

G. KERN.
AUTOMATIC SET FOR ALARM CLOCKS.
APPLICATION FILED DEC. 16, 1912.

1,096,542.

Patented May 12, 1914.

2 SHEETS—SHEET 1.

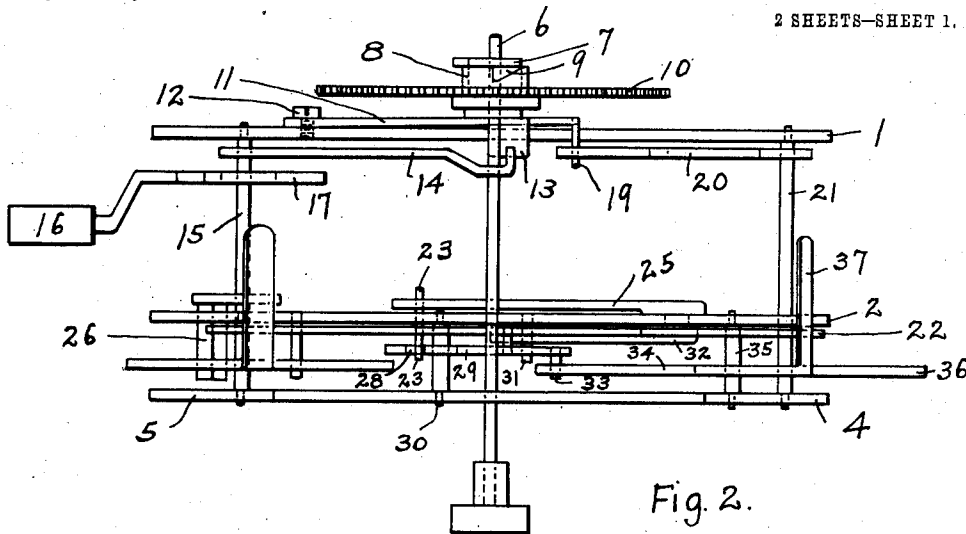


Fig. 2.

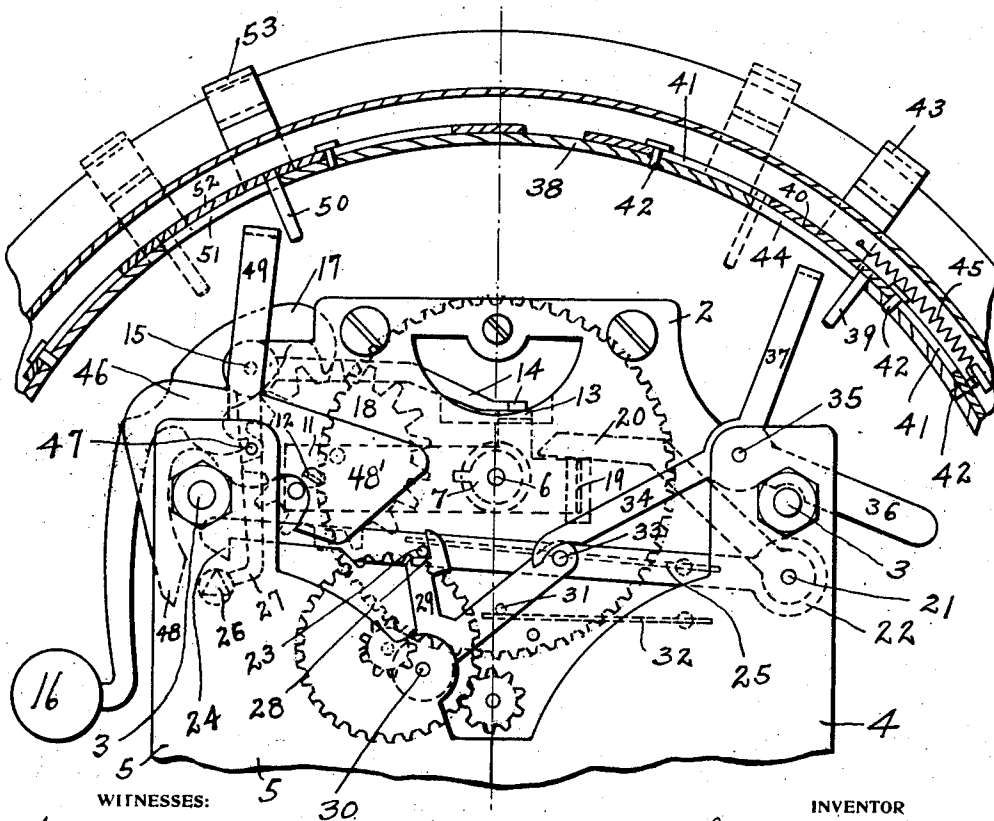


Fig. 1.

