Dec. 1, 1936. P. LUX 2,062,895

ALARM CLOCK

Filed Nov. 7, 1935

Fig. 1.

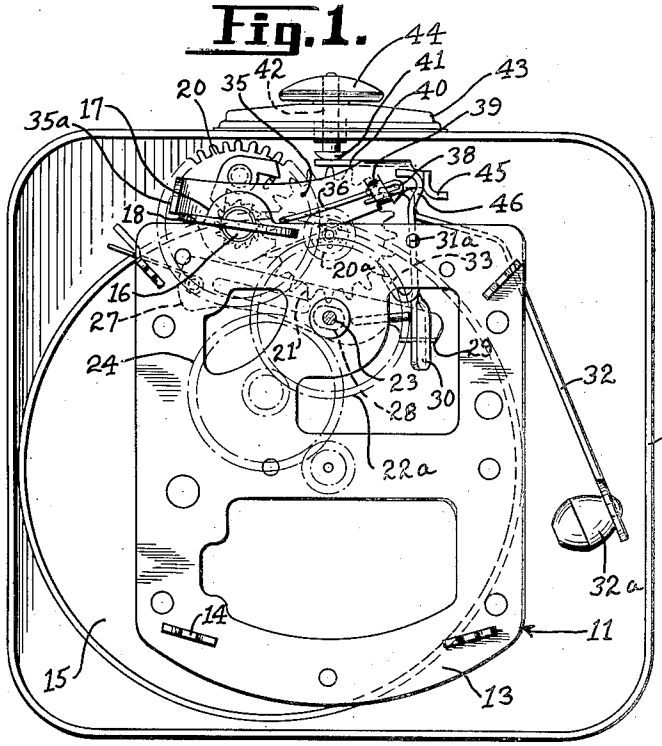


Fig. 2

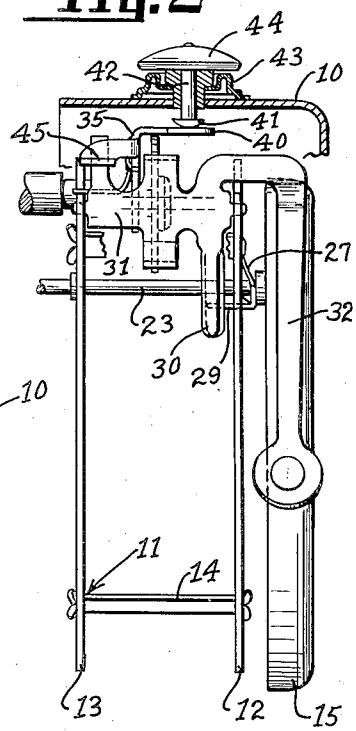


Fig. 3.

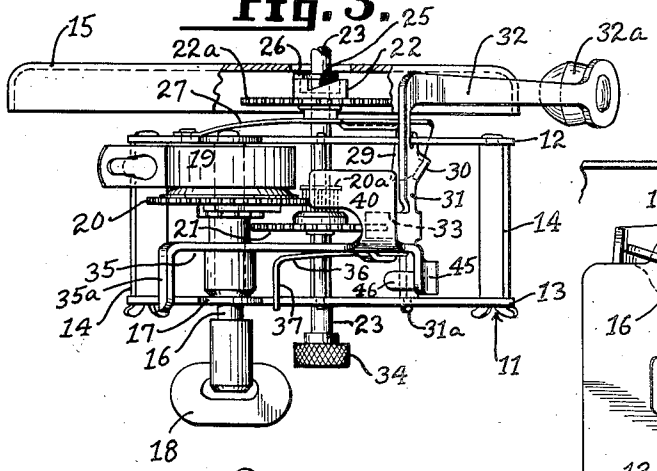


Fig. 4.

