

No. 805,735.

PATENTED NOV. 28, 1905.

S. B. LEFLEY.

REAR END CONTACT TELEGRAPH KEY.

APPLICATION FILED AUG. 26, 1903. RENEWED JULY 13, 1905.

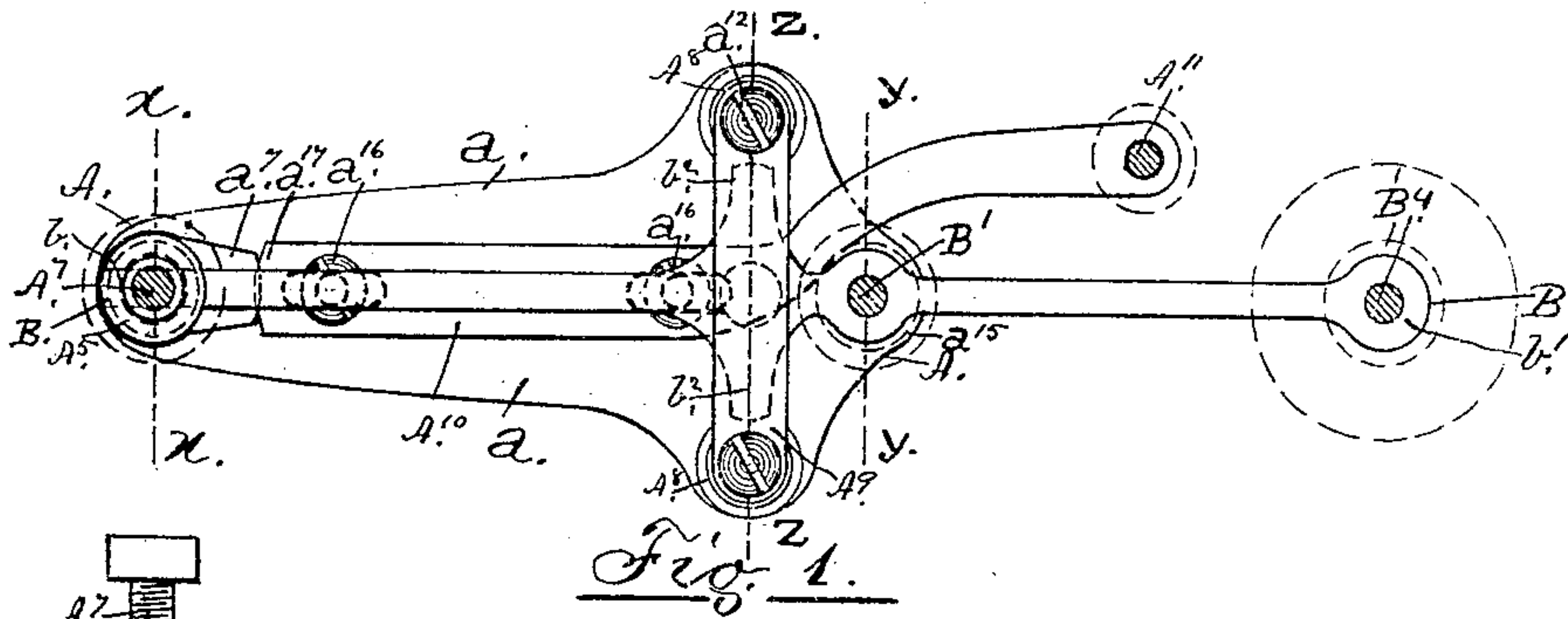


Fig. 1.

