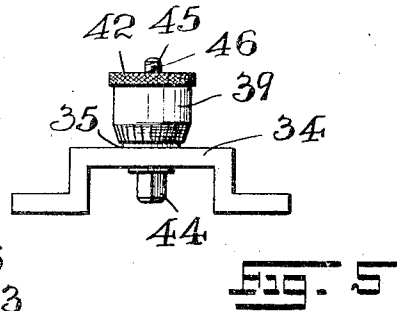
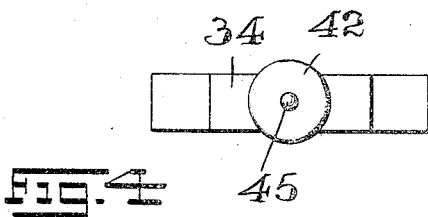
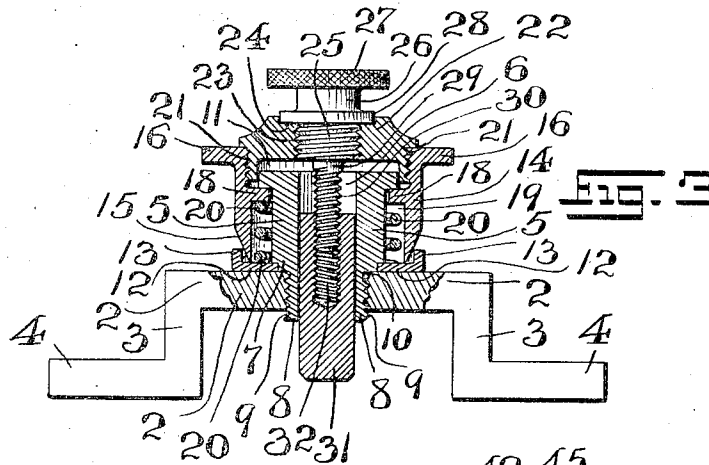
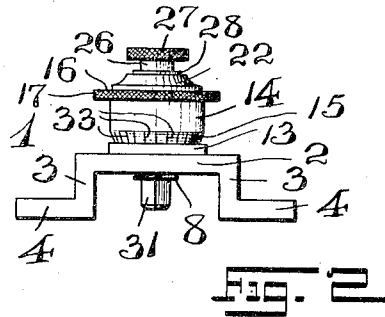
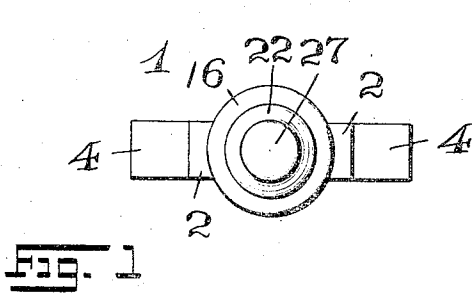


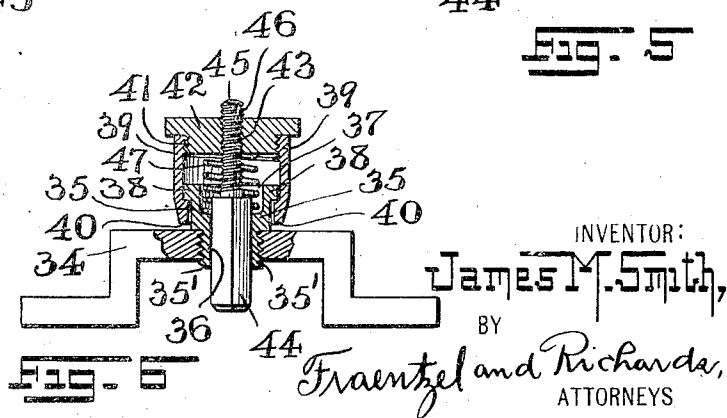
J. M. SMITH.
ELECTRICAL CONTACT DEVICE.
APPLICATION FILED JAN. 13, 1909.

943,281.

Patented Dec. 14, 1909.



WITNESSES:
Friedrich W. Fraentzel
Anna H. Acton



INVENTOR:
James M. Smith,
BY
Fraentzel and Richards,
ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES M. SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
WILSON D. CRAIG WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICAL CONTACT DEVICE.

943,281.

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To all whom it may concern:

Be it known that I, JAMES M. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Contact Devices; 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 characters of reference marked thereon, which form a part of this specification.

