Oct. 24, 1933. M. SCHLENKER 1,932,284

ALARM CLOCK

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FIG. 1

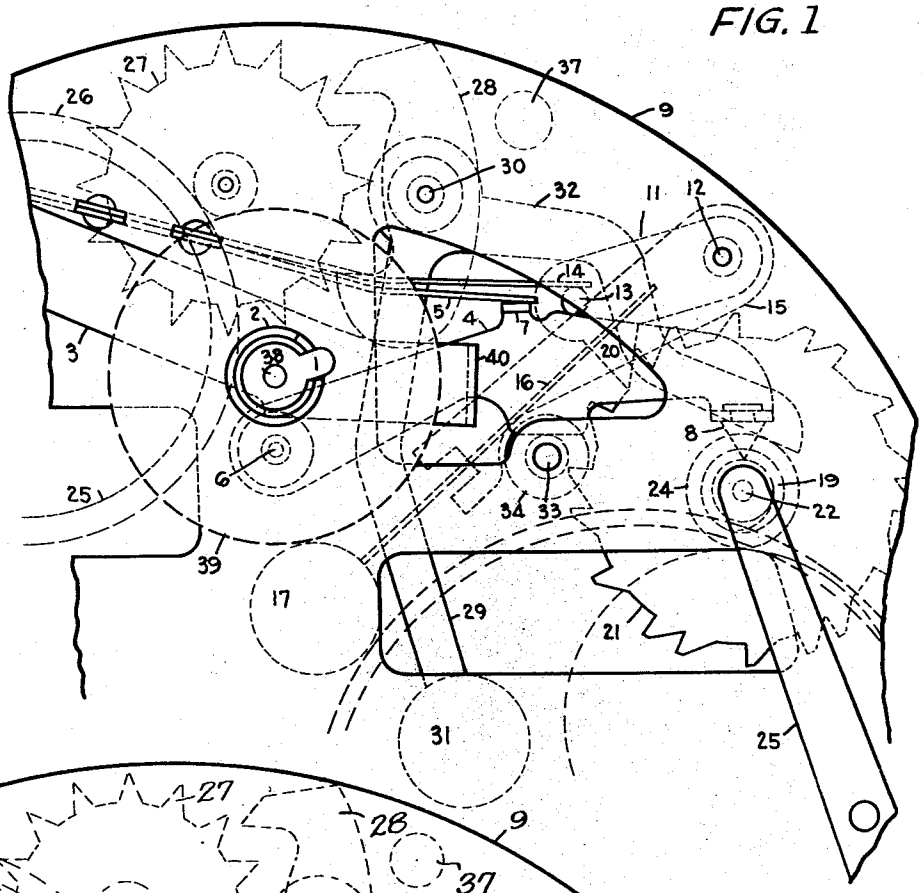
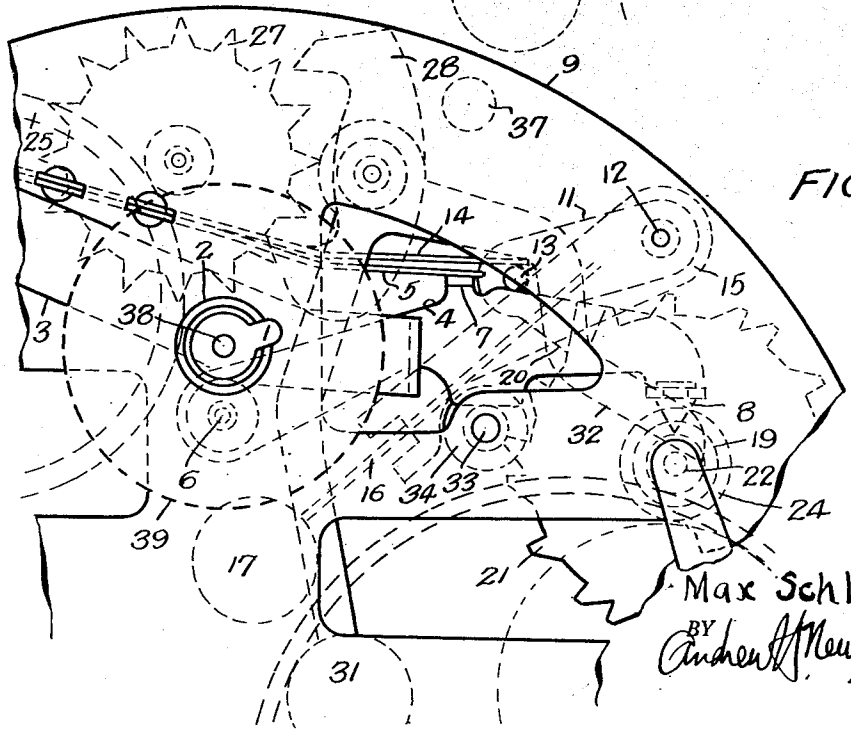


