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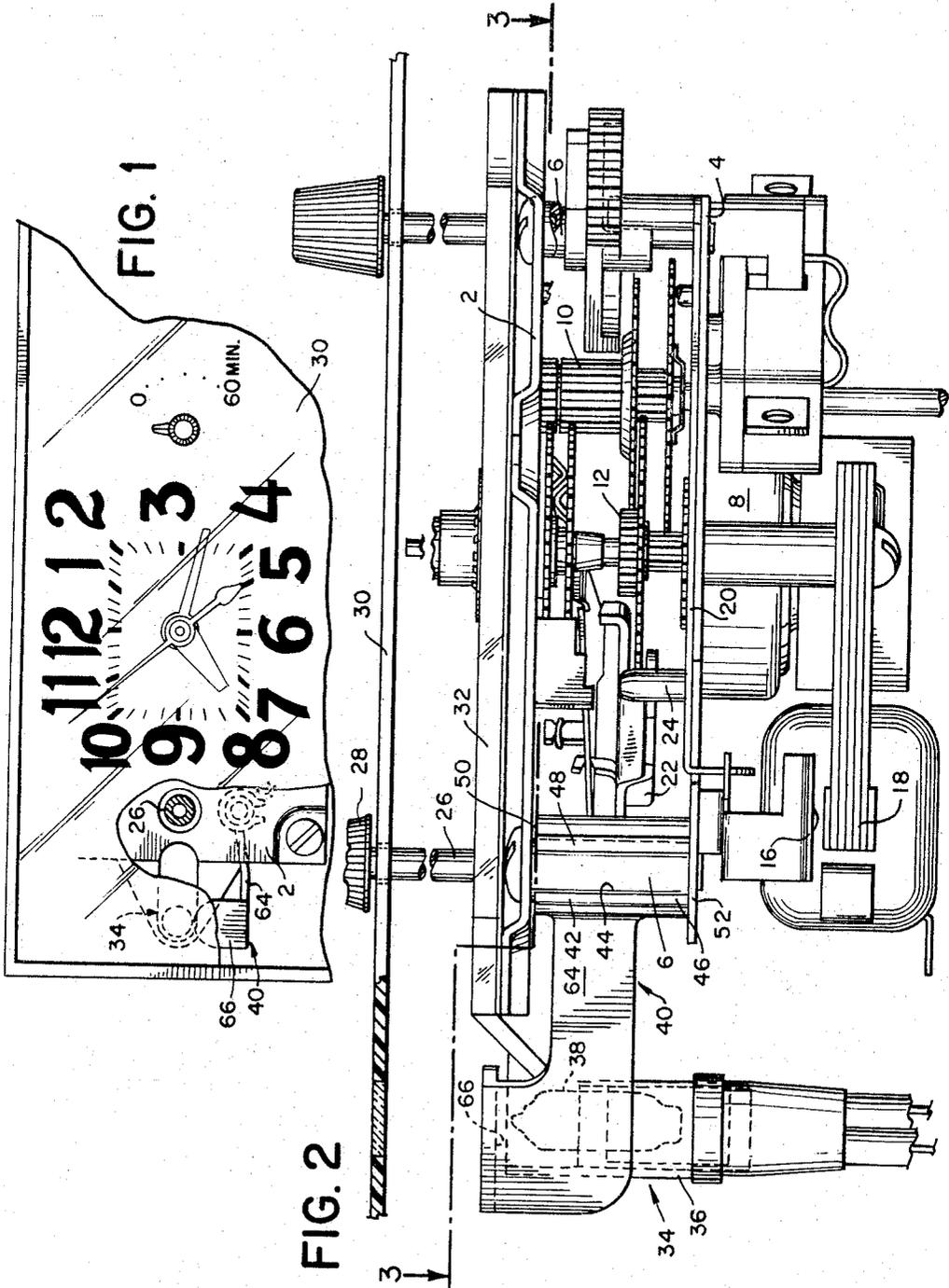
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ALARM CLOCK

