H. F. KRANTZ.

SAFETY PANEL BOX.

APPLICATION FILED AUG. 17, 1917.

1,306,347.

Patented June 10, 1919.

3 SHEETS—SHEET 1.

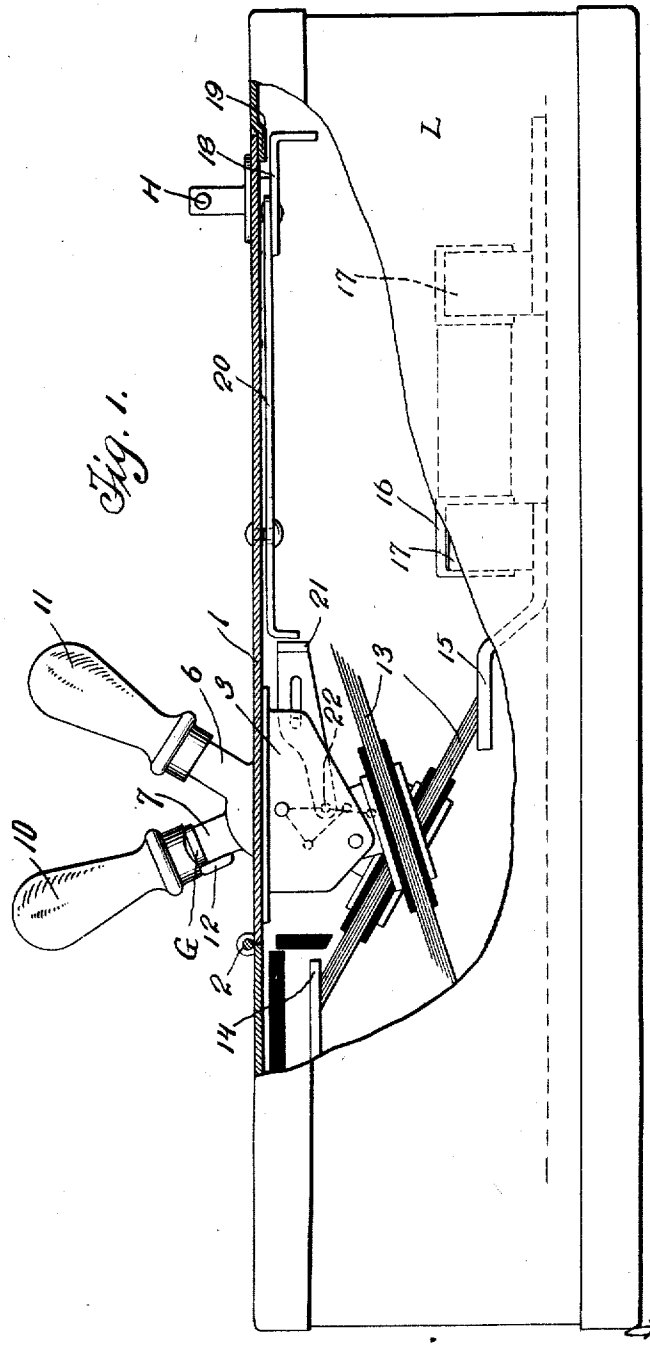


Fig. 1.

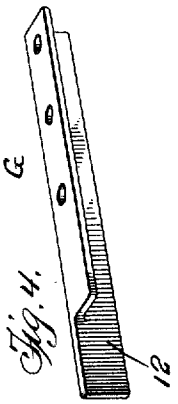


Fig. 4.

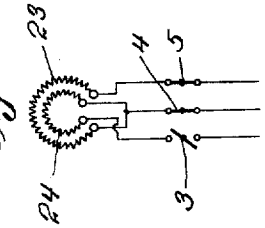


Fig. 5.