FIG. 3



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ALARM CLOCK

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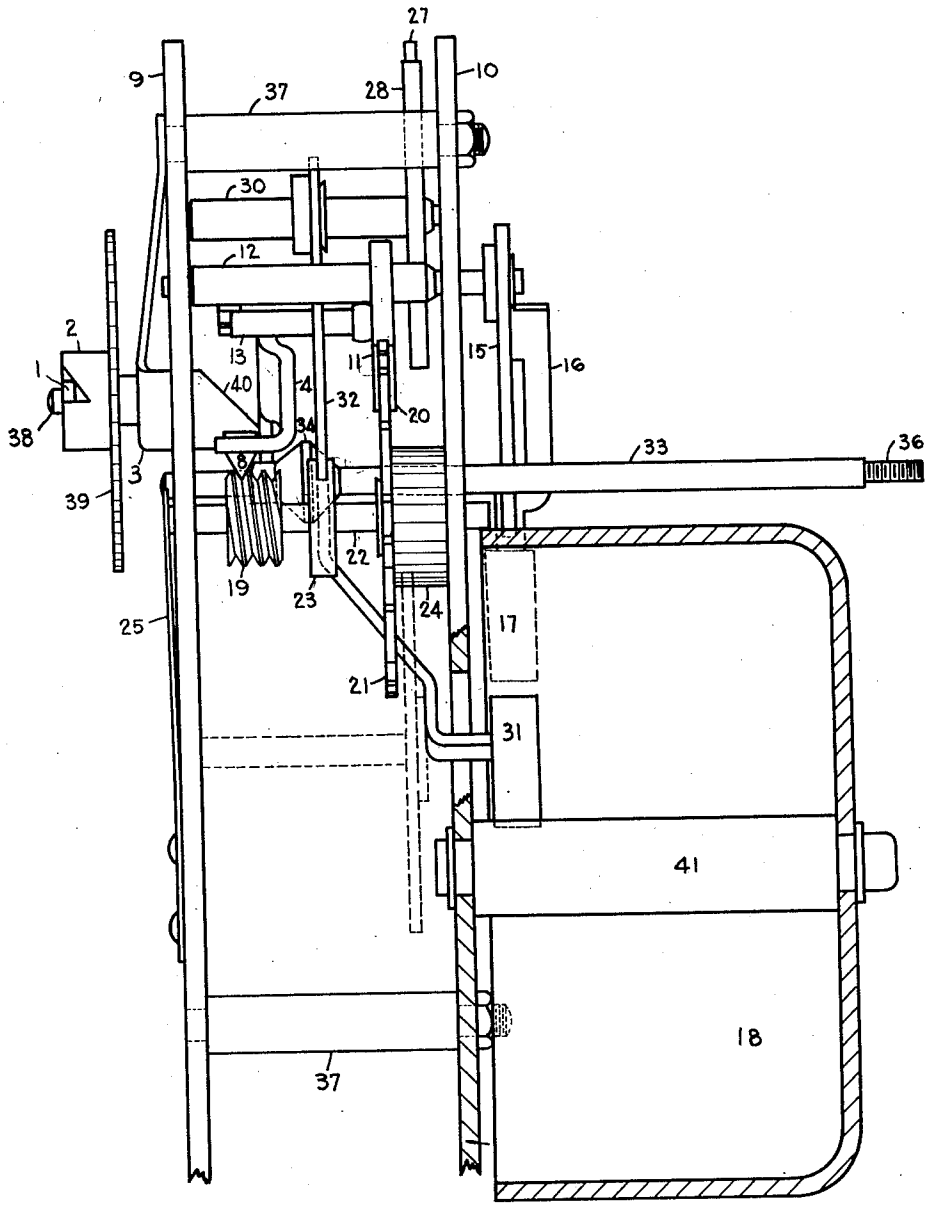


