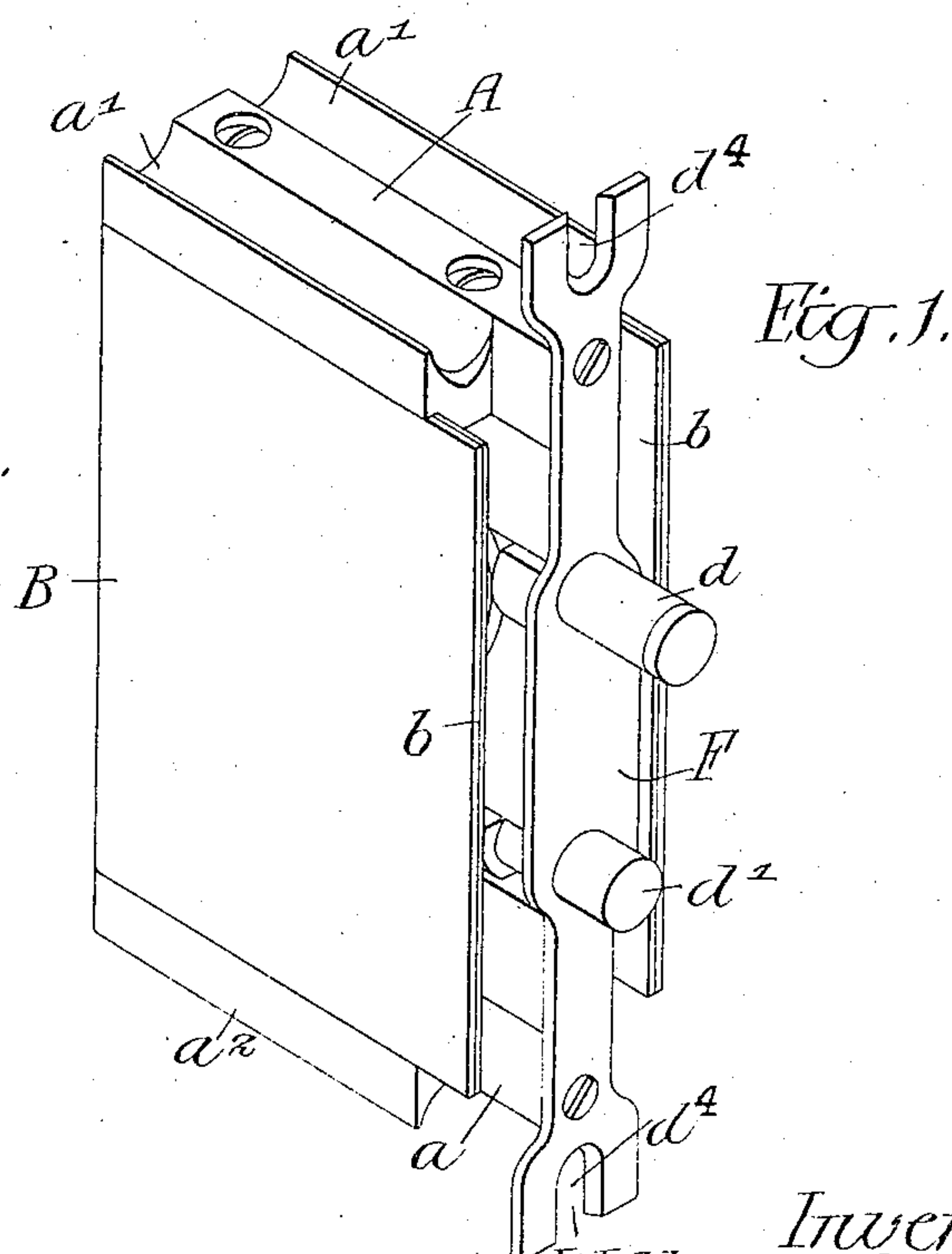
