

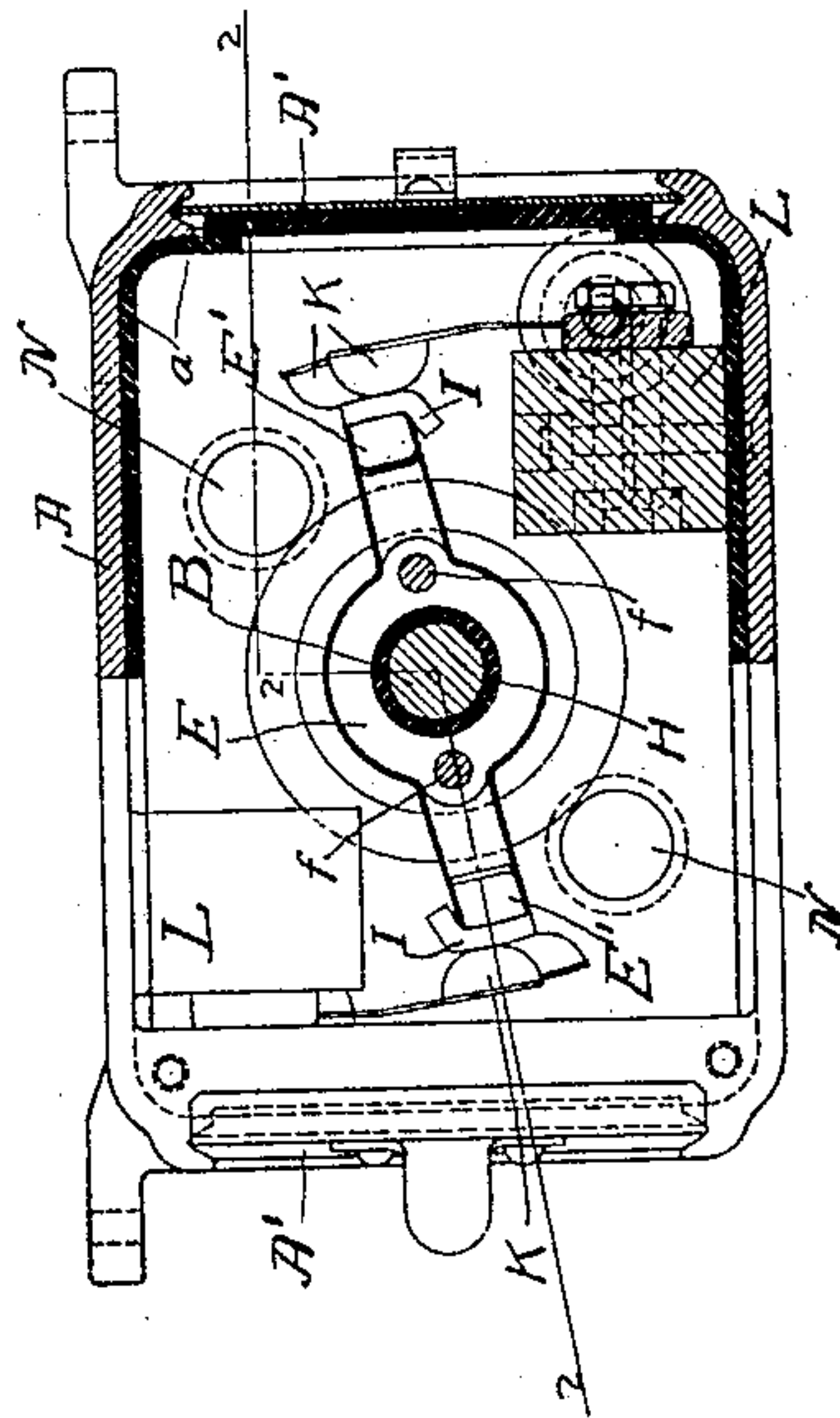
