G. GUT.

SWITCH BOX.

APPLICATION FILED JULY 6, 1910.

977,187. Patented Nov. 29, 1910.

Fig. 1

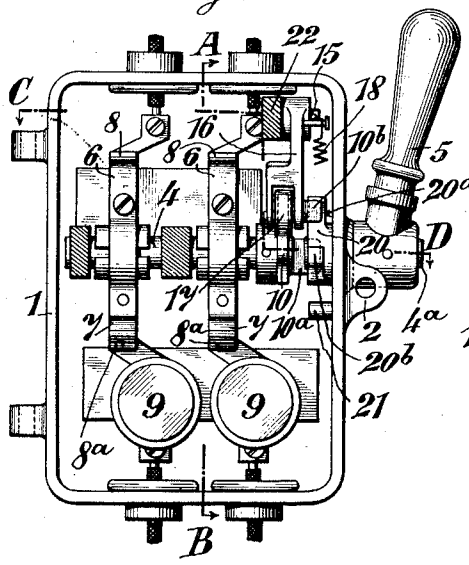


Fig. 2

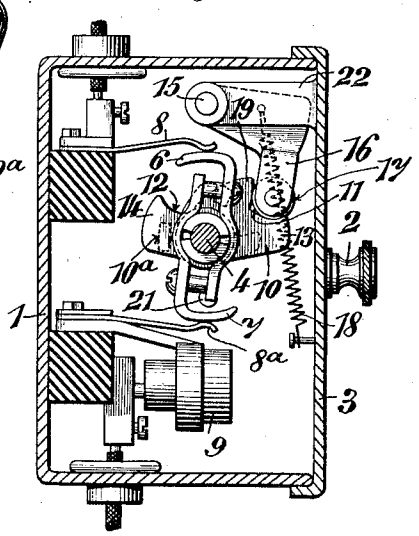


Fig. 3

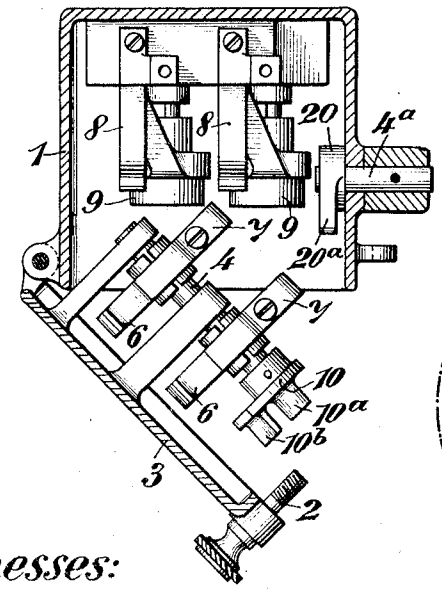


Fig. 4

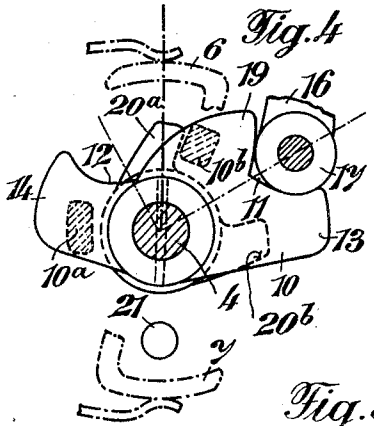
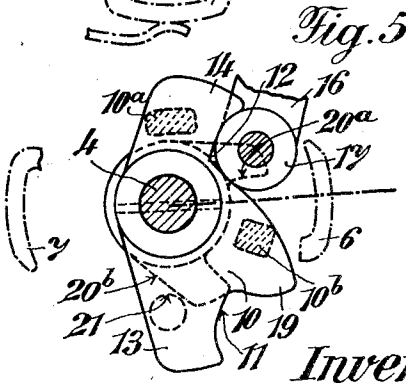


Fig. 5



Witnesses:

B. V. Sommers

May Ellis.

Inventor:

Gottlieb Gut.

By Henry Orth Jr.

Atty.

UNITED STATES PATENT OFFICE.

GOTTLIEB GUT, OF SEEBACH, NEAR ZURICH, SWITZERLAND, ASSIGNOR TO THE FIRM OF AUFZÜGE- & RÄDERFABRIK SEEBACH, OF SEEBACH, NEAR ZURICH, SWITZERLAND.

SWITCH-BOX.

977,187. Specification of Letters Patent. **Patented Nov. 29, 1910.**

Application filed July 6, 1910. Serial No. 570,643.

To all whom it may concern:

Be it known that I, GOTTLIEB GUT, a citizen of the Republic of Switzerland, residing at Seebach, near Zurich, Sonneggstrasse, Switzerland, have invented certain new and useful Improvements in Switch-Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in switch-boxes of that class in which the shaft that carries the movable contacts is mounted on the box-cover.

With prior switch-boxes of this type, if the switching-shaft is actuated from a distance, for example by means of a system of rods or by chain-gear, the cover can only be opened if the said actuating-mechanism is at least in part removed.

According to my invention I overcome this inconvenience by mounting an auxiliary shaft in the wall of the box, for the purpose of actuating the switching-shaft. The arrangement is such that when the cover of the box is closed, the auxiliary shaft is so connected with the switching-shaft, with the aid of intermediate mechanism, that on rotation of the auxiliary shaft the switching-shaft is turned also. The intermediate mechanism also has members which prevent opening of the box-cover when the switch-contacts are in their operative position.

