

949,283.

T. E. MURRAY.

ELECTRIC CUT-OUT.

APPLICATION FILED MAR. 27, 1909

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.

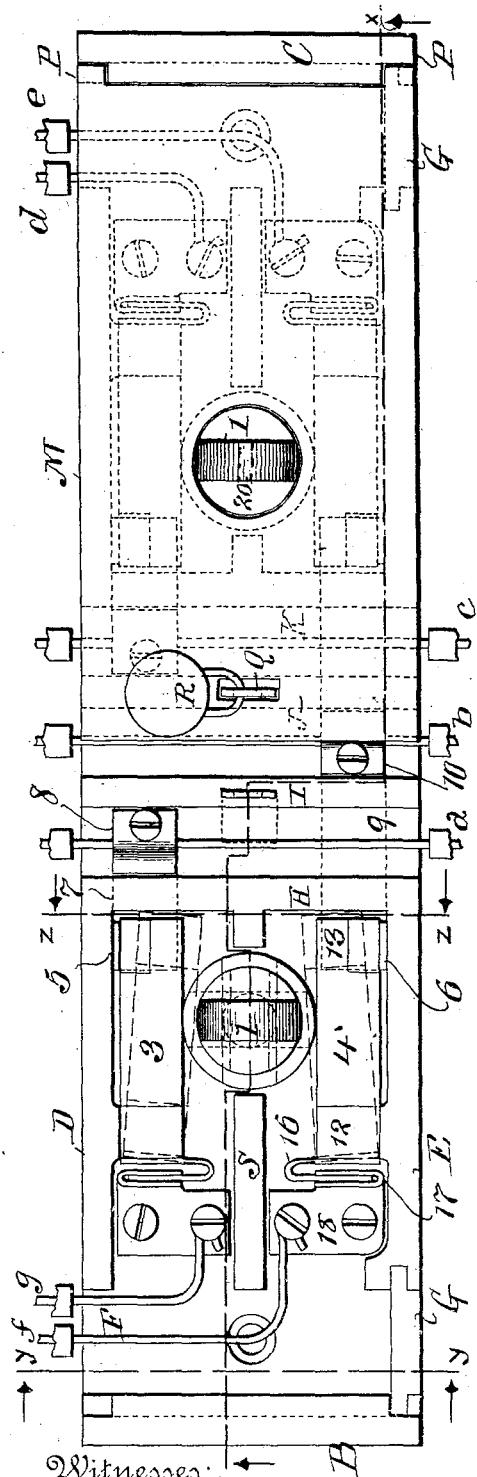


Fig. 1.

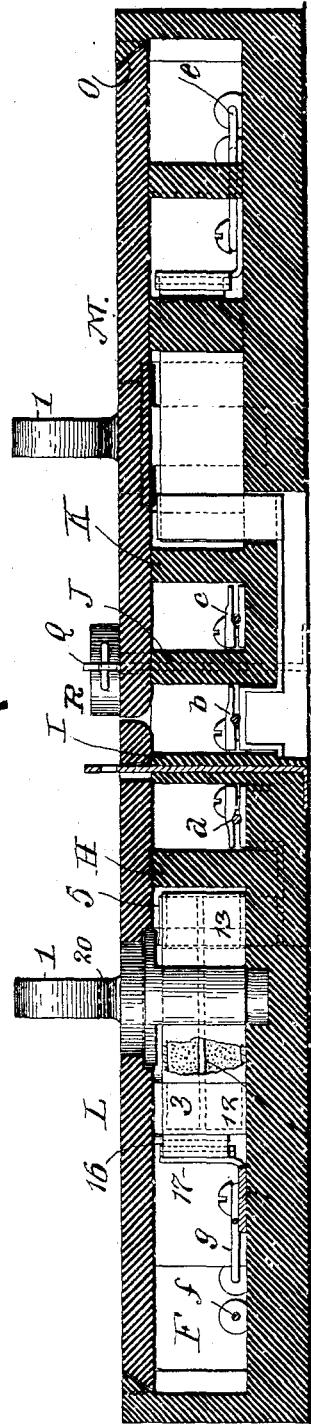


Fig. 2.



Fig. 11.

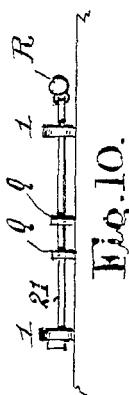


Fig. 10.