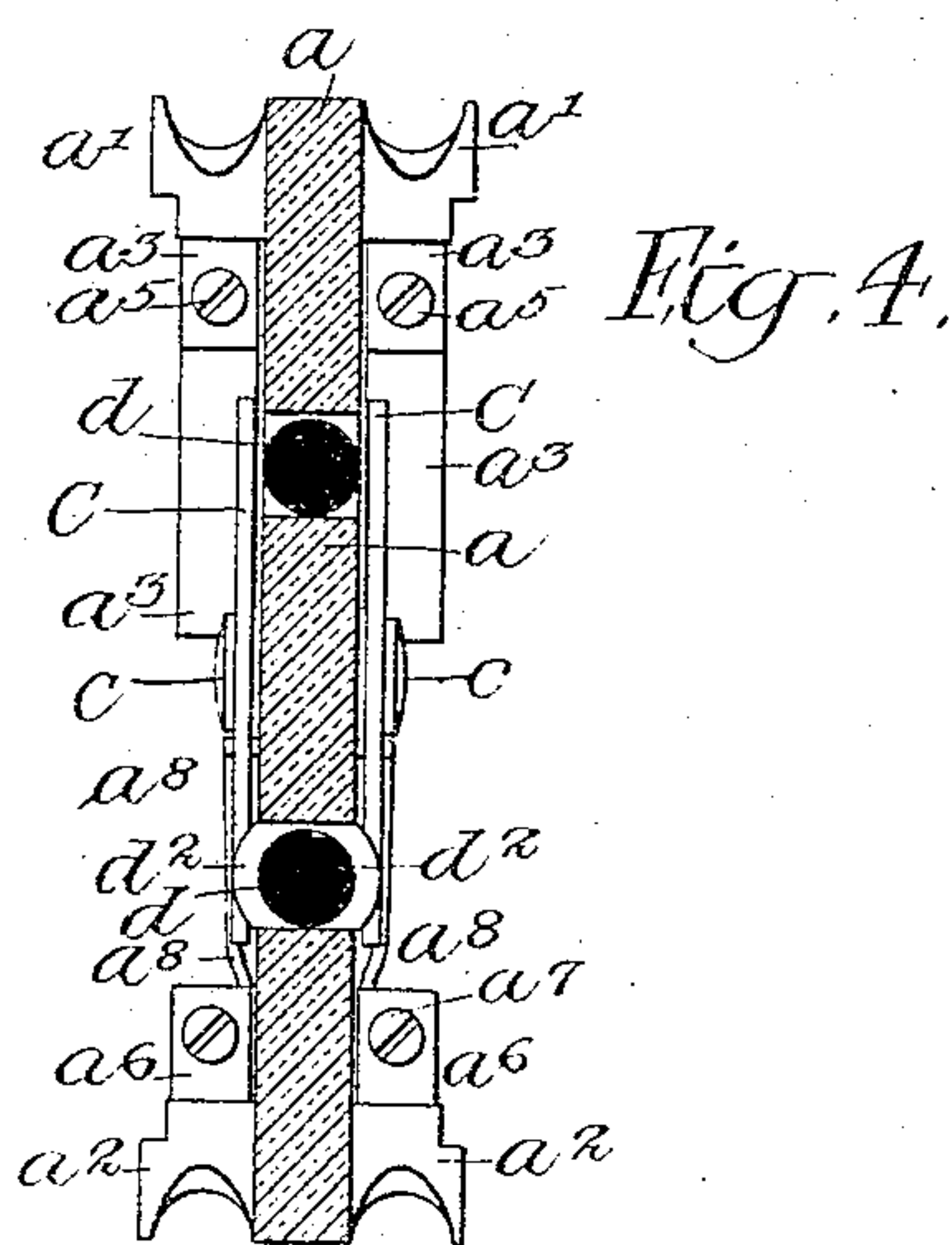
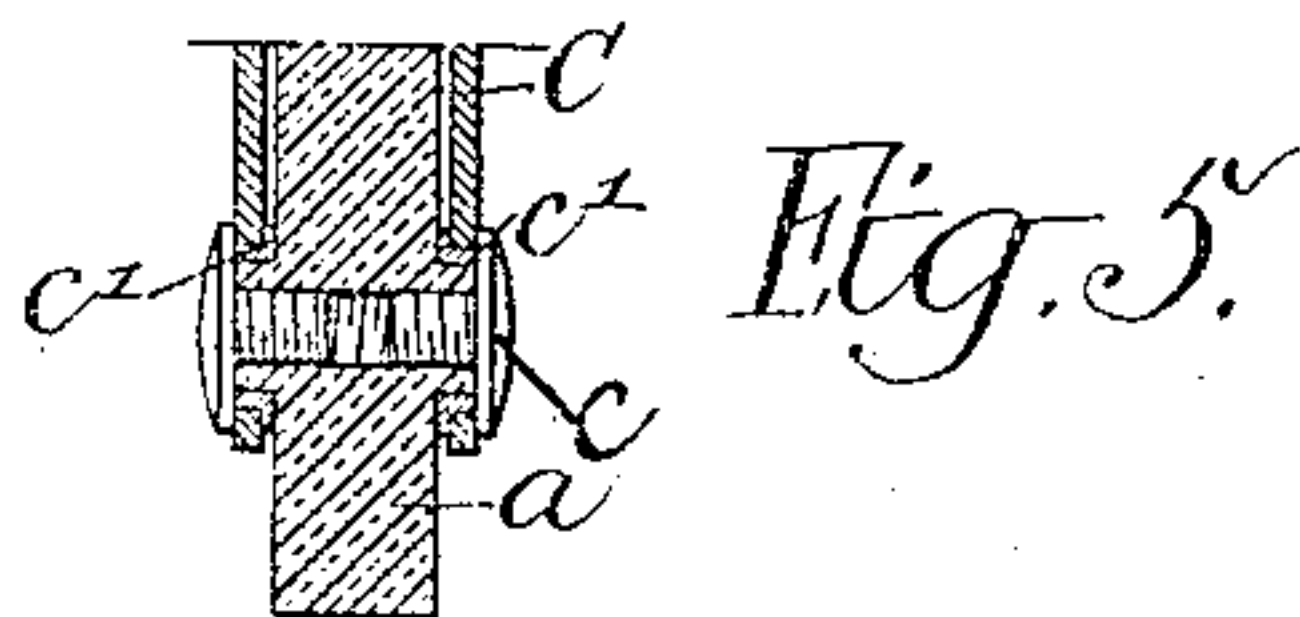
