May 17, 1932. M. SCHLENKER 1,858,563

ALARM CLOCK

Filed Aug. 29, 1930 2 Sheets-Sheet 1

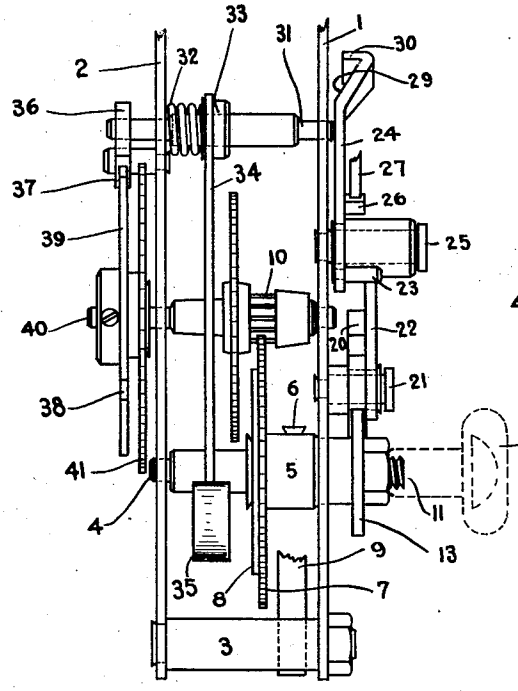



FIG. 1

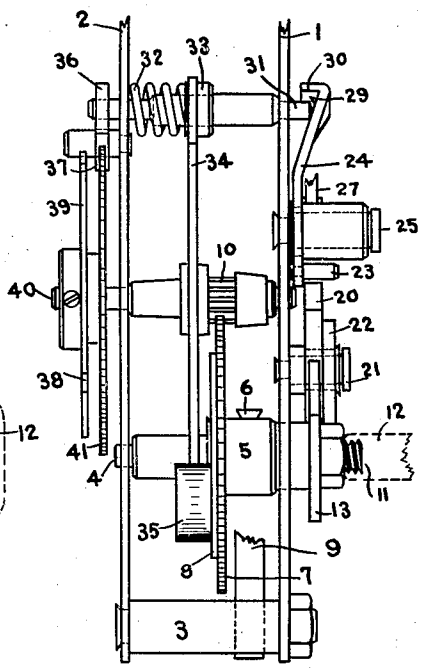



FIG. 2

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ALARM CLOCK

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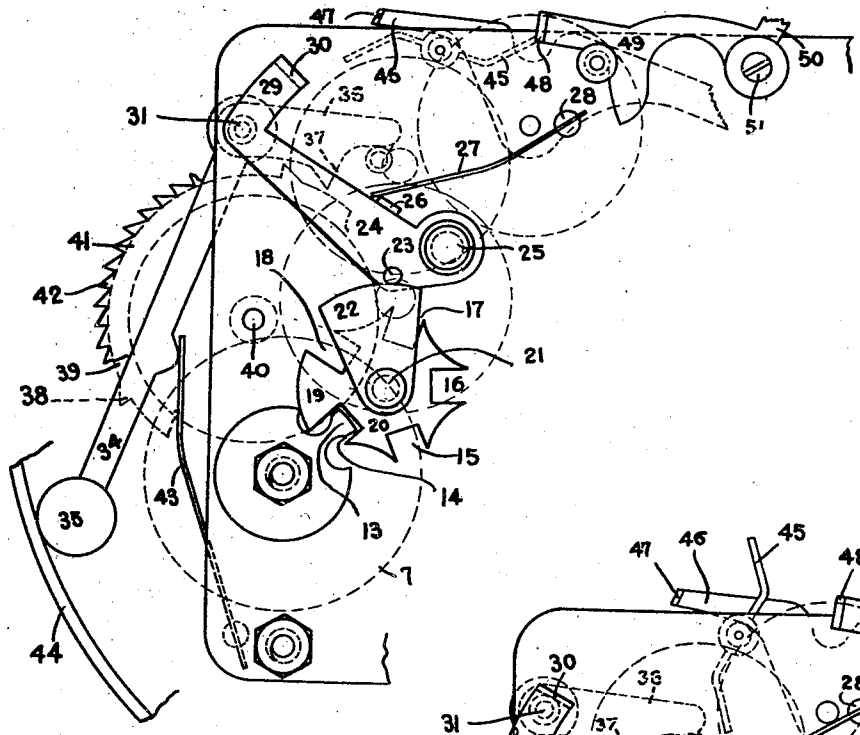