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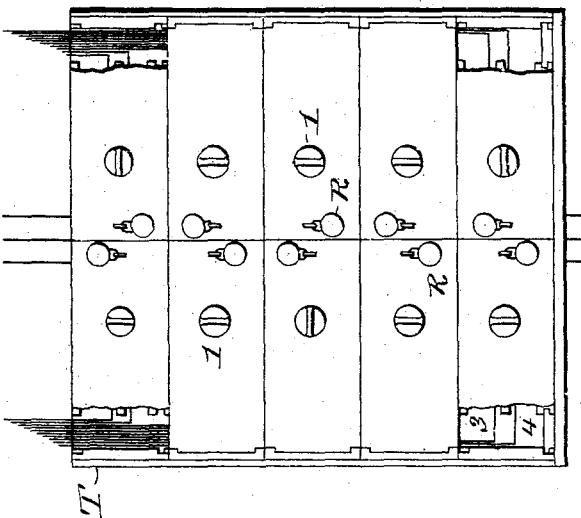


Fig. 5.

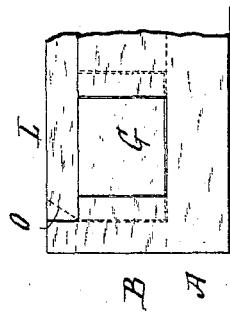


Fig. 6.

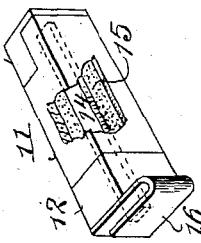


Fig. 7.

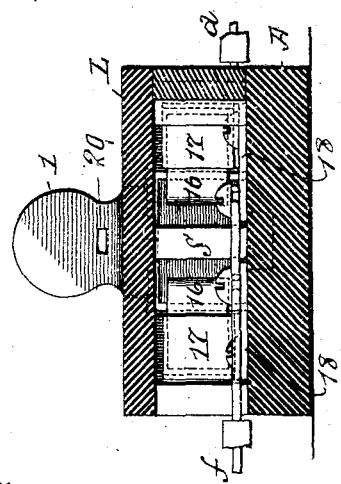


Fig. 8.

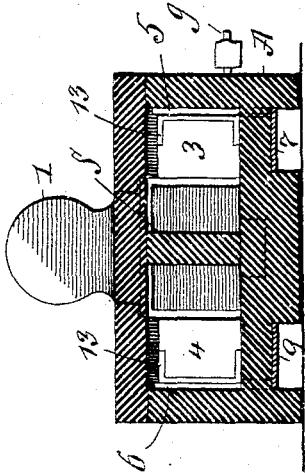


Fig. 9.

Witnesses:

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Inventor

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# UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N. Y.

## ELECTRIC CUT-OUT.

949,283.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed March 27, 1909. Serial No. 486,093.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electric Cut-Outs, of which the following is a specification.

The invention relates to electric cut-outs, and consists in the construction, whereby the fuse is disposed in a pivoted circuit closing arm within the inclosing box or case, which arm is controlled to make or break circuit by suitable means from the exterior of said case; also in the combination of a plurality of said boxes in juxtaposition and the arrangement of the main and local conductors connected therewith, and also in the various combinations more particularly set forth in the claims.

In the accompanying drawings—Figure 1 is a plan view of my cut-out. Fig. 2 is a section on the line  $x, x$ , of Fig. 1. Fig. 3 is a section on the line  $y, y$ , of Fig. 1. Fig. 4 is a section on the line  $z, z$ , of Fig. 1. Fig. 5 is an elevation of a corner of the inclosing case, showing the removable cover and end piece. Fig. 6 shows separately and in perspective, the cam key for operating the pivoted fuse cases. Fig. 7 shows separately and in perspective, one of the fuse cases with a portion of the wall broken away to exhibit the fuse strip and filling. Fig. 8 shows separately and in perspective, the holder for the spring terminal at one end of a fuse case. Fig. 9 shows in face elevation, a number of my cut-out boxes disposed in juxtaposition on a suitable support. Figs. 10 and 11 show modified forms of the locking device.

Similar numbers and letters of reference indicate like parts.

As here shown, my cut-out is constructed to control two local circuits receiving current from a three wire system, of which  $a$  and  $c$  are respectively the plus and minus, and  $b$  the neutral conductor. The local conductors  $d, e$ , on the right hand side of Fig. 1 are respectively electrically connected to main conductors  $b$  and  $c$ , and the local conductors  $f, g$ , on the left hand side of Fig. 1 are respectively electrically connected to main conductors  $a$  and  $b$ .

The construction of the parts of the device on each side of the middle line repre-

sented by the conductor  $b$  is the same, so that a description of one side will apply to both.