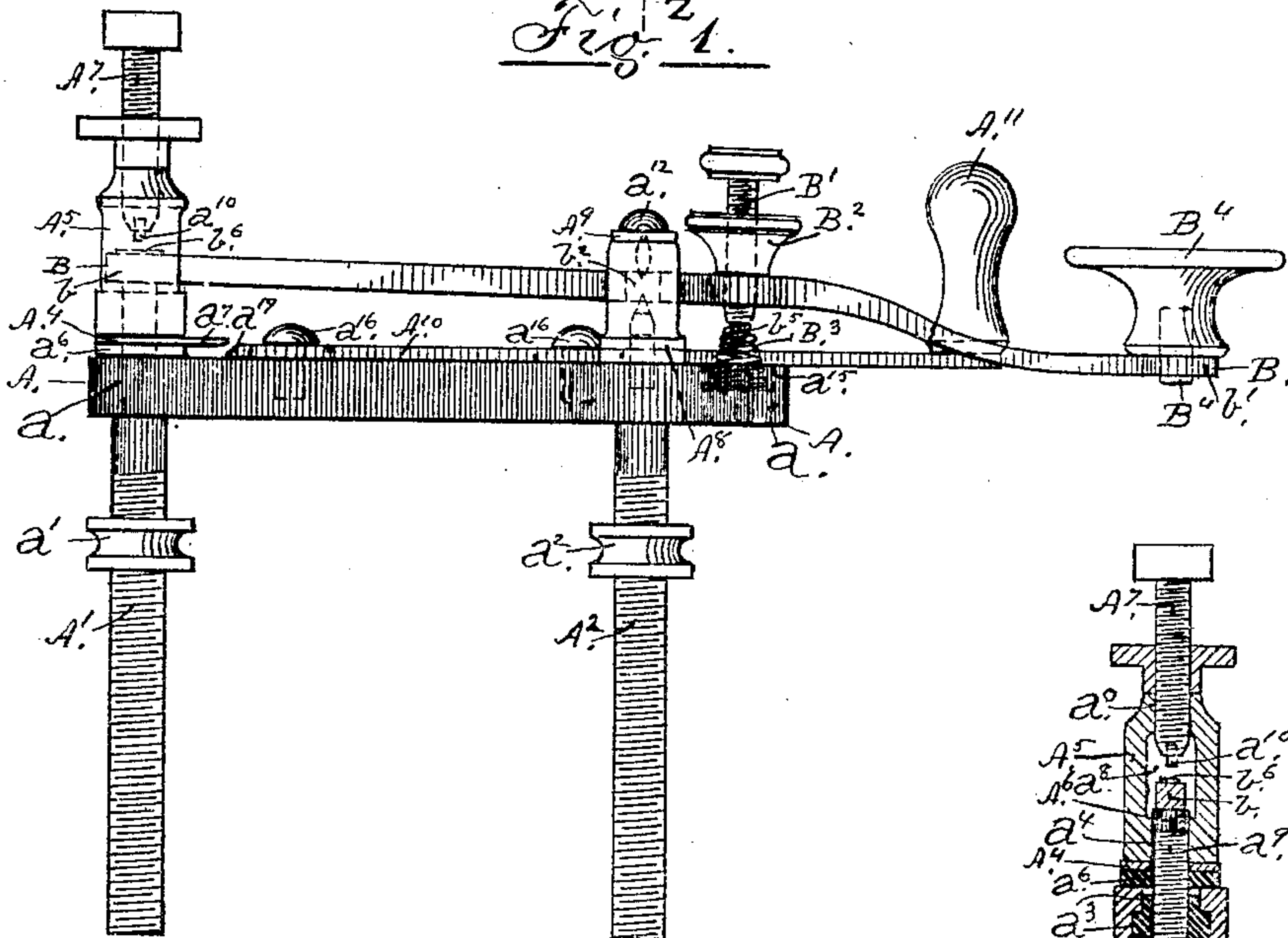


Fig. 2.