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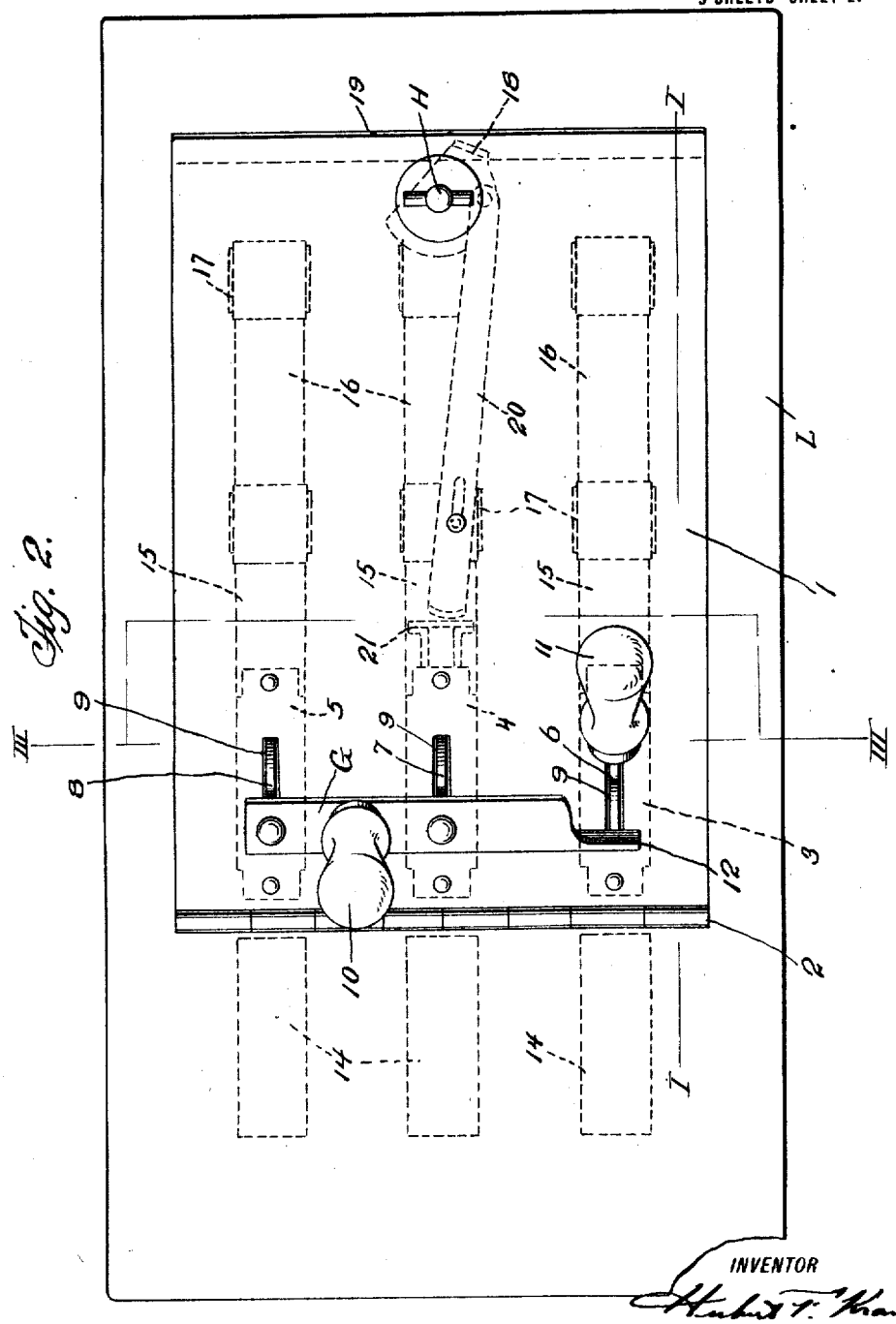
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3 SHEETS—SHEET 2.

Fig. 2.