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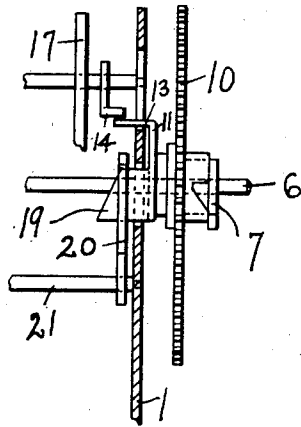


Fig. 4.

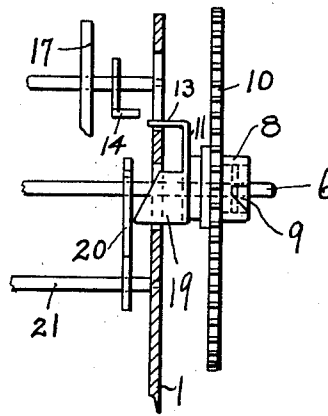


Fig. 5.

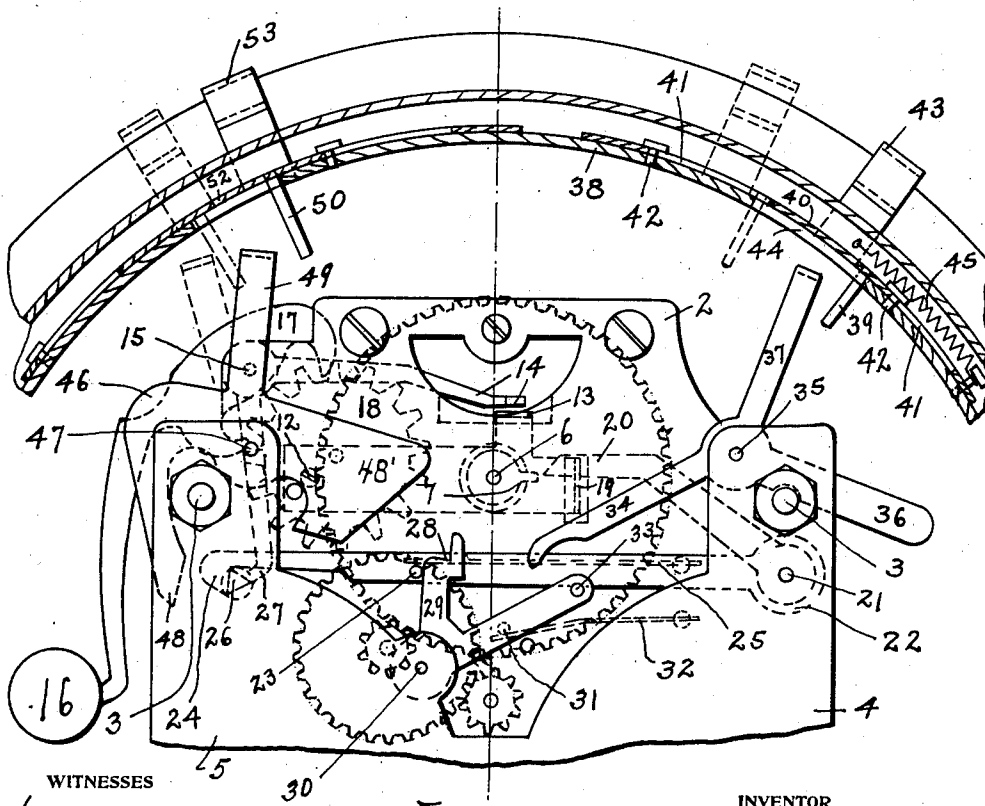


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE KERN, OF PERU, ILLINOIS, ASSIGNOR TO WESTERN CLOCK CO., OF LA SALLE, ILLINOIS, A CORPORATION OF ILLINOIS.

AUTOMATIC SET FOR ALARM-CLOCKS.

1,096,542.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE KERN, a subject of the Emperor of Germany, residing in the city of Peru, county of La Salle, and State of Illinois, have invented certain new and useful Improvements in Automatic Sets for Alarm-Clocks, of which the following is a specification.

My invention relates to an improvement in alarm clocks and particularly to alarms applied to eight day clocks which will sound once in twenty-four hours, the object being such that, should the alarm be shut off after it has started to sound it will be automatically set into its normal operative position by mechanism in close relation to the time mechanism of the clock and also to provide means to entirely cut the alarm mechanism out of operation.