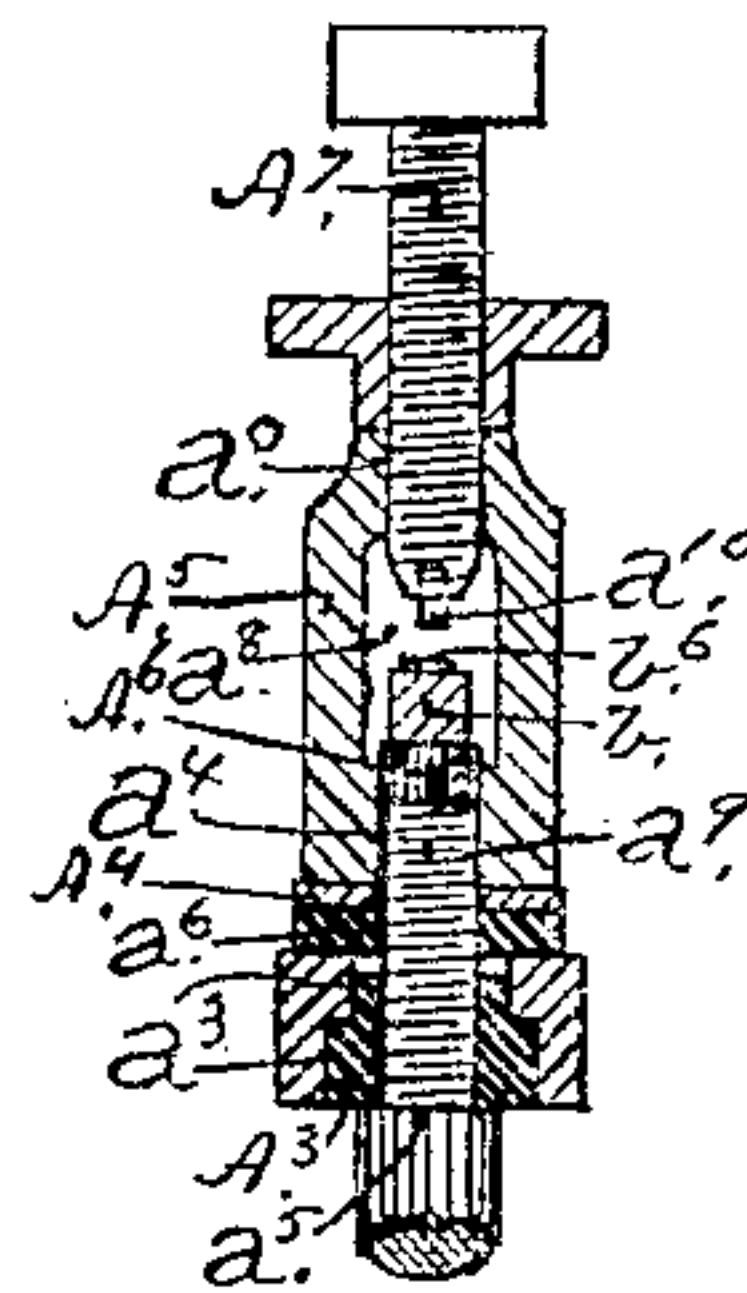


Fig. 3.

