March 14, 1950 I. BARNWELL 2,500,335

BURGLAR ALARM SWITCH

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FIG. 1.

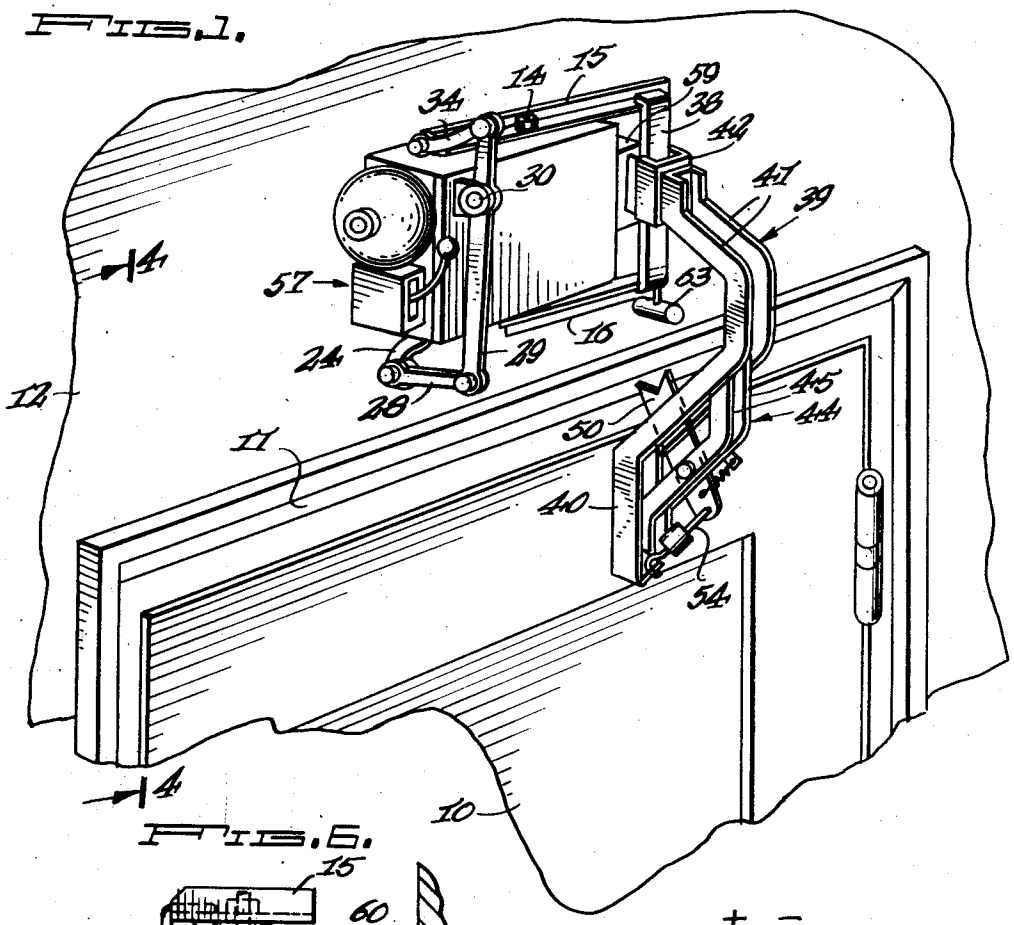
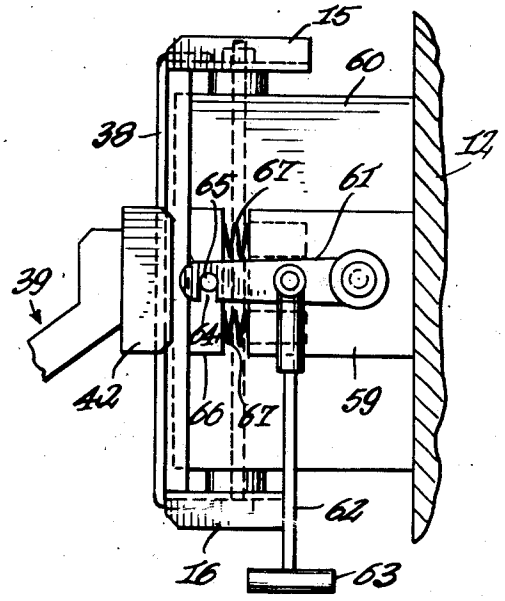



FIG. 6.



