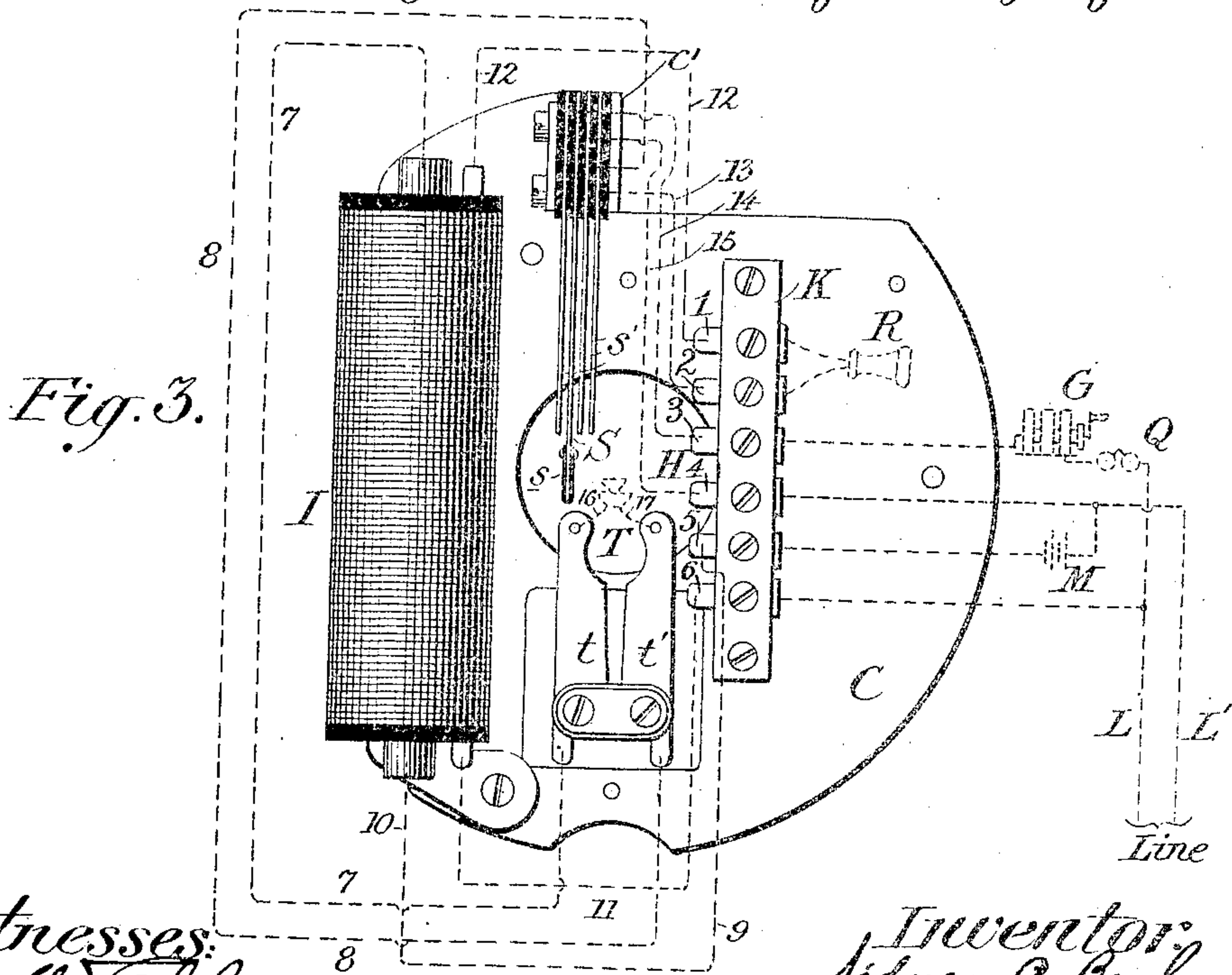
