W. J. DRIVER.

BURGLAR AND FIRE ALARM.

APPLICATION FILED APR. 14, 1920.

1,377,324. **Patented May 10, 1921.**

2 SHEETS—SHEET 1.

Fig. 3.

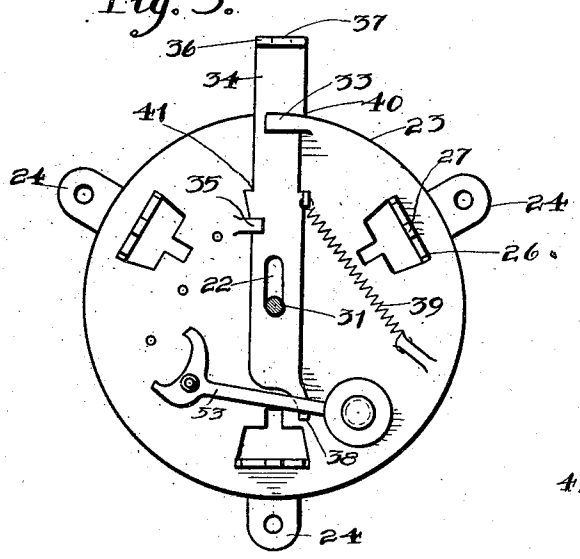


Fig. 1.

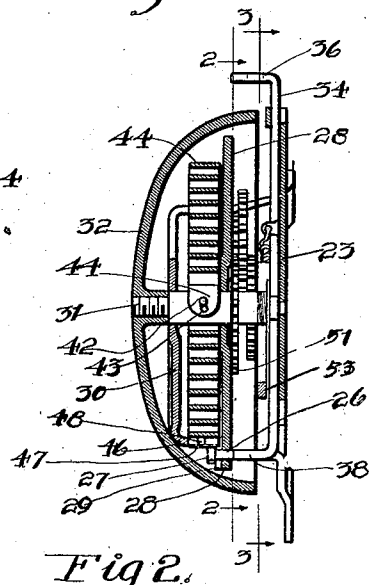


Fig. 4.

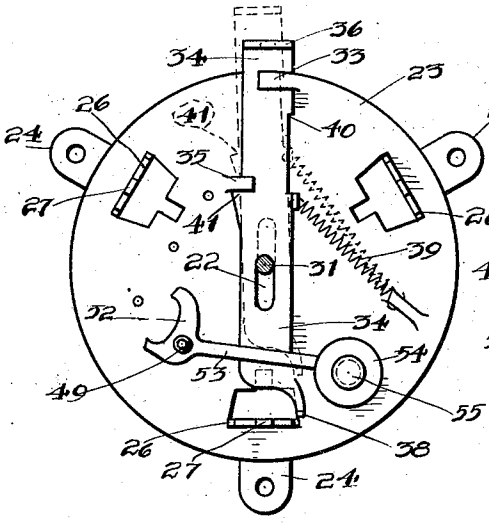
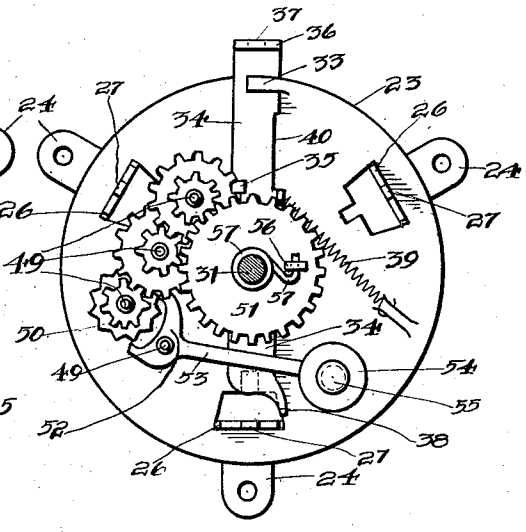


Fig 2.



Witness.

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2 SHEETS—SHEET 2.

Fig. 5.

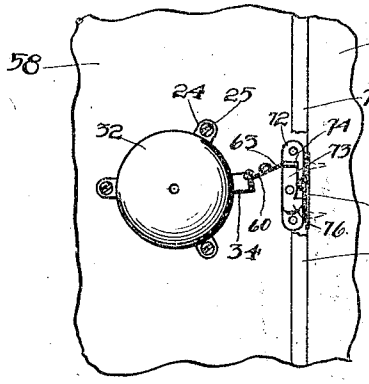


Fig. 6.