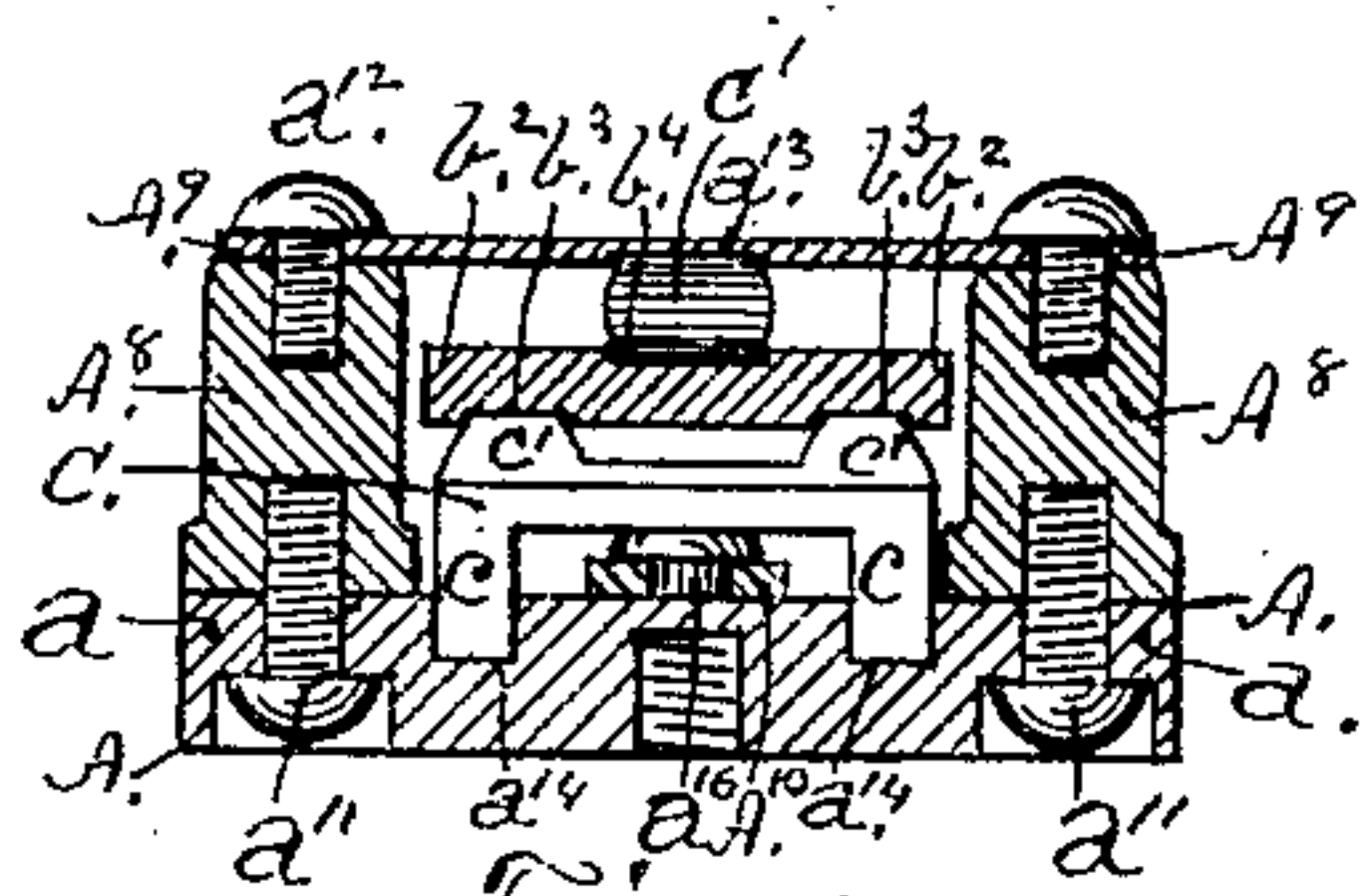


Fig. 4.

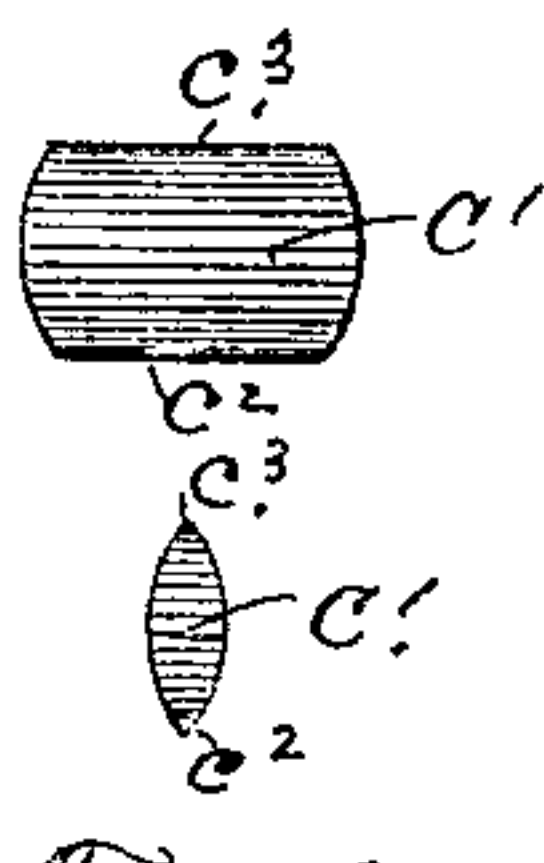


Fig. 5.