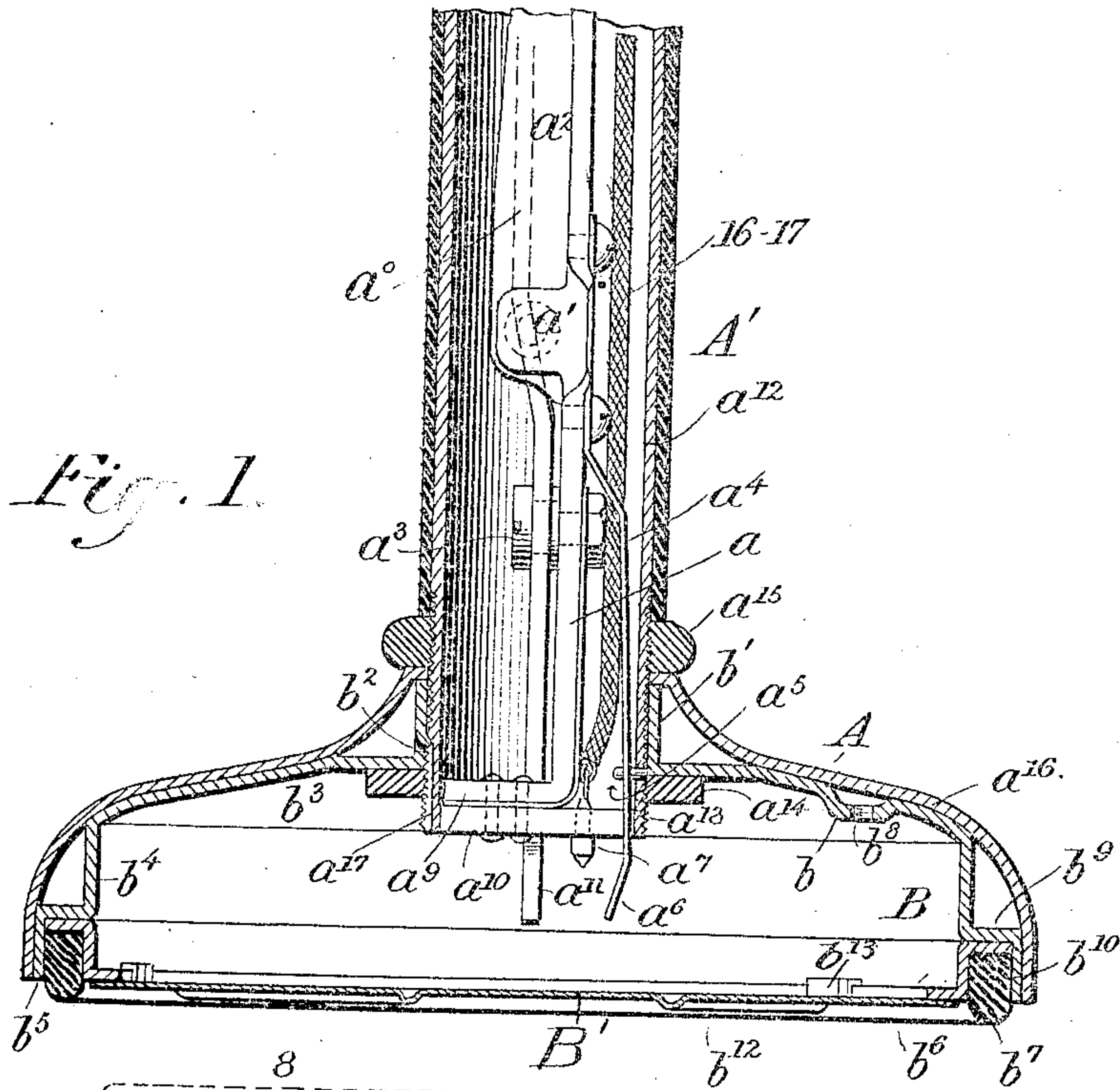