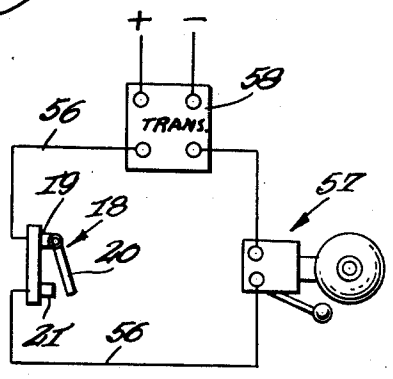




FIG. 8.

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FIG. 2.

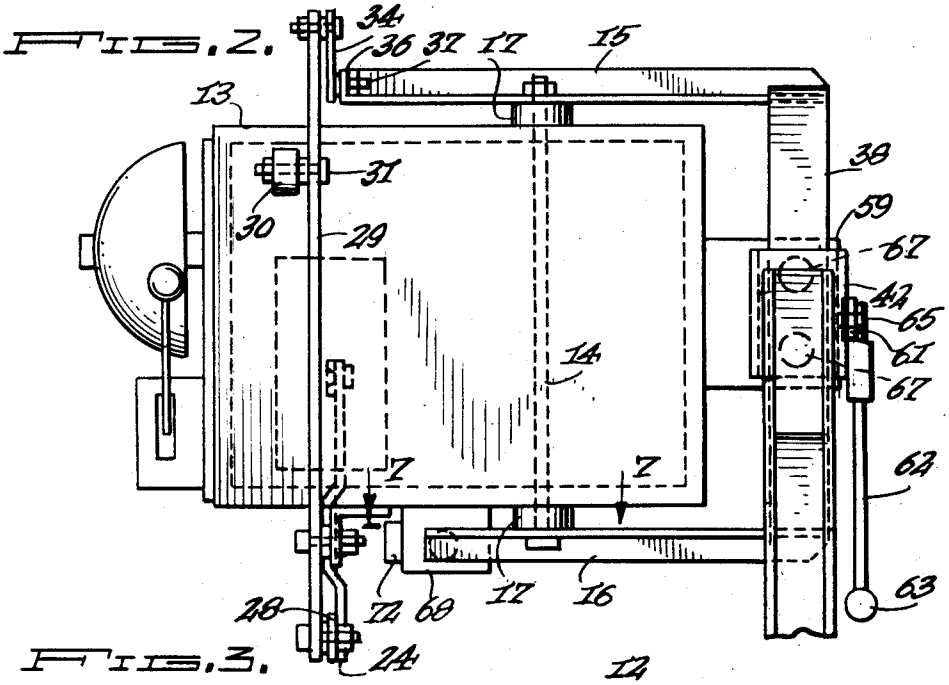
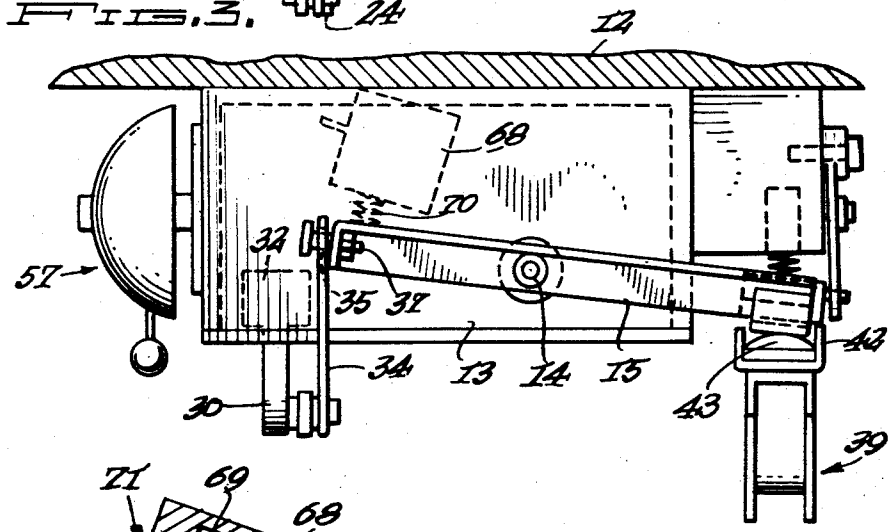



FIG. 3.