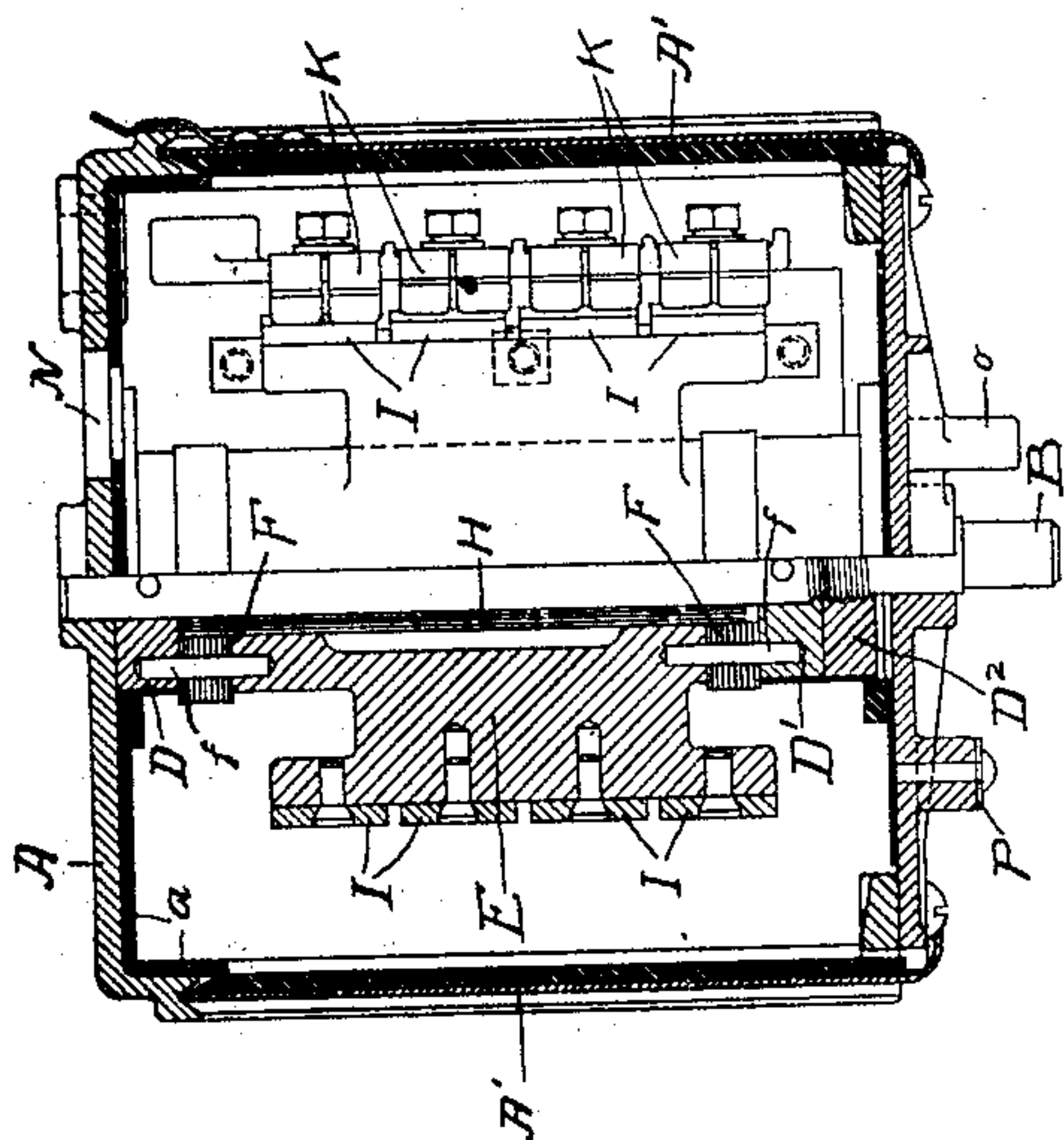
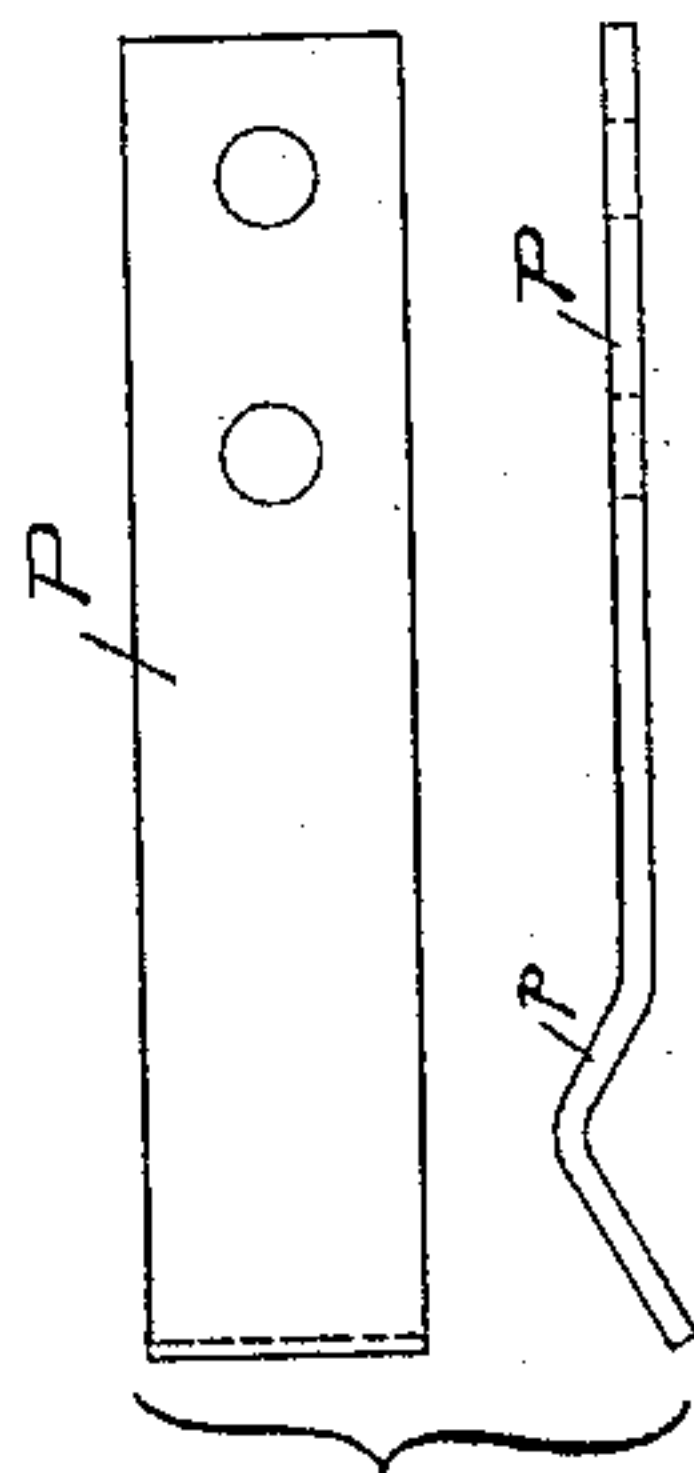