S. A. BEYLAND.
TELEPHONE APPARATUS.
APPLICATION FILED FEB. 28, 1905.

3 SHEETS—SHEET 1.



Witnesses:
O. W. Edlin
James H. Marr.

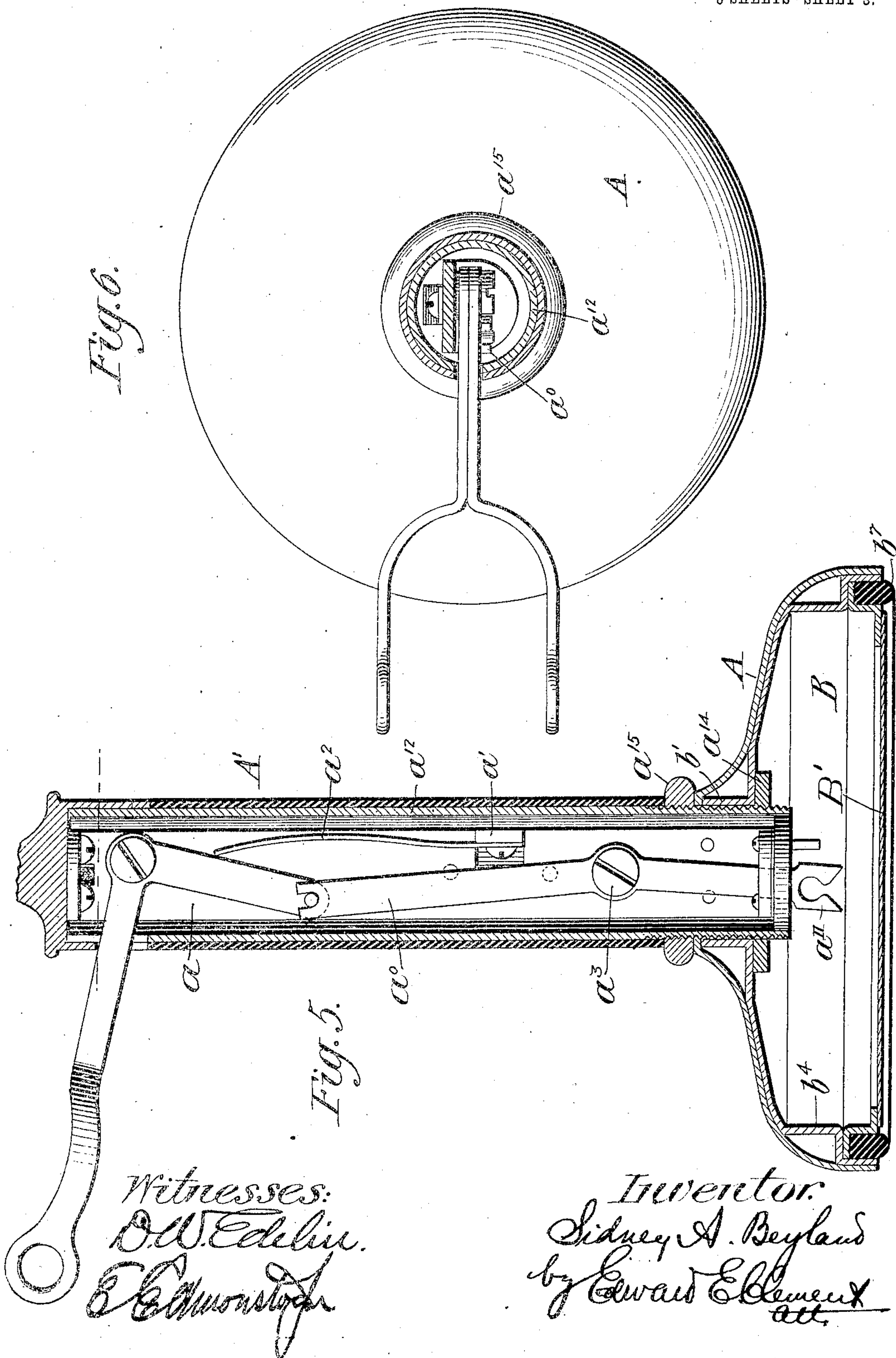
Inventor:
Sidney A. Beyland,
by Edward C. Blum
Att'y.