FIG. 2

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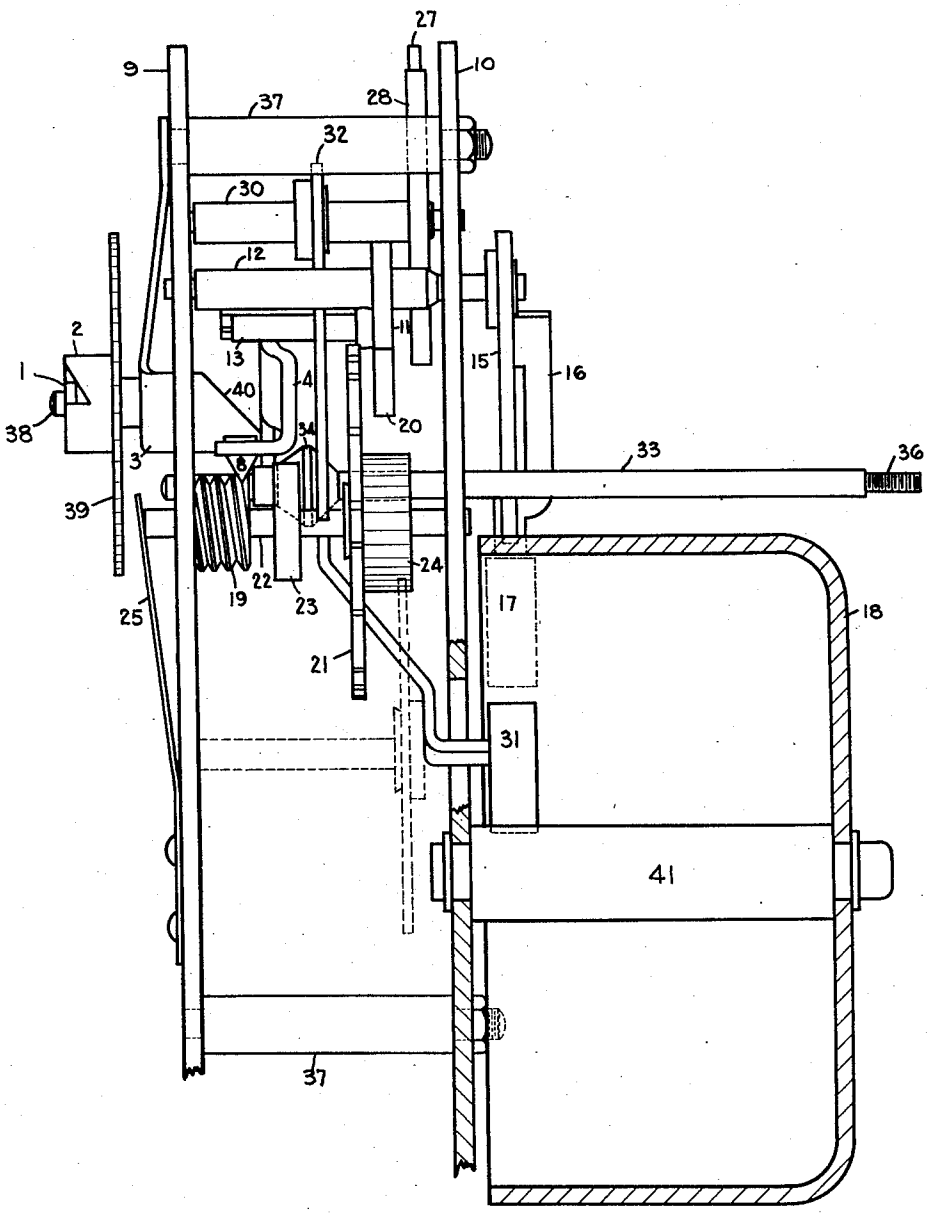


