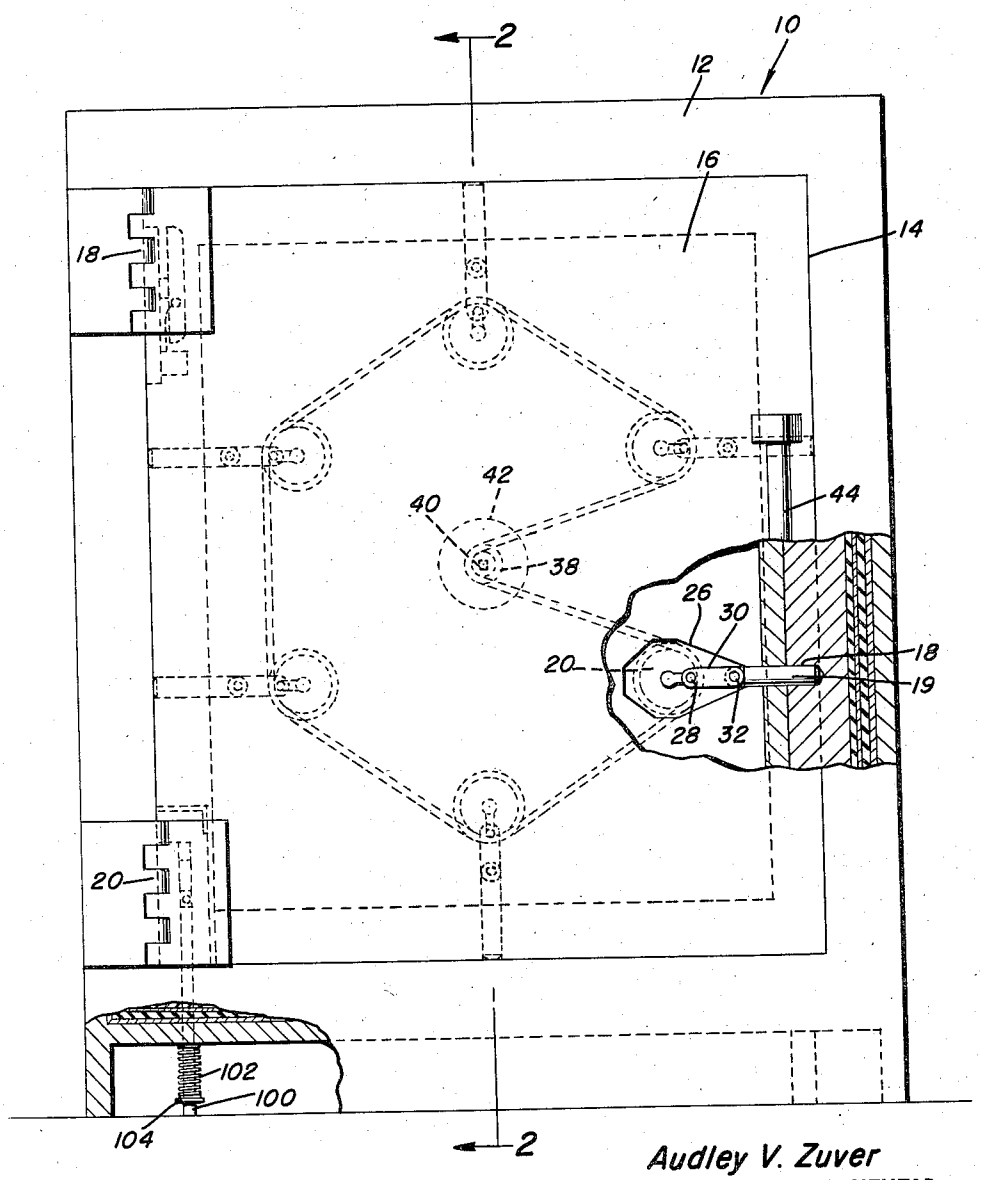
March 31, 1959 A. V. ZUVER 2,879,725

BURGLAR PROOF SAFE

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