With these and other objects in view my invention consists in certain constructions, combinations and arrangements of parts, the preferred form of which will be first described in connection with the accompanying drawings, and then the invention particularly pointed out in the appended claims.

Referring to the drawings wherein the same part is designated by the same reference numeral wherever it occurs Figure 1 is a rear elevation of an alarm mechanism embodying my invention, with parts broken away, and the casing in section; Fig. 2 is a top plan view of the construction shown in Fig. 1 with the casing omitted; Fig. 3 is a view similar to Fig. 1, with, however, the parts in different position; Fig. 4 is a detail side view partly in section of the alarm tripping mechanism, showing the parts in normal position; Fig. 5 is a view similar to Fig. 4, showing however the parts in the position they assume when the alarm is tripped.

1 designates the front plate; 2 the rear plate and 4 and 5 the auxiliary plates or bridges of an alarm mechanism secured together by means of the pillars 3. Journaled on the plates 1 and 2 is the alarm set shaft 6 carrying a fingered trip collar 7, adapted to rest upon the face of the trip cam 8, provided with the cam slot 9. The trip cam 8 is journaled on the alarm shaft 6 and carries the trip wheel 10 which, in the form of my invention illustrated, is shown as a twenty-four hour wheel, that is to say it makes one revolution in twenty-four hours. The trip wheel 10 is a gear and is connected

with the time train of the clock movement in the ordinary way.

11 is the trip spring provided with an aperture through which the shaft 6 passes. The trip spring is secured to the front plate 1 by means of the screw 12, and the spring is provided with a projection 13 passing through an aperture in the plate 1 and adapted to move into and out of the path of the lever 14 secured to the shaft 15, journaled between the plates 1 and 2. The shaft 15 carries the arm of the hammer 16 which is secured to the hammer shaft 15, the arm being formed into a verge 17, engaging with the teeth of the alarm escape wheel 18, the latter being actuated by the alarm train mechanism in the usual manner.

The particular form of mechanism just described forms no part of my invention, and is an ordinary type of alarm mechanism which I have illustrated merely for the purpose of showing a specific embodiment of my invention.

In the specific embodiment of my invention illustrated I provide the alarm trip spring 11 with a projection 19, having a cam surface on its inner end, as best shown in Figs. 4 and 5, into the path of which projects the free end of a lever 20 mounted on a shaft 21, journaled in the plates 1 and 4.

22 is a lever fast on the shaft 21, and carrying, intermediate of its ends, a pin 23 that extends out from each side thereof, the pin on one side of the lever being engaged by the free end of a flat spring 25 mounted on the plate 2. The free end of the lever 22 is formed on its under side into a hook 24 adapted to engage a pin 26, preferably triangular in cross section, carried on the free end of the lever 27, fast on the hammer shaft 15.

From the construction thus far described it will be evident that the spring 25 tends to hold the hook 24 in engagement with the pin 26, and thus prevent the oscillation of the hammer, and that it also holds the free end of the lever 20 in contact with the cam surface of the projection 19.

29 designates a bell crank lever mounted on a shaft 30 which in turn is mounted in the plates 2 and 5. One arm of this bell crank lever extends upwardly, and at its free end is formed into a shoulder 28 in the path of the pin 23 on the lever 22, and is so

arranged that when the shoulder 28 engages the pin 23, as shown in Fig. 1, the hook 24 will be held out of engagement with the pin 26 of the lever 27, thereby permitting the operation of the bell hammer 16. The other arm of the bell crank lever 29 from that carrying the shoulder 28 is provided intermediate its ends with a pin 31 engaged by a flat spring 32, said spring tending to force the shoulder 28 in a direction to engage the pin 23. When, however, the parts are in their tripped position, as shown in Fig. 3, the side of the arm carrying the shoulder 28 rests against the pin 23, so that the lever 22 has to be raised before the shoulder 28 can engage the pin. The arm of the lever 29 which carries the pin 31 is also provided with a pin 33 which extends into the path of a lever arm 34. 36 is a counter weight which is formed integral with the lever arm 34, and 37 is an actuating arm which is also preferably integral with the lever arm 34. As shown the lever arm 34 is mounted on a shaft 35 extending between the plates 2 and 4. From Figs. 1 and 3 it will be seen that the counter weight 36 tends to hold the lever arm 34 in the position shown in these figures and out of contact with the pin 33 of the bell crank lever 29. The actuating arm 37 is oscillated to throw the lever 34 into engagement with the pin 33, when the parts are in the position shown in Fig. 1, by means of a pin 39 extending through a slot 44 in the clock case 38. This pin 39 is carried by a slide 40 mounted on the clock case 38 by means of the rivets 42 extending through slots 41 in the slide 40. The slide 40 is provided with a projection 43 that extends outside of the clock case, and is in convenient position to be moved by hand. The slide is normally held in the position shown by means of the spring 45. When, however, the slide is moved to the left of the position shown in Figs. 1 and 3 the pin 39 will engage the actuating arm 37 of the lever 34 and operate the bell crank lever 29.