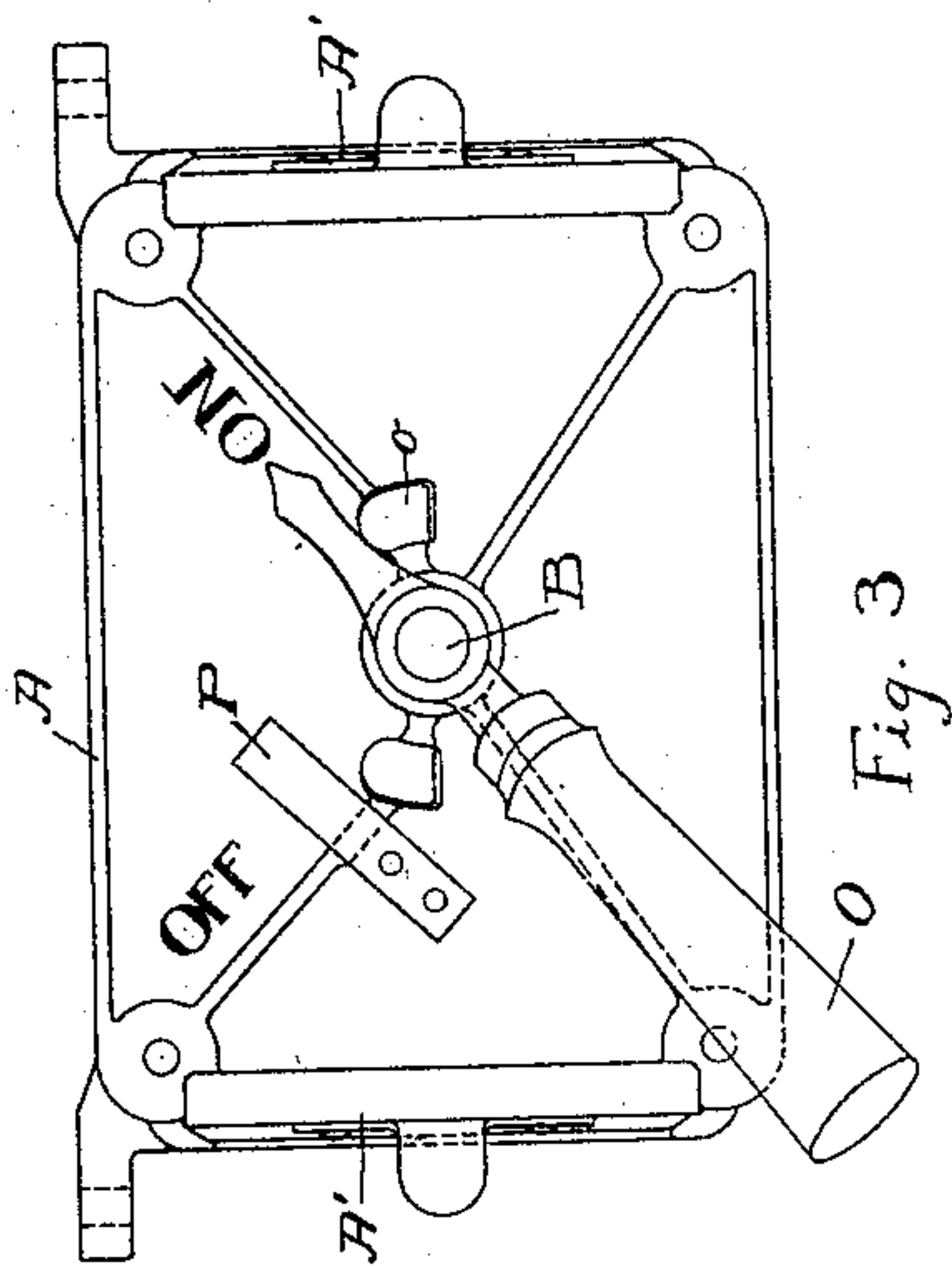
No. 706,581.