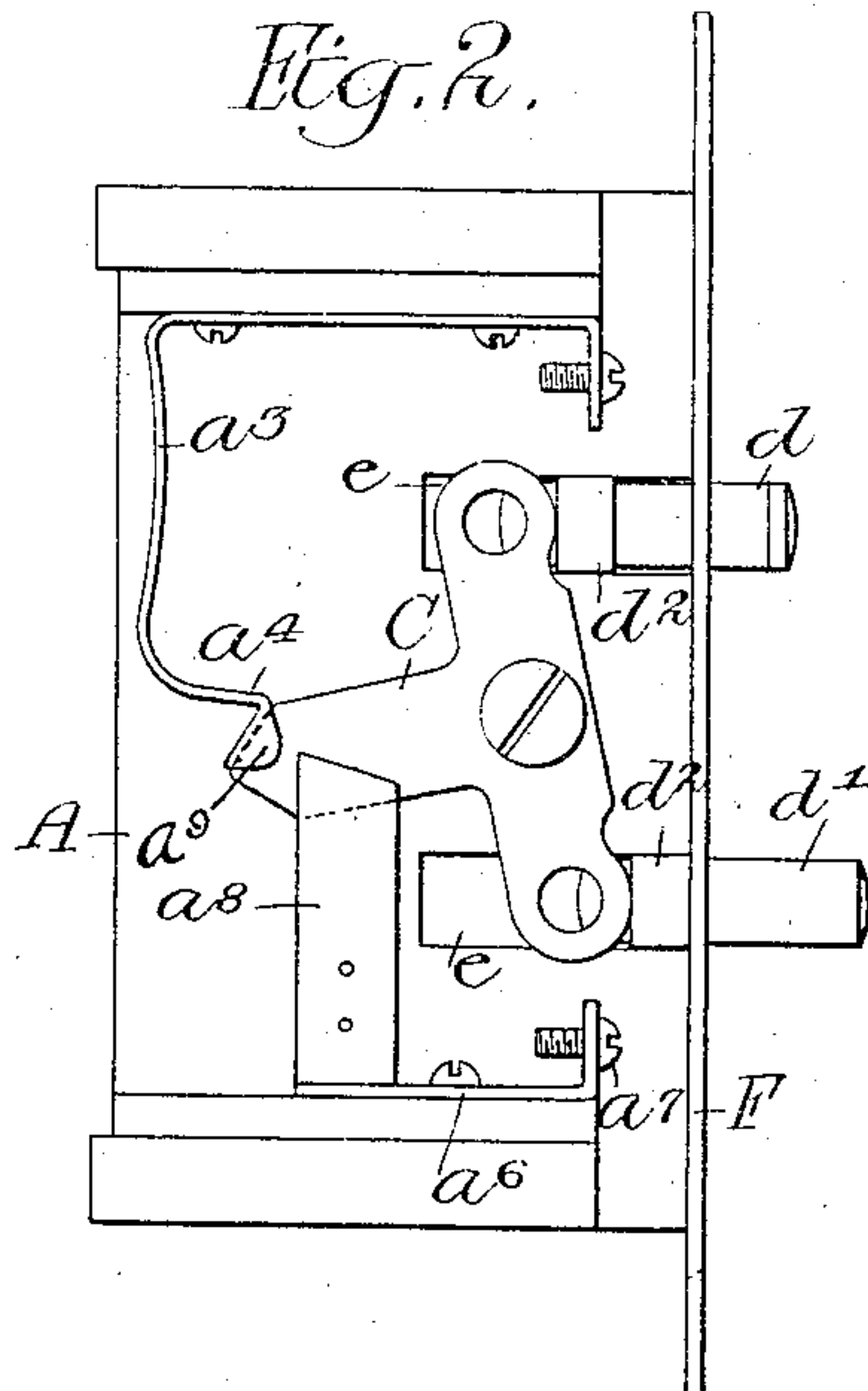