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4 Sheets-Sheet 1



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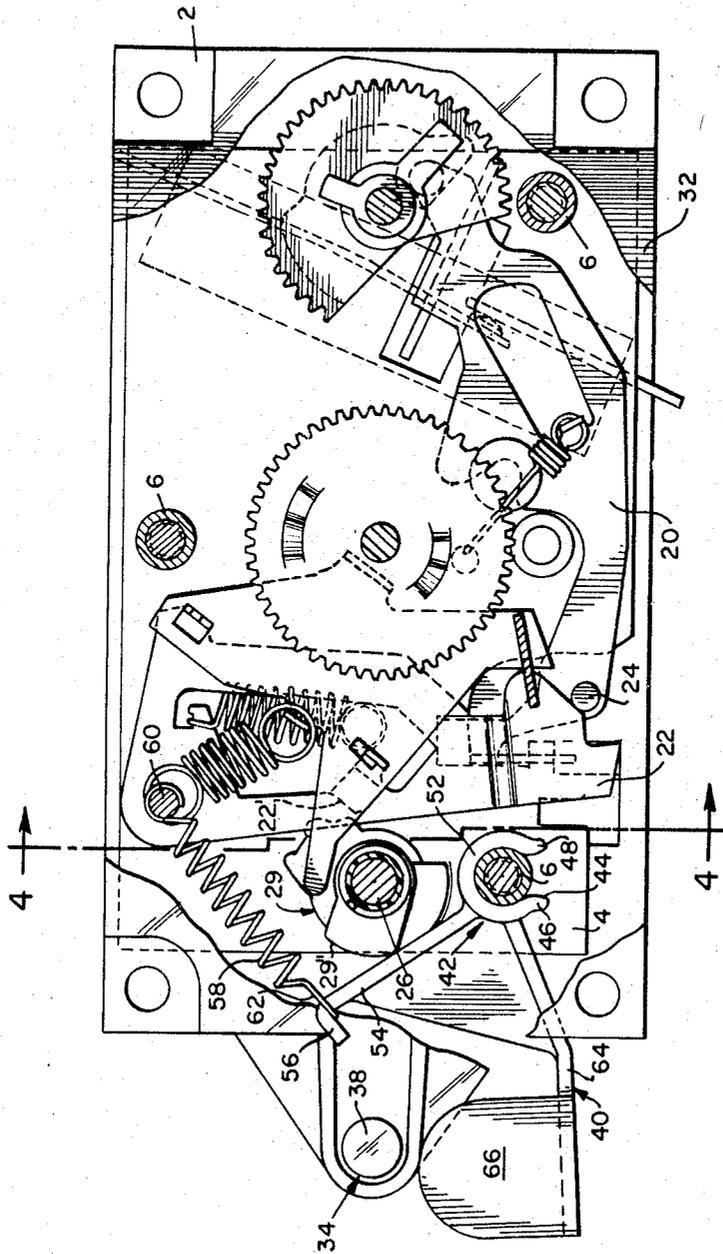
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FIG. 3