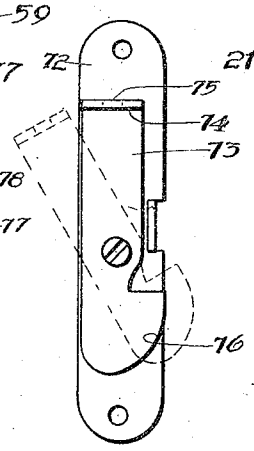


Fig. 10.

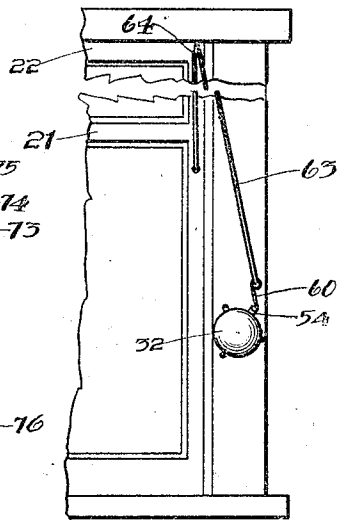


Fig. 7.

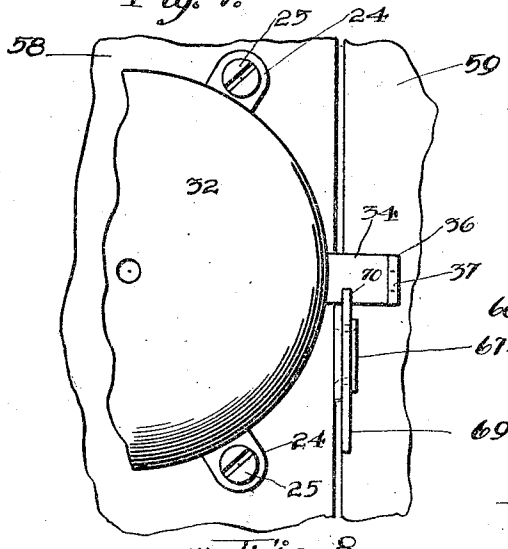


Fig. 9.

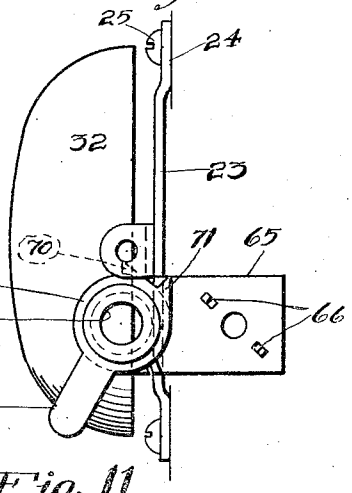


Fig. 8.

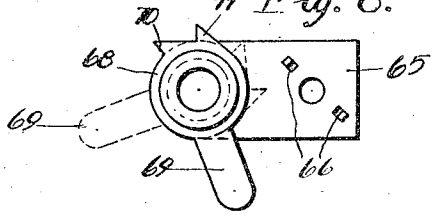
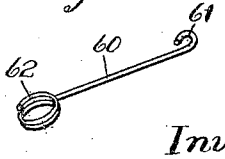


Fig. 11.



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BURGLAR AND FIRE ALARM.

1,377,324. Specification of Letters Patent. Patented May 10, 1921.

Application filed April 14, 1920. Serial No. 373,715.

To all whom it may concern:

Be it known that I, WILLIAM J. DRIVER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Burglar and Fire Alarms, of which the following is a specification.

This invention relates to improvements in a device employed for use in connection with doors, windows, transoms and the like, for sounding an alarm in the movement of either in the operation of opening the same, and in some instances, for producing an alarm in case of fire, and it consists in certain novel features of construction and arrangement of the parts thereof as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide a mechanical alarm giving device the parts of which shall be so constructed and arranged as to reduce the cost and simplify the manufacture thereof by dispensing with elements or parts heretofore generally employed in doors for a like purpose.