FIG. 3

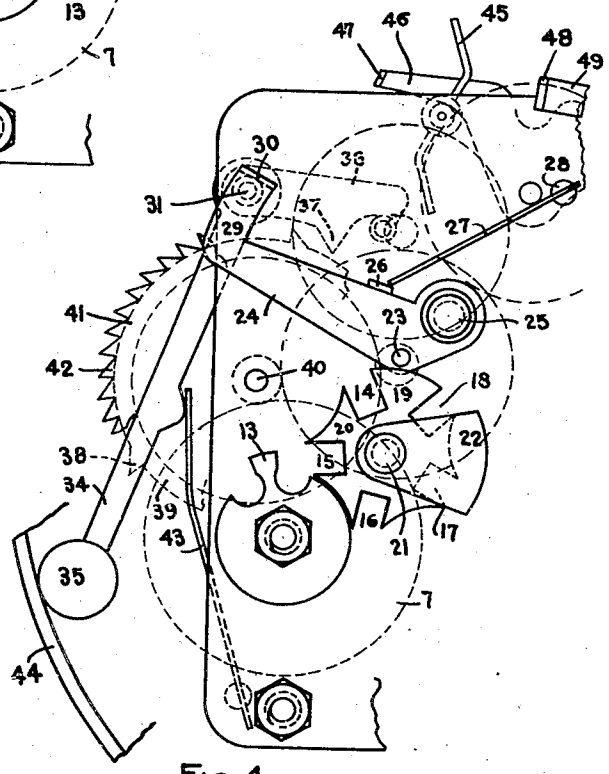



FIG. 4

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# UNITED STATES PATENT OFFICE

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## ALARM CLOCK

Application filed August 29, 1930. Serial No. 478,641.

My invention relates to alarm clocks and has for its object the production of an alarm clock that has a regular alarm bell and mechanism that will awaken the soundest sleepers in combination with 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 them 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 a lighter sleeper will be fully awakened and have an opportunity to shut off the louder and harsher alarm before it comes into action.

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

Fig. 1 is a side view of my alarm clock showing the alarm mechanism in position for sounding the lesser alarm.

Fig. 2 is a similar side view of my alarm clock showing the alarm mechanism in position for sounding the louder and harsher alarm.

Fig. 3 is a view of the right hand side of Figure 1.

Fig. 4 is a view of the right hand side of Figure 2.

Similar numerals represent the same part throughout the several views.

In the drawings 1 represents the rear movement plate and 2 the front movement plate of my alarm clock movement, which are held together by means of the usual pillars 3. Journally mounted in said plates 1 and 2 is the usual spring winding and retaining shaft 4 which has the usual pin or latching point 6 mounted on the spring retaining part 5 mounted thereon; one end of the power spring 9 (only partially shown) which actuates the alarm mechanism being fastened to said pin 6 and the other end as usual being fastened to the plate 1 or to the pillar 3, the latter being indicated as 9 in Figs. 1 and 2. Rotatably mounted adjacent to the arbor 5 is the usual driving wheel 7 which transmits the power of the spring to the first pinion 10 of the alarm train, said wheel 7 being connected in the usual manner with spring arbor 5 and shaft by means of the usual ratchet plate 8 which is fastened to the arbor 5 and the shaft 4. Formed in the right hand end of shaft 4 is a threaded part 11 on which is fastened the usual winding key indicated at 12. Mounted on said threaded part is a collar with suitably shaped finger 13 which, as it is rotated with the shaft 4, registers with a plurality of slots 14—15—16—17 and 18 of a member 20 rotatably mounted on a pin 21, the portion 19 between the slots 14 and 18 being specifically larger than the parts between the remaining registering slots so that part 19 constitutes a means for stopping the finger 13 against further rotation in the one corresponding direction of rotation, as for instance, in Figure 3, the finger 13 is locked against any further rotation in the clockwise direction, but can be rotated in the counter clockwise direction, and it can be so rotated (see Figure 4 for the location after the shaft 4 has made two rotations in said counter clockwise direction) until finger 13 is in slot 18 and the member 19 is on the opposite side of the finger 13 to that shown in Figure 3 after which it can only be rotated in the clockwise direction back to the position shown in Figure 3. It is evident from the above that the shaft 4 can be rotated clockwise and counter clockwise alternately a given number of turns. From the drawings it will be seen that the finger member 13 is so shaped to correspond with the curved parts between slots 14—15—16—17 and 18 (with exception of the part 19 above mentioned) so that after the finger 13 leaves one of the slots mentioned it locks the slotted member against rotation until the member 13 enters the next slot. When the finger 13 is turned clockwise until it is in the position shown in Figure 1, the spring 9 is fully wound and ready to rotate the finger 13 in the counter clockwise direction. Fastened on member 20 as shown is a cam 22 which therefore rotates with said member 20. Riding on cam 22 is a pin 23 which is mounted on a lever 24 which is rotatably mounted on a

shouldered pin 25 which is fastened on the plate 1. Lever 24 has a projection 26 against which presses a spring 27 which is fastened to said plate 1 by means of a pin 28, by means of which the pin 23 is kept resiliently forced against the dwelling surface of the cam 22. The lever 24 further has formed on its end as shown a slanting or cam surface 29 which terminates into a projection 30 which prevents the lever 24 from dropping too far when the pin 23 drops off the surface of the cam 22.