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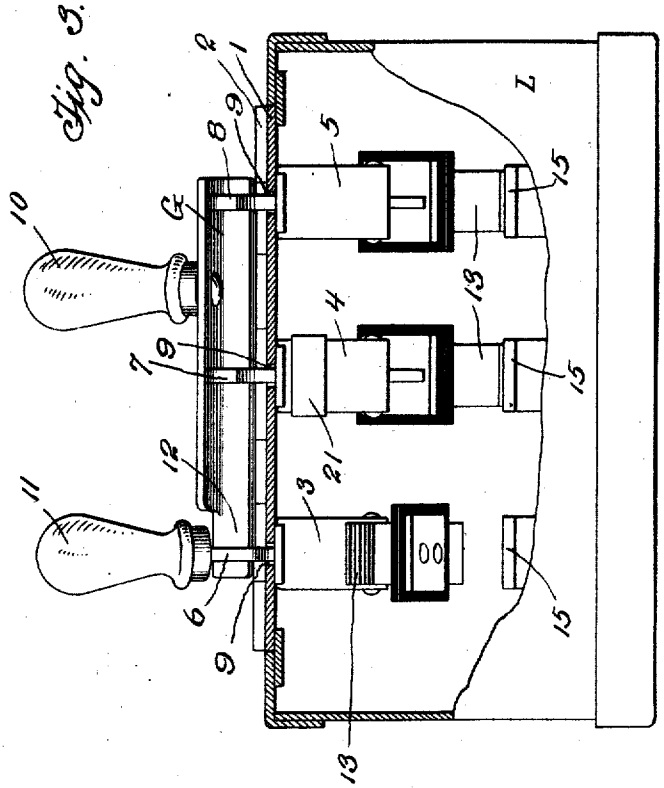
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3 SHEETS—SHEET 3.

Fig. 3.



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SAFETY PANEL-BOX.

1,306,347. Specification of Letters Patent. Patented June 10, 1919.

Application filed August 17, 1917. Serial No. 186,662.

To all whom it may concern:

Be it known that I, HUBERT F. KRANTZ, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Safety Panel-Boxes, of which the following is a specification.

This invention relates to a safety panel box.

The object of the invention is to provide a safety panel box, including a plurality of independently operable switch mechanisms, in which the operation of one switch mechanism governs the operation of another switch mechanism.

A further object is to provide a safety panel box within which the several switch mechanisms are contained, to provide an entrance door having safety lock mechanism so associated with the several switch mechanisms as to stand in locking position whenever any one of the switch mechanisms is "on".

A further object is to provide a safety panel box in which two switch mechanisms interfere in such manner that when one switch mechanism is moved from "on" to "off" position the second switch mechanism is automatically also moved to "off" position, and so that when the first mechanism is in the "on" position the second switch mechanism may be moved to "on" and "off" positions at will without affecting the first switch mechanism, and further to so associate the door-locking mechanism with the two switch mechanisms that it will be held in locking position so long as the first switch mechanism is "on", irrespective of the "on" and "off" movements of the second switch mechanism.

A further object is to provide a safety panel box which is particularly adapted for controlling the supply of current to electric galley stoves and like devices.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:—

Figure 1 is a vertical longitudinal sectional view through a panel box constructed in accordance with this invention, parts being shown in elevation, the section being taken substantially upon the plane of line I—I of Fig. 2.

Fig. 2 is a top plan view of the structure shown in Fig. 1.

Fig. 3 is a transverse sectional view taken upon the plane of line III of Fig. 2, parts being shown in elevation,

Fig. 4 is a detached perspective view of the switch-bridging element, and

Fig. 5 is a diagrammatic view illustrating the manner of connecting the several switch mechanisms of this device in a three wire system.

Referring now to the drawings for describing in detail the structure which is illustrated therein the reference character L indicates the casing or box. This may be made of any suitable material, either sheet metal or otherwise, as preferred. In the drawings it is shown to be made of sheet metal.