No. 896,796.

PATENTED AUG. 25, 1908.

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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE

SIDNEY A. BEYLAND, OF ELYRIA, OHIO, ASSIGNOR TO THE DEAN ELECTRIC COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO.

TELEPHONE APPARATUS.

No. 896,796.

Specification of Letters Patent.

Patented Aug. 25, 1908.

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To all whom it may concern:

Be it known that I, SIDNEY A. BEYLAND, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Telephone Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to telephones, and particularly to desk sets.

It has for its object to facilitate the connection and disconnection of the operative parts of the desk set, to enable one standard to be used for several different types of instrument, to increase the economy of manufacture, and generally to improve the efficiency of the instrument. To this end I employ the construction hereinafter set forth; the main feature of which is the employment of a separable base plate, with cooperating parts, whereon the coil, switch springs, terminal rack, and their connections, are mounted so as to be readily inserted into and withdrawn from the base of the stand, all-connections with the instrument circuit being automatically made in the act. The switch lever, which is carried on the upper portion or standard, acts mechanically on the springs of the base plate, but is common in form for all types of instrument, the springs alone requiring change to alter the same from say a magneto to a common battery telephone, or from one kind of circuit to another.

My invention is fully illustrated in the accompanying drawings, wherein the same letters of reference point out the same parts throughout.

In these drawings, Figure 1 is a vertical sectional view of the base and part of the standard of a desk set embodying my invention. Fig. 2 is a bottom plan-view of the same. Fig. 3 is a similar view of the removable base-plate, and Fig. 4 shows a modification thereof. Fig. 5 is a vertical sectional view taken at right angles to the section shown in Fig. 1 and omitting the transmitter, but showing the operating parts in full lines. Fig. 6 is a transverse section taken above the switchhook.

In these drawings A is the base, and A' the standard, of a desk set. The switch mechanism of this set is partly contained in the base and partly in the standard. The me-

chanical portions are all in the standard, connected to and controlled by the receiver-hook lever. The electrical contact springs, however, are arranged in the base, on the base-plate which I have described.

In the standard A', which is preferably sheathed with insulating material such as hard rubber, the vertical support *a* is mounted, attached at its upper end to a cast plug fitting the upper end of the standard (upon which the transmitter head is secured), and at its lower end to a plate *a*¹⁰ by means of rivets passing through the overturned foot *a*⁹ of the support. Upon the support *a* is pivoted at *a*³ a vertical-oscillating lever *a*⁰, which at its upper end is pivoted to the hook lever (the latter being formed in the shape of a bell crank). At its lower end the lever *a*⁰ is bifurcated, as shown at *a*¹¹ in Figs. 1 and 2. The bifurcated end plays in a slot formed in the plate *a*¹⁰, as the lever turns upon its pivot. The upper end of the lever is normally thrown over when the hook lever is depressed by the weight of the receiver against the tension of the spring *a*² riveted to the lug *a*¹ on the support *a*. This spring may be made long and stiff, the use of the standard for the purpose permitting length, and the leverage obtained by forming the hook and the lever *a*⁰, as shown, permitting the strength.

The support *a* with its plug and transmitter head at the upper end and the hook-lever parts upon it, slides bodily in and out of the tube *a*¹² in the standard. In order to hold it in place when inserted, and yet render it easily removable, I have provided the spring latch *a*⁴, secured at its upper end to the support *a* and having its lower end *a*⁶ bent over as shown. This latch spring engages a stud *a*⁵ set into the wall of the tube *a*¹² at or near its lower end. The latch spring is punctured to receive the stud *a*⁵, and when it is desired to remove the vertical support and its parts from the standards A', all that is necessary is to remove the cover-plate in the base, which will shortly be described, and press back the spring *a*⁴, whose end *a*⁶ will then be exposed. On replacing the vertical parts in the tube, the spring-latch will of itself reengage the pin *a*⁵, locking the parts in position.