FIG. 4

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ALARM CLOCK

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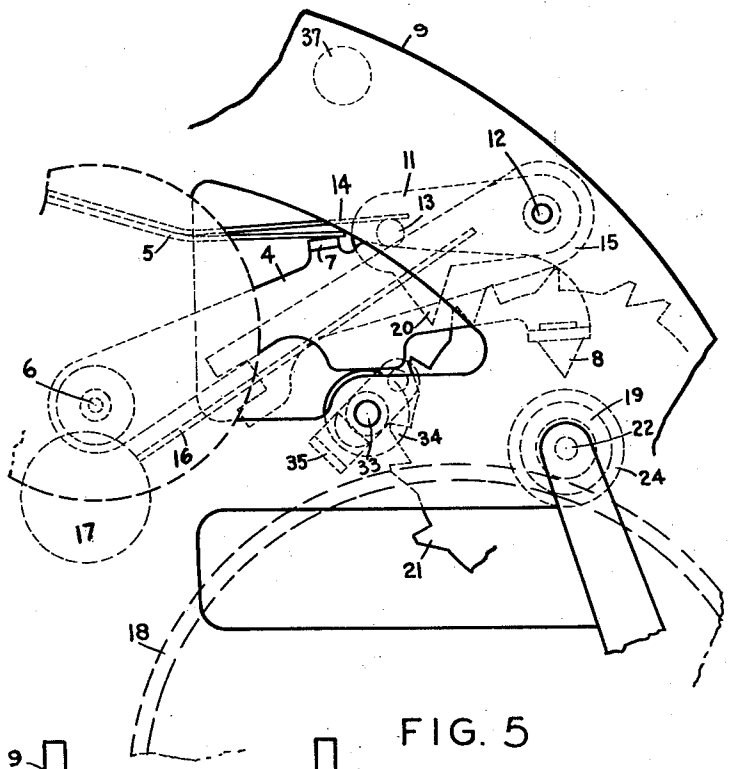


