point 43 of the lever 41. The lever 41 is in the path of the finger 44 of the armature so that when the armature is down against the magnet, it pushes down on the arm 45 of the lever 41 which causes it to snap over the catch 46 which is pivoted at 47, and has an ear 48 connected by the spring 49 with the ear 42 and also has an extension 50 which is in the path of the adjustable tripping finger 51 fastened to the extension 52 of the armature 15.

It will thus be evident that when the circuit is broken the spring 17 moves the armature so that it swings up, the finger 51 trips the catch 46, the spring 49 moves the contact arm 39 and the contacts 37 and 38 are brought together and the circuit is closed. This energizes the magnet as the current enters from any suitable source of supply by the wire 53, passes through the coils, through the wire 54 from the coils to the

movable contact, and by the wire 55, from the fixed contact to a suitable return wire or is grounded.

This intermittent movement keeps the springs 33 under a constant tension varying slightly at the operation of the armature, this of course, being taken up by the balance wheel or its equivalent, in the clock train.

I claim:

An electric driving mechanism for a clock train comprising a frame, a magnetic coil, an armature pivoted at one side of the coil, extending across said coil and having a tripping finger at its free end and a transverse finger on the side thereof, a stirrup secured on the armature, a spring to yieldingly influence one end of the stirrup, a pawl carried by the other end of the stirrup, a ratchet actuated by the pawl and connected to the clock train, a fixed contact on the frame, a movable contact pivoted on the frame with an arm to engage the fixed contact and a lever under the transverse finger of the armature, a catch pivoted on the frame and adapted to engage the arm of the movable contact and having an extension to be tripped by the tripping finger of the armature, an ear on the movable contact, an ear on the catch, and a spring connecting the ears.

In testimony whereof I affix my signature.

MARK A. STANDOW.