A further object is to provide an alarm, the parts of which shall be so constructed that they may be arranged in such a manner that the door or window, in conjunction with which it is used, may be opened or closed without giving an alarm, yet may be adjusted or arranged so that a slight movement of the door or one of the window sashes, in opening the same, will sound an alarm, and sometimes in case of a fire in the room, an alarm will be given.

Other objects and advantages of the invention will be disclosed in the following description and explanation.

In the accompanying drawings, which serve to illustrate the invention—

Figure 1 is a central vertical sectional view through the alarm showing the parts thereof assembled and in their unlocked positions.

Fig. 2 is a face view partly in section taken on line 2—2 of Fig. 1 looking in the direction indicated by the arrows.

Fig. 3 is a similar view taken on line 3—3 of Fig. 1 as indicated by the arrows, but showing the locking and releasing bar in its locked position.

Fig. 4 is a similar view to Fig. 3 taken on the same line but showing the locking and releasing bar by continuous lines in its unlocked position and by dotted lines in its locked position.

Fig. 5 is a face view of a portion of a door frame and a part of a door adapted to open outwardly from the rim showing the alarm in place on the door.

Fig. 6 is an enlarged detached face view of a trip for the locking and releasing bar of the alarm showing said trip mounted on a supporting plate therefor, and illustrating by dotted lines one of the movements of the trip.

Fig. 7 is a face view of a portion of a door frame and a part of a door adapted to open into a room showing the alarm in place on the latter.

Fig. 8 is a detached face view of a trip for the locking and releasing bar of the alarm when used on an inwardly opening door, showing it mounted on its supporting plate, and illustrating it by continuous lines in the position to be automatically set on closing the door for tripping said bar on opening the door, and by dotted lines in its inoperative position.

Fig. 9 is a side view of the parts shown in Fig. 7.

Fig. 10 is a face view of a part of a window frame shortened for the convenience of illustration, showing the alarm attached thereto, and

Fig 11 is a detached perspective view of a clamping ring used in connection with the alarm when it is applied to a window or an outwardly opening door.

Referring now more particularly to Figs. 1 to 4 inclusive of the drawings, the reference numeral 23 designates the base plate of the alarm, which is provided at its periphery with a number of apertured lugs 24 to rest against a door or the frame of a window, and to be secured by means of screws 25 thereto. The plate 23 is provided with a plurality, usually three, of forwardly extended projections 26, which are struck up from the metal of the plate, and each is provided on its free end with a tongue 27 to extend through suitable openings in a casing plate 28 and the feet or lugs 29 of a spider frame 30, which is mounted on the front face of the plate 28. Centrally journaled in the plate 23 is the centerpost or spindle 31 the outer end of which is screw-threaded for engagement with a suitable opening centrally located in a bell 32 which is of sufficient size to encom-

pass the plate 28 and spider 30, and also to cover the interior mechanism of the alarm. The plate 23 is provided at its periphery with a guide 33 for one edge of the locking and releasing bar 34, and inwardly of its periphery with another guide 35 for the opposite edge of said bar. These guides overlap the bar 34 at its edges so as to hold the same between the plate 23 and the guides, yet in such a manner that said bar may have longitudinal movement on the base plate.

Near its middle portion the bar 34 is provided with a longitudinal slot 22 for the reception of the spindle 31, which also acts as a guide for the bar, as well as for a pivot therefor, in certain of its movements. The outer end of the bar 34 is by preference provided with a horizontally extended projection 36 having an opening 37 therein. The inner end of the bar is provided with a forwardly extended detent 38 to engage and release the arm of the bell hammer. Secured at one of its ends to the plate 23 is a spring 39 the other end of which is secured to the bar 34 between the post 31 and the projection on said bar.

As is clearly shown in Figs. 3 and 4 the bar 34 is provided on its side adjacent to the guide 33 with a recess 40 to engage said guide, and on the opposite edge with a recess 41 to engage the guide 35 under certain conditions. The openings in the casing plate 28 for the reception of the tongues 27 on the projections 26 are located near the periphery of the casing plate, and as shown in Fig. 1 the spider 30 is provided with rearwardly extended projections 46 terminating in feet 29, each of which has an opening therein for the reception of said tongues, which after being inserted through openings in the plate 28 and in the feet of the spider can be twisted slightly by means of a suitable instrument so as to clearly hold the said plate and spider together, which members are centrally mounted on the post 31 as shown. The post 31 is provided in its wall with a projection 42 to engage an opening 43 in one end of the main spring 44 which is located between the plate 28 and spider 30 and coiled around the post 31 and has its other end secured to one of the rearward projections 46 of the spider, which projection is provided with a laterally extended lug 47 to engage an opening 48 in the main spring. By this arrangement it will be understood that as the spring is secured at one of its ends to the post 31 which is revolubly mounted on the plate 23 and at its other end to the spider, the spring can be wound up by turning the bell 32 which is in screw engagement with the post 31, to the right.