The base of this instrument is preferably formed as follows: A press metal shell *a*¹⁶ is shouldered around a central opening to fit

upon the tube a^{12} and lie against the screw-ring a^{15} which is threaded thereon. Inside the shell a^{16} is fitted a press metal liner B, having a peculiar configuration, for purposes which I will now point out. The liner has its upper part shaped in at b^1 to form a tubular neck fitting snugly around the tube a^{12} and with the upper end of its flange or tube pressing against the inside edge of the shoulder or shell a^{16} . It is necessary for certain reasons that the liner B should not turn upon the tube. To secure this a projection b^2 is punched in from one side of the neck b^1 , and in one side of the tube a^{12} a slot or key-way is formed as shown at a^{17} , in which the projection b^2 may lie when the liner is slipped on a tube. The liner is held in place by means of a threaded nut a^{14} which is set up against it on the tube. At the lower and outer edges of its bell, the liner B has a horizontal flange, and two vertical flanges, lettered b^3 , b^4 and b^{10} , respectively. The horizontal flange b^3 stiffens the whole base perfectly; the vertical flange b^4 of the liner B incidentally stiffens the top of the base all around, and the flange b^{10} forms one side of a channel to receive the rubber or leather ring b^7 which serves to form a soft pad or deadener for the base of the set. The inner side of this ring channel is formed by the flange ring b^6 whose horizontal flange b^{11} is notched at b^{13} at intervals, as best shown in Fig. 2. Against the lower face of this ring rests the cover-plate B', provided with locking teeth or radial projections b^{13} , to register with and take into the notches b^{12} , so that by inserting the same and then slightly turning the cover-plate the projections b^{13} will pass under the flange b^{11} and lock the plate in position.

The inside face of the liner B, as shown in Fig. 2, is provided with several projections intended for the adjustment and securing of the base plates which I have now described. These projections are shown at b^8 and b^{20} , in Figs. 1 and 2, the former being adapted for securing screws. Upon them is laid and secured the detachable base-plate shown in Figs. 3 and 4 in two different forms. Upon this base-plate are mounted the induction coil I, the transmitter terminal springs t , t' , the switch springs S, s' , the terminal rack K, and their connections. The central portion of the plate C is provided with a round opening H of sufficient diameter to surround the lower end of the tube a^{12} of the standard when the plate is laid in the base. The position of the plate and the relative position of the base at such time will be clearly understood by inspecting Figs. 2 and 4, the parts then appearing just as they would register. When the plate Fig. 4 is superposed upon Fig. 2, it will be observed the insulated end s of the operating spring S passes into the bifurcation a^{11} in the lower projecting end of the

pivoted lever a^9 . This is indicated in dotted lines in Fig. 4.

The springs S and s' of Fig. 4, and the corresponding springs in Fig. 3, are mounted upon an upturned flange c' formed by bending a portion of the periphery of the plate C vertically. The terminal rack K is composed of hard rubber or other appropriate material, and may if desired be built up of rubber or mica strips on both sides of the metallic terminals k , with an overlying metal strip k' . In any event, I preferably provide the terminals with openings to receive the tips of conducting cords, with set-screws 1, 2, 3, 4, 5 and 6 for the purpose of clamping said tips.