A door 1 is formed preferably in the top wall of the box, being hinged as at 2, to swing into and out of closed position. Within the box is a plurality of switch mechanisms as 3, 4 and 5 and these are adapted to be operated from without the box by means of operating members 6, 7 and 8 respectively which extend through suitable openings 9 formed in the top wall of the box. The operating members 7 and 8 are connected together by a bridging element G outside of the box. A single hand grip 10 is connected with the bridging element so that the two switch mechanisms 4 and 5 may be simultaneously operated by the single hand grip.

The operating member 6 has a hand grip 11 fixed directly thereto so that it may to a certain extent be operated independently of the switch mechanisms 4 and 5.

The bridging element G has a projection 12 which extends directly into the path of movement of the operating member 6 for the switch mechanism 3 so that it will be impossible to swing the hand grip 11 from an "off" to an "on" position without producing a like movement of the hand grip

10. Or, it will be impossible to swing the hand grip 10 from an "on" to an "off" position without insuring an "off" position of the hand grip 11. At the same time the hand grip 11 will be free to swing in either direction at will so long as the hand grip 10 is in the "on" position, and further, the hand grip 10 will be free to swing in either direction at will, and without affecting the hand grip 11, so long as the hand grip 11 is in the "off" position.

The switch mechanisms 3, 4 and 5 may be of any desired type or construction, but preferably are similar to the switch mechanism shown and described in my pending application Serial No. 42,956 filed July 31, 1915. As shown in the drawings they each include a main supporting housing which is fixed to the inner surface of the top wall of the box and which carries a pivotally-mounted switch blade 13. The switch blades are double ended. One end swings into and out of engagement with main line contacts 14 while the other end swings into and out of engagement with branch line contacts 15, it of course being understood that there is one main line contact and one branch line contact for each switch blade.

The operating members 6 and 7 project downwardly into the housings and are operatively connected with the switch blades so as to swing the switch blades in response to the swinging movements of the hand grips.

One way of employing this switch box in connection with electric stoves and like devices is diagrammatically illustrated in Fig. 5 of the drawings in which it is seen that the two branch line contacts for the switch mechanisms 4 and 5 are connected to one heating element as 23, of the stove so that the passage of current for this heating element may be controlled by the hand grip 10, and that the second heating element as 24, of the stove is connected with the branch line contacts of the switch mechanism 3, the return side of the heating element 24 being connected with the return side of the heating element 23. In this manner the heating element 23 is necessarily in operation whenever the heating element 24 is employed and the heating element 24 may be turned "on" and "off" at will.

As shown in the drawings the branch line contacts 15 have each associated therewith a suitable fuse, as 16, through which the current passes when the switch blades are "on." The fuses are held in suitable clips 17 in the usual manner.

When any one or more of the switch blades is "on" current is passing through the fuse and clips of that switch blade. Hence it is desirable that the door 1, which in effect, constitutes a movable guard member for the parts within the box, should be closed and locked whenever any one of the switch blades is "on."

For this purpose the door is provided with a latch member 18 which is pivotally mounted thereon to swing into and out of engagement with a fixed portion 19 of the wall of the box. A link 20 is connected at one side of the latch 18 and extends into the path of movement of a plunger 21. This plunger is operatively connected to be moved back and forth by the hand grip 10 as the hand grip is swung to operate the switch blades of the switch mechanisms 4 and 5. The manner of connecting the plunger within the switch mechanism 4 is fully shown and described in my above mentioned pending application in which it will be seen that the switch blade is controlled by a toggle which is made and broken by the swinging movements of the handle, and that the plunger is connected with the heel of the toggle, as at 22 in Fig. 1 of the present drawings, so that the plunger moves outwardly when the toggle is made and inwardly when the toggle is broken.

The effect of the movements of the plunger upon the latch mechanism are fully illustrated and described in my pending application Serial No. 79,094 filed February 18, 1916, from which application it will be seen that whenever the door is closed and the plunger is out then the latch 18 is in locking position. Thus whenever the switch blade of the switch mechanism 4 is "on" then it is impossible to open the door.