PATENTED JULY 26, 1904.

SWITCH.

APPLICATION FILED NOV. 27, 1903.

NO MODEL.



Witnesses:-  
Augustus B. Coppes  
Titus H. Gros.

Inventory  
William J. Caskey,  
Harry A. Lewis,  
by their Attorneys  
Howson & Howson



# UNITED STATES PATENT OFFICE.

HARRY A. LEWIS, OF NORRISTOWN, AND WILLIAM J. CASKEY, OF  
PHILADELPHIA, PENNSYLVANIA.

## SWITCH.

SPECIFICATION forming part of Letters Patent No. 766,047, dated July 26, 1904.

Application filed November 27, 1903. Serial No. 182,941. (No model.)

*To all whom it may concern:*

Be it known that we, HARRY A. LEWIS, residing in Norristown, and WILLIAM J. CASKEY, residing in Philadelphia, Pennsylvania, citizens of the United States, have invented certain Improvements in Switches, of which the following is a specification.

This invention relates to that class of devices for making and breaking electrical circuits particularly designated as "flush" switches, and has for its object the provision of a device which shall be less expensive to manufacture and of a simpler construction than has hitherto been considered possible in this class of apparatus, it being further desired that the parts of the device shall be of such a nature and so arranged as not to be easily deranged or liable to require frequent repair. These objects we attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our improved switch, the cover thereof being shown in position. Fig. 2 is a side elevation of the switch with the cover removed, showing the movable blades in position to complete the circuits through the switch. Fig. 3 is a side elevation similar to that shown in Fig. 2, illustrating the movable switch-blades in a position to break the circuits. Fig. 4 is a sectional elevation taken on the line 4 4, Fig. 3; and Fig. 5 is a sectional plan view on the line 5 5, Fig. 3.

In the above drawings, A represents the supporting-body of the switch, formed of any desired insulating material—as, for example, hard rubber or fiber—though in practice we prefer to construct it of porcelain or similar vitreous substance.

The cover or casing B extends around three sides of the body portion and is provided with a lining *b*, of sheet insulating material, extending over its inside surface.

The switch illustrated in the drawings is of the double-pole type—that is to say, two circuits or two portions of the same circuit extend through it, there being provided for the purpose of making and breaking said circuits two complete and independent switches oper-

ated simultaneously by push-buttons common to both.