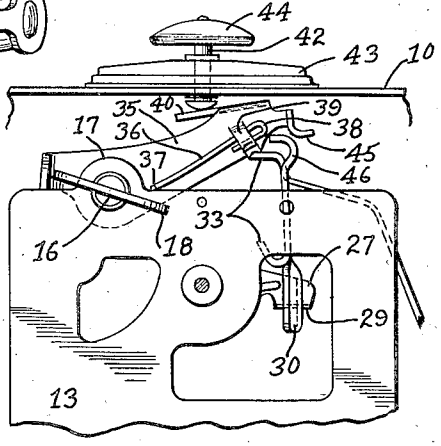
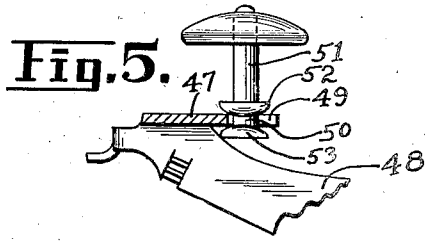


Fig. 5.



INVENTOR
Paul Lux
BY
H. G. Manning
ATTORNEY

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ALARM CLOCK

Paul Lux, Waterbury, Conn., assignor to The Lux Clock Manufacturing Company, Waterbury, Conn., a corporation of Connecticut

Application November 7, 1935, Serial No. 48,706

5 Claims. (Cl. 58—16)

This invention relates to clocks, and more particularly to an alarm clock having an improved "setting" mechanism.

One object of this invention is to provide an alarm clock of the above nature in which the alarm shut-off device will be automatically disconnected by the operation of winding the alarm spring, thus making it impossible for the user to forget to "set" the alarm when the clock is wound.

A further object is to provide an alarm clock of the above nature provided with a manual alarm shut-off device which may be operated either prior to or after the sounding of the alarm.

A further object is to provide an alarm clock of the above nature which is equipped with an auxiliary shut-off lever having a cam adapted to frictionally interlock with a cam on the alarm sounding lever, and in which said sounding lever is automatically unlocked from the auxiliary lever by the operation of winding up the alarm spring.

A further object is to provide an alarm clock of the above nature which will be simple in construction, inexpensive to manufacture, easy to assemble and manipulate, compact, ornamental in appearance, and very efficient and durable in use.

With these and other objects in view, there have been illustrated on the accompanying drawing two forms in which the invention may be conveniently embodied in practice.

In the drawing:

Fig. 1 represents a rear elevation of an alarm clock casing equipped with the present invention, and showing the alarm shut-off lever in locked position.

Fig. 2 is a right-hand end view of the same, showing a portion of the casing in vertical section.

Fig. 3 is a top plan view of the alarm mechanism with the casing removed.

Fig. 4 is a rear elevation of the alarm "shut-off" mechanism, showing the appearance of the auxiliary shut-off lever in unlocked or "set" position.

Fig. 5 is a side view of a modified form of auxiliary shut-off lever and a modified knob plunger loosely connected thereto.

Referring now to the drawing in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates a casing within which is mounted a clock movement frame 11 for containing the usual movement, not shown, and an alarm operating mechanism positioned in the upper part of said frame, as will be later described. The frame 11 comprises a pair of front and rear spaced plates 12 and 13 respectively, attached together by horizontal pillars 14 located at the four corners thereof. A shallow cupped bell or gong 15 is positioned between the front of the frame 11 and the adjacent dial face of the clock casing.

The alarm operating mechanism consists of a horizontal spindle 16 rotatably journaled in a pair of upright lugs 17 integral with the upper edges of the plates 12 and 13. The rear end of the winding spindle 16 projects beyond the rear plate 13 and is supplied with a detachable winding key 18 for winding up a coiled alarm spring 19 secured to the spindle 16. The spring 19 is adapted to drive a gear train including a main gear 20, a pinion 20*a*, and an escapement wheel 21.