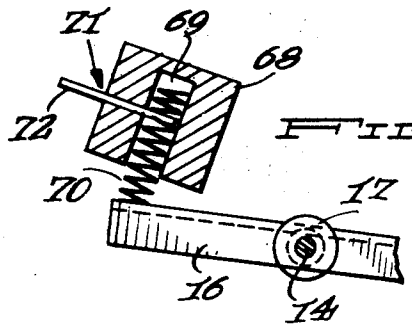




FIG. 7.

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FIG. 4.

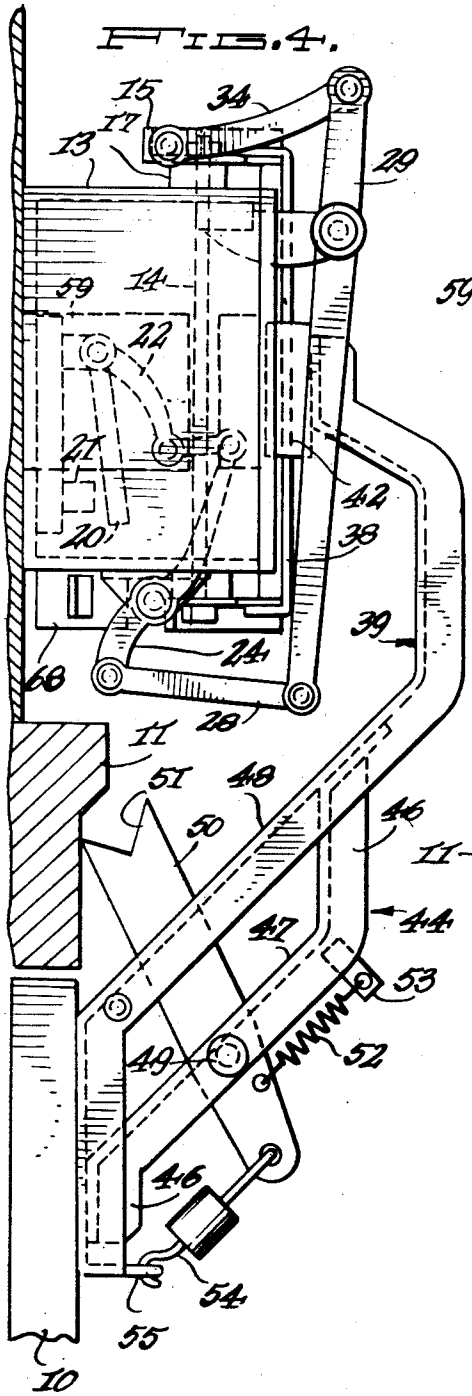
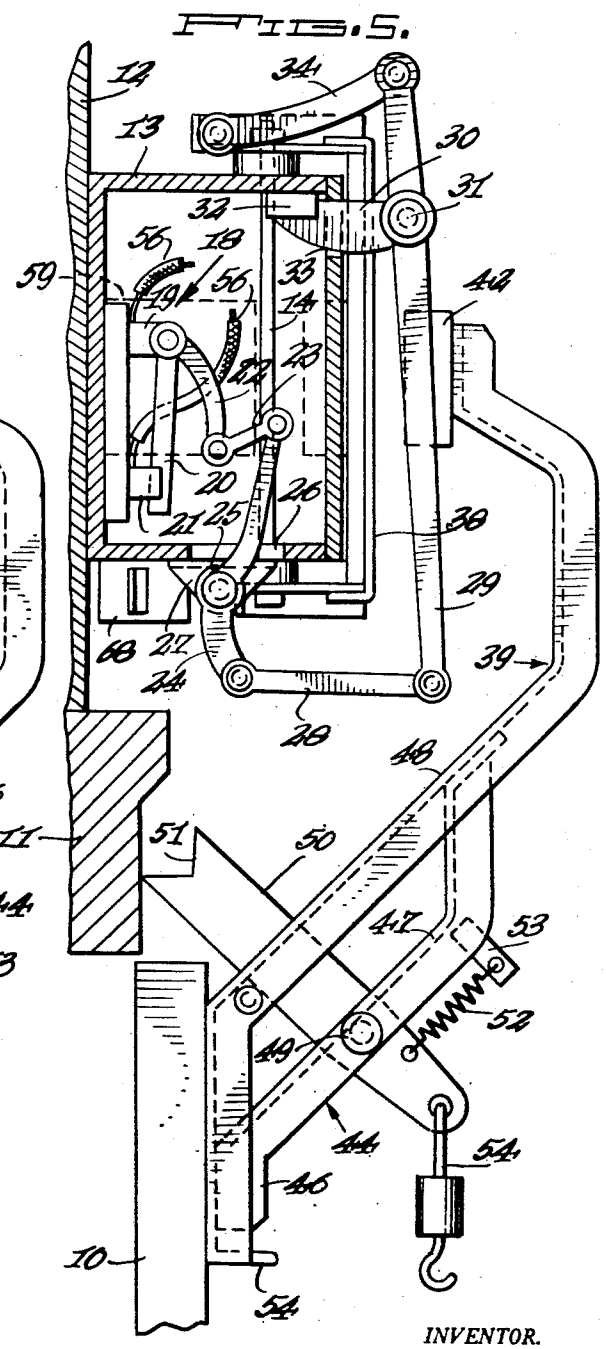