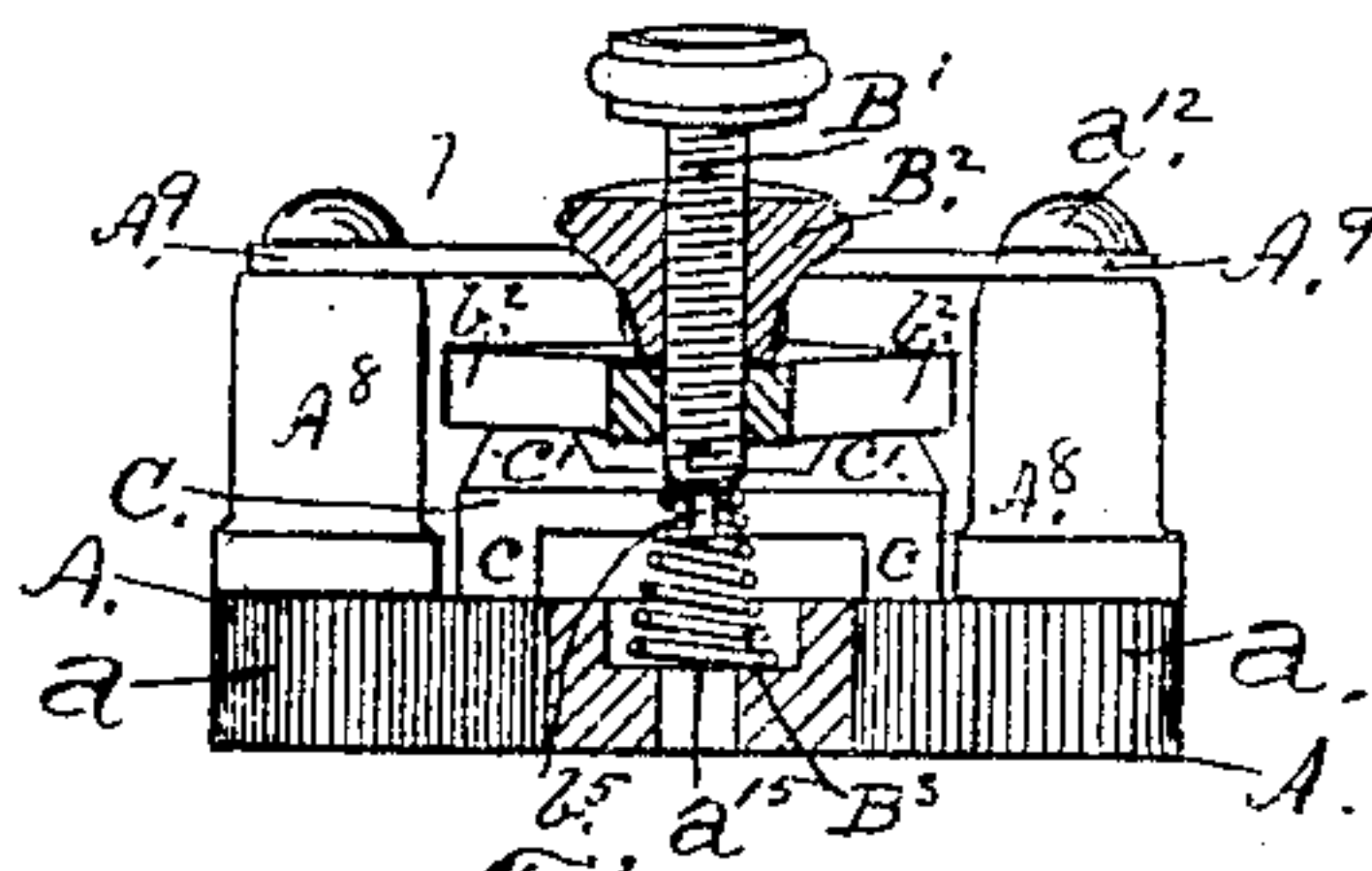


Fig. 6.

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REAR-END-CONTACT TELEGRAPH-KEY.

No. 805,735

Specification of Letters Patent.

Patented Nov. 28, 1905.

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To all whom it may concern:

Be it known that I, SAMUEL B. LEFLEY, a citizen of the United States, residing at Florinel, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Rear-End-Contact Telegraph-Keys; 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.

This invention relates to improvements in a rear-end-contact telegraph-key of that class in which the transmitting-lever is centrally provided with side projections forming cross-arms and supported between knife-edges of blades—two below located well toward the outer ends of the arms and one above situated about midway between the juncture of said arms with said lever.

The object of the invention is the production of a telegraph-key in which the contact end of the transmitting-lever will have the desired throw under a slight yielding of the button end, in which said lever is supported in place to oscillate or rock up and down with friction reduced to a minimum, and in which is avoided all sidewise vibration and lateral adjustment, being simple in construction and capable of performing all the functions of an effective telegraph-key.

The elements of the invention will severally and at large appear in the following description and be separately or combinedly set forth or pointed out in the appended claims.

The purposes of the invention are attained by the mechanism, devices, and means illustrated in the accompanying drawings, with similar reference characters to designate like parts throughout the several views, in which—

Figure 1 is a top view or plan of a telegraph-key embodying the elements of the invention with certain buttons and adjusting-screws removed, but dotted lines indicating their positions; Fig. 2, a side elevation of Fig. 1 with the removed parts in place. Figs. 3, 4, and 5 are transverse vertical sections taken, respectively, on the lines xx , yy , and zz in in Fig. 1, with the circuit-breaking bar removed in Fig. 4; and Fig. 6 shows, detached, enlarged end and side elevations of the upper or top pivoting-blade.