Mounted on suitable studs 49 journaled on the base plate 23 and between it and the plate 28 are a train of gears which unite an escapement wheel 50 which is also journaled on one of the studs 49, with the main gear 51 mounted on the post 31. Mounted on the stud 49 in the plate 23 near the stud 49 on which the escapement wheel is mounted is an anchor pawl 52 to engage the escapement wheel. This pawl has an arm 53 extended therefrom and across the bar 34 near the detent 38 thereon. The end of the arm 53 opposite the pawl is provided with a hammer 54 which is loosely connected to the arm 53 by means of a pin 55 extended through suitable openings in the hammer and said arm, which pin has its ends enlarged or upset so as to allow of vibration of the hammer in its stroke against the bell.

The main gear 51 is provided on its front face with a lug 56 to which is secured one end of a spring 57 which is formed into a coil of sufficient size to fit snugly in the opening of said gear and to surround the post 31 of the mechanism, as will be clearly understood by reference to Fig. 2 of the drawings.

By this arrangement it is apparent that the tension of the spring 57 will act on the main post 31 in such a manner as to dispense with the use of a ratchet pawl as is commonly employed.

The operation of the alarm is as follows: When used in connection with a window as shown in Fig. 10, the face plate 23 is secured to the window frame in such a way that the locking and releasing bar 34 will occupy a slightly inclined vertical position, as shown, but when the alarm is used in connection with a door 58 to which it is secured near the edge thereof adjacent to the frame 59, the bar 34 will be located in a horizontal position as shown in Figs. 5 and 7 of the drawings. When used in connection with a window or a door opening outwardly from the room, a link 60, see Figs. 5, 10 and 11, having at one of its ends a hook 61 to engage the opening 37 in the projection 36 of the bar 34 and having at its other end a coil 62 of at least a pair of convolutions to provide a clamp, is employed.

Extended between the convolutions of the coil 62 is a cord 63 which is extended through an eyelet or screw-eye 64 mounted on the upper sash 22 which cord is from thence extended downwardly and secured at its other end to the lower sash 21 at any suitable point thereon. When thus connected to the sash, assuming that the same are in their closed positions, the bar 34 will be held in about the position shown in Fig. 4 by dotted lines, and in Fig. 10 by full lines, in which former figure it will be observed that the recesses 40 and 41 of the bar 34 are located out of locking engagement with the guides 33 and 35 for said bar. Now, on a slight movement of either of the sashes, the cord 64 will be slackened, thus

allowing the spring 39 which actuates the bar 34 to retract the same, in which operation the detent 38 on said bar will be disengaged from the arm 53 of the hammer, thus permitting the hammer to strike the bell and sound an alarm. The alarm will continue to sound until the bar 34 is projected to the position shown in Fig. 3 when, it is obvious, that the recess 40 will be engaged by the guide 33 thus causing the detent 38 to lock the hammer arm. As the cord is slightly inclined, and as it can be made taut by passing the lower portion thereof between the coils 62 of the link 60 it will be understood that when the alarm is used in connection with a window, the bar will be held in such position as to be out of locking engagement with its guides until released by slacking the cord, in the operation of moving either of the sashes to open the same, after which the bar will be retracted to the position shown by continuous lines in Fig. 4, when, by reason of the pivotal movement of the bar on the post 31 and the inclination of the cord, the recess 41 will be caused to engage the guides 35, which will prevent the bar being projected, except from within the room, and thus will allow the bell to be rung until the main spring has exhausted its tension.