FIG. 5

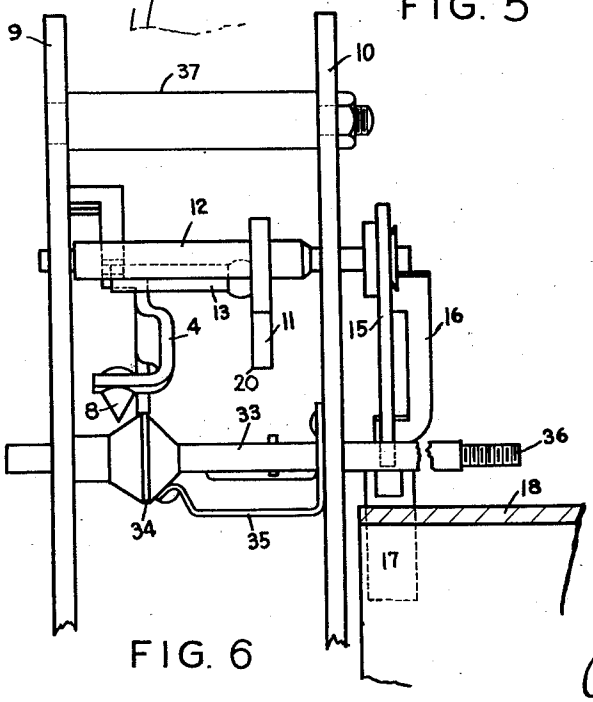


FIG. 6

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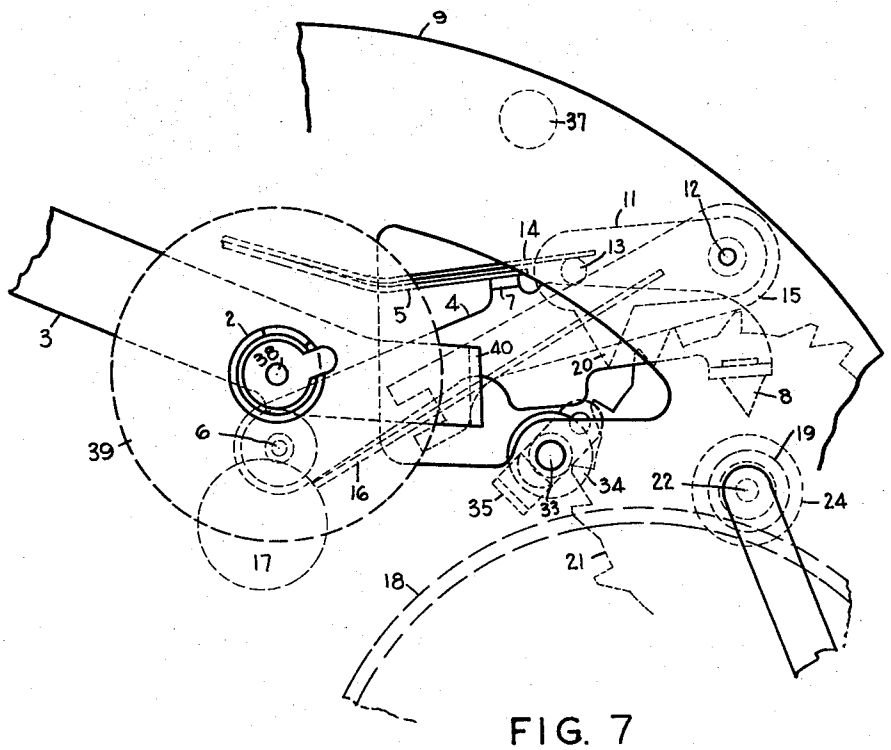


FIG. 7

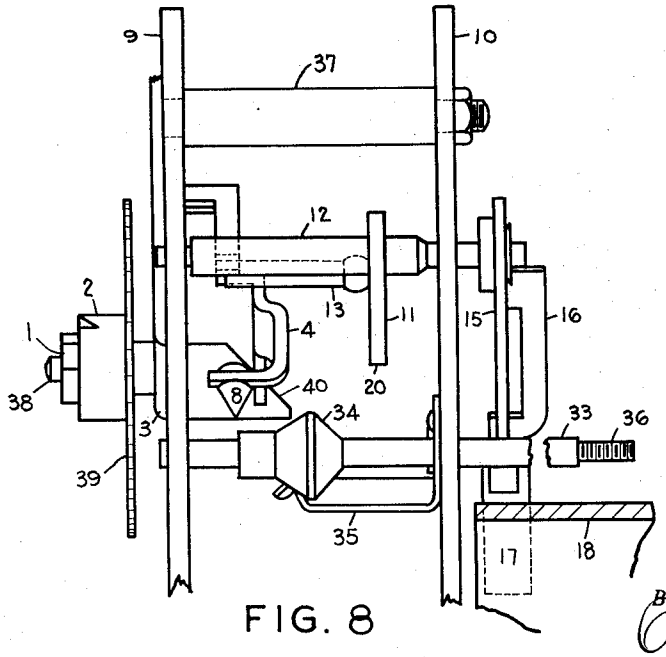


FIG. 8

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Patented Oct. 24, 1933 1,932,284

UNITED STATES PATENT OFFICE

1,932,284

ALARM CLOCK

Max Schlenker, La Salle, Ill., assignor to Western Clock Company, Peru, Ill., a corporation of Illinois

Application January 21, 1932. Serial No. 587,863

8 Claims. (Cl. 58—16)

My invention relates to alarm clocks and has for its object the production of an alarm clock that has a regular alarm bell mechanism that will awaken the soundest sleeper in combination with an alarm mechanism producing a sound that is not so loud and harsh as the continuous sound produced by the regular alarm which lesser sound producing alarm precedes the regular alarm to warn the lighter sleepers to enable them to arise to shut off the louder and harsher alarm before it can act and frighten or arouse the others sleeping near by who are scheduled to arise at a later period. Further this lesser alarm is sounded at repeated intervals for a short period so that the lighter sleeper will be fully awakened and have an opportunity to shut off the louder and harsher alarm before it comes into action.

