(No Model.) 3 Sheets—Sheet 1.

H. D. BAYNE.

AUTOMATIC TELEPHONE SWITCH.

No. 533,427. Patented Feb. 5, 1895.

Fig. 1.

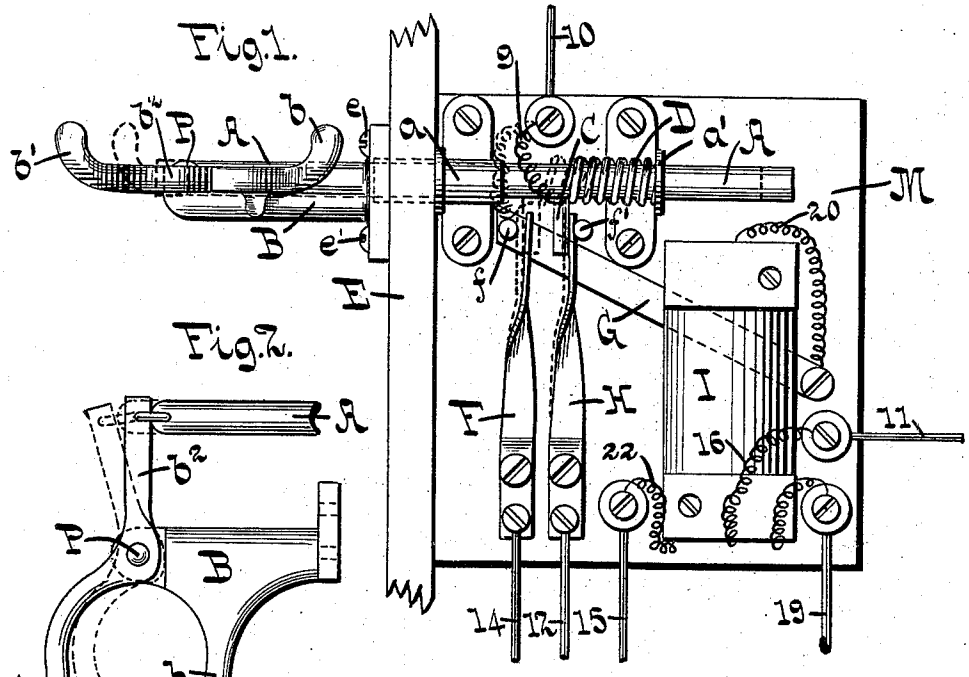
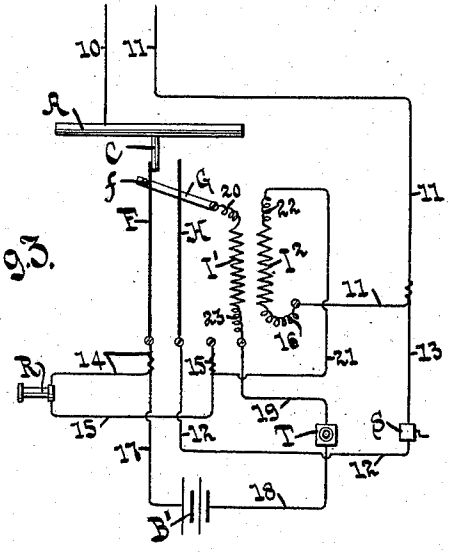


Fig. 2.

Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

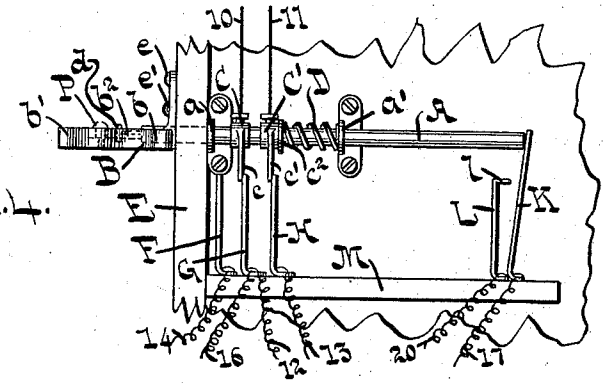


Fig. 5.