Rotatably and slidably mounted in plates 1 and 2 is the alarm hammer shaft 31 the right hand of which is in contact with the upper part of the lever 24 at the base of the starting of the slanting surface 29 and said shaft is held against said lever 24 by means of the spring 32 mounted on said shaft 31 between the plate 2 and the hammer collar 33 fastened on said shaft, which collar 33 carries the hammer arm 34 on which is mounted the hammer 35. Mounted on the left hand end of said shaft 31 adjacent to the plate 2 is the verge 36 whose point 37 is shown in position in the path of the teeth 38 of the lesser alarm ratchet wheel 39 which is fastened on the shaft 40 which shaft also has the pinion 10 mounted on it as above mentioned. Said wheel 39 has only a few teeth 38 on its periphery, whereas the greater alarm actuating wheel 41, which is mounted on said shaft 40 between said wheel 39 and plate, has a very large number of teeth 42 on its periphery to produce a rapidly striking harsh alarm sound. The hammer 35 is forced to strike the bell 44 through the means of a spring 43 one end of which is fastened to the plate and the other end of which rests on the projections shown on the hammer arm 34 which spring is put under tension every time the verge point 37 passes over one of the teeth 38 or 42 causing it to strike the bell each time the said point passes over a tooth.

From the above description it is evident that when the alarm actuating mechanism is in the position shown in Figures 1 and 3 that the lesser or warning alarm will be sounded and that when the alarm mechanism continues to operate and the pin 23 leaves the surface of the cam 22 and approaches its position shown in Figures 4 and 2 that the louder and harsher alarm will be continuously sounded. The speed or rapidity with which either the lesser or the louder alarm sounds will be controlled by means of the train of gears shown, which finally rotates the wind vanes or fan 45 to create the necessary resistance which controls the speed at which the hammer 35 strikes the bell 44. The fan 45 also serves as the point of the starting and stopping of the sounding of the alarm, which starting of the sounding of the alarm is accomplished by withdrawing the end 47 of the lever 46 from out of the path in which said fan 45 rotates which is done in the usual manner by means of the trip wheel not shown, which trip wheel is operated by the dial train of the time movement in the usual manner as is done in alarm clocks and the time of such starting is also set on the alarm dial in the usual manner. The shutting off of the alarm is done by means of the projection 48 on lever 49 which is pivotally and frictionally mounted on one of the plates at 51 and has a further projection 50 which extends to the outside of the usual casing not shown and it is this lever 50 that is manually used to shut off the alarm.

From the above description it is evident that when the alarm mechanism of my alarm clock is fully wound, the position of the parts will be that shown in Figures 1 and 3 and that as soon as the trip cam controlled by the time movement releases the fan 45 the lesser or warning alarm will give individual taps on the bell and continue these individual taps (if not previously manually shut off as above described) until the pin 23 drops off the surface of the cam 22 when the rapid continuous harsher sounding alarm will come into action, which will continue through the positions of the mechanism shown in Figure 4 until the part 19 comes to the opposite side of the finger 13 shown in Figure 3 when the sounding of the harsher alarm will also stop and, of course, the alarm spring must again be wound to the position shown in Figure 3, before the warning alarm will again come into action to repeat the soundings previously mentioned.

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 wish to have it taken in a sense illustrative of any and all the forms that come fairly within the scope of the appended claims.

I claim:

1. In an alarm clock, a lesser sound producing means in combination with a greater sound producing means, both associated with a time movement having a common alarm releasing means, a common alarm driving means and mechanism entirely associated with and controlled by said driving means for first actuating the lesser sound producing means and then the greater sound producing means, said mechanism comprising a member having a plurality of slots, a finger mounted on and actuated by said common alarm driving means which registers with said slots, a cam on said member and a suitably shaped lever co-acting with said cam.

2. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism controlled by said driving

means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels.

3. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism controlled by said driving means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels, said mechanism comprising a cam and a suitably shaped lever co-acting with said cam and said hammer.

4. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism controlled by said driving means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels, said mechanism comprising a member having a plurality of slots, a finger which registers with said slots, a cam on said member and a suitably shaped lever co-acting with said cam and said hammer.

5. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism controlled by said driving means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels, in combination with a time movement having means for releasing said driving means at a predetermined time.

6. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism associated with said driving means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels, said means comprising a lever and a cam actuated by said driving means, in combination with a time movement having means for releasing said driving means at a predetermined time.

7. In an alarm clock, a bell, a hammer associated with said bell, a driving means, a plurality of toothed wheels, one having a greater number of teeth than the other, mounted on a shaft associated with said driving means and mechanism associated with said driving means for bringing said hammer into position to be actuated first by one of said toothed wheels and then by the other of said toothed wheels, said means comprising a lever and a cam actuated by said driving means, in combination with a time movement having means for releasing said driving means at a predetermined time and manually operated means for stopping said driving means.

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