When the alarm is employed in connection with a door opening into a room, as shown in Figs. 7 to 9 inclusive, a supporting plate 65 having spurs 66, struck up therefrom, may be secured to the wall of the door frame 59 adjacent to the free edge of the door, as is clearly shown in Fig. 7 of the drawings. The supporting plate 65 is provided with a grommet-like bearing 67 at its outer end, on which is mounted and frictionally held a collar 68 which may have a handle 69 for turning the same, and said collar is provided with a pair of angular teeth 70 and 71 located in its periphery. When used on the door the main plate 23 of the alarm is secured thereto in such a manner that the bar 34 will extend horizontally from said plate and beyond the free edge of the door, as shown in Fig. 7, in which position the bar will be located by reason of the recess 40 of the bar 34 engaging the guide 33 on the base plate.

Assuming that the handled collar 68 is in the position shown in Fig. 8 of the drawings, and that the door is closed, it is obvious that the bar 34 will strike the tooth 71 thus causing the collar 38 to be turned to about the position shown in Fig. 9, when it is apparent that the tooth 70 will be located with its inclined surface in the path of the bar 34, when on opening the door said bar will be released from the guide 33 and retracted by means of the spring 39, thus unlocking or releasing the hammer arm and permitting the alarm to be sounded.

If it is desired to open and close the door without interference by the tooth collar, it is only necessary to turn the latter to about the position shown in Fig. 8 by dotted lines, when the teeth or projections 70 and 71 will be located out of the way of the releasing bar. When the alarm is applied to a door opening outwardly of a room as shown in Fig. 5, the base plate 23 is secured to the door 58 on its inner surface and near its hinged edge so that the bar 34 of the alarm will lie in substantially horizontal position. With this arrangement I prefer to employ a tripping mechanism shown in detail in Fig. 6 which consists of a supporting plate 72 which is secured to the door 58 and has fulcrumed thereon a lever 73 which is provided at one of its ends with a horizontal lip 74 having an opening 75 therein. The opposite end of the lever 73 is provided with a cam edge 76 to contact with the surface of the door frame 59 adjacent to the hinged edge of the door.

In Fig. 5 the molding 77 is shown as being broken away to illustrate the position of the parts and to show a contact plate 78 secured to the face of the frame 59 against which the cam edge 76 of the lever 73 will contact. In this arrangement a link 60 of the construction shown in Fig. 11 and previously described is hooked to the bar 34 and connected to the lip 74 by means of a short cord 63 fastened at one of its ends in the opening 75 of said lever.

Now, in using this tripping device, the door 58 is closed, in which operation the lever 73 will be caused to assume the position shown in Fig. 5 when it is apparent that the hook 61 of the link 60 can be placed in engagement with the bar 34 after which the cord 63 can be made taut by drawing it in the proper direction through the convolutions 62 thereof, when it will be understood that the bar 34 will be held out of locking engagement with its guides 33 and 35 as shown by dotted lines in Fig. 4 of the drawing. Upon opening the door, it is evident that the spring 39 will retract the bar 34 and thus allow the alarm to be given.

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

1. A device of the character described, including in combination with a main plate provided on one of its faces with an outer and an inner guide, a spindle centrally located on said plate, a bell surrounding the spindle and suitably mounted on said plate, an arm pivotally connected near one of its ends to the plate and having at its other end a hammer adapted to strike the bell, means to vibrate the hammer and its arm, a spring actuated bar having a longitudinally disposed slot to receive said spindle and slidably and pivotally mounted between said

guides on said plate and extended at one of its ends beyond the edge of the latter, said bar having in one of its edges a recess to engage the outer guide and in its other edge a recess to engage the inner guide, said bar also having a detent adapted to engage said hammer arm when the bar is in its projected position, and means at the outwardly projected portion of the bar to release the same.

2. In a device of the character described, the combination with a main plate provided on one of its faces with an outer and an inner guide, of a spindle centrally and rotatably mounted on said plate, a bell surrounding the spindle and mounted thereon, an arm pivotally connected near one of its ends to the plate and having at its other end a hammer adapted to strike the bell, means uniting the spindle and the hammer arm for vibrating the latter, a spring actuated bar having a longitudinally disposed slot receiving said spindle and slidably and pivotally mounted between said guides on said plate and extended at one of its ends beyond the edge of the latter, said bar having in one of its edges a recess to engage the outer guide and in its other edge a recess to engage the inner guide, said bar also having a detent adapted to engage said hammer arm when the bar is in its projected position, and means at the outer end of the bar to release the same.

WILLIAM J. DRIVER.