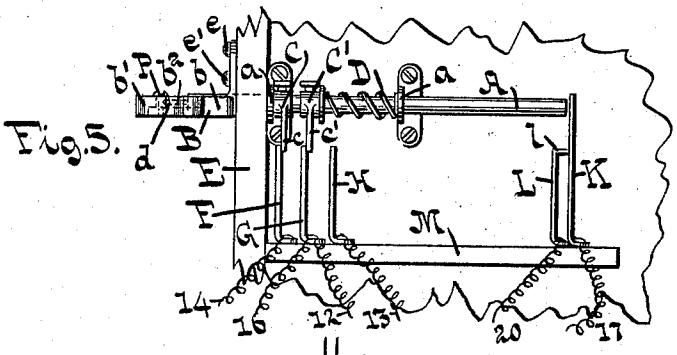
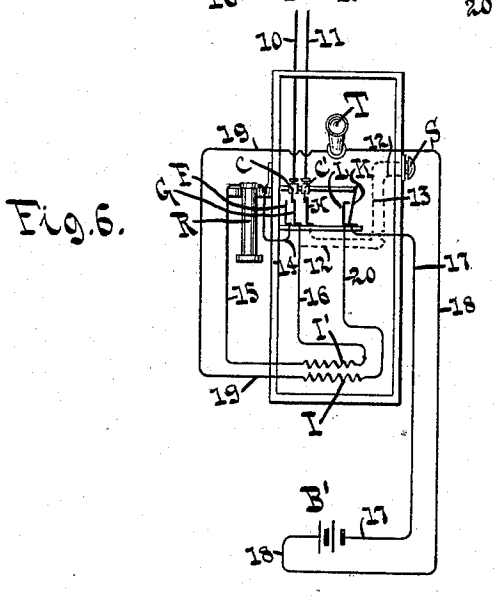


Fig. 6.



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AUTOMATIC TELEPHONE SWITCH.

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Fig. 7.

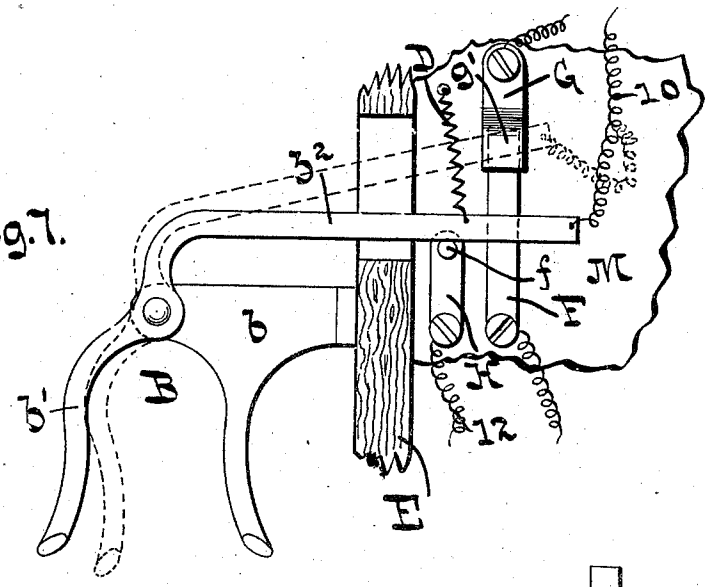


Fig. 8.

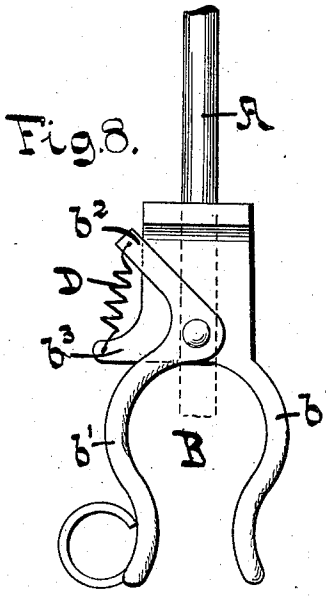
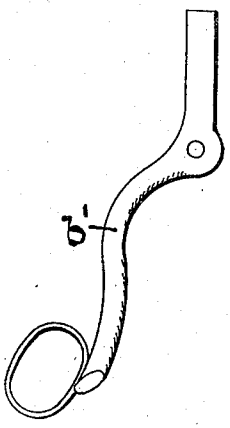


Fig. 9.



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UNITED STATES PATENT OFFICE.

HENRY DUCKWORTH BAYNE, OF BROOKLYN, NEW YORK.

AUTOMATIC TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 533,427, dated February 5, 1895.

Application filed May 31, 1894. Serial No. 513,025. (No model.)