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FIG. 4

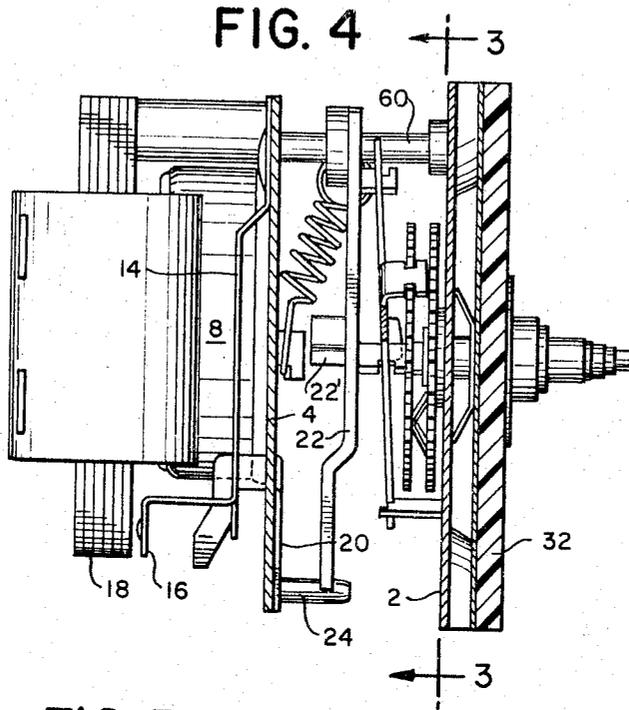
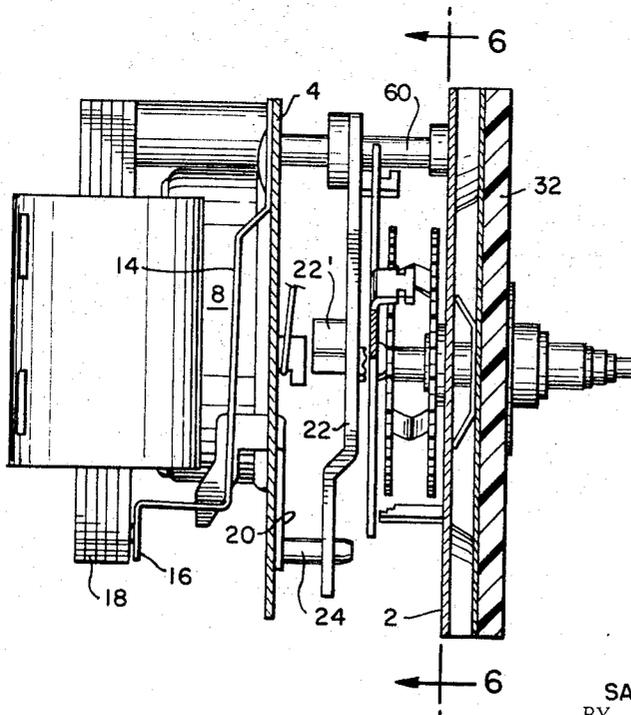


FIG. 5



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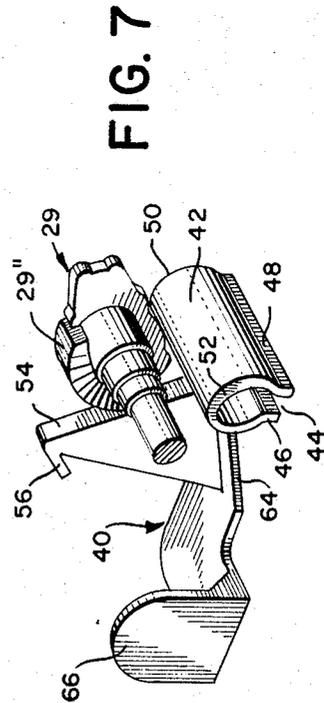
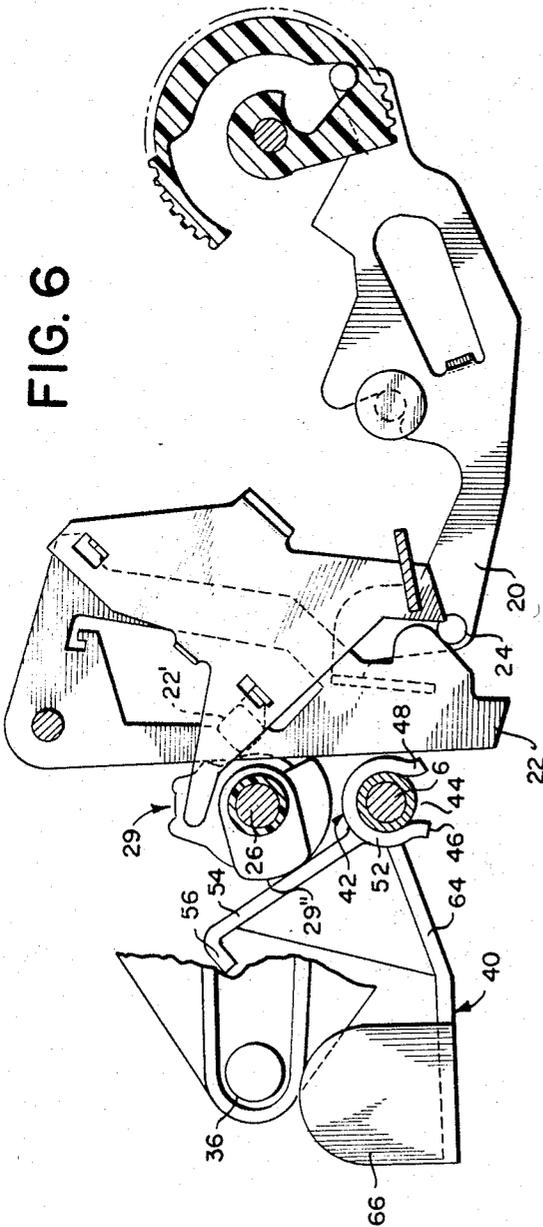
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3,328,953