It will be seen that the body portion A consists of a central plate *a*, having at its ends laterally-extended portions *a'* and *a''*, in which are formed grooves for the reception of the wires running to the switch. Each of the portions *a* has fixed to it a piece *a<sup>3</sup>*, of spring metal, bent at an angle and provided at one end with a terminal screw *a<sup>5</sup>* for the attachment of a wire. It will be noted that one arm only of said piece is held to the body portion A, while the other arm is free to move and has its end bent at an angle or turned on itself in the form indicated at *a<sup>4</sup>*. This end portion is preferably formed with upturned ears *a<sup>9</sup>* for a purpose hereinafter set forth. At the opposite end of the plate *a* from that having the piece *a<sup>3</sup>* is fastened a second piece of flat metal *a<sup>6</sup>*, also provided with a terminal screw *a<sup>7</sup>* and having in electrical connection with its end a blade *a<sup>8</sup>* for the reception of a movable blade C. This movable blade is preferably of a T-shaped form and is pivoted to the plate A by means of a screw *c* in the manner illustrated in Fig. 5, it being noted that said plate preferably has projecting bosses on each face, to which are applied metallic bushings *c'*, serving as bearings for said movable blade C. Extending through the bosses is a threaded recess for the reception of the screws *c*, which are of such a length that they cannot be made to come in contact with one another. The laterally-extending arms of the blade are engaged, respectively, by two push-buttons *d* and *d'*, which have adjacent to their inner ends headed portions *d<sup>2</sup>*, so shaped as to slide in recesses or slots *e* in the central portion of the plate A, which heads project laterally for a distance sufficient to enable them to engage said arms of the movable blade. The main stem or arm of this blade has its end beveled or cut to a point, and it, with the spring-piece *a<sup>3</sup>* and the fixed blade *a<sup>8</sup>*, are so arranged that one face and the projecting ears *a<sup>9</sup>* on the angular part *a<sup>4</sup>* of the spring *a<sup>3</sup>* bear against one face and the sides of the beveled portions of said blade C and when this latter is in engagement with the fixed blade *a<sup>8</sup>*. When, however,



said movable blade has been turned on its pivot by means of pressure exerted upon the push-button  $d'$ , the beveled point of the blade presses downwardly the angular portion of the spring-piece  $a^3$  until, finally, the point of said angular portion passes beyond the point or sharp edge of said angular portion  $a^4$  and the ears  $a^5$ , after which the spring-piece acts upon said beveled portion of the blade C to move and hold it away from the fixed blade  $a^8$ . If now pressure be exerted upon the push-button  $d$ , the spring-piece  $a^3$  is pushed away from the beveled portion of the blade C until the point of said blade has passed the sharp edge of the angular portion, after which the spring-piece acts to move said blade forward and retain it in contact with the fixed blade  $a^8$ .

In the present instance we have shown a flat strip of metal F fastened to the front face of the supporting body portion or plate A, and this is provided with holes for the passage and guidance of the push-buttons  $d$  and  $d'$ , as well as having openings  $d^4$  in its ends for the reception of the screws or other means by which the switch is held in position in a recess in the well-known manner.

It will be understood that the heads  $d^2$  of the push-buttons  $d$  and  $d'$  project on both sides of the plate  $a$ , so that the two movable blades C are necessarily simultaneously operated to make or break their respective circuits.

It is to be noted that our device is of an extremely simple construction, since in addition to the inexpensive nature of the molded body portion the blades and the spring-pieces  $a^3$  can be quickly and cheaply stamped from sheet material.

While we have illustrated our invention as applied to a double-pole switch, it will be understood by those skilled in the art that it can be employed with equal advantage in switches of the single-pole type without departing from the principles of said invention.

We claim as our invention—

1. In a switch, the combination of a fixed blade and a spring contact-piece having terminals respectively connected to them, with a movable section having an arm permanently engaged by the spring contact-piece and having means operative upon a second arm whereby said section may be positively moved, both into and out of contact, with the fixed blade, substantially as described.

2. In a switch, the combination of a fixed blade and a spring contact-piece having terminals connected respectively to them, with a pivoted T-shaped blade having a plurality of arms, of which one is permanently engaged by the spring contact-piece and means engaging another arm for moving the blade to cause it to form electrical connection between said fixed blade and the spring contact-piece, substantially as described.

3. In a switch, the combination of a fixed blade and a spring contact-piece connected respectively to the terminals of said switch, with a movable blade having an arm with a beveled portion, said contact-piece being placed to bear upon one or the other side of said beveled portion and means for moving the blade into and out of contact with the fixed blade, substantially as described.

