No. 832,425. PATENTED OCT. 2, 1906.

L. SCHMIDT.

INTERCOMMUNICATING TELEPHONE.

APPLICATION FILED SEPT. 16, 1905.

5 SHEETS—SHEET 1.

Fig. 2.

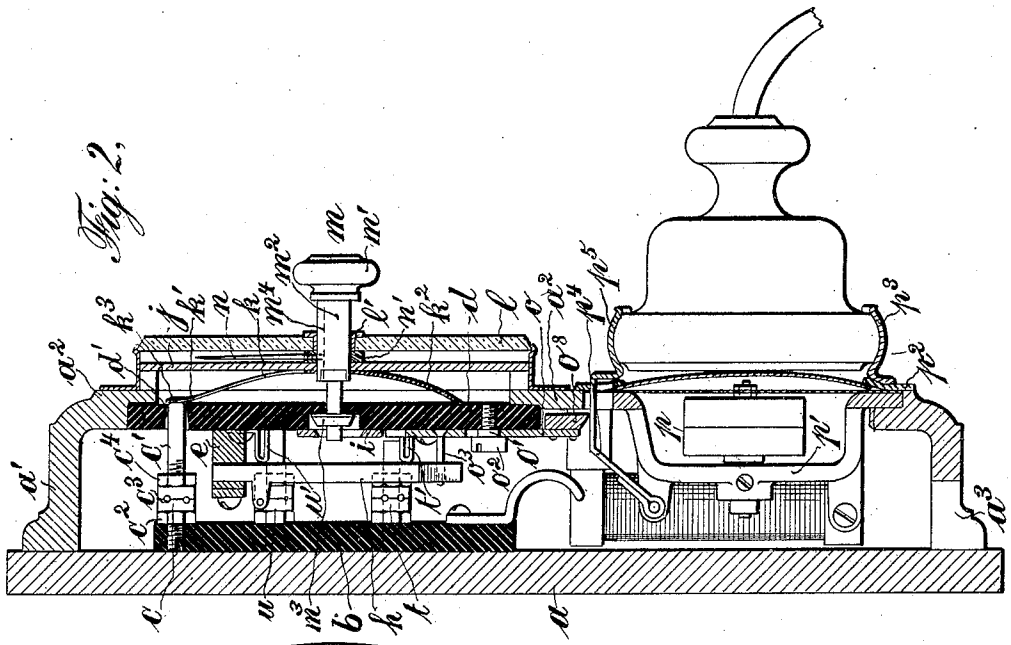
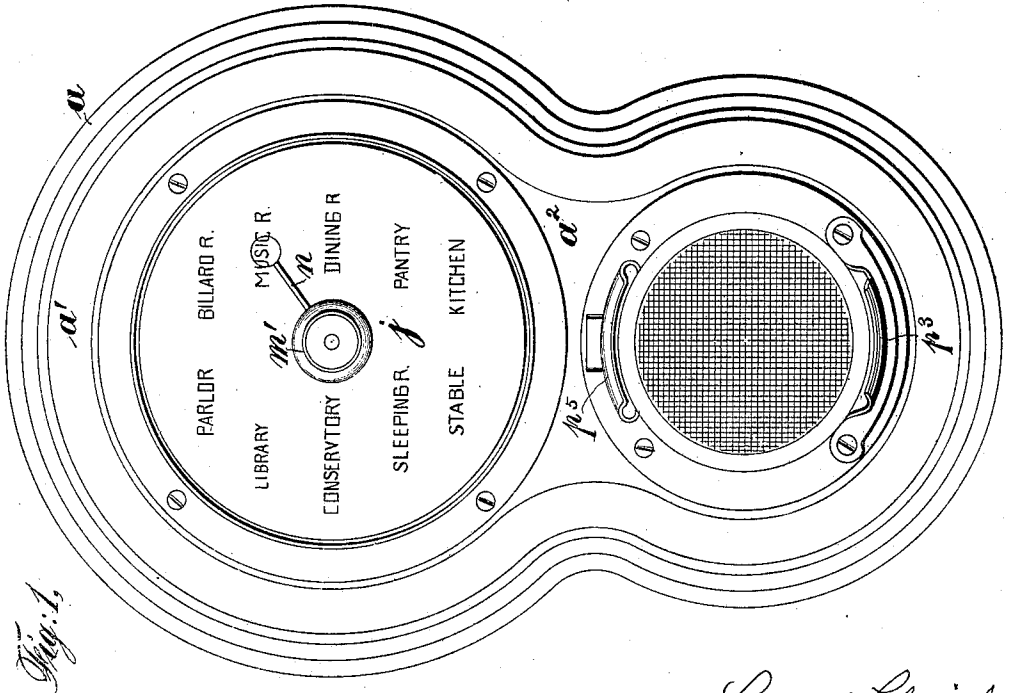


Fig. 1.

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5 SHEETS—SHEET 2.

Fig. 4.

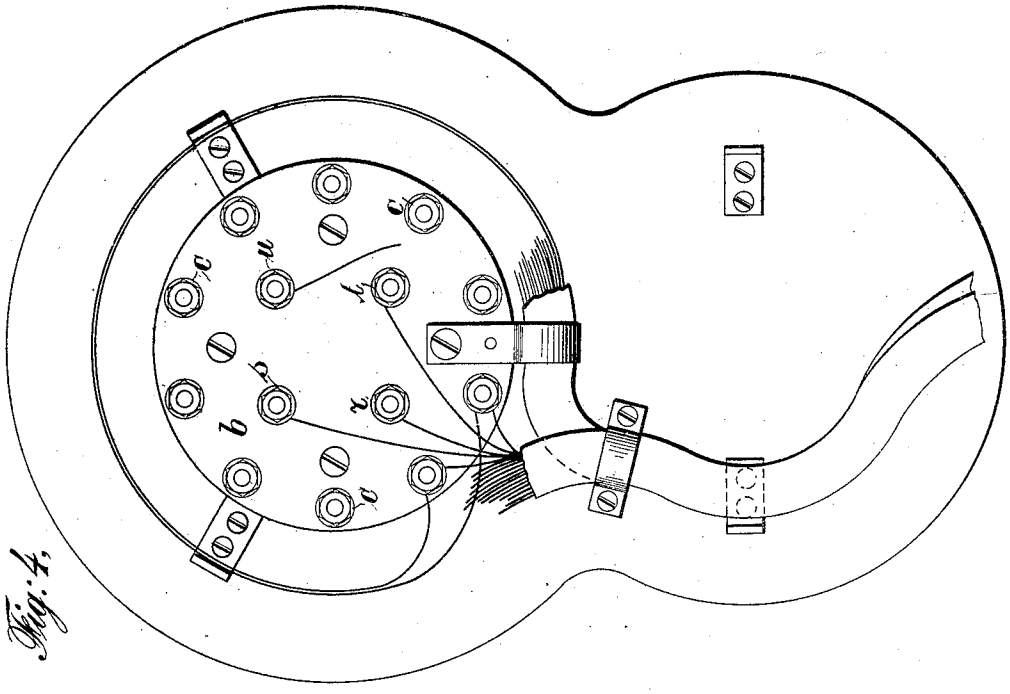
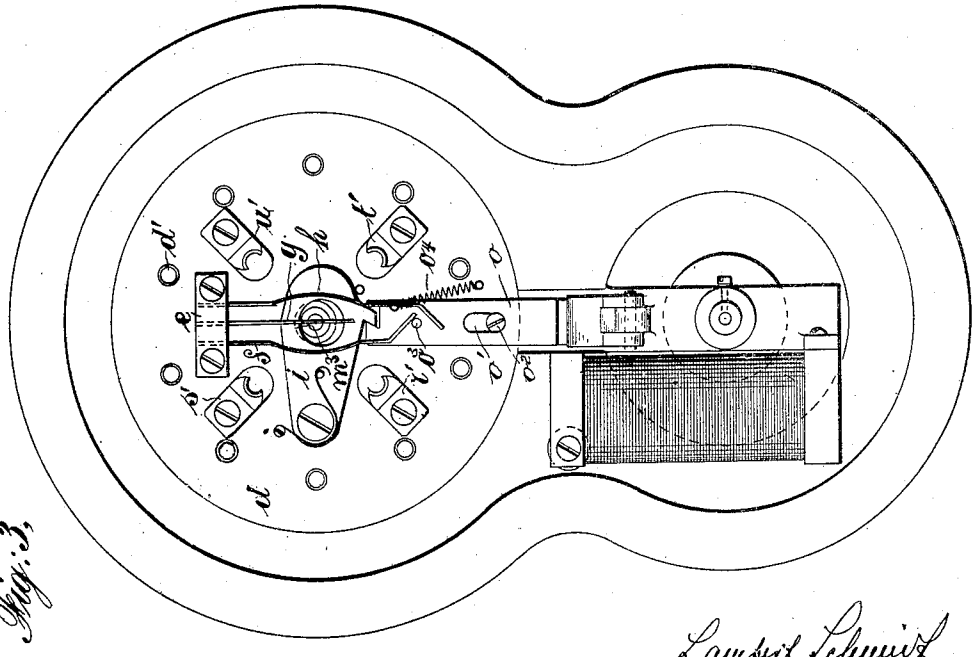



Fig. 3.

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5 SHEETS—SHEET 3.

Fig. 5.

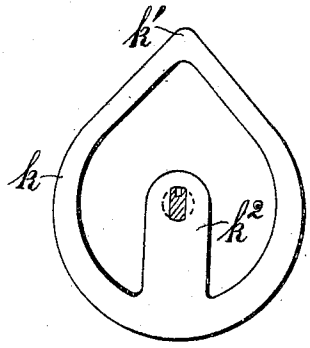



Fig. 6.

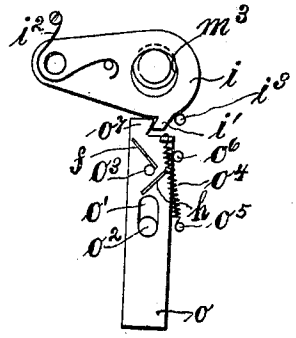



Fig. 7.

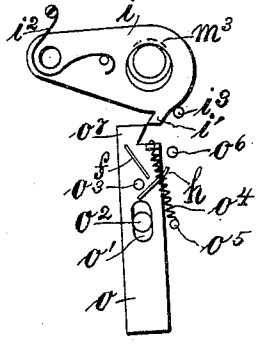



Fig. 9.

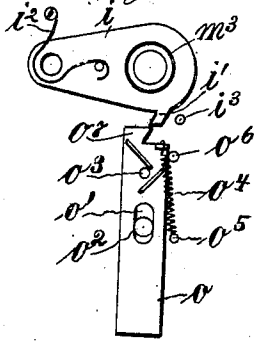
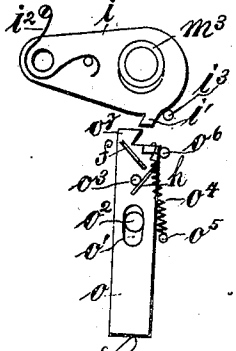



Fig. 8.

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5 SHEETS—SHEET 4.

*Fig. 10.*

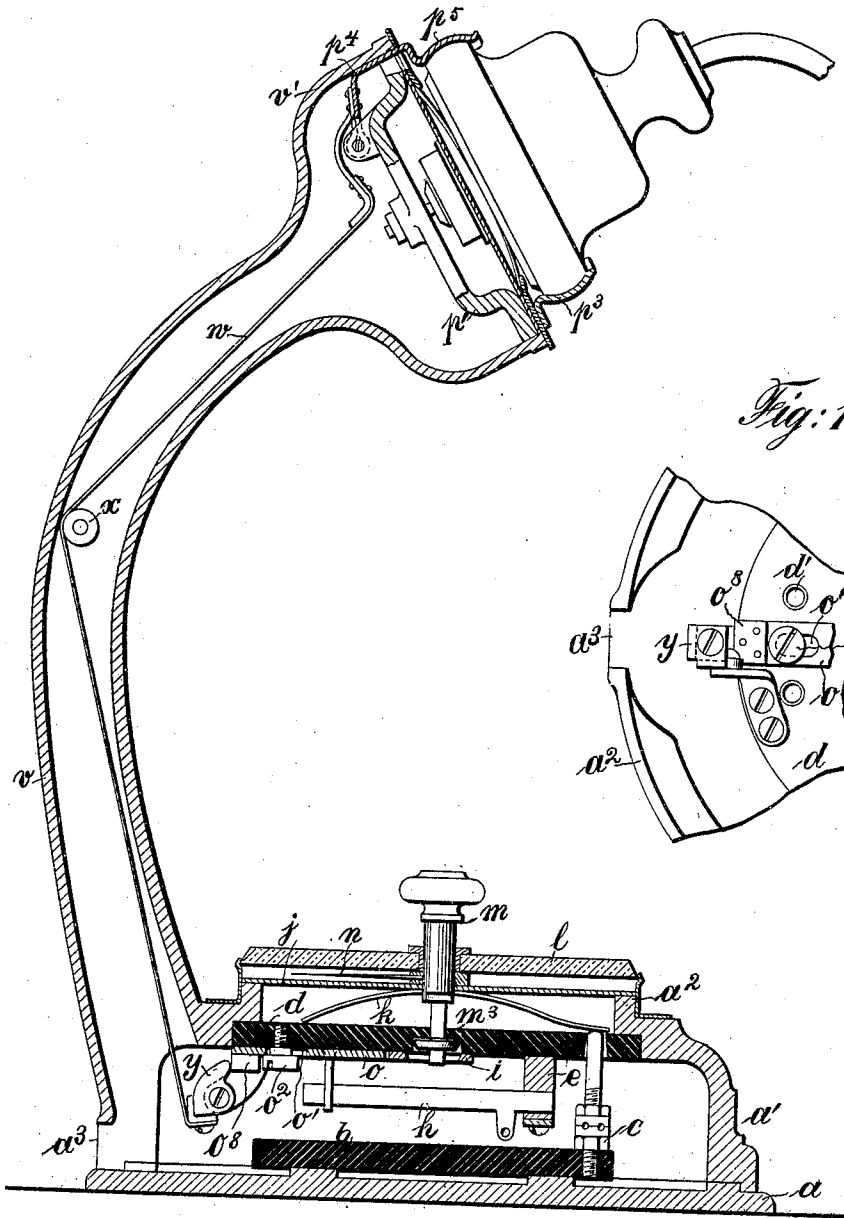


*Fig. 11.*




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5 SHEETS—SHEET 5.

Fig. 12.

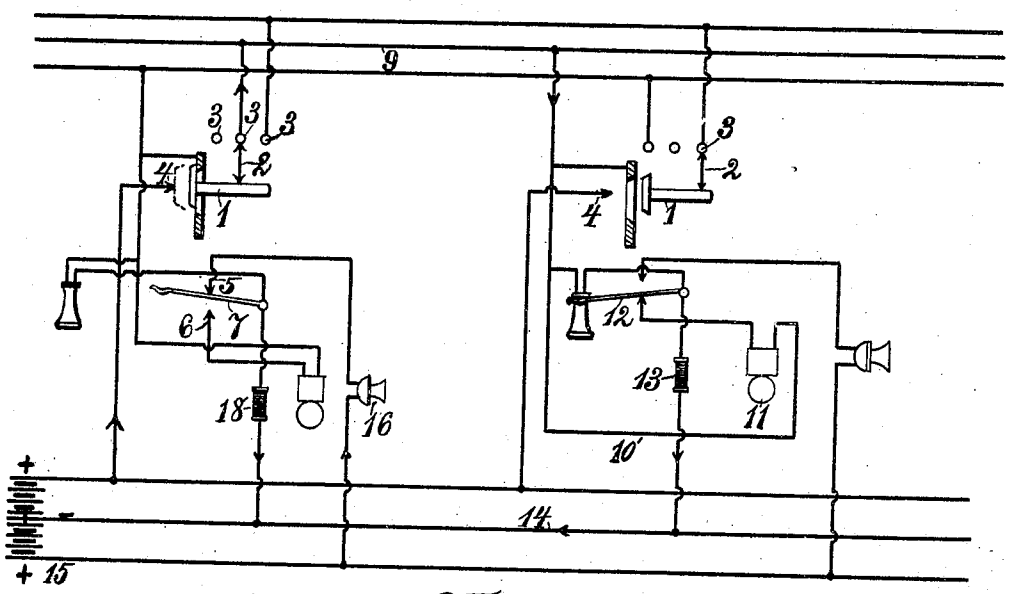
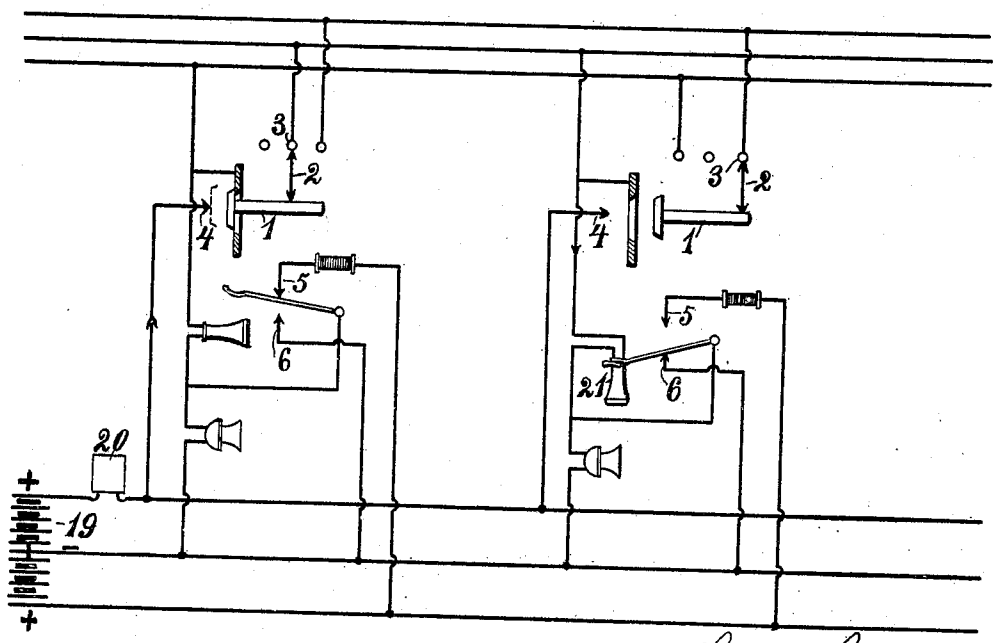



Fig. 13.

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# UNITED STATES PATENT OFFICE.

LAMBERT SCHMIDT, OF WEEHAWKEN, NEW JERSEY.

## INTERCOMMUNICATING TELEPHONE.

No. 832,425. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed September 16, 1905. Serial No. 278,698.

*To all whom it may concern:*

Be it known that I, LAMBERT SCHMIDT, a citizen of the United States of America, and a resident of Weehawken, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Intercommunicating Telephones, of which the following is a specification.

This invention has reference to improvements in intercommunicating telephones.

It is the special object of this invention to