ALARM CLOCK

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 2 Claims. (Cl. 58—22.7)

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This invention relates to alarm clocks and more particularly to an improved illuminating indicating mechanism for visually displaying whether the clock alarm mechanism has been set.

In the manufacture of clocks and timers it has been customary to provide an arrangement for indicating whether the alarm has been set. However, it is also common practice to manufacture some alarm clocks which do not include such an arrangement. A low cost alarm set indicating arrangement which can be easily and quickly added to a number of different alarm clock and timer movements is especially desirable.

Accordingly, it is a primary object of the invention to provide a reliable low cost unique alarm set indicating mechanism which may be readily added to an alarm clock or timer.

Another object of the invention is to provide such an indicating mechanism which may be conveniently operated by the conventional parts of an alarm clock or timer mechanism.

It is a further object of the invention to provide such an indicating arrangement which is reliable and not susceptible to failure of any kind.

The invention is concerned with the type of alarm set indicating arrangement which includes a light source for causing a spot of light to appear on a clock dial as an indication that the alarm has been set. A shutter is selectively positionable in front of the light source to prevent the spot of light from appearing on the clock dial.

In accordance with one aspect of our invention, a unique shutter member is provided with a plurality of integrally formed portions including a hub portion having an elongated slot formed therein. With this construction, the shutter member may be readily added to an existing clock or timer structure by simply aligning the elongated slot with a conventional clock spacer post and pressing the generally cylindrical hub of the shutter member onto the spacer post. Plastic arms are integrally formed with the hub and extend radially therefrom. One arm is spring urged into engagement with an alarm control cam so that the arm and the entire shutter member partakes of the movement of the control cam. A shutter which is arranged for selectively uncovering a light source is positioned on one of the other arms which extend radially from the hub. By this arrangement, movement of the alarm control cam causes corresponding movement of the shutter to cover or uncover the light source thereby visually displaying whether the alarm has been set.

Other objects and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a front elevational view, partly broken away, of an alarm clock incorporating our improved alarm set indicating arrangement;

FIG. 2 is a top plan view of the alarm clock shown in FIG. 1;

FIG. 3 is a front elevational view of the alarm clock shown in FIG. 1 with the dial and other portions removed;

FIG. 4 is a partial left side elevational view of a portion of the internal structure of the alarm clock of FIG. 1 showing the alarm mechanism in its alarm OFF position;

FIG. 5 is a partial left side elevational view of a portion of the internal structure of the alarm clock of FIG. 1 showing the alarm mechanism in the alarm SET, and sounding position;

FIG. 6 is a side elevational view showing portions of the alarm clock shown in FIG. 1;

FIG. 7 is a perspective view of our unique shutter member and control cam.

Referring now to the drawings, and first particularly to FIG. 2, there is shown a plan view of an alarm clock including a front plate 2 and a rear plate 4 connected by a plurality of spacer posts, one of which is shown at 6. A self-starting synchronous electric motor 8 drives a suitable gear train portions of which are shown at 10 and 12.

Turning now to the alarm mechanism of the clock, there is provided an elongated vibrator member 14 having one end fixed by suitable fastener members to rear plate 4. Conventionally, the movable end 16 of the vibrator 14 is arranged in close proximity with field laminations 18 of the motor so that it may vibrate against these laminations to thereby sound the alarm. As shown in FIG. 2, a lever member 20 under control of the alarm timing mechanism normally holds the vibrator 14 in its forward position to prevent it from vibrating against the field laminations 18.