In the construction of this key is used a frame A to support the specially-formed lever-arm, and to this end said frame comprises a base-plate a , provided with the usual rear end

and front end legs A' A^2 , screw-threaded throughout with the usual nuts a' a^2 thereon, said plate to rest on an operating-table top, said legs to pass therethrough and said screws to be screwed home thereagainst, serving to securely affix the same to said table-top, as well as to hold the ends of the circuit-wires (not shown) in place. The leg A^2 , having its upper end tapped into the plate, is in electric connection therewith, and the leg A' , having its upper end rigidly secured to said plate, is electrically insulated therefrom. To effect this insulating and securing, through the rear end of the base is formed a vertical cylindrical aperture a^3 of greater diameter in the lower than in the upper portion, with a ring offset between the portions about midway in said aperture. Within this aperture is seated a tubular bushing A^3 , of preferably hardened rubber, conforming in contour thereto, having its lower end even with the under surface of the base-plate and its upper end slightly short of the upper surface thereof, preventing contact with parts that may be placed thereon.

The leg A' has a circumferentially-reduced upper end, forming a stem a^4 , with a circular offset or shoulder a^5 at the beginning thereof. Said stem, being of the required dimensions and screw-threaded throughout, extends through the bore of the seated bushing, with the shoulder a^5 abutting against the lower end thereof and the upper end of the stem projecting the required distance therethrough and above the base-plate, whereon is placed a packing-ring or cushion a^6 , of any approved insulating materials and on which washer is placed an approved metal washer-plate A^4 , provided with a forwardly-projecting tongue a^7 , while a post A^5 , with a prescribed slot or aperture a^8 forwardly and rearwardly disposed through its body, a screw-threaded axial bore a^9 in its base and opening into said aperture, and a similar bore a^9 in its top, with said base engaged on the projecting end of said stem and firmly screwed home onto said washer-plate, serves to bind the several parts together, thus rigidly securing said leg A' in position, as well as completely insulating the base-plate A from the parts above the washer a^6 . Seated on the stem a^4 in the axial bore a^9 and projecting into the aperture a^8 is a plug A^6 , of hardened rubber, preventing all contact with the base of the post A^5 of the lever end, yet to be described, while performing its functions in said aperture, thus electrically insulating said lever end

from the base of the post and through the bore a^0 in the top of the post engages an ordinary contact adjusting-screw A^7 , with a platinum contact-point a^{10} projecting axially from the lower end of the screw and an ordinary jam-nut rotably mounted on the shank thereof to be firmly screwed home onto the top of said post, thereby clamping said screw and holding it in any adjusted position.

Well toward the forward end of the plate a on side projecting ears the required distance apart are erected prescribed posts A^8 , rigidly secured in place by headed screws a^{11} , passed upwardly through the plate and tapped axially into the base of the posts, which are joined together by a bridge-plate A^9 , rigidly secured in position by headed screws a^{12} , passed downwardly through the ends thereof and tapped axially into the tops of said posts, said plate having at the center in its under surface a shallow groove a^{13} for seating the upper edge of a knife-blade, yet to be described, while in line with the axial plane of the posts are formed in the upper surface of the plate a recesses or mortises a^{14} for the seating of the feet of a bridge-bar supporting the lower knife-blades, yet to be described, and in the top of the central forwardly-rounded end of said plate is formed a circular socket or recess a^{15} for seating a spring-coil, yet to be described. Arranged lengthwise of the base-plate a along the longitudinal center line thereof and movable back and forth on its upper surface is a strap A^{10} , secured in position by headed guide-screws a^{16} , passed through oblong slots in its body and tapped into the body of the plate, one of said screws being near the rearward end of said strap and the other one adjacent to the line of the rearward sides of the posts A^8 , while forward of said line the strap is made curving to the right for clearance of the before-mentioned spring-coil when seated in the recess a^{15} , and the strap is provided on its forward end with a handle or knob A^{11} to move said bar, while a push thereagainst moves the bar rearward, bringing its rear end a^{17} into close contact with the tongue a^7 , thus closing the electric circuit for telegraphic transmission or signaling from a distant station, and a pull thereon moves the bar forward, freeing its end a^{17} from said tongue a^7 , thus breaking said close contact, and thereby opening the electric circuit to telegraphic transmission or signaling by this key.