FIG. 5.

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# UNITED STATES PATENT OFFICE

2,500,335

## BURGLAR ALARM SWITCH

Irving Barnwell, New York, N. Y.

Application June 29, 1948, Serial No. 35,822

2 Claims. (Cl. 200—54)

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This invention relates to safety devices or apparatus intended to protect homes or other apartments, rooms, etc. from burglars or other intruders, and aims to provide certain new and useful improvements in such apparatus whereby the degree of security offered is very substantially enhanced.

Another object of the invention is the provision of a device partly attached to a door and partly to the wall or frame surrounding the door, and including means whereby, when the door opens even a very short distance, an alarm is sounded, and additional means which prevent closing of the door by the intruder thereby adding to the likelihood of his capture.

The above broad as well as additional and more specific objects will be clarified in the following description, wherein characters of reference refer to like-numbered parts in the accompanying drawings. It is to be noted that the drawings are intended solely for the purpose of illustration, and that it is neither desired nor intended to limit the invention necessarily to any or all of the exact details of construction shown except insofar as they may be deemed essential to the invention.

Referring briefly to the drawings, Fig. 1 is a fragmentary perspective view of a door and the wall surrounding the same, illustrating an embodiment of the invention applied thereto.

Fig. 2 is a side elevational view of that part of the apparatus which is fixed to the surrounding wall, showing also a portion of the operating arm which extends from the door.

Fig. 3 is a plan view of Fig. 2, showing also, in section, a portion of the surrounding wall.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1, showing the door in closed position, with the bell omitted.

Fig. 5 is a view similar to Fig. 4, showing, however, the door in slightly open position.

Fig. 6 is a rear (right-hand) elevational view of Fig. 2, showing also a portion of the surrounding wall, in section.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 2.

Fig. 8 is a wiring diagram for the alarm.

Referring in detail to the drawings, the numeral 10 indicates a door set in a door frame the upper part of which is indicated at 11, through a dividing house wall 12.

A box 13 is secured in any desired manner to the wall 12 over the door, and a vertical rod or shaft 14 extends through the box, substantially as shown. Secured on the upper and lower extremities of this rod are co-planar parallel arms 15 and 16, respectively. The rod 14 is pivotable in bushings 17; hence, when the lower arm 16 is swung about its pivot (the axis of the rod 14), the upper arm 15 swings synchronously with it.