When complete the transmitter connects through the movable parts in the vertical standard without delay and automatically, the springs t , t' are mounted upon the plate C in such a manner as to be insulated therefrom, supported upon a stop bed t^2 , but confined at their outer ends only at t^3 , and with their inner ends projecting over the opening H in position to register with two terminals tips or points a^7 secured to but insulated from the plate a^{10} of the vertical support. To each of these tips a^7 is secured one of the transmitter wires 16—17, as shown in Figs. 1, 3 and 4. Thus when the plate C is put in position, fitting around the neck of the tube a^{12} , its spring S falls into the slot or bifurcation in the switch-lever, and its two springs t , t' at the same time make good contact with the two points a^7 and complete the transmitter circuit. By inserting the proper screws in the openings c and thence into the tapped projections b^8 , the plate is secured. By removing the screws the plate may be removed, and it will be observed that this removal requires no breaking of circuits, and no disconnection of wires and absolutely no disarrangement whatever of any of the operative pieces of apparatus.

In Fig. 3, I have shown the base-plate fitted and connected for a magneto telephone, and in Fig. 4 I have shown it similarly fitted and connected for a common battery system. It should be understood that at the present time when common battery systems are gradually and widely being substituted for magneto systems wherever practicable, such a scheme of interchangeability is highly important. By my invention, a portion or the whole of an exchange outfit may be equipped with magneto sets, and these may be changed over at any time to common battery by merely removing one base-plate and inserting another in each instrument. Moreover, the greatest economy in manufacture is obtained by this means. Not only is it possible to thoroughly test and adjust the coil springs and connections on the base, cheaply and with accuracy, according to my plan, but without great expense or trouble. The

factory stock may embrace all desired types of instrument without requiring more than one set of tools to produce them. Moreover, orders may be made up from stock by simply assembling the required number of desk stands which are of one standard type, whatever type of base-plates and connections may be called for. I am aware that the mere statement of this idea does not perhaps constitute invention, but the solution of the problem of how to accomplish it has required more than the exercise of mere skill, and I consider myself the first successfully to produce a combination commercially operative which will serve the desired ends.

Referring to Fig. 3, it will be observed the terminal rack has terminals 1, 2, 3, 4, 5 and 6; 1 and 2 taking the receiver cord from receiver R; 3 taking the tip of the conductor leading from generator G and ringer Q, which are connected on their other side to the line terminal L in the ringer box; 4 takes the conductor from the mate (or second line) terminal L'; 5 takes the battery wire, connected on its other side to the mate terminal; and 6 takes the direct connection from line. The connection of these terminals by wires 13, 14 and 15, to the springs of the switch s, is clearly shown in Fig. 3. Terminals 5 and 6 go to the primary and secondary of the coil 1, respectively, the continuations of these windings going by wires 7 and 12, respectively, to the transmitter spring t and the receiver. Wire 8 puts the mate spring t' on the switch.

In Fig. 4, I have shown the simplified circuit and apparatus for a common battery base-plate. Herein the terminal rack K has only four terminals, 1, 2, 4 and 6, whose connections are obvious and are numbered the same as in Fig. 3. The switch here is reduced to a single pair of springs, but is operated in the same manner as before.

I do not herein claim as my invention any of the parts mounted in or upon the desk standard, nor the arrangement by which the supporting strip and its parts are rendered removable therefrom, as such construction is illustrated herein. It is immaterial for the purposes of my invention whether the parts within the desk standard are removable or are fixed therein. Regarding them as fixtures my invention resides in the arrangement of the parts in the base of the set, so that they may be withdrawn away from the other parts. Such combinations and connections as are necessary to effectuate this purpose I claim herein, and no more.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. A telephone desk set comprising a metal tubular standard, a shoulder thereon, as a^{15} , a pressed metal shell or bell surrounding the end of the tube and resting against said

shoulder, a flanged liner fitted within said shell, locking means for holding the shell and liner together and upon the tube, and a cover plate detachably connected within the shell and upon the liner, substantially as described.

2. In a telephone desk set, the combination with a base, of a liner secured therein, a ring secured within the liner, and deadening means interposed between the liner and ring and projecting below the base.