Patented Aug. 12, 1902.

F. A. MERRICK.
ELECTRIC SWITCH.

(Application filed June 26, 1901.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

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MESNE ASSIGNMENTS, TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION
OF PENNSYLVANIA.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 706,581, dated August 12, 1902.

Application filed June 26, 1901. Serial No. 66,105. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. MERRICK, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new
5 and useful Improvement in Electric Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

10 My invention has reference to electric switches, and more particularly to the switches used on electric-railway cars, commonly known as "canopy" switches, although it may be used for other purposes.

15 The object of the invention is to provide a simple, durable, and efficient switch capable of carrying and handling a considerable volume of current without injury; and the invention consists in the novel construction,
20 combination, and arrangement of parts, all as hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a horizontal section of a switch embodying
25 my invention; Fig. 2, a vertical section of the same on the line 2 2 of Fig. 1 with the handle removed; Fig. 3, a bottom plan view, and Fig. 4 a detail view, of the spring-catch which holds the switch at its open-circuit or
30 off position.

In the figures the letter A designates the casing or inclosure of the switch, having a lining *a* of insulating material and constructed with vertically-sliding door portions A' at
35 opposite sides, which give convenient access to its interior. Journaled in the top and bottom walls of the casing is a central shaft or spindle B, to the end portions of which within the casing are pinned or otherwise secured
40 upper and lower metallic heads D D', respectively, the lower head D' being also secured by a nut D², threaded on the shaft. Secured between these two heads is a metallic drum E, having opposite radially-extending contact-
45 carrying wings or arms E'. The upper and lower ends of the drum are electrically separated from the heads D and D' by means of blocks or disks F of insulating material and are mechanically connected to the said heads

by means of pins *f* of insulating material, 50 which pass through the blocks or disks F. The drum is also insulated from the shaft or spindle by a sleeve II. Secured to the vertical or peripheral edges of the arms or wings E' are a plurality of contacts I, there being 55 four contacts on each wing in the particular switch shown; but the number will obviously vary with the size and capacity of the switch.