A is the base plate of the apparatus, made preferably of porcelain or other fictile material, and having formed integrally with it, end walls B, C and side walls D, E, the whole forming, with the covers, an inclosing box. The side walls are separated at their ends from the end walls by intervals, one of which may be left open, as shown at F, for the passage of the local circuit wires, and the other closed by a shouldered sliding piece G. Where a number of cut-outs are grouped together in juxtaposition, as shown in Fig. 9, all of these intervals may be left open, so that the local conductors from each box may be carried through other boxes, if desired, of the series to an outlet in the wall of the last box of said series.

Extending between the side walls D, E are four partitions, H, I, J, K, forming channels through which pass the main conductors  $a, b, c$ . Two covers L, M meeting at their inner edges rest on said partitions and side walls, and at their outer ends are beveled to extend beneath similarly beveled shoulders on the end walls B, C, as shown at O, Fig. 2. On each side of the beveled edge of the covers are projections P which receive the beveled shoulder of the end wall between them, lateral displacement of the cover being in this way prevented. In order to lock the covers in place, I provide metal strips Q which may be secured to the base in any suitable way—(they are here shown embedded in partitions I, J) which extend up through openings in said covers. Apertures are formed in said strips, above said covers, to receive the shackles of any suitable seal fastenings R.

I will now describe the parts which have already been referred to as the same on both sides of the device.

From the partition H extends a longitudinal partition S which is divided to receive a rotary cam key 1, seated in the base A at its lower end and shouldered in an opening in the cover L, through which it extends. The function of key 1 is to move the swinging fuse cases 3, 4 to close circuit with fixed contact terminals 5, 6. Said terminals are metal plates disposed on the inner surface of the side walls B, C. The terminal 5 connects by a metal strip 7 with the clip 8 which

receives main conductor *a*, and the terminal 6 connects by a similar strip 9 with the clip 10 which receives the neutral conductor *b*.

The fuse cases 3, 4 are alike and each is 5 constructed as follows (see Fig. 7). 11 is a tubular envelop of fictile material, preferably porcelain, having metal end caps or terminals 12, 13. Between said terminals extends the fuse strip 14, and the space 10 within the envelop is filled with pulverized non-combustible material 15, (see Fig. 7) in which the strip 14 is embedded. One fuse terminal 12 has its resilient end plate bent over in loop form, as shown at 16, Fig. 7, 15 said bent over portion 16 entering between the vertical bent over loop 17 of a plate 18, Fig. 8, which is secured to the base A. Said mutually engaging loops, 16, 17, together form a spring. One of the local circuit 20 conductors, namely, *f*, is connected to plate 18, and the other local conductor *g* is connected to the similar plate 18 to which fuse case 3 is attached. Circuit, therefore, proceeds from the main conductors *a*, *b* to the 25 local conductors *f*, *g*, through the metal strips 7 and 9, contact terminals 5, 6, fuse case terminals 13, fuse strips 14 in cases 3, 4, fuse case terminals 12 and plates 18.

When the cam key 1 is turned so that its 30 operation portion is in line with partition S, (dotted lines on the left hand side of Fig. 1) the springs 16, 17 at the end of each fuse case 3, 4 move the terminals 13 of said fuse cases out of contact with the fixed terminals 35 5, 6—thus cutting out the local circuit conductors *f*, *g*. When the cam key 1 is turned, as shown in full lines, so that its operating portion is transverse to the partition S, said operating portion acting on the sides of the 40 fuse cases 3, 4, swings said fuse cases, and against the resiliency of the spring, carries the terminals 13 of said fuse cases into contact with the fixed terminals 5, 6—thus completing circuit to conductors *f*, *g*.

45 It is to be particularly noted that each fuse case, 3 or 4, forms the swinging arm of an electric switch, and that the fuse strip is brought into and out of circuit simply by swinging its containing case, so as to 50 bring a terminal on said case into and out of contact with a fixed circuit terminal disposed in its path of movement; also, that this is accomplished by simply rotating the cam key 1 which here controls both fuse 55 cases in like manner, and so makes and breaks circuit in both local conductors. It is further to be observed that the external shape of the device is that of a right prism or box without projections on side or end 60 walls or bottom. This enables me to place any number of cut-out boxes in close contact on any suitable support, such as the frame or case T, Fig. 9, where they are shown as piled in juxtaposition, one above the other.