In order to release the alarm sounding mechanism at a predetermined time, provision is made of the usual cup-shaped cam 22 slidably and rotatably mounted upon the forward end of an alarm setting arbor 23. The cam 22 is secured to a relatively large gear 22*a* which is intermeshed with the gear train 24 forming a part of the time indicating mechanism of the clock. The cam 22 has a V-shaped notch 25 which cooperates with a detent lug 26 carried by the setting arbor 23, and said cam 22 is normally pressed forwardly at all times against the detent lug 26 by means of a leaf spring 27, one end of which is anchored securely to the front plate 12.

The free end of the spring 27 is formed with an inturned lug 29 which normally engages a depending arm 30 on a striking lever 31 which is pivoted by trunnions 31*a* between the front and rear plates 12 and 13. The lug 29 serves to prevent the striking lever 31 from being oscillated until the predetermined alarm time arrives. The spring 27 and the lug 29 will then be snapped forwardly at the instant that the cam notch 25 comes into alinement with the detent lug 26. The lug 29 will thus be moved out of contact with the arm 30 of the striking lever 31, which is provided with an angular offset arm 32 carrying on its outer lower end a bell striking hammer head 32*a*.

The vibration of the hammer head against the bell 15 is actuated in the well known manner through the escapement wheel 21, previously mentioned, under the control of a pair of detent teeth 33 carried by the striking lever 31. The rear end of the shaft 23 is provided with a knurled knob 34 for manually setting the alarm with reference to a dial, not shown.

In order to lock the alarm sounding lever,

provision is made of an auxiliary shut-off lever **35** fulcrumed upon the winding spindle **16** and normally urged in a counter-clockwise direction by means of a light wire spring **36** having one end securely anchored to the outer portion of the lever **35**, and provided at its inner free end with an out-turned section **37** which rests upon the upper edge of the rear plate **13**. The anchored end of the spring is looped back at **38** and is embraced by a lug **39** sheared integrally out of the stock of the lever **35**. The left end of the lever **35**, as viewed in Figs. 1, 3 and 4, is integrally formed with a rearwardly projecting lug **35***a* which is adapted to abut the upper edge of the rear plate **13** to limit the counter-clockwise rotation of said lever **35** under the influence of the spring **36**.

The auxiliary shut-off lever **35** is provided at its upper right end with an integral offset horizontal ledge or plate **40** which is adapted to be engaged by the headed lower end **41** of a vertical plunger rod **42** passing up through an ornamental escutcheon plate **43** mounted on top of the clock casing **10**. A large knob **44** is rigidly attached to the upper end of the plunger rod **42**, and is adapted to be manually depressed to shut off the alarm.

The shut-off lever **35** is provided at a point opposite from the ledge **40**, as viewed in Fig. 3, with a convex cam lug **45** which is adapted to be engaged over a similar convex cam lug **46** integral with the bell-sounding lever **31** for locking the latter against vibration.

Operation

In the operation of the alarm mechanism, assuming that the alarm spring has been wound up, and that the auxiliary shut-off lever **35** is in the "on" position as shown in Fig. 4, the alarm will be sounded when the detent lug **26** comes into alinement with the notch **25** of the cup cam **22**. The cam **22** will at this time snap forwardly under the influence of its spring **27**, releasing the inturned detent lug **29** from the depending arm **30** of the striking lever **31**. The hammer arm **32** and head **32***a* will then be set into rapid vibration due to the step-by-step rotation of the escapement wheel **21**.

The striking of the hammer head **32***a* against the bell **15** will continue until the spring **19** has unwound, unless the alarm is previously shut off by the manual depression of the knob **44**. The depression of the knob **44** causes the auxiliary shut-off lever **35** to pivot about its axis in a clockwise direction to the "off" position shown in Fig. 1 until the cam lug **45** snaps down over the cam lug **46** of the striking lever into interlocking engagement therewith.