The key-lever arm of the invention is practically a rectangular bar B , preferably straight in the portion toward the contact end b , and downwardly curving with a straight part in the portion toward the operating end b' , and provided at its center with side projecting arms $b^2 b^2$, forming therewith at said center a cross-bar of approved dimensions. Well toward the extremities of the arms b^2 of said cross-bar, on the transverse center line in the under surface thereof, are formed shallow in-

verted-V-shaped grooves $b^3 b^3$ of the required length for the seating of the upper edges of the lower knife-blades before mentioned, and in the upper surface of said cross-bar, at the middle point of the transverse center line thereof, is formed a prescribed groove b^4 for the seating of the lower edge of the upper knife-blade, also before mentioned. At a prescribed point forward from this cross-bar the lever-bar is circularly widened, as shown, and centrally provided with a screw-threaded orifice, into which is inserted the stem of a headed screw B' , to be screwed up or down therethrough, said stem having axially in its point a projecting pin b^5 and on its body a nut B^2 , which on being screwed home onto said lever-bar serves to jam or hold said screw in place. In the recess a^{15} of the plate a is seated the base of a preferably conically-coiled spring B^3 , having its apex upwardly projected the required distance, with the pin b^5 engaged in said apex and the extremity of said screw seated thereon when said lever-bar is placed in operative position on the supporting-frame, and the screw in being adjustable thereon, with the jam-nut securely holding it, serves to control the tension of said spring. When in the operative position above mentioned, the lever-bar has its contact end b in the aperture a^8 , with its under surface on the insulating-plug A^6 , while its upper surface is provided with a rigidly-secured platinum plate b^6 , preventing fusing of said end on its impingement against the contact-point a^{10} in telegraphic transmission, and onto the operating end b' of the lever-bar is secured in any approved manner an ordinary press or finger button B^4 , whereby said lever-bar is operated.

Supporting the lever-bar in the operative position above mentioned and arranged underneath its cross-bar is a bridge-bar C , provided with downwardly-projecting end legs $c c$, which are securely seated in the base-recesses a^{14} , before mentioned, while at the ends of the top edge of the bar are formed upwardly-projecting inverted-V-shaped lugs $c' c'$ of the required length, longitudinally extending and inwardly sloping to form knife-edges at the ridges thereof, which knife-edges are seated in the V-grooves b^3 , before mentioned, and between said cross-bar and the bridge-plate A^9 , before mentioned, is arranged a knife-blade C' , shaped as is best shown in the two views of Fig. 6, said blade having knife-edges $c^2 c^3$, respectively, at its lower and upper ridges, which knife-edges are respectively seated in the grooves $b^4 a^{13}$, respectively, of the lever-bar and bridge-plate, both before mentioned. The lever B being thus mounted between the knife-edges of the lower and upper blades will rock or oscillate up and down with a minimum of friction. There being two extreme blades below and one central blade above, all lateral vibration, as well as lateral adjustment, is avoided. The contact

end and the button end of the lever-arm being practically equidistant from the knife-edge mounting, the desired throw of said contact end will be attained by a less throw of the button end than can be had with the telegraph-keys in general use.

The invention having thus been ascertained and described and the manner in which it is performed fully shown and set forth, what is considered new, and desired to be secured by Letters Patent, is—

1. A rear-end-contact telegraph-key comprising: a base-plate to be mounted upon and secured to the top of an operating-table, and adapted to be in electric connection with an electric source; a contact-post with an underlying circuit-closing tongue mounted upon and rigidly secured to the rear end of said plate, both being electrically insulated therefrom but in electric connection with the electric source, said post having an oblong vertical aperture forwardly and rearwardly there-through, with an insulating-plug in said aperture and projecting above the base thereof, and a contact-adjusting screw axially seated through the top of said post and extending into said aperture, with a platinum contact-point projecting from the entered end of the screw; a transmitting lever-arm, as described, centrally pivoted between supporting-posts erected on said base-plate near the forward end thereof and in electric connection therewith, said lever-arm having its forward end provided with an operating-button, and its rear end or contact end within the aperture of said rear-end post to engage between the insulating-plug and the contact-point therein, with a platinum plate secured to the top surface thereof to engage against said contact-point, with an adjustable tension-spring provided to hold said lever-arm in operating position; and a circuit breaking and closing strap, as described, movable lengthwise back and forth on the base-plate to bring its rear end into and out of engagement with the forward end of said circuit-breaking tongue, all substantially as described and for the purpose hereinbefore set forth.