A further object of my invention is to produce the above mentioned results of sounding the preliminary or warning alarm entirely independent of whether the regular or loud alarm main spring is slightly, partly or fully wound up, but they are yet so combined and co-actively interrelated that it is necessary for the warning alarm to be sounded for a certain length of time before the loud alarm can function.

I accomplish these results by the means shown in the accompanying drawings in which:

Fig. 1 is a partial front view of the alarm mechanism of my alarm clock with parts in position to allow the warning alarm to function.

Fig. 2 is a side view of the same.

Fig. 3 is a partial front view of the alarm mechanism with parts in position to allow the steady alarm to function.

Fig. 4 is a side view of the same.

Fig. 5 is a partial front view of the manual alarm shut-off mechanism with parts in position to prevent the functioning of either alarm.

Fig. 6 is a side view of the same.

Fig. 7 is a partial front view of the manual alarm shut-off mechanism with parts in position to permit the functioning of the alarms.

Fig. 8 is a side view of the same.

Similar numerals represent similar parts throughout the several views.

In the drawings 9 is the front plate and 10 is the rear plate of a clock movement, which plates are held together by means of the pillars 37. 1 is the trip finger which is mounted on a shaft 38 which as usual passes through plates 9 and 10 and has the usual frictional means not shown, associated therewith and one of the movement plates, to hold the trip finger 1 stationary while the trip cam 2 rotates on said shaft. Mounted on the trip cam 2 is the trip wheel 39 which is actuated in the usual manner from the dial gear train. Actuated in the usual manner by means of the trip cam 2 is the trip spring 3, one end of which is fastened to the plate 9 and the other end of which has an inclined projection 40 (see Fig. 8) which engages and raises and releases a lever 4 which is fastened on a shaft 6 journaled in plates 9 and 10. Lever 4 has a projecting point 8 which engages a worm or screw 19 and is held in the V threads thereof by means of a spring 5 one end of which is fastened to one of the plates and the other end of which rests on a projection 7 of said lever 4.

Fastened on a shaft 12, which shaft is journaled in plates 9 and 10 and projects beyond said plate 10 is a hammer carrying and motion limiting part 15 which has fastened thereto a resilient hammer arm 16. This arm 16 is so shaped that it has a part that enters the slot limiting part in said part 15 and an end part that carries a hammer 17. Said shaft 12 has fastened thereto a lever 11 having an angular projection 20 which engages the teeth of the wheel 21 which is mounted on a pinion 24 which is fastened on a shaft 22 journaled in the plates 9 and 10 which pinion 24 has a very wide face and is geared in the usual manner with the synchronous motor, not shown.

Adjacent to the hammer 17 is mounted a bell or gong 18 which is fastened to plate 10 by means of the post 41. Said part 11 further has a pin 13 fastened to it that projects beyond the path in which the lever 4 moves so that the position of the point 20 in relation to its engagement with the teeth of the wheel 21 is controlled by the position of said lever 4. A spring 14 one end of which is fastened to one of the plates presses said pin 13 against the lever 4.

The shaft 22 is held in its sidewise position, shown in Fig. 2, by means of a spring 25 one end of which is fastened to the plate 9. In addition to the V threaded worm 19 the shaft 22 has mounted thereon an alarm stopping disc 23 which in its normal position, shown in Fig. 2, engages the stop lever 32 which is fastened to the hammer shaft 30 which is journaled in the plates 9 and 10 and thus holds the hammer shaft 30 from vibrating. The hammer shaft 30 further has fastened to it the hammer verge 28 whose points engage the teeth of the alarm escape wheel 27 which is driven by means of the alarm spring 25 in the usual manner. Hammer

shaft 30 further has fastened thereto, a hammer shank 29 which carries a hammer 31 which strikes the bell on the inside surface adjacent to the point where the primary or warning hammer above mentioned strikes the bell.