As shown more particularly in FIG. 6, in order to move the lever member 20 up or down to hold or release the vibrator 14 the alarm timing mechanism includes a lever 22 which operates against a lug 24 fixed to lever member 20. With reference to FIG. 4, lever 22 has moved lever 20 downwardly to hold the alarm vibrator 14 in its alarm SHUT OFF position; whereas, as shown in FIG. 5, lever 22 has moved lever 20 upwardly thereby permitting the vibrator 14 to vibrate against the field laminations 18. The specific details of the alarm timing mechanism, shown generally to the right of lug 24 in FIG. 3, do not form a part of this invention. Hence, for the purposes of this discussion it is merely necessary to appreciate that the timing mechanism actuates lever 22 and is controlled by lever 22.

In order to set the alarm mechanism for operation at a preset time the clock is provided with a rotatably mounted control shaft 26 which may be manually operated by a knob 28. As shown more particularly in FIG. 3, a cam member 29 is fixed to the control shaft 26 for transmitting movement of the control shaft to the internal parts of the alarm set mechanism. By this arrangement, the cam 29 may be rotated against a rearwardly extending lug 22' which is formed on previously mentioned lever 22 in order to set the alarm. With reference to FIG. 3, when the knob 28 and its associated shaft 26 and control cam 29 have been rotated to their extreme counterclockwise position, as shown in FIG. 3, the projections on cam 29 have actuated lug 22' and lever 22 to set the alarm for operation at a preset time.

Referring now to FIGS. 1 and 2, it can be observed that the clock includes a translucent dial 30 positioned in front of lens 32. The lens is lighted by a source of illu-

mination 34 positioned adjacent one edge of the lens 32. As shown, the source of illumination includes a lamp holder 36 containing and supporting a lamp 38. The holder 36 directs the light emitted by the lamp 38 toward the dial 30 to thereby project a spot of light on the dial.

In accordance with our invention a unique alarm set indicating arrangement is provided to visually project the spot of light onto dial 30. This arrangement includes a unique shutter member 40 which is selectively positionable in front of the light source 38 to prevent the spot of light from appearing on the dial. The shutter member 40 is preferably formed from plastic or other suitable semiflexible material, and as shown more particularly in FIGS. 2 and 3 it includes a generally cylindrical hub portion 42 which is provided with an elongated slot 44. With reference to FIG. 3, it can be seen that the width of the elongated slot is slightly less than the diameter of spacer post 6 and the generally cylindrical hub 42 includes two generally parallel spring fingers 46 and 48 which extend downwardly on opposite sides of the slot. By this arrangement, the unique shutter member may be readily added to a clock mechanism by simply aligning the slot 44 with spacer post 6 and pressing the generally cylindrical hub 42 laterally onto the spacer post.

Referring now to FIG. 2, it can be seen that the width of the generally cylindrical hub member 44 is slightly less than the distance between the front plate 2 and the rear plate 4. With this construction, end portions 50 and 52 of the hub may slide on the surfaces of the front plate and rear plate as the integrally formed shutter member hub is rotated about the spacer post 6. Thus, the shutter member 40 is reliably guided on the alarm clock mechanism.

As shown in FIG. 3, a cam lever arm portion 54 of said shutter member extends radially upwardly from said hub portion 42 for engagement with cam projection 29" of control cam 29. In addition, cam lever arm portion 54 is provided with a hooked end 56 for cooperating with a spring 58 which constantly urges the cam lever arm 54 into engagement with cam surface 29". As shown in FIG. 3, one end of the spring 58 is looped over a shaft 60 while the other end portion 62 is held by the hooked end 56. A shutter arm 64 extends radially downwardly from hub 44, and as shown in FIG. 2, it includes a light blocking portion 66 which is selectively positionable in front of lamp 38.