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Secured against the back wall of the box 13 is a knife switch 18 including a pillar 19 which comprises one pole of the switch. A blade 20 is pivoted to the pillar 19 and is adapted to be moved into or out of contact with the other pole 21 of the switch. A curved arm 22 is rigid with the arm 20 at the pivot of the latter, so that the arm 22 and the blade 20 move together. A link 23 is pivoted at one end to the free end of the arm 22, and at the other end to the free end of a simple lever 24 which is pivoted at 25 on a support 27 on the underside of the box and extends through an opening 26 in the bottom wall of the box. A link 28 is pivoted at one end to the other end of the lever 24 and at its other end to the lower end of an upright simple lever 29. The latter is pivoted at 31 on the end of a support 30 which is secured to a base 32 in the box and extends through an opening 33 in the front wall of the box.

A link 34 is pivoted at one end to the upper end of the lever 29, the latter having a relatively large opening 35 through its other end. An ear 36 is provided at one end of the arm 15. A pin 37, secured in the ear 36, passes through the opening 35 in the link 34. It is now apparent that when the arm 16, and hence the arm 15, is turned clockwise (Figs. 1 and 3), through the linkage above described the switch blade 20 will be moved into contact with the switch pole 21 to close the switch, and that when the arms 15 and 16 are swung in the opposite direction the switch will be opened.

An upright bar 38 has its upper end secured to the free end of the upper arm 15 and its lower end secured to the corresponding end of the lower bar 16, thereby fixing the bars 15 and 16 in the co-planar parallel relationship previously mentioned.

An elongated arm 39, deformed so as to be approximately V-shaped in side view, is secured by its base 40 to the upper edge of the door 10, the deformation of the arm enabling it to pass upward clear of the upper portion 11 of the door frame to bring its upper end adjacent the bar 38. The arm 39 is formed of two spaced ribs 41 joined at both ends, substantially as shown. Secured to the upper end of the arm 39 is a U-shaped shoe 42 adapted to engage and register about the bar 38. A cushion 43, which may be of rubber, is se-

cured in the shoe 42 to cushion contact of the latter with the bar 38.

Secured between the ribs 41 of the arm 39 adjacent the lower end of the latter, is a support 44 also formed of two spaced ribs 45 and having approximately a Z-shape in side view with the end arms 46 of the Z shorter than the base 40 of the arm 39 so that the mid-portion 47 is spaced to one side and below the rising section 48 of the arm 39. Pivoted at 49 intermediate its length between the ribs of the support 44 intermediate the length of the portion 47 of the support 44, is a tongue whose upper end may be forked and sharpened, as shown at 51. A spring 52, having one end attached to an ear 53 secured to one of the ribs 45, has its other end secured to the tongue 50 below its pivot 49 so that the spring normally urges the upper end of the tongue toward the door frame 11. A weighted hook 54 pivotally suspended from the lower end of the tongue 50, is adapted to engage an opening in an ear 55 joining the lower ends of the ribs 41 to maintain the upper end of the tongue in non-jamming position with respect to the door frame 11.

An alarm such as a bell 57 may be mounted on the box 13, as shown, or it may of course be mounted at any other position near to or distant from the box. As shown in the wiring diagram in Fig. 8, leads 56 place the switch 18 and the alarm 57 in series with the secondary of a transformer 58, the latter being adapted to be connected to the house current supply lines.

A block 59 is mounted on the rear wall 60 of the box 13 and has a normally horizontal arm 61 pivoted at its base thereto. A rod 62 which may be provided with a handle 63 at its lower end, has its upper end pivoted to the arm 61 intermediate the length of the latter. A slot 64 in the arm 61 is adapted to engage a pin 65 on a block 66 secured to the bar 38, and coiled springs 67 normally urge the blocks 59 and 66 apart and hence normally urge the bar 38 outward from the box 13. However, when the said two blocks are held together against the force of these springs by the arm 61 as shown in Fig. 6, the bar 38 is unable to move outward from the box 13. Pushing up the rod 62, however, disengages the arm 61 from the pin 65 and thus permits the said springs to urge the bar 38 outward.

