

P. DRUSEIDT.
ELECTRIC SWITCH.
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1,034,596.

Patented Aug. 6, 1912.

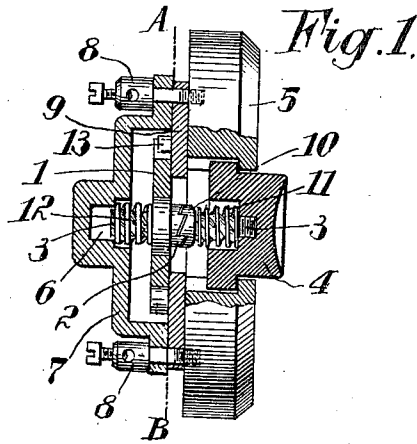


Fig. 5.



Fig. 3

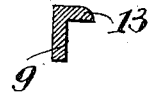


Fig. 2

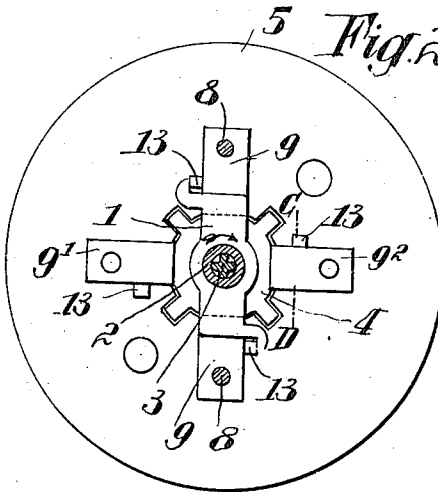


Fig. 6

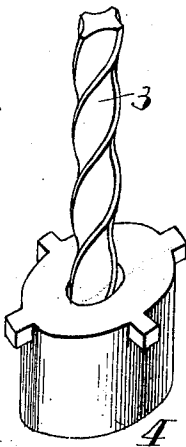
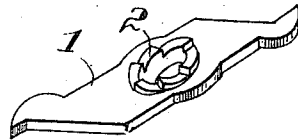


Fig. 4



Witnesses
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UNITED STATES PATENT OFFICE.

PAUL DRUSEIDT, OF REMSCHEID, GERMANY.

ELECTRIC SWITCH.

1,034,596.

Specification of Letters Patent.

Patented Aug. 6, 1912.

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To all whom it may concern:

Be it known that I, PAUL DRUSEIDT, a subject of the Emperor of Germany, and resident of Elberfelderstrasse 27, Remscheid, Germany, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

This invention has reference to an electric switch, the contacts and switch body of which are uncoupled, or at least loosened, from each other in the direction of movement of a press-button, before the switch body rotates or while it slides along the contacts in its rotation.

The invention is illustrated by way of example in the accompanying drawing, in which:

Figure 1 shows the switch partly in section and partly in elevation, Fig. 2 is a section on the line A—B of Fig. 1, and Fig. 3 is a section on the line C—D of Fig. 2. Fig. 4 is a perspective view of a detail of a device, hereinafter termed a switch body. Fig. 5 is a view similar to Fig. 4 showing a coupling nut. Fig. 6 is a view similar to Fig. 4 showing a press button and high pitched screw which coacts with the element shown in detail in Figs. 4 and 5.

Similar characters refer to similar parts throughout the several views.

The switch body 1 is formed or provided on its front face with a toothed coupling 2 having obliquely rising teeth and a central bore through which a high-pitch screw 3 passes freely. The said screw is fixed non-rotatably in a press-button 4 which is slidable axially, and guided so that it cannot rotate, in the switch plate 5. The screw 3 has a bearing in a socket 6 formed in a cap 7 that covers the working parts of the switch at the back, which cap is advantageously connected to a switch plate 5 and contacts 9 by means of the terminals 8. Against the oblique faces of the teeth of the coupling 2, a coupling nut 10, having like shaped teeth, bears, which nut is rotatable on the high pitch thread of the screw 3 and the teeth of which nut engage the teeth of the coupling 2 under the action of a spring 11. A stronger spring 12 passes the switch body 1 against the contacts 9 which are provided with rearwardly projecting lugs 13 on which the switch body 1 is displaced lengthwise in the direction of movement of the press-button 4 when the said button with the screw 3 is pushed inwardly. In order to

reduce the very short displacement rubbing between the switch body 1 and the lugs 13, the latter may rise somewhat obliquely, as shown in Fig. 3, or at the points of contact either the lugs or the switch body may be provided with small rollers.