In order to be able to shut off the alarm mechanism entirely I have illustrated a latching mechanism consisting of a member 46 carried by a shaft 47 mounted in the plates 2 and 4, said member having an arm 48 which may be moved into the path of the pin 26 to prevent its oscillation, and thus lock the hammer arm. This member is also provided with a counter weight 48', which normally holds the arm 48 out of the path of the pin 26. In order to actuate the member 46 I provide the same with a projecting arm 49 extending into the path of movement of a pin 50 that extends through a slot 51 in the clock casing, and is secured to a slide 52 mounted on the casing and is provided with an operating projection 53 extending therefrom.

The operation is as follows: The set shaft

6 is rotated to indicate on the dial the time at which the alarm is to ring. The gear 10 which makes one revolution in twenty-four hours will, at the predetermined time when the finger trip 7 coincides with the slot 9, be forced outwardly by the spring 11. When this movement taken place the projection 13 will be withdrawn from under the lever 14 and release the alarm mechanism. Simultaneously with this movement the projection 19 on spring 11 is drawn out of the path of lever 20 for reasons which will presently be explained. After the alarm has served its purpose the lever 37 (Fig. 1) is moved to the left and the arm 34 acting on pin 33 moves the parts to the position shown in Fig. 3, where the hook 24 engages the triangular oscillating member 26 and arrests further movement. As the gear 10 continues to rotate the cam slot under the action of the finger trip will be forced rearwardly and the cam 19 will engage under the lever 20 and raise the same. This movement will release the hook 24 from engagement with the oscillating member 27, but, in the meantime, the detent 13 will have been moved under the lever 14 which prevents movement of this lever. The spring 32 will restore the lever 29 to the position shown in Fig. 1, and the parts are again in position to be actuated at the predetermined time on the following day.

I realize that considerable variation is possible in the details of construction and arrangement of parts without departing from the spirit of my invention, and I therefore do not intend to limit myself to the specific form shown and described.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with an alarm mechanism having a time-actuated gear, a shaft, means for oscillating said shaft, an alarm sounding hammer on said shaft, an arm also carried by said shaft, a trip spring provided with a projection adapted to move into and out of the path of said arm, and means operated by the time-actuated gear for operating said trip spring, a second arm fast on said hammer shaft, a pivoted lever adapted to engage a part on said last-mentioned arm to lock it against movement, a pin projecting from said pivoted lever, a latch lever provided with a shoulder adapted to engage said pin and hold the pivoted lever out of engagement, a pin mounted on the latch lever, a manually operated lever adapted to be moved into engagement with said last-mentioned pin to move the shoulder out of engagement with the pin on the pivoted lever, an arm movable with said last mentioned pivoted lever and a projection carried by the trip spring and adapted to move said arm to disengage said latching lever.

2. The combination with an alarm mechanism, having a time-actuated gear, a shaft, means for oscillating said shaft, an alarm sounding hammer on said shaft, an arm also
5 carried by said shaft, a trip spring provided with a projection adapted to be moved into and out of the path of said arm, means operated by the time-actuated gear for operating said trip spring, a latch adapted to lock the
10 hammer carrying shaft against oscillation, a pivotally mounted lever holding said latch in released position, separate manually operated means adapted to permit of moving the latch through said lever into latching position,
15 tion, means operated by the trip spring to release the latch after the projection on the trip-spring has moved into the path of the lever on the hammer-carrying-shaft and separate means adapted to restore such parts to
20 normal position.

3. In an alarm clock in combination, a shaft carrying an alarm hammer, a detent mounted thereon, means for oscillating said shaft at periodic intervals, and means for
25 arresting the oscillation of said shaft at will, said means comprising a latch adapted to engage said detent, a separate pivoted member holding said latch in released position, and a disconnected manually operated
30 lever for moving said pivoted member to allow said latch to move into latching position; and time actuated mechanism adapted simultaneously to return said arresting means and lever to normal position and lock
35 said oscillating shaft against movement until the completion of a periodic interval.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."