4. In a switch, the combination of a fixed blade and a spring contact-piece, with a pivoted blade having an arm provided with two faces at an angle to each other, means for turning the said blade on its pivot to move it into and out of contact with the fixed blade, said contact-piece being placed to bear on one of the angularly-formed faces of the arm when said arm engages the fixed blade and on the other face when the arm is out of contact with said blade, substantially as described.

5. In a switch, the combination of a fixed blade and a spring contact-piece, with a pivoted blade having an arm provided with two faces at an angle to each other, means for turning the said blade on its pivot, said contact-piece being placed to bear on one of the angularly-formed faces of the arm when said arm is in one position and on the other face when the arm is in another position, substantially as described.

6. The combination in a switch of a fixed blade and a spring contact-piece, a pivotally-supported blade having a plurality of arms of which one has two faces at an angle to each other, means for acting on the arm or arms to operate the blade, said spring contact-piece having a portion acting on one of the angularly-formed faces of the arm on the movable blade to retain the same in contact with the fixed blade, said spring-piece being also free to act to maintain said movable blade out of contact with the fixed blade, substantially as described.

7. In a switch, the combination of a fixed blade and a spring contact-piece connected respectively to the terminals of the switch, a movable blade having an arm with a beveled portion, a projecting ear or ears on the contact-piece, said piece being placed to bear upon one or the other side of the beveled portion of the movable blade and means for moving said blade into and out of contact with the fixed blade, substantially as described.

8. In a switch, the combination of a substantially T-shaped movable blade, push-buttons operative on two arms of the same, a fixed blade and a spring contact-piece, a third arm of said movable blade having its end pointed and said spring-piece being in engagement with one side of the pointed end when the blade is in engagement with the fixed blade and contacting with the other side of said pointed end when the movable blade is out of contact therewith, substantially as described.



9. The combination in a switch of a plate of insulating material, a movable blade pivoted to each face of said plate, a fixed blade and a spring contact-piece for each of said movable blades, with a push-button for moving said blades into position to form contact between the fixed blade and the spring contact-piece, and a second push-button for moving said blades out of such position, substantially as described.

10. The combination of two fixed blades, two movable blades and two spring contact-pieces forming independent switches, with a plate of insulating material extending between the same, said movable blades being pivotally supported so as to be free to turn in the plane of said plate and having means whereby they may be simultaneously operated, substantially as described.

11. The combination of a plate of insulating material, two recesses in the same, push-buttons having portions movable in said recesses, a piece of metal pivotally mounted on each face of the plate and engaged by the push-buttons, with contact-pieces having terminals and placed to be engaged by each of said pivoted pieces, substantially as described.

12. In a switch, the combination of a pivoted blade having an arm with a pointed portion, a spring contact-piece having on it a portion bent at an angle to the remainder and placed to engage with the point of said blade, and a fixed contact-piece within the range of motion of the movable blade, said spring contact-piece being on one side of the point of said arm when said blade engages the fixed contact-piece and bearing upon the opposite side of said point when the blade is out of engagement with said piece, with means for operating said blade, substantially as described.

13. In a switch, the combination of a plate of insulating material a boss projecting therefrom, a metallic bushing on said boss, a movable blade journaled on said bushing and a

screw for retaining said blade in position, with means for turning the blade on the bushing, a fixed contact-piece and a spring contact-piece, said latter piece acting to hold the movable blade in engagement with the fixed contact-piece in one position and acting to retain it out of engagement with said piece in another position, substantially as described.

14. In a switch the combination of a plate of insulating material having in it two recesses, movable pieces in said recesses, a switch-blade pivotally carried on each face of said plate and respectively engaged by both of said movable pieces, with two contacts for each of the blades and terminals respectively connected thereto, substantially as described.

15. The combination of a plate of insulating material having laterally-extending end portions, an inclosing casing forming with said plate two chambers, two independent switches in said chambers and means common to both switches for operating the same, substantially as described.

16. The combination in a switch of a plate of insulating material, a casing surrounding the same and forming therewith two chambers, a fixed contact, a movable blade and a spring-contact in each chamber, terminals, and push-buttons for operating the movable blades, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of subscribing witnesses.

HARRY A. LEWIS.

WILLIAM J. CASKEY.

Witnesses to the signature of Harry A. Lewis:

O. F. LENHARDT,  
H. E. TRIPLER.

Witnesses to the signature of William J. Caskey:

WILLIAM E. BRADLEY,  
JOS. H. KLEIN.