To all whom it may concern:

Be it known that I, HENRY DUCKWORTH BAYNE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Telephone-Switches, of which the following is a specification.

My invention relates to improvements in telephone switches and has for its object to provide a simple and reliable device for automatically controlling the circuits of the telephone and to be equally well applicable in single as double pole systems or in three point switches.

My invention consists essentially of a bracket provided with two jaws, one of which is stationary, and attached to the telephone box, while the other is pivoted thereto and in engagement with a sliding bar carrying a contact or contacts, or is extended far enough to make the contacts itself. A spring is attached to the movable jaw so as to keep it in a certain position when not acted upon.

The nature of my said invention will be best understood when described in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a switch constructed according to my invention; Fig. 2, a plan of the switch actuating mechanism; Fig. 3, a diagrammatic view of the wire connections. Fig. 4 is a plan of the switch used in a double pole system; Fig. 5, the same in a different position; Fig. 6, a diagram of the wire connections. Fig. 7 is a plan view of the switch applied to a three point system. Fig. 8 shows a modification, and Fig. 9 an attachment to Fig. 2.

Similar letters and numerals designate corresponding parts throughout the several views of the drawings.

In the drawings, see especially Fig. 2, the letter B designates a bracket consisting of two parts b and b', the former b being a stationary jaw, attached to the telephone box E by means of screws e, e', the latter b' movable and in pivotal connection with b through a pivot P.

b^2 is an extension of b' held in engagement with a sliding bar A (Figs. 1 and 2) or made of such form as to make and break the contacts without any intermediate means (Fig. 7).

The bracket B is intended to hold the receiver and with that object in view the two jaws b, b' are made of such shape that, when open, they will fit around the body of the receiver and hold it firmly.

D is a spiral spring encompassing bar A, bearing at one end against the bearing a' and at the other against the contact C.

In Fig. 1 the bar A is fitted to slide in bearings a, a', secured to an insulated piece M. C is a metallic contact connected with the line through an insulated wire g. f, f' are posts for limiting the motion of the bar, f being connected with a conducting strip G which in turn is connected with the primary of an induction coil I through wire 20. F and H are flexible conducting springs secured to M.

In Figs. 4 and 5 C and C′ are two contacts secured to A and provided with projecting portions c, c' which are brought to bear against contact springs F, G and H secured to the insulating piece M. K and L are two contact pieces of which L is stationary and provided with a projecting portion l which forms a stop for K when the bar A is withdrawn. d is a screw passing through b^2 and used for regulating the motion of bar A so as to make the contacts properly.

In Fig. 7, b^2 is extended through the side of the telephone box E. H is a metallic conducting strip to which is secured a conducting stop f'. F is a metallic strip secured to M and placed so that b^2 passes over the same. G is another metallic strip also secured to M but provided with raised "strap" g' under which b^2 passes and against which it comes to rest.

Fig. 9 shows b' provided with an attachment into which the finger may be inserted and the jaws forced apart and thus changing the circuits upon inserting the receiver. The receiver itself, after insertion, serves as a stop to keep the jaws apart. In practice I prefer to curve the jaws out enough so that the receiver can be inserted without use of more than one hand.

Fig. 8 shows a device in which the bracket B consists of a stationary jaw b and a movable jaw b'. To a projection b^3 on b is secured one end of a spiral spring D, the other end of which is connected to b^2. The bar A

instead of being in connection with b' is here actuated by the receiver directly, everything else being the same as in Figs. 1, 4 or 5.

T is the transmitter; R, the receiver; S, the signaling device; B', the battery; 10—23, insulated wires; I', a primary, and I^2 a secondary, induction coil, all constructed as usual.

The operation of the switch in the single pole system, Figs. 1 and 3, is as follows:—The receiver R hanging in the bracket B keeps the two jaws b and b' apart. The spring D is compressed and C is brought to bear against H through the motion of bar A. f' limits this motion. A circuit is closed through line wire 10, C, H, 12, S, 13, 11 and the signaling apparatus is open to the "line." When a signal is received the receiver is taken out of the bracket, the spring D forces the bar over, brings b' toward b until C is in contact with F and brought to rest against f. The receiver and transmitter circuits are then closed, the former through 10, C, F, 14, R, 15, 21, 22, I^2, 16, 11 and the latter through B', 18, T, 19, 23, I', 20, G, f, F, 17, B'. The line is now in readiness for transmission and reception of a message. When the same is delivered the receiver is replaced into the bracket, the jaws b, b' are brought away from each other and the bar A moved over until stopped by f'. The spring D being compressed tends to close the jaws of the bracket but are prevented from doing so by the receiver being placed between them, and holds the same firmly in its place.