2. In a rear-end-contact telegraph-key having the base-plate, *a*, supporting the lever-arm, B, the tension-spring, B³, the circuit-breaking strap, A¹⁰, and the front leg, A², all as shown and described, the combination with the rear end of said plate having the vertical cylindrical orifice, *a*³, being greater in diameter in the lower than in the upper portion with a circular offset at the center between the portions; the tubular rubber bushing, A³, as described, seated in said orifice, being even with its lower end and a trifle below its upper one, of the leg, A¹, having its screw-threaded stem, *a*⁴, projecting through the bore of said bushing, and its shoulder, *a*⁵, against the bottom thereof, having the rubber washer, *a*⁶, in engagement with the stem and with the

top surface of the plate *a*, having also the washer-plate, A⁴, with the tongue, *a*⁷, seated on said rubber washer, and the post, A⁵, with its base screwed home onto said washer-plate, whereby the several parts are firmly secured together and the post with the washer-plate electrically insulated from said base-plate, *a*, said post having the aperture, *a*⁸, through its body, the axial orifice, *a*⁹, through its base, with the rubber plug, A⁶, seated therein, and having also the axial orifice, *a*⁰, through its top with the contact-adjusting screw, A⁷, engaging therethrough and the platinum contact-point, *a*¹⁰, projecting from the inner end of said screw, all substantially as described and for the purpose hereinbefore set forth.

3. The combination in a rear-end-contact telegraph-key of the character described, with the base-plate, *a*, as described, having the rear-end-contact post A⁵, with the aperture, *a*⁸, both as described; the lever-arm-supporting side posts, A⁸ A⁸, in position as shown, with the conical tension-spring, B³, seated in the recess, *a*¹⁵, in the forward end thereof, and the bridge-bar, C, with its end legs, *c c*, seated in the recesses, *a*¹⁴, of said plate, *a*, and in the axial plane of said latter posts, said bar having at the extremities of its upper edge the upwardly-projecting top knife-edge blades, *c' c'*, of the key-lever arm B, having the central cross-bar formed by the side projecting arms, *b*² *b*², with the inverted-V grooves, *b*³ *b*³, in the under surface of said cross-bar adjacent to the extremities of said arms, said top knife-edges seated in said grooves to support said lever-arm in operative position, with central top means provided to hold it in said operative position, said lever-arm having its rear or contact end, *h*, engaging in said aperture, *a*⁸, with the platinum plate, *b*⁶, secured to the top surface of said contact end, and its operating end, *b'*, provided with the finger or press button, B⁴, and the tension-controlling screw, B¹, passing through the lever-arm, with the jam-nut, B², on the body of said screw, and the point, *b*⁵, projecting from its end and inserted into the apex of said spring, with said end on the top thereof, and said nut on the top surface of said lever-arm, all substantially as described and for the purpose hereinbefore set forth.

4. The combination, in a rear-end-contact telegraph-key of the character described, with the key-lever arm, B, as described and supported in operative position on the top knife-edges of the blades, *c' c'*, between the lever-arm-supporting side posts, A⁸, as shown, with the bridge-plate, A⁹, having its ends rigidly secured to the tops of said posts, and having at the center of its under surface the inverted-V groove, *a*¹³, and said lever arm, B, having in its upper surface, in the vertical plane of said groove, *a*¹³, the V-groove, *b*⁴, of the two-edged knife-blade, C, with its lower edge, *c*², seated in said groove, *b*⁴, and the upper

edge thereof seated in said groove, a^{13} , the
resiliency of said bar, A^9 , allowing said blade,
 C' , to be snapped thereinto, all substantially
as described and for the purpose hereinbefore
5 set forth.

5. The combination in a rear-end-contact
telegraph-key of the character described, with
the base-plate a , having the rear-end-contact
post, A^5 , the washer-plate, a^6 , with the con-
10 tact-point, a^7 , and the key-lever arm, B , all
as described and mounted thereon as shown,
of the circuit-breaking strap, A^{10} , having the
contact-point, a^{17} , and the handle-knob, A^{11} ,

said strap being movable longitudinally back
and forth thereon, with the screws, a^{16} a^{16} , 15
passed through the oblong slots in the body
of said strap and tapped into the body of said
plate, all substantially as described and for
the purpose hereinbefore set forth.

In testimony whereof I affix my signature in 20
presence of two witnesses.

SAMUEL B. LEFLEY.

Witnesses:

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