K designates spring contact-fingers which are designed to engage the contacts I, the lat- 60 ter in the construction shown being each broad enough for engagement with two of said fingers. There are two sets of these fingers, one set for the contacts on each arm or wing. They are secured to finger boards or 65 strips L, and the fingers of each set are all electrically connected in multiple with each other. The two upper fingers of each set are placed slightly behind the other fingers, so as to remain in engagement with their respec- 70 tive contacts momentarily after the other fingers have broken their engagement, and the top portion of the casing immediately above these upper fingers is formed with vent holes or openings N. 75

O is the operating-handle, which is rigidly secured to the lower exteriorly-projecting end portion of the shaft or spindle. This handle is stopped at its "on" position by a lug *o* on the casing and is held in this position by 80 means of the friction between the contact-fingers and contacts. It is stopped and held at its "off" position by means of a spring-catch P, Figs. 3 and 4, having a raised lip *p*, over which the index end of the handle is 85 pushed.

It will be readily seen that the construction provides for a large current-carrying capacity without undue heating and that the switch is a strong and durable one, having 90 no springs or other parts of a nature likely to become deranged or out of order. In opening the switch the current is finally broken at the upper fingers by reason of the fact that, as above stated, these fingers retain their en- 95 gagement momentarily after the others and practically the entire arc is transferred and limited to these fingers. In this manner the

remaining fingers are protected and the destructive action of the arc is confined to the upper fingers, which can be readily removed and replaced when necessary. The arc, moreover, is of short duration, being almost immediately broken by the wide opening which is formed between the contacts before the off position is reached. The products of the arc escape quickly through the vent-openings at the top. It will also be noted that by finally breaking the current at the upper fingers and limiting the arcs to that portion of the switch I avoid the necessity for as careful insulation as would otherwise be necessary at the handle of the switch.

The fingers and contacts are readily accessible for adjustment, renewal, or repairs by raising the slides A' at the sides.

I do not wish to limit myself to the details of construction, arrangement, and combination which I have herein shown and described, as it is obvious that various mechanical changes may be made therein without departing from the spirit and scope of my invention as defined in the appended claims.

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

1. In an electrical switch, the combination of an inclosing casing having vent-openings in one wall thereof, a rotary drum of conducting material journaled in said casing and insulated therefrom, said drum having two sets of contacts, and a set of contact-fingers for connection with each set of said contacts, the fingers of each set being connected in multiple with each other, and those fingers of each set nearest the vent-openings being set to retain their contact engagement longer than the other fingers of each set.

2. In an electrical switch, the combination with a rotary body or drum of conducting material carrying two sets of contacts, of two sets of contact-fingers, one set for engagement with each set of contacts, the fingers of each set being all connected in multiple in the switch-circuit, and means for actuating the said drum, said fingers being so arranged

that one or more of each set will retain their contact engagement momentarily longer than the remaining fingers.

3. In an electrical switch, the combination with a rotary body or drum having two sets of contacts thereon, of two sets of relatively stationary contact-fingers, one set for engagement with each set of contacts, the fingers of each set being all connected in multiple, and an actuating-handle secured to the shaft or spindle which carries said body or drum, the contact-fingers of each set which are most distant from the said handle being placed to retain their contact engagement momentarily after the others.

4. In an electrical switch, the combination of a casing or inclosure, a shaft or spindle journaled therein, a body or drum of conducting material secured to the said shaft and carrying two sets of contacts, relatively stationary fingers for engagement with each set of contacts, the fingers of each set being connected in multiple, and a handle secured to an exteriorly-projecting end of the shaft or spindle, the wall of the casing at the opposite end thereof from the handle having vent-openings therein, and the contact-fingers adjacent to said openings being set to retain their contact engagement momentarily after the other fingers.

5. In an electrical switch, the combination of a box or casing, a shaft or spindle journaled therein, heads secured to the end portions of said shaft or spindle, a body or drum of conducting material secured to said heads and insulated therefrom and from the shaft or spindle, said body or drum having two radiating contact-carrying wings, a plurality of contact-fingers for engagement with the contacts of said wings, the fingers of each set being connected in multiple, and an actuating-handle for said shaft or spindle.

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

FRANK A. MERRICK.

Witnesses:

CORA G. COX,
H. W. SMITH.