In the double pole system, Figs. 4 to 6, the operation is as follows:—The receiver R hanging in the bracket B keeps the jaws b and b' apart. The contacts C and C' close the circuit from the line wires 10, 11, by bearing against the contact springs G and H, through 12 and 13 and the signaling device. When a signal is received over the line, the bell announces it and the receiver is taken out of the bracket. By the action of the spring D the jaw b' is partly closed and bar A is brought over toward the bracket whereby the contacts C and C' separate from G and H breaking the signaling circuit. C is brought to bear against the contact springs F and C' against G. A circuit is thereby established through line wire 10, C, F, 14, R, 15, I', 16, G, C' and line wire 11 which connects the receiver with the line. The bar A in moving toward the brackets B is withdrawn from contact spring K thereby allowing the same to come into contact with the stationary spring or arm L. When K and L are brought into contact the battery is closed through 18, T, 19, I, 20, L, K, 17 to B'. This connects the transmitter and completes the primary circuit. When the communication is received and answered the receiver is replaced into the bracket by inserting it between the jaws of the same. The outer ends of the jaws are purposely made of such shape as to allow the receiver to be inserted easily and quickly without the use of any additional means. The receiver in being replaced into the bracket forces bar A into its original position, breaks the communication between the line and the receiver and transmitter and opens the signaling circuit. The telephone is then again ready for a new signal.

In Fig. 7, b^2 is bent around to pass through the side of the telephone and into the same. Line wire 10 is directly connected to it and the spring D tends to bring it up between the two contact springs F and G. The receiver being in place between b and b' holds them apart and keeps b^2 in contact with the stop f that is secured to the spring H. Connected to H is wire 12 which leads to the signaling device. The wire connections are the same as in Fig. 3 (or 6). Consequently when b^2 is bearing against f the circuit is closed through 10, b^2, 12, S, 13, 11. When the receiver is removed the jaws close up and b^2 is forced in between F and G by the action of the spring D. On account of G being in the shape of a strap g', b^2 is brought to rest against it and the two springs are set into electrical connection with each other thereby closing a circuit through 10, b^2, F, 14, R, 15, 21, 22, I^2, 16, 11 and connects the receiver with the line. The battery circuit is closed through B', 18, T, 19, 23, I', 20, G, b^2, F, 17 thereby closing the transmitter circuit.

In Fig. 8, the jaws close up entirely when the receiver is removed and bar A is forced over by the spring so as to connect the receiver and transmitter with the line. The same wire connections are used as in 3 or 6. When the receiver is placed between the jaws it forces the bar over so as to break the receiver and transmitter circuits and connect the signaling device to the line. The spring tending to close the jaws must be stronger than the spring actuating the bar so as to retain the receiver between the jaws when placed there.

What I claim is—

1. An automatic telephone switch consisting of a sliding bar carrying a contact or contacts, a bracket having one jaw pivoted and in engagement with the bar, a spring acting on the same and a receiver or equivalent for inserting between the bracket jaws, substantially as and for the purpose set forth.

2. In a device of the character specified, a bracket for holding the receiver having one jaw stationary and the other pivoted, the latter adapted to engage a sliding bar, substantially as set forth.

3. In a device of the character specified, a bracket for holding the receiver having one jaw stationary and the other pivoted, the latter engaging a sliding bar and a spring for closing the jaws and changing the position of the sliding bar, substantially as and for the purpose set forth.

4. In a device of the character specified, a bracket having one jaw stationary and one movable, the latter provided with an exten-

sion for making and breaking the different circuits and a spring for normally holding the jaws together, substantially as described.

5. In a device of the character specified, a bracket for the reception of the receiver consisting of two jaws one stationary and the other pivoted thereto, a spring for closing the jaws and a spring pressed sliding bar entering centrally between but immediately below the same, substantially as and for the purpose set forth.

Signed at Brooklyn, in the county of Kings and State of New York, this 2d day of May, A. D. 1894.

HENRY DUCKWORTH BAYNE.

Witnesses:

HARRY J. BRAINERD,

WILLIAM J. TATE.