The present invention relates to improvements in electrical contact devices adapted for use with many of the various kinds of electrical devices or appliances, and particularly with make and break devices of the various kinds and forms; and, the present invention has reference, more particularly, to a novel electrical contact-device which is capable of an extremely minute degree of adjustment, as well as of a greater degree thereof.

The invention has for its principal object to provide a novel, simple and efficient contact-device which may be adjusted to a hair's breadth, and which automatically locks itself against displacement caused by jarring, vibration, or other extraneous causes to which it may be subjected, and still is easily operated for the adjustment of the same.

The invention has for a further object to provide a simple construction of contact device which may be easily and quickly taken apart for purposes of the cleaning and the repairing of the parts, when necessary, without disturbing the apparatus with which it is connected, and the parts of which may be as easily re-assembled in their operative relations.

Further objects of this invention, not at this time more particularly set forth, will be apparent from the following detailed description of the present invention.

The invention consists, primarily, in the novel construction of contact-device herein-after more particularly set forth; and, furthermore, this invention consists in the various novel arrangements and combinations of the devices and parts, as well as in the various details of the construction of the same, all of which will be more fully described in the

following specification and then finally embodied in the clauses of the claim which are appended to and which form an essential part of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a top or plan view of the novel construction of contact device embodying the principles of the present invention. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal vertical section of the same, said section being drawn upon an enlarged scale. Fig. 4 is a plan or top view of a slightly modified construction of contact-device, also embodying the principles of the present invention. Fig. 5 is a side elevation of the same. Fig. 6 is a longitudinal vertical section of the same, drawn on an enlarged scale.

Similar characters of reference are employed in all of the above described views to indicate corresponding parts.

Referring now to the said drawings, the reference-character 1 indicates the complete contact-device embodying the principles of the present invention, the same comprising a bridge-piece 2 which is provided at each end thereof with downwardly extending members 3, each of said members 3 being provided with an outwardly extending lug or projection 4.

The reference-character 5 indicates a cylindrical contact-holder provided with a longitudinally extending rectangular opening or hole 6. The said contact-holder 5 is further provided, at its lower end, with a shoulder 7 and with a reduced portion 8, said reduced portion 8 being provided with an external screw-thread 9, adapted to screw into a suitably disposed screw-threaded opening 10 in said bridge-piece 2. The said contact-holder 5 is further provided at its upper end with an annular flange 11. Arranged upon the said shoulder 7 is a perforated disk 12, which is provided at its peripheral edge with an upwardly extending rib or flange 13, the said disk 12 resting preferably upon the upper surface of said bridge-piece 2.

The reference-character 14 indicates a tubular member adapted to be arranged over or around said contact-holder 5. This said tubular member 14 is provided at its lower end with a chamfered edge-portion 15, which is adapted to be fitted within and be guided by the rib or flange 13 of said disk

12. The upper end of said tubular-member 14 is provided with an outwardly extending flange 16, the edges of which may be knurled, as at 17, to aid in operating or turning the same. The inner surface of said tubular-member 14 is provided with an inwardly extending flange 18 adapted to be engaged by and fit under said flange 11 of said contact-holder 5. The said tubular member being of larger inside diameter than the outer diameter of said contact-holder 5, a space or chamber 19 is provided in which is arranged a coiled spring 20, said spring extending around said contact-holder 5 and having its upper end bearing against the said flange 18 of said tubular-member 14, while the lower end thereof bears against said disk 12, thereby causing a strong frictional engagement between the said flange 18 of said tubular member 14 and said flange 11 of the contact-holder 5, which arrangement of these parts prevents any accidental turning of said tubular member 14, due to excessive vibration, jars, or other extraneous causes. The said tubular-member 14 is provided at its upper end, above the said flange 18, with an internal screw-thread 21. Screwed down upon the said screw-thread 21 is a perforated cap-piece 22, the perforation or hole of which is provided with an internal screw-thread 23. This cap-piece 22 is further provided upon its top-surface with a receiving recess or socket 24, and screwed upon said screw-thread 23, by means of a screw-threaded portion 25, is the head 26 of an adjusting screw-holder, said head 26 being preferably provided with a knurled flange 27 for manipulating said head to insert or remove the said adjusting screw-threaded portion 25 from its operative relation with said cap-piece 22. The said head 26 is further provided with a flanged portion 28 which is fitted into said receiving recess or socket 24 of said cap piece 22. Extending downwardly from said head 26, and preferably forming an integral part thereof, is an adjusting screw or shank 29 which is provided with a suitable screw-thread 30. Slidably arranged within said rectangular opening or hole 6 of said contact-holder 5 is a rectangular contact-piece 31 which is provided with a screw-threaded receiving-recess or socket 32 adapted to receive and engage the screw-threads 30 of said adjusting screw or shank 29.