3. In a telephone desk set, the combination with a base, of a liner secured therein, a ring secured within the liner, a pad secured between the ring and liner and projecting below the base, and a cover plate secured to the ring.

4. In a telephone desk set, the combination with a base, of a ring secured within such base, and deadening means secured between such base and such ring and projecting below such base.

5. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, a removable plate adapted to be supported in such base, switching mechanism carried by such plate adapted to cooperate with operating mechanism carried in such standard and means for automatically closing electrical connection between such switching mechanism and such apparatus when such plate is placed in such base.

6. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, a removable plate adapted to be supported in such base, switching mechanism carried by such plate adapted when operated to change the circuit connections of such desk set, a switch hook carried by such standard adapted to operate such switching mechanism, an induction coil carried by such plate and electrically connected to such switching mechanism and means for automatically closing electrical connection between such switching mechanism and such apparatus when such plate is placed in such base.

7. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, a removable plate adapted to be supported in such base, switching mechanism carried by such plate adapted to cooperate with operating mechanism carried in such standard and means for automatically severing electrical connection between such switching mechanism and such apparatus when such plate is removed from such base.

8. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, a removable plate adapted to be supported in such base, switching mechanism carried by such plate adapted when operated to change the

circuit conditions of such desk set, a switch hook carried by such standard adapted to operate such switching mechanism, an induction coil carried by such plate and electrically connected to such switching mechanism and means for automatically-severing electrical connection between such switching mechanism and such apparatus when such plate is removed from such base.

9. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to carry terminals of different circuits for such desk set and to be interchangeably supported in such base and means for automatically completing electrical connection from the terminals of any one of such plates to such apparatus when such plate is placed in such base.

10. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to be interchangeably supported in such base, switching mechanisms carried by such plates adapted to control different circuits, means for automatically engaging the switching mechanism on any one of such plates by operating mechanism carried by such standard when such plate is placed in such base and means for automatically closing electrical connection between the switching mechanism of such plate and the apparatus carried by such standard.

11. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to be interchangeably supported in such base, different mechanisms carried by such plates, each of such mechanisms adapted to cooperate with the apparatus carried by such standard and means for closing or opening electrical connection between any one of such mechanisms and such apparatus when the plate carrying such mechanism is inserted into or removed from such base.

12. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to be interchangeably supported in such base, switching mechanisms carried by such plates adapted to control different circuits, a switch hook carried by such standard adapted to operate the switching mechanism on any one of such plates, induction coils carried by such plates and differently connected to such switching mechanisms, means for automatically engaging the switching mechanism of any

one of such plates by operating mechanism associated with such switch hook when such plate is placed in such base and means for automatically closing electrical connection between the switching mechanism of such plate and the apparatus carried by such standard.

13. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to carry terminals of different circuits for such desk set and to be interchangeably supported in such base and means for automatically severing electrical connection between the terminals of any one of such plates and such apparatus when such plate is removed from such base.

14. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to be interchangeably supported in such base, switching mechanisms carried by such plates adapted to control different circuits, means for automatically disengaging the switching mechanism on any one of such plates from the operating mechanism carried by such standard when such plate is removed from such base and means for automatically severing electrical connection between the switching mechanism of such plate and the apparatus carried by such standard.

15. In a telephone desk set, a tubular standard, a base for such standard, telephone apparatus carried by such standard, removable plates adapted to be interchangeably supported in such base, switching mechanisms carried by such plates adapted to control different circuits, a switch hook carried by such standard adapted to operate the switching mechanism on any one of such plates, induction coils carried by such plates and differently connected to such switching mechanisms, means for automatically disengaging the switching mechanism of any one of such plates from the operating mechanism associated with such switch hook when such plate is removed from such base and means for automatically severing electrical connection between the switching mechanism of such plate and the apparatus carried by such standard.

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

SIDNEY A. BEYLAND.

Witnesses:

ROY H. MANSON,
A. D. T. LIBBY.