In operation, when the manually operated alarm control knob 28 is rotated counterclockwise to the alarm SET position it carries cam surface 29" to the position shown in FIG. 3. During this movement, cam surface 29" is moved to the left as shown in FIG. 3 against the force of spring 58, and light blocking member 66 is removed from in front of lamp 38 to permit a spot of light to appear on the dial plate 30. When control knob 28 is rotated clockwise to the alarm OFF position, cam surface 29" is moved upwardly thereby permitting the control cam arm 54 and shutter member 66 to be rotated clockwise as viewed in FIG. 3 under the influence of spring 58. It can be seen that upon such movement, light blocking member 66 will be moved in front of lamp 38 to prevent a spot of light from appearing on the dial 30.

It should be appreciated that our improved illuminating indicating mechanism for visually showing whether the alarm mechanism has been set comprises only two parts, a uniquely formed shutter member 40 and a spring 58. Moreover, these parts can be added to the clock mechanism with a minimum amount of effort after most of the other parts of the clock, except the outside case, have been assembled.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications can be made therein without departing from the invention, and therefore, it is aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In an alarm clock including a front plate, a rear plate and a generally cylindrical spacer post connected between said plates, a mechanism for indicating whether the clock alarm mechanism has been set comprising:

- (a) a translucent dial;
- (b) a lens positioned behind said dial;
- (c) a light source positioned adjacent one edge of said lens for illuminating said dial;
- (d) an alarm mechanism including a rotatable alarm control shaft, said alarm control shaft being manually rotatable between an alarm OFF and an alarm SET position;
- (e) a cam positioned on said control shaft for rotation therewith; and

(f) a shutter member integrally formed from resilient plastic, said shutter member including a generally cylindrical hub portion having an elongated slot formed therein, means on said shutter member cooperating with said cam, and a shutter arm portion extending radially from said hub having a shutter formed at the end thereof, the width of said elongated slot being slightly less than the diameter of the spacer post and the width of said cylindrical hub being less than the distance between said front plate and said rear plate whereby the hub portion of said shutter member may be connected to said spacer post by aligning said elongated slot with said spacer post and pushing said resilient hub laterally onto said spacer post, the ends of said cylindrical hub portion thereby being arranged for slidable guiding movement with respect to said front plate and said rear plate and the inner portion of said cylindrical hub being arranged for slidable movement with respect to said generally cylindrical spacer post, said shutter being arranged with respect to said light source when said hub has been placed in position on said spacer post such that the shutter is moved out of alignment with said light source when the manually rotatable alarm control shaft and cam are moved to the alarm SET position so that a spot of light will appear on said translucent dial.

2. In an alarm clock including a front plate, a rear plate and a generally cylindrical spacer post connected between said plates, a mechanism for indicating whether the clock alarm mechanism has been set comprising:

- (a) a translucent dial;
- (b) a lens positioned behind said dial;
- (c) a light source positioned adjacent one edge of said lens for illuminating said dial;
- (d) an alarm mechanism including a rotatable alarm control shaft, said alarm control shaft being manually rotatable between an alarm OFF and an alarm SET position;
- (e) a cam positioned on said control shaft for rotation therewith;

(f) a shutter member integrally formed from resilient plastic, said shutter member including a generally cylindrical hub portion having an elongated slot formed therein, a cam lever arm portion extending generally radially from said cylindrical hub portion having a hook formed at the end thereof, and a shutter arm portion extending radially from said hub having a shutter formed at the end thereof, the width of said elongated slot being slightly less than the diameter of the spacer post and the width of said cylindrical hub being less than the distance between said front plate and said rear plate whereby the hub portion of said shutter member may be connected to said spacer post by aligning said elongated slot with said spacer post and pushing said resilient hub laterally onto said spacer post, the ends of said cylindrical hub portion thereby being arranged for slidable guiding movement with respect to said front

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plate and said rear plate and the inner portion of said cylindrical hub being arranged for slidable movement with respect to said generally cylindrical spacer post, said shutter being arranged with respect to said light source when said hub has been placed in position on said spacer post such that the shutter is moved out of alignment with said light source when the manually rotatable alarm control shaft and cam are moved to the alarm SET position so that a spot of light will appear on said translucent dial; and
 (g) spring means connected to the hook portion of

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said cam lever arm for urging said cam lever arm against the cam positioned on said control shaft.

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