65 The local circuit conductors leading from

each box are carried up through the open intervals F between the side and end walls of the series of boxes above it, these intervals registering, so that in this way, conduits are formed for the reception of said conductors. In this way, the cut-out boxes belonging to any number of local circuits may be conveniently assembled at one place, and when a new circuit is to be included, another box is easily added. The main conductors 70 75 *a*, *b*, *c* extend through all the boxes.

While I have described the strips Q as each provided with a seal fastening R, it is to be understood that I do not limit myself to this construction. I may provide the lugs 80 of the cam key 1 with openings 19, 20 disposed relatively at right angles, and carrying a locking bar 21 headed at one end through either opening 19 or 20 and the opening in strip Q, as shown in Fig. 11, a 85 seal fastening R being then secured in an aperture in the end of said bar to prevent removal thereof. In such case, said bar will not only prevent removal of the cover, but also the rotation of the cam key. Or, I may 90 carry a bar 21 through both of the cam keys in the device and both strips Q, as shown in Fig. 10. Or, I may simply insert a bar through both openings in the strips Q without passing it through the cam keys, using as 95 before, a single seal at one end.

I claim:

1. In an electric switch, a base plate, a support pivoted to swing in a plane parallel to said base, a fuse on said support, metallic 100 end pieces on said support connected to the extremities of said fuse, and two fixed circuit terminals: one of said end pieces being pivoted to one circuit terminal and the other end piece closing circuit with the other 105 circuit terminal.

2. In an electric switch, a base plate, a fixed circuit terminal, a fuse case and fuse of the cartridge type, metallic end pieces on 110 said case, and two fixed circuit terminals: the said fuse case being pivoted at one end to one circuit terminal and movable in a plane parallel to said base to close circuit at its opposite end piece with the other circuit terminal.

3. In an electric switch, a base plate, a support, two arms thereon swinging in a plane parallel to said plate, a fuse in circuit carried by each of said arms, fixed contacts, and means for simultaneously operating both 120 of said arms to close or open circuit at said contacts.

4. In an electric switch, a base plate, a fuse case, a spring hinge connection between one 125 end of said case and said base plate, a fuse in said case in circuit with said hinge connection and with an end terminal, and a contact on said base in the path of movement of said terminal; the said path being in a plane parallel to said base.

5. In an electric switch, a support, a fuse case, a plate on said support having a projection doubled over to form a loop, a plate on one end of said fuse case doubled over 5 to form a loop and detachably engaging with the loop on said support plate, a plate on the opposite end of said fuse case, a fuse in said case connecting said fuse case plates, a contact on said support, and means for moving 10 the said fuse case to cause the plate on the free end thereof to close circuit with said contact.

6. In an electric switch, a support, a swinging arm thereon, terminals on said 15 arm, a fuse carried by said arm and connecting said terminals, a fixed circuit terminal in the path of movement of the terminal on the free end of said arm, and a rotary cam key disposed in said support and engaging 20 with said arm to move said free end terminal thereon into contact with said fixed terminal.

7. In an electric switch, a support, a swinging arm thereon, terminals on said 25 arm, a fuse carried by said arm and connecting said terminals, a fixed circuit terminal in the path of movement of the terminal on the free end of said arm, a rotary cam key disposed in said support and engaging with 30 said arm to move said free end terminal thereon into contact with said fixed terminal, and a removable locking device for preventing rotation of said key.

8. In an electric switch, a box, a cover 35 therefor, a swinging arm in said box, terminals on said arm, a fuse carried by said arm and connecting said terminals, a fixed circuit terminal in said box and in the path

of movement of the terminal on the free end of said arm, a rotary cam key disposed in 40 said box extending through said cover and engaging with said arm to move said free end terminal thereon into contact with said fixed terminal, and a locking device for preventing rotation of said key and removal of 45 said cover.

9. The combination of a support, a plurality of boxes disposed in juxtaposition thereon, main circuit conductors extending through all of said boxes, and, in each box, 50 local circuit conductors leading from said main conductors, and a cut-out in said local circuit: the said local conductors extending through a transverse passage at the end of each intermediate box to an outlet in a wall 55 of the last box of the series.

10. The combination of a support, a plurality of boxes disposed in juxtaposition thereon, main circuit conductors extending through all of said boxes, and, in each box, 60 local circuit conductors leading from said main conductors, a cut-out in each local conductor, and means operable from the exterior of the box for actuating said cut-outs to make and break local circuit: the said local 65 conductors extending through a transverse passage at the end of each intermediate box to an outlet in a wall of the last box of the series.

In testimony whereof I have affixed my 70 signature in presence of two witnesses.

THOMAS E. MURRAY.

Witnesses:

MAY T. McGARRY,  
GERTRUDE T. PORTER.