From the above description, it is evident that when the point 8 of lever 4 enters the V threads of the worm 19 which is mounted on the shaft 22 which is so arranged that it can move axially or sidewise, that, as the said shaft rotates the worm 19, the shaft 22 will move to the left and in so moving will cause the disc 23 to move out of the path of the stop lever 32 to permit the usual rapid motion of the hammer 31 to produce the loud alarm of the usual alarm clock. It is also further evident that during the time that said disc 23 is in engagement with said regular alarm stop lever 32, the point 20 will remain in engagement with the teeth of the rotating gear 21 and produce a series of distinct intermittently clear ringing pleasing sounds and that a large number of such distinct sounds will be produced before the usual loud alarm is sounded.

As soon as the sleeper is awakened by these preliminary or warning sounds he can arise and shut off the alarm to avoid the usual loud alarm from disturbing others. This is accomplished by means of a double coned and shouldered member 34 which is mounted on a shaft 33 which is slidably mounted in the plates 9 and 10. Said member 34 can be moved to two positions one at its left hand position shown in Fig. 6 and its right hand position, shown in Fig. 8 and it is retained in either one of said positions by means of the resilient member 35 having the angular shaped free end shown. When the member 34 is in its left hand position, shown in Fig. 6, it engages a projection from the lever 4 and raises said lever 4 so that the point 20 is held away from the teeth on the gear 21 and the point 8 on lever 4 is held away from the V-threads on the worm 19 so that both alarms are locked against sounding and the alarms thus effectively shut off. In order to permit the alarms to sound again it is necessary to move the member 34 to its right hand position, shown in Fig. 8 which is done by means of the usual button member (not shown) which engages the threads 36 on the shaft 33. From the above description it is evident that the preliminary or warning alarm will always sound previously to the loud alarm and does not depend on the state of the movement or the winding of the regular alarm spring that actuates the usual loud alarm.

In practice my alarm clock operates as follows:

When the cam edge of the conventional trip cam 2 passes beyond the trip finger 1 the trip spring 3 moves the trip cam 2 to the left (see Fig. 2) and disengages lever 4 allowing said lever 4 to drop under pressure of the spring 5 acting on said lever 4. The pin 13 under pressure of the spring 14 bears upon the upper edge of the lever 4. The lever 11 therefore will drop or be raised in conjunction with the lever 4. Being rigidly attached to the shaft 12 the lever 11 and the hammer lever 15 which carries the resilient hammer arm 16 and the hammer 17, will simultaneously fall into their lower positions as shown in Fig. 1.

When the lever 4 and the lever 11 are thus allowed to drop, the follower point 8 will enter the V of the threads of worm 19 and the angular projection 20 of lever 11 will enter between and bear upon the teeth of warning escape wheel 21.

When the point 20 of lever 11 drops against the teeth of the moving warning escape wheel 21 the lever 11 and the hammer lever 15 are intermittently raised and lowered producing a series of taps on the gong 18 widely spaced as to time and serving as a warning alarm.

When at the same time the follower point 8 enters the rotating worm 19 said follower point 8 being rigid, will cause the worm 19 and the shaft 22 to travel axially to the left (see Fig. 2) until the warning escape wheel 21 has passed out of engagement with the lever 11 (see Fig. 4) at which instant the lever 11 will no longer be raised and the warning alarm will cease. The pinion 24 however, remains in mesh with its driving gear and therefore the warning escape wheel 21 continues to rotate.

At the same moment the warning alarm ceases, the steady and more rapid alarm is brought into operation, as follows:

When the warning alarm ceases to operate by reason of the lever 11 passing out of engagement with the warning escape wheel 21 the disc 23 also passes from under the arm 32 causing said arm 32 to drop and permitting the free oscillation of the verge 28 and hammer shank 29. The alarm thus functions until the power spring 25 runs down or the manual shut-off is employed.

The manual shut-off is shown in Fig. 6 in the shut-off position. A yielding spring 35 bears upon the cone shaped member 34 holding said member 34 in either of the two positions shown in Fig. 6 and Fig. 8. Said cone shaped member 34 is manually placed in either position by means of a knob not shown attached to the end 36 of shaft 33. When in the shut-off position (Fig. 6) the crest of the conical member 34 bears upon the bottom edge of lever 4 holding said lever 4 in its upper position and said conical member 34 then performs the same function as the trip spring 3.