When the lever **35** is in the "off" position, the alarm mechanism will be locked against operation. The shut-off lever **35**, however, is adapted to be automatically restored to the "on" position, as shown in Fig. 4, to unlock the bell-sounding mechanism whenever the operator turns the key **18** for the purpose of winding the alarm spring **19**. The force exerted by the key **18** acting through the train of gears tends to move the escapement wheel **21** in a clockwise direction allowing the cam lug **46** to move to the left away from the cam lug **45**. The latter will immediately rise under the influence of the spring **36** and set the alarm mechanism in "on" position.

In the modified form of the invention shown in Fig. 5, the horizontal ledge **47** of the auxiliary shut-off lever **48** is provided at its end with an open slot **49** for slidably receiving the lower neck portion **50** of a modified operating plunger **51**. The plunger **51**, instead of having a single head as in the first form, has a pair of spaced opposed convex heads **52** and **53** adapted to engage on opposite sides of the horizontal ledge **47**. By means of this construction, not only may the auxiliary lever **48** be moved to locked position by the manual depression of the knob plunger **51**, but said lever may be unlocked by pulling said knob upwardly to "set" the alarm, whenever desired.

One advantage of the present invention is that the knob **44** may be depressed to lock the alarm at any time either before or after the alarm has started to sound.

While there have been disclosed in this specification two forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In an alarm clock, a casing, a frame in said casing, an alarm driving spring carried by said frame, vibratory alarm sounding means driven by said spring, an escapement for controlling said vibratory means, a spring-pressed auxiliary lever for holding said sounding means from vibrating, cooperating cam means on said lever and vibratory means for detachable interlocking engagement, and manually operated means projecting through said casing for engaging said lever for forcing said cam means into interlocking engagement to "shut off" the alarm, the force of the spring pressing on said auxiliary lever being insufficient to overcome the engagement of said cams, but causing said auxiliary lever to move upwardly into unlocked position when said cams are disengaged by the winding of said spring.

2. In an alarm clock, a casing, a movement frame in said casing, an alarm driving coiled spring carried by said frame, a vibratory alarm sounding lever pivoted in said frame, means driven by said spring for vibrating said lever, an auxiliary alarm shut-off spring-pressed lever pivoted in said frame, interlocking cam means on said vibratory lever and said auxiliary shut-off lever for detachably holding said vibratory lever out of action, and means responsive to the winding of said spring for disengaging said cam means to permit the sounding of the alarm, the force of the spring pressing on said auxiliary lever being insufficient to overcome the engagement of said cams, but causing said auxiliary lever to move upwardly into unlocked position when said cams are disengaged by the winding of said spring.

3. In an alarm clock, a casing, a movement frame in said casing, an alarm driving coiled spring carried by said frame, a vibratory alarm sounding lever pivoted in said frame, means driven by said spring for vibrating said lever, an auxiliary shut-off lever pivoted in said frame on the axis of said spring, interlocking cam means on said vibratory lever and said auxiliary shut-off lever for detachably holding said vibratory lever out of action, and means responsive to the

winding of said spring for disengaging said cam means to permit the sounding of the alarm.

4. In an alarm clock, a movement frame, and alarm spring, a gear train connected with said spring, an alarm sounding lever connected with said gear train, a manually operated auxiliary alarm shut-off lever, said levers having cooperating convex cam arms for holding said alarm sounding lever out of operation when said auxiliary lever cam is forced down over the sounding lever cam.

5. In an alarm clock, a movement frame, an alarm spring, a gear train connected with said spring, an alarm sounding lever connected with said gear train, a manually operated auxiliary spring-pressed alarm shut-off lever, said levers having cooperating convex cam arms for holding said alarm sounding lever out of operation when said auxiliary lever cam is forced down over the sounding lever cam, the force of the spring pressing on said auxiliary lever being insufficient to overcome the engagement of said cams, but causing said auxiliary lever to move upwardly into unlocked position when said cams are disengaged by the winding of said spring.

PAUL LUX.