Fig. 1



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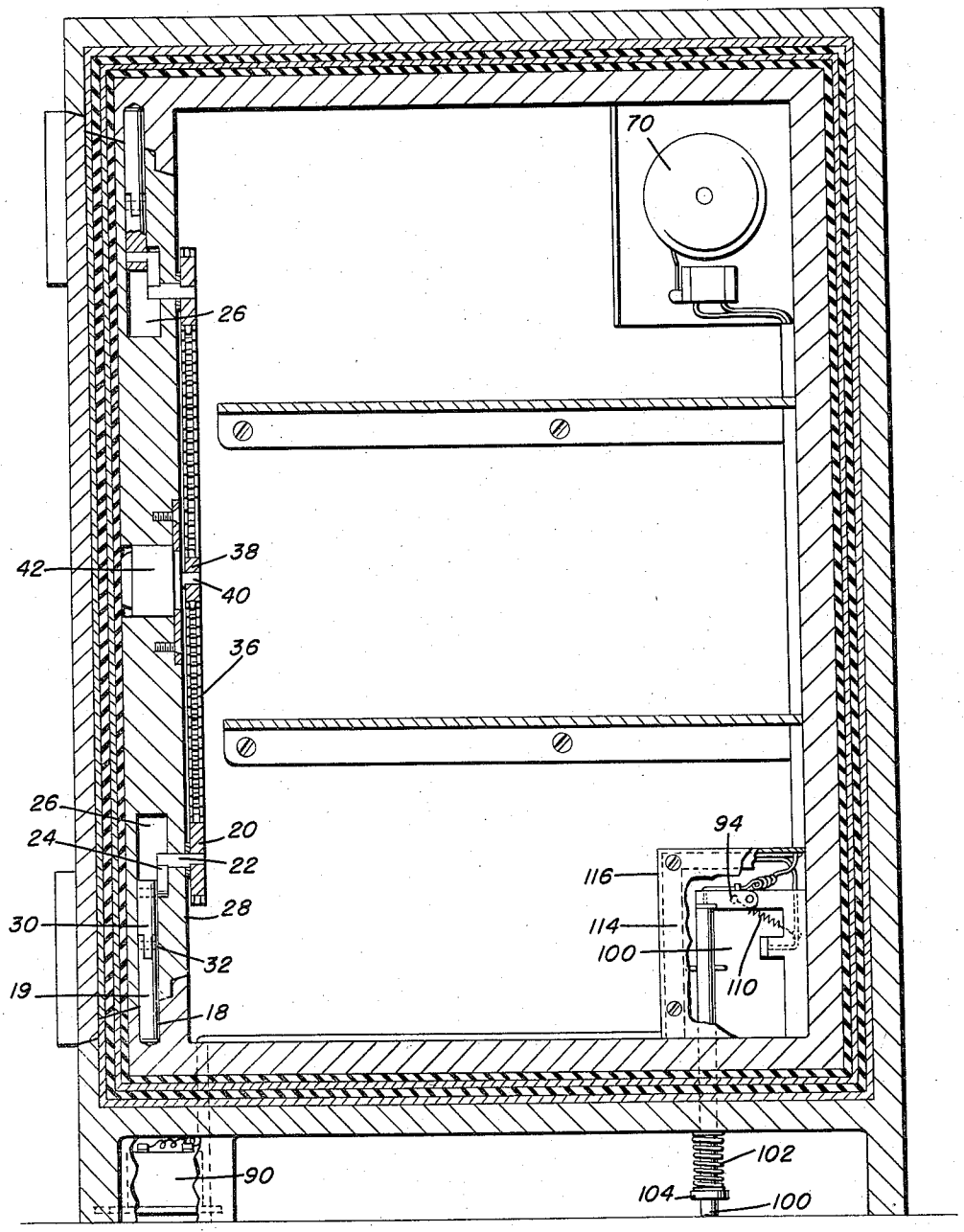