The outer surface of the chamfered end 15 of said tubular-member 14 may be provided with graduations or marks 33, to aid in determining the amount of adjustment given or imparted to said contact-piece 31, when the device is operated.

To operate the above described contact-device, so as to adjust the same, it is simply necessary to turn or revolve the tubular member 14, the turning movement being im-

parted to the cap-piece 22 and to the adjusting screw-holder, since they are carried by and secured to said tubular-member 14 in the manner herein-above described. This turning movement is thus imparted to the screw-threaded adjusting screw or shank 29 which, although capable of thus being turned, is not permitted to move vertically, but is rather retained stationary with relation to the contact-holder 5 which is also stationary. Hence the action of the screw-thread 30 working in the screw-threaded receiving recess or socket 32 of said contact-piece 31 causes the latter to move up or down in accordance with the direction of the turning movement. The said contact-piece is thus prevented from turning, because of its rectangular cross-section, which is slidably arranged in the similarly formed hole or opening in said contact-holder. The spring 20, causing the frictional engagement of the revoluble parts with the stationary parts of the device, prevents any accidental turning of said revoluble parts, as above described, and thereby automatically locks or retains the said contact-piece 31 in any of its adjusted positions. It will also be readily understood, that owing to the screw-adjustment, coupled with this feature of automatically locking at any point, permits of a very minute degree of adjustment of said contact-piece.

Referring now more particularly to Figs. 4, 5 and 6 of the drawings, there is illustrated therein a slightly modified construction of contact-device which, however, operates upon the same principle and secures the same results as above described in connection with the construction shown in said Figs. 1, 2 and 3 of the drawings. In this modified construction of contact-device, as illustrated in the said Figs. 4, 5 and 6, the reference-character 34 indicates a bridge-piece of similar construction as that above described, it being clearly understood, that this construction may be greatly varied in the previously described construction of contact device, as well as in this modification thereof, since its shape or construction in no way contributes to the operation of said contact device.

The reference character 35 indicates a contact-holder provided with a screw-threaded reduced portion 35' adapted to be screwed into a screw-threaded hole or perforation in said bridge-piece 34. This said contact-holder 35 is provided with a longitudinally extending rectangular hole or opening 36, terminating in an enlarged recess or socket 37 at the upper end of said contact-holder 35. Said contact-holder is also provided at its upper end with an outwardly extending annular flange 38, and rotatively arranged upon said contact-holder 35 is a tubular member 39 which is provided upon its lower

end with an inwardly extending annular flange 40, adapted to engage with the under side of the flange 38 of said contact-holder 35. The upper portion of said tubular member 39 is provided with an internal screw-thread 41, and screwed upon said screw-thread 41 is a cap-piece 42 which is provided with a perforation or opening having an internal screw-thread 43. Slidably arranged in said rectangular opening 36 is a contact-piece 44, said piece being provided at its upper end with an adjusting screw or shank 45, substantially as shown. Said screw or shank 45 is provided with a screw-thread 46 which is adapted to be engaged by the screw-threads 43 of said cap-piece 42.

A coiled spring 47 is arranged around said contact-piece 44, one end thereof resting in the receiving-recess or socket 37 of said contact-holder 35 and the other end thereof bears against the under side of said cap-piece 42, thereby causing a strong frictional engagement of the flanges 38 and 40 of the contact holder 35 and the tubular member 39 respectively.

From the foregoing description it will be clearly evident that I have produced a simple and efficient contact-device capable of a minutely variable range of adjustment, and which is very useful in connection with make and break devices and other electrical apparatus.

I am fully aware that some changes may be made in the general arrangements and combinations of the various devices and parts, without departing from the scope of my present invention as set forth in the foregoing specification, and as defined in the claims which are appended to the same. Hence I do not limit my invention to the exact arrangements and combinations of the devices and parts as described in the said specification, nor do I confine myself to the exact details of the construction of any of the said parts.