From the above description of the structure, and particularly of the relation of the bridging member G with the several switch mechanisms, it will be apparent that whenever any one of the switch blades is "on" then the door will be locked. Also, it will be apparent that with the hand grip 10 thrown "on" and the door thus locked the hand grip 11 may be thrown "on" and "off" at will without changing the effect of the "on" position of the hand grip 10 upon the plunger and lock. Further, that, with both hand grips "off" movement of the hand grip 11 to "on" position will move the plunger to cause the latch to lock the door while subsequent movement of the hand grip 11 to "off" position may be had without returning the plunger.

The latch may be provided with a hand control H by means of which to swing it to unlatching position after the plunger has been withdrawn by movement of the hand grip 10 to "off" position. If desired the hand control and its connections may be of such proportions as to permit of application to the link 20 of sufficient manual force to move the plunger backwardly for breaking the toggle. If the hand grip 11 be in the "on" position when this operation is effected then the hand grip 11 will move,

together with the hand grip 10, immediately into the "off" position.

While the several switch mechanisms above described are shown in the drawings to be mounted to swing with the door or guard member 1 of the box, so as to obtain the advantages set forth in my pending application 79,094, yet it will of course be understood that they may as well be mounted upon a fixed portion of the walls of the box if desired, as for instance as is shown and described in my pending application Serial No. 158,957 filed March 31, 1917.

It will also be understood that a single switch mechanism with two blades may be employed in lieu of the two switch mechanisms 4 and 5 illustrated if desired, such as is described in my pending application Serial No. 175,194 filed June 16, 1917.

It will also be understood that although I have shown and described above two switch blades connected with one handle grip and one switch blade connected with the other handle grip yet this is a matter which is dependent upon the nature of the circuit or circuits in connection with which the device is employed and that one or more switch blades may be connected for control by either of the handle grips, according to requirements.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

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

1. A safety panel box having an opening thereinto, a closure for said opening, a latch for said closure, a plurality of switch mechanisms within the box, separate operating means for operating said switch mechanisms into "on" and "off" positions, means whereby movement of one of said operating means into "on" position will automatically move another operating means into "on" position, and connections whereby movement of the second operating means into "on" position will move the latch into latching position.

2. A safety panel box having an opening thereinto, a closure for said opening, a latch for said closure, a plurality of switch mechanisms within the box, separate operating handles for operating said switch mechanisms into "on" and "off" positions, a member connected with one operating handle operable to move the latch into latching position when said mentioned operating handle is moved to "on" position, and a part carried by said mentioned operating handle projecting into the path of movement of another operating handle to insure movement of the first operating handle into "on" position whenever the second operating handle is moved to "on" position, the relation of said projecting part with the second operating handle being of a character to permit movement of the second operating handle into "on" and "off" positions at will while the first operating handle stands in "on" position.

3. In a safety panel box having a movable wall part for giving access to the interior thereof, a pair of switch mechanisms therein, said switch mechanisms being operable either together or at different times into "on" and "off" positions, and a pair of independently operable operating elements for said switch mechanisms, the combination therewith of means whereby an operation of either of said operating elements into the "on" position will effect retention of the movable wall part and whereby an operation of one of said operating elements into the "off" position at a time when both said operating elements are in the "on" position, will render the wall part readily removable.

4. In a safety panel box having a movable wall part for giving access to the interior thereof, a latch for said wall part movable into latched and unlatched positions, a pair of switch mechanisms therein, said switch mechanisms being operable either together or at different times into "on" and "off" positions, and a pair of independently operable operating elements one for each switch mechanism, the combination therewith of means whereby an operation of either of said operating elements into the "on" position will retain the latch in latched position and whereby an operation of one of said operating elements into the "off" position at a time when both of said operating elements are in the "on" position will render the latch readily releasable.

In testimony whereof I affix my signature in the presence of two witnesses.

HUBERT F. KRANTZ.

Witnesses:
JOHN L. KOLLE,
BROGER DYBDAHL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."