When the family is at home, it is not desirable to have the device sound the alarm every time the door is opened, and by locking the blocks 59 and 66 together, as shown in Fig. 6, the device is held in inactive position. By pushing the rod 61 up and disengaging the block 66 from the block 61, while the door is closed, the device is "cocked" and ready to function at any time the door is opened. The latter is the condition of the device at night, when the family have retired. If then anyone opens the door the alarm will sound, and if he attempts to close the door again to stop the alarm he cannot do so owing to the action of the spring 52 in jamming the tongue 50 against the door frame 11, as shown in Fig. 5. In "cocking" the device as above mentioned, the hook 54 is also disengaged from the ear 55.

The following means is provided to push the right-hand end (Fig. 3) of the arm 16 outward from the box, when the upright arm 39 is withdrawn from the bar 38 upon opening of the door. A block 68 is either attached to the underside of the box 13 by any suitable means, not shown, or it may be made integral with the box casing. This block has a socket 69 therein, in which a coiled tension spring 79 is slidably mounted with



the outer end thereof anchored to the free end of the arm 16 thus tending to swing the arm 16 in a clockwise direction about its pivot 14. Adjusting means is provided to vary the tension of the spring 70 as may be needed for most efficient operation of the device. This consists in providing a narrow slot or passage through one wall of the block, shown at 71, at right angles to the socket 69, and slidably mounting a blade-like member 72 therein. By pushing the spring 70 inward or pulling it outward while the member 72 is withdrawn clear of the socket 69, the number of coils of the spring which will lie between the member 72 upon reinsertion of the latter and either end of the spring may be varied, and thus the tension of the spring is adjusted since only those coils between the member 72 and the free end which is attached to the arm 16, function as a spring.

It is the spring 70 which, upon withdrawal of the shoe 42 by the arm 39 from contact with the bar 38, forces the arm 16 to turn in a clockwise direction, as above-mentioned, and thus to actuate the mechanism described to operate the device in the manner set forth.

Obviously, modifications in form and structure may be made without departing from the spirit or scope of the invention.

I claim:

1. In combination with a door and the wall of a structure surrounding the door, an upright arm secured at its lower end to the door and extending upward to the level of said wall, a support secured to said wall and having a vertical rod pivotally mounted therein, said rod having vertically spaced arms pivotally mounted thereon, a bar rigidly joining said spaced arms at one end of the latter, resilient means normally urging said spaced arms to swing in such direction as to move said bar outward from the wall, the upper end of said upright arm when the door is closed contacting said bar and pushing the same inward toward said wall to a given position, an electric switch on said support and including a switch arm for opening or closing the switch, means connecting said spaced arms with said switch for opening said switch when said door is closed and hence said upright arm positions said bar inward at said given position and for closing said switch when said door is open and hence said upright arm moves outward from said wall and permits said resilient means to move outward from said wall and permits said resilient means to move said bar outward from said wall, said switch being adapted to be connected with an electric alarm and a source of electricity, a tongue pivotally mounted on said upright arm on an axis below the top of the door, means normally urging the upper end of said tongue against said wall to jam the door after being opened against closing thereof.

2. In combination with a door and the wall of a structure surrounding the door, an upright arm secured at its lower end to the door and extending upward to the level of said wall, a support secured to said wall and having a vertical rod pivotally mounted therein, said rod having vertically spaced arms pivotally mounted thereon, a bar rigidly joining said spaced arms at one end of the latter, resilient means normally urging said spaced arms to swing in such direction as to move said bar outward from the wall, the upper end of said upright arm when the door is closed contacting said bar and pushing the same inward toward said wall to a given position, an electric switch on said support and including a switch arm for

opening or closing the switch, means connecting said spaced arms with said switch for opening said switch when said door is closed and hence said upright arm positions said bar inward at said given position and for closing said switch when said door is open and hence said upright arm moves outward from said wall and permits said resilient means to move outward from said wall and permits said resilient means to move said bar outward from said wall, said switch being adapted to be connected with an electric alarm and a source of electricity, a tongue pivotally mounted on said upright arm on an axis positioned below the top of the door and at a distance from the door, said tongue extending in an upward direction to the wall over the door and



having means normally urging the upper end of the tongue against said wall whereby when said door is opened said upper end of the tongue provides an extension in the direction of said wall to prevent re-closing of the door.

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