When the required interval of time has passed after the alarm has functioned and the trip 1 again comes to the high lobe of the trip cam 2 the trip spring 3 is depressed thereby raising the lever 4 together with the follower point 8 and lever 11. Spring 25 pushes the shaft 22 and its attached parts to the right and when the cone shaped member 34 on shaft 22 is manually drawn to the position shown in Fig. 8, the two alarm mechanisms are again in position to function as above described.

It will be understood, of course, that while I have here shown one form of my invention, I do not wish to limit myself to the exact form shown, but desire to have it taken in a sense illustrative of any or all the forms that come fairly within the scope of my claims.

I claim:

1. In combination, a time movement, an alarm mechanism having a rapidly vibrating hammer, an auxiliary alarm mechanism having a slowly vibrating hammer, a sounding means adjacent to said hammers, a locking member on the alarm mechanism, a releasing member on the auxiliary alarm mechanism co-acting with said locking member, means co-operatively connecting said alarm mechanisms so that the rapidly vibrating alarm mechanism will sound after the slowly vibrating alarm mechanism has sounded for a given period, and means co-acting with said time movement to bring said co-operatively connecting means into operative position.

2. In combination, a time movement, an alarm mechanism having a rapidly vibrating hammer, an auxiliary alarm mechanism having a slowly vibrating hammer, a sounding means adjacent to said hammers, a locking member on the alarm

mechanism, a releasing member on the auxiliary alarm mechanism co-acting with said locking member, means co-operatively connecting said alarm mechanisms so that the rapidly vibrating alarm mechanism will sound after the slowly vibrating alarm mechanism has sounded for a given period, means co-acting with said time movement to bring said co-operatively connecting means into operative position, and manually operated means for stopping said alarms.

3. In combination, a time movement, an alarm releasing means, an alarm mechanism and a sounding means associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm wheel mounted on said shaft, an auxiliary hammer actuated by said wheel, a co-operating releasing member on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate.

4. In combination, a time movement, an alarm releasing means, an alarm mechanism and a sounding means associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm wheel mounted on said shaft, an auxiliary hammer actuated by said wheel, a co-operating releasing member on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate, and manually operated means for stopping the alarms from sounding.

5. In combination, a time movement, an alarm releasing means and an alarm mechanism associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm device comprising a wheel mounted on said shaft with an auxiliary hammer actuated by said wheel, a co-operating releasing member mounted on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate after said auxiliary alarm device has sounded.

6. In combination, a time movement, an alarm releasing means and an alarm mechanism associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm device comprising a wheel mounted on said shaft with an auxiliary hammer actuated by said wheel, a co-operating releasing member mounted on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate after said auxiliary alarm device has sounded, and manually operated means for stopping the alarm from sounding.

7. In combination, a time movement, an alarm releasing means, an alarm mechanism and a sounding means associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm device comprising a wheel mounted on said shaft with an auxiliary hammer adjacent to said sounding means actuated by said wheel, a co-operating releasing member mounted on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate, said means comprising a threaded member fastened on said shaft co-acting with a lever having means to permit said auxiliary hammer to operate and a pin which registers with said threaded member, which lever is positioned in relation thereto by said alarm releasing means.

8. In combination, a time movement, an alarm releasing means, an alarm mechanism and sounding means associated with said movement, a locking member on said alarm mechanism, a continuously rotating shaft slidably mounted in said movement, resilient retaining means engaging said shaft, a preliminary auxiliary alarm device comprising a wheel mounted on said shaft with an auxiliary hammer adjacent to said sounding means actuated by said wheel, a co-operating releasing member mounted on said shaft that engages said locking member and means for moving said releasing member to permit the alarm mechanism to operate, said means comprising a threaded member fastened on said shaft co-acting with a lever having means to permit said auxiliary hammer to operate and a pin which registers with said threaded member, which lever is positioned in relation thereto by said alarm releasing means and manually operated means for stopping the alarms from sounding.

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