Fig. 2

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BURGLAR PROOF SAFE

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Fig. 3

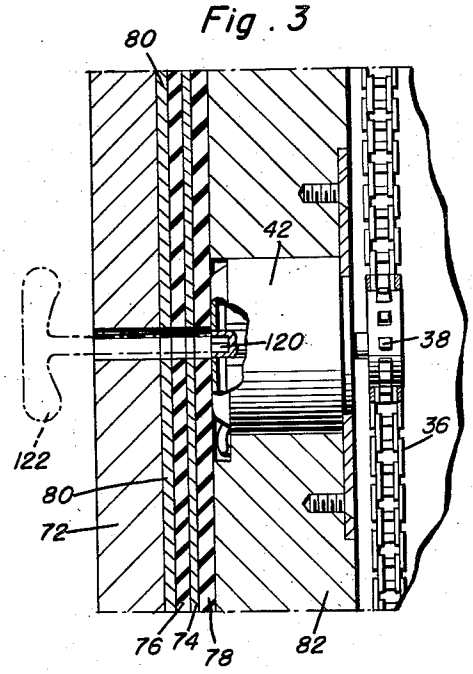
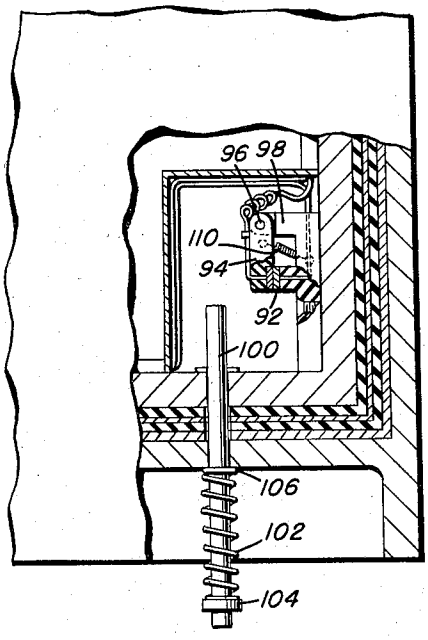


Fig. 4



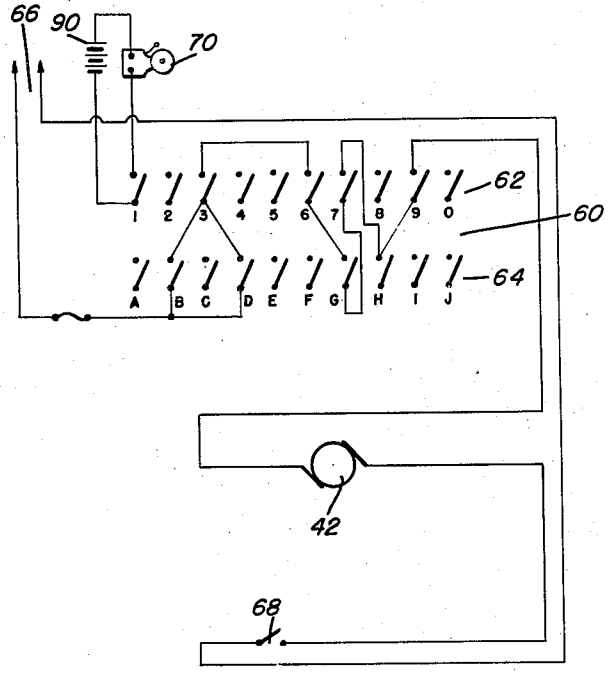


Fig. 5

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BURGLAR PROOF SAFE

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Application February 19, 1957, Serial No. 641,215

2 Claims. (Cl. 109—39)

This invention relates to a safe or vault which is provided with means for preventing tampering with the safe or removal thereof by means of suitable alarm systems utilized in the invention together with various improvements in the construction of the safe.

One of the objects of the present invention resides in the provision of a safe which eliminates the usual time lock, knob and dial usually mounted on the door of a safe so that the door of the safe may be made solid having no hole or opening therein which will weaken the safe and make it more easily tampered with and openable without authorization.

Another object of the invention resides in the provision of a novel switchboard arrangement wherein by use of a proper combination an electrical signal to a motor controlling the door will actuate the motor. It is within the concept of the invention to provide a remotely located switch which may be hidden or secret even from the man who has knowledge of the combination of the switchboard so that since this secret switch must be closed before there is any power on the line supplying the motor and controlled by the switchboard, the secret switch must be thrown. Inasmuch as the secret switch may be very remote from the safe, there is little likelihood that a burglar could operate the safe even if he knew the combination due to the fact that the secret switch may be under the control of the police or other authorized person.