An embodiment of the invention is illustrated in the accompanying drawing, in which—

Figure 1 is an elevation of the switch-box, the cover being removed. Fig. 2 is a section on the line A—B of Fig. 1. Fig. 3 is a section on the line C—D of Fig. 1, with the cover partly open. Figs. 4 and 5 are detail views of the members for coupling the switching- and auxiliary shafts.

The switch-box 1 is closed by a cover 3, with screw 2. The switching-shaft 4 is mounted on the cover 3 and carries the removable contacts 6, 7 and a cam-plate 10 (Figs. 4 and 5), having two projections or lugs 10^a, 10^b lying parallel with the switching-shaft 4 (Fig. 3). 8 and 8^a (Fig. 2) are the contact-fingers for the contacts 6 and 7. 9, 9 are removable safety-cartridges (Figs. 1 and 2). The cam-plate 10 has two depressions 11, 12 which are confined by the elevated parts 12, 19, 13 (Figs. 2, 4, 5).

Secured to the cover 3 are two brackets 22, carrying a pin 15, to which there is fulcrumed the one end of a bent lever 16. The other end of this lever 16 carries a roller 17, which is constantly pressed against the plate 10 by means of a spring 18, secured at one end to the lever 16 and at the other end to the cover 3 (Fig. 2).

In alinement with the shaft 4 (when the cover 3 is shut), there is mounted in the wall of the box 1 an auxiliary shaft 4^a (Figs. 1 and 3). This shaft 4^a is provided outside the box with a handle 5, while at its inner end it carries a hub 20 having two catches 20^a, 20^b, between which there projects the lug 10^b of the plate 10.

The operation of the switch is as follows: Assuming the contacts to be in their operative position, as shown in Figs. 1, 3 and 4, the lug 10^a will lie behind the hub 20 (Fig. 4) and thus prevents opening of the cover 3. The lug 10^b lies against the catch 20^a. The roller 17 rests in the depression 11 and bears against the elevation 19.

On the switch being thrown over into the inoperative position (Fig. 5), that is, on rotation of the lever 5, the shaft 4^a with hub 20 is turned and the catch 20^a will carry around the lug 10^b and thus the plate 10. The elevation 19 will now press back the roller 17 against the action of the spring 18. At the moment in which the roller passes the point of the elevation 19, the plate 10 will snap around until the roller 17 lies in the depression 12 (Fig. 5). At the same time the lug 10^a will arrive above the hub 20. The current, which enters at 8 and leaves at 8^a, will, in this position of the parts, be interrupted at two places. In order that the handle 5 may not snap around also, a stop 21 is provided on the wall of the box 1, in such position that the catch 20^b strikes it and prevents further rotation of the handle. By turning the screw 2 the cover can now be opened, the shaft 4 with the contacts 6, 7, the plate 10, and the lever 16 with the roller 17 and spring 18, being carried with it. The lug 10^a will move laterally past the hub 20.

With the above construction, the back of

the box and the parts secured in the interior (such as contact-fingers, safety-cartridges, and conductors) are readily accessible for inspection or repair. The inspection or renewal of the contacts 6, 7 is absolutely without danger, as these parts on opening of the cover move out of the interior of the box. The cover cannot be opened when the contacts are in their operative position; and, on the other hand, when the cover is open the contacts cannot be brought into the closed-circuit position again, as they are outside the box.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a switch-box, in combination, a box, a cover therefor, a switching-shaft mounted on the latter, and an auxiliary shaft mounted in the box wall, and means which when the cover is closed couples the two shafts and thus enables transmission of motion from the auxiliary to the switching-shaft, substantially as described.

2. In a switch-box, in combination, a box, a cover therefor, a switching-shaft mounted on the latter, and an auxiliary shaft mounted in the box wall, means which when the cover is closed couples the two shafts, and means for automatically locking the cover in the coupled position of the shaft, substantially as described.

3. In a switch-box, in combination, a box, a cover therefor, a switching-shaft mounted on the latter, and an auxiliary shaft mounted in the box wall, and means which when the cover is closed couples the two shafts and simultaneously locks the cover, substantially as described.

4. In a switch-box, in combination, a box, a cover therefor, a switching-shaft mounted on the latter, and an auxiliary shaft mounted in the box wall, means mounted on the auxiliary shaft, and a plate mounted on the switching-shaft and presenting two projections of which in the closed position of the cover the one is engaged by the said means and enables the motion of the auxiliary shaft to be transmitted to the switching-shaft, while the second projection engages with the auxiliary shaft and locks the cover, substantially as described.

5. In a switch-box, in combination, a box, a cover therefor, a switching-shaft mounted on the latter, and an auxiliary shaft mounted in the box wall, a device mounted on the auxiliary shaft and presenting two catches, and a cam-plate mounted on the switching-shaft and presenting two projections parallel with the latter shaft, of which projections the one is engaged by the said catches, while the other projection engages with the auxiliary shaft and locks the cover, and spring-operated means mounted on the cover engaging with and controlling the position of said cam-plate, and means for limiting the rotation of the said device, substantially as described.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GOTTLIEB GUT.

Witnesses:

BERNARD KNITTEL,

CARL GUBLER.