I claim:—

1. A contact device comprising a stationary element, a contact-piece slidably arranged in said stationary element, a revolving element encircling said stationary element, means connecting said revolving element with said contact-piece for raising and lowering the same in said stationary element, and means for automatically holding or locking said revolving element at any point in its revolution, consisting of a flange upon said stationary element, and a flange upon said revolving element in frictional engagement therewith, and a coiled spring for maintaining the frictional engagement of said flanges, substantially as and for the purposes set forth.

2. A contact device, comprising a stationary element provided with a longitudinal rectangular opening, a rectangular contact-

piece slidably arranged in said rectangular opening of said stationary element, a revolving element encircling said stationary element, means connecting said revolving element with said contact-piece for raising and lowering the same in said longitudinal rectangular opening of said stationary element, and means for automatically holding or locking said revolving element at any point in its revolution, consisting of a flange upon said stationary element, and a flange upon said revolving element in frictional engagement therewith, and a coiled spring for maintaining the frictional engagement of said flanges, substantially as and for the purposes set forth.

3. A contact device comprising a stationary element provided with a longitudinal rectangular opening, a rectangular contact-piece slidably arranged in said rectangular opening of said stationary element, a revolving element encircling said stationary element, an adjusting screw carried by said revolving element, said screw having a screw-threaded portion in engagement with said contact-piece to raise and lower said contact-piece in said longitudinal rectangular opening of said stationary element, and means for automatically holding or locking said revolving element at any point in its revolution, consisting of a flange upon said stationary element, and a flange upon said revolving element in frictional engagement therewith, and a coiled spring for maintaining the frictional engagement of said flanges, substantially as and for the purposes set forth.

4. A contact device comprising a stationary element provided with a longitudinal rectangular opening, an outwardly extending flange upon the upper end of said stationary element, a revolving element, an inwardly extending flange connected with said revolving element adapted to engage frictionally with said outwardly extending flange of said stationary element, a coiled spring arranged to maintain the frictional engagement of said outwardly and inwardly extending flanges, an adjusting screw carried by said revolving element, a rectangular contact-piece slidably arranged in the rectangular opening of said stationary element, and said screw having a screw-threaded portion in engagement with said contact-piece to raise and lower said contact-piece, substantially as and for the purposes set forth.

5. A contact device comprising a stationary element provided with a longitudinal rectangular opening, an outwardly extending flange upon the upper end of said stationary element, a revolving element, an inwardly extending flange connected with said revolving element adapted to engage frictionally with said outwardly extending flange of said stationary element, a coiled spring arranged to maintain the frictional engagement

ment of said outwardly and inwardly extending flanges, a cap-piece secured to the upper end of said revolving element, an adjusting screw carried by said cap-piece, and
 5 a rectangular contact piece provided with a screw-threaded receiving socket adapted to receive said adjusting screw, said contact-piece being slidably arranged in the rectangular opening of said stationary element, substantially as and for the purposes set forth.
 10

6. A contact device comprising a stationary element provided with a longitudinal rectangular opening, a shoulder on said stationary element, a flanged disk arranged on
 15 said shoulder, a screw-threaded reduced portion extending from the lower end of said stationary element, an outwardly extending flange upon the upper end of said stationary element, a tubular revolving element, said
 20 element being formed with a chamfered portion on the lower end thereof adapted to register with said flanged disk, a knurled flange upon the upper end of said tubular revolving element, an inwardly extending flange
 25 upon the inner surface of said tubular revolving element adapted to engage with the

under side of said outwardly extending flange of said stationary element, a coiled spring arranged upon said flanged disk between said stationary and said revolving elements, 30 the upper end of said coiled spring bearing upon the inwardly extending flange of said tubular revolving element; a cap-piece screwed upon the upper end of said tubular revolving element, an adjusting screw- 35 holder screwed into said cap-piece, an adjusting screw carried by said adjusting screw-holder, and a rectangular contact-piece slidably arranged in said longitudinal rectangular opening of said stationary element, 40 said contact-piece being provided with a screw-threaded receiving socket adapted to operatively engage said adjusting screw, substantially as and for the purposes set forth.

In testimony, that I claim the invention 45 set forth above I have hereunto set my hand this eighth day of January, 1909.

JAMES M. SMITH.

Witnesses:

FREDK. C. FRAENTZEL,
 FREDK. H. W. FRAENTZEL.