The action of the switch is as follows: On pushing in the screw 3 by pressing upon the button 4 the coupling nut 10 is prevented from rotating so long as the switch body 1 is sliding along the axial surfaces of the lugs 13, but as soon as the switch body begins to slide along the beveled portion of the said surfaces, as shown in Fig. 3, the nut 10, coupling 2 and switch body 1 are rotated in the direction of the arrow as the screw 3 is pushed farther inward. Instead of the lugs 13 being beveled, the switch body may be formed with beveled contact surfaces. During the rotation of the switch body 1 on the beveled surfaces, which may of course be inclined at any desired angle and of any desired length, the switch body in its rotation is pushed away from the contacts in the direction of the pressure, and accordingly the rubbing frictional contact is entirely suspended, or at least reduced by the loosening, the already compressed spring 12 being at the same time put under further tension. As soon as the switch body 1 leaves the lugs 13 it is rotated under the strong action of the spring 12 with a sudden jerk in the direction of the arrow (Fig. 2) against the next lugs 13, *i. e.* from 9, 9 to 9¹, 9², being turned with the coupling nut 10 around the high-pitch thread of the screw 3. During this sudden rotation of the switch body 1, the said body together with the coupling 2 can overrun the coupling nut 10, and thus the important result is attained that the screw 3 may have a very feeble pitch and the couplings 2 or 10, or both, may be formed with more than four teeth although the switch body 1 rotates a quarter of a revolution at each operation or one of them may have more than four teeth and the other only one tooth, the re-coupling in that case in the return of the screw 3 taking place earlier than a quarter revolution, so that the press-button only requires to be pushed in a few tenths of a millimeter farther than the lugs 13 project from the contacts 9. A very short movement of the press-button, only from one to two millimeters, suffices to actuate the switch. When the press-button is released the spring 11

pushes it together with the screw 3 back into the normal position, the coupling nut 10 sliding back over the teeth of the coupling 2.

5 Always according to the arrangement of the lugs 13, the spring 12 effects exclusively the rotation of the nut 10 and the switch body coupled therewith, or the rotation of the clatter is effected by the pushing in of the screw 3, for example if the lugs 13 or 10 the contacts 9 or the switch body 1 are provided with gradually rising inclined surfaces.

The spring 12 effects only a very slight 15 rotation of the nut 10 and the switch body 1 coupled therewith if, for example, the lugs 13 only project a few tenths of a millimeter, or if the latter are dispensed with, in which event the screw thread must be of 20 suitable length and the couplings 2 and 10 must also have a suitable number of teeth.

The switch body 1 is in the case of change-over or ordinary switches provided with wings as shown in Figs. 1 and 2; for series 25 switches the latter may be of angular shape, or there may be a larger number of them, for example 3.

Instead of displacing or loosening the switch body, it will be understood that the 30 contacts or the lugs may be displaced axially; further, the lugs may also be mounted to project in the opposite direction on the switch body in order to effect in accordance with the invention the uncoupling, loosening 35 or reduction of the rubbing of the switch body and the contacts in the direction of movement of the pressed button.

I claim:

1. In an electric switch, the combination 40 of a rotatable switch body, a plurality of contacts adapted to be engaged by said switch body, a coupling member carried by said switch body, a reciprocable, but non-rotatable, screw, a coupling nut carried by 45 said screw adapted to coact with said coupling member of said switch body, a push button for operating said screw, means for normally retaining said coupling member and nut in engagement, and a spring adapted 50 to normally retain said switch body in engagement with said contacts.

2. In an electric switch, the combination

of a rotatable switch body, a plurality of contacts adapted to be engaged by said switch body, a coupling member carried by 55 said switch body, a reciprocable but non-rotatable screw, a coupling nut carried by said screw adapted to coact with said coupling member of said switch body, a push button for operating said screw, a spring 60 interposed between said button and coupling nut to retain the latter in engagement with said coupling member, and a second spring adapted to normally retain said switch body 65 in engagement with said contacts.

3. In an electric switch, the combination of a rotatable switch body, a plurality of contacts adapted to be engaged by said switch body, a coupling member carried by 70 said switch body, a reciprocable but non-rotatable screw, a coupling nut carried by said screw adapted to coact with said coupling member of said switch body, a push button for operating said screw, a spring 75 interposed between said button and coupling nut to retain the latter in engagement with said coupling member, and a second spring adapted to normally retain said switch body 80 in engagement with said contact, said second mentioned spring having greater tension than said first mentioned spring, substantially as and for the purpose set forth.

4. In an electric switch, the combination of a reciprocable screw, a switch body revolvable about the axis of said screw, said 85 screw and switch body being movable axially one with respect to the other, a plurality of contacts disposed in the path of movement of said switch body and adapted to be successively engaged thereby, said con- 90 tacts normally preventing rotation of said switch body, a spring normally forcing said switch body toward said contacts, and means actuated by said screw for successively actuating said switch body against action of 95 said spring and rotating the same, substantially as and for the purpose set forth.

In testimony whereof, I have hereunto set my hand in presence of two witnesses.

PAUL DRUSEIDT.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.