An additional object of the invention resides in the provision of a safe which cannot be drilled or burned, due to its construction, without setting off an alarm and which cannot be moved without also setting off an alarm.

Still further objects and features of this invention reside in the provision of a burglar proof safe that is simple in construction, capable of being adapted for use on various sizes and types of safes, and which is capable of being made so as to be substantially fool-proof and burglar proof in operation.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this burglar-proof safe, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is an elevational view of a safe constructed in accordance with the concepts of the present invention with parts thereof being broken away to show other parts in section for greater detail;

Figure 2 is an enlarged vertical sectional view as taken along the plane of line 2—2 in Figure 1 illustrating in particular the construction of the door and the construction of the alarm means for sounding an alarm if the safe is being moved;

Figure 3 is a sectional detail view illustrating the utilization of means for opening the door manually should there be a power failure or other reason why automatic opening of the door cannot be obtained;

Figure 4 is an enlarged sectional detail view illustrating

the construction of the alarm actuation device in an operative condition for indicating that the safe has been moved from its normal resting place; and

Figure 5 is a schematic wiring diagram illustrating some of the electrical circuits utilized in the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** is used to generally designate a burglar proof safe constructed in accordance with the concepts of the present invention. This safe includes a casing **12** having an access opening **14** adapted to be closed by a door **16** hingedly secured as at **18** and **20** to the casing **12** It is to be recognized that the hinges can be mounted internally or externally as may be desired with the door **16** lying flush with the face of the casing **12.**

The casing **12** is provided with a plurality of annularly spaced recesses **18** extending about the periphery of the thickened portion of the casing adjacent the axis opening **14.**

Rotatably mounted with respect to the door **16** are a plurality of sprockets **20.** Each of these sprockets are fixed to a shaft **22** having a crank arm **24** extending into a cavity **26** in the door the shape of which can be best seen in Figure 1. The crank **24** has a stub shaft **28** preferably integral therewith which is pivotally secured to a connecting link **30** which in turn is pivoted as at **32** to the plunger **19.**

Entrained about the various sprockets **24** is an endless chain **36** which is also entrained about a sprocket **38** mounted on a shaft **40** driven by a motor **42** mounted in the door **16.** Hence, upon operation of the motor **42,** the sprockets **20** will be rotated to the extent that it will actuate the various cranks to pull the plungers out of the recesses **18** to allow the door to be opened utilizing a handle such as is indicated at **44.** Or further operation of the motor in the same direction will of course cause the plungers **19** to be positioned back in the recesses **18.**

Mounted on the safe **10** or remote therefrom is a switchboard, see Figure 5, generally indicated by reference numeral **60.** This switchboard includes a plurality of rows of switches **62** and **64** which switches are arranged to be connected in suitable series connection with a selected number of the switches thereby forming a combination in series each of which particular switch must be closed to complete an operative electrical circuit from a source of power indicated at **66** to the motor **42.** Further, a remotely located and secretely hidden switch **68** may be provided which must be closed before the switchboard **60** becomes operative to provide electrical current to the motor **42.** It is noted that the motor **42** may be provided with any suitable predetermined and preset stops so that energization through the switch board will cause the motor **42** to attain a certain limit and that as may be needed the motor may be so geared as to slowly move the plungers **19** in and out of the recesses **18** whereby the door can be easily opened and closed.

In order to prevent access to the safe by burning or drilling, the walls of the casing and the door are constructed so as to actuate an alarm as indicated at **70** which may be mounted in or on the safe or remotely located. This construction includes the utilization of an outer plate **72,** an interior sheet of conductive material such as copper or the like as indicated at **74** which is sandwiched between suitable insulation at **76** and **78** as well as a soft lead sheeting **80** disposed between the insulation layer **76** and the outer plate **72.** On the other side of the insulation **78** is the inner lining **82.** Hence, when the wall or door of the safe is drilled, the drill will cause an alarm circuit between the outer plate **72** and the conductive sheet **74** while application of heat will cause the lead sheet **80** to melt causing deterioration of

the insulation and thus causing a closure of the circuit between the sheet 74 and the outer plate 72. Of course, the alarm 70 may be connected to a suitable source of power and to the sheet 74 with the source of power being grounded to the outer plate 72. Further connected to the alarm 70 or any other suitable alarm are the switches of the switch board 60 which are not utilized in the combination. These are shown schematically for some of the switches in Figure 5.

In order to prevent the entire removal of the safe from the premises on which it is located, there is embedded in one leg of the same a battery 90. This battery is connected through suitable conductors to suitable contacts 92 and 94. The contact 94 is a movable contact pivoted as at 96 to an arm 98 and is adapted to engage the contact 94 when released so as to complete an operative electrical circuit to the bell or alarm 70. The movable contact 94 normally rests on a rod 100 urged by means of spring 102 which engages a collar 104 on the rod and the bottom 106 of the safe outwardly of the safe. However, when the safe is resting on the ground, the rod is urged into a raised position compressing the spring 102. However, as soon as the rod has been released by lifting the safe, the spring 110 which is connected to the movable contact 94 urges the movable contact downwardly into engagement with the fixed contact 92. Due to the fact that the plunger is horizontally displaced with respect to the pivotally mounted movable contact 94, even if the rod 100 is then moved to the raised position will not suffice to turn off the alarm 70, re-setting of the contacts only being had by opening the access door as at 114 of the housing 116 for the movable and fixed contacts and the rod.

In the event that the operation mechanism of the invention becomes faulty, it is possible to drill a hole through the door after the various alarms have been shut-off. Then, since the motor 42 has a square end 120 on the shaft thereof, a key 122 can be used to turn the motor to open the door. The outside of the door may be marked with a center punch or otherwise, if desired, or the precise location for drilling may be maintained secret.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A safe comprising a casing having an access opening, a door hingedly attached to said casing for closing said access opening, recesses in said casing, plungers slidably mounted on the inner face of said door movable into said recesses to lock said door, sprockets connected to said plungers with said plungers being movable with said sprockets, an endless chain entrained about said sprockets, a motor mounted on said inner face of said door, said motor driving a drive sprocket having said endless chain entrained thereabout to actuate said endless chain to cause said sprockets to move said plungers with respect to said recesses, said casing being supported on legs, one of said legs having a battery mounted therein, said safe having a ground engaging rod vertically slidably mounted therein, said rod being spring pressed outwardly of said safe, a horizontally pivotally mounted contact positioned above and adapted to be supported by said rod, a fixed contact positioned proximate said pivotally supported contact, said horizontal pivot being offset from the line of travel of said rod whereby said rod upon releasing said pivotally supported contact to establish a connection between said fixed contact and said pivotally supported contact is ineffectual to break said established connection upon an inward movement of said rod.

2. A safe comprising a casing having an access opening, a door hingedly attached to said casing for closing said access opening, recesses in said casing, plungers slidably mounted on the inner face of said door movable into said recesses to lock said door, sprockets connected to said plungers with said plungers being movable with said sprockets, an endless chain entrained about said sprockets, a motor mounted on said inner face of said door, said motor driving a drive sprocket having said endless chain entrained thereabout to actuate said endless chain to cause said sprockets to move said plungers with respect to said recesses, said casing being supported on legs, one of said legs having a battery mounted therein, said safe having a ground engaging rod vertically slidably mounted therein, said rod being spring pressed outwardly of said safe, a horizontally pivotally mounted contact positioned above and adapted to be supported by said rod, a fixed contact positioned proximate said pivotally supported contact, said horizontal pivot being offset from the line of travel of said rod whereby said rod upon releasing said pivotally supported contact to establish a connection between said fixed contact and said pivotally supported contact is ineffectual to break said established connection upon an inward movement of said rod, said casing and said door having walls including outer plates, an inside lining, a conductive sheet between said outer plates and said inside lining, insulation on each side of said conductive sheet, and a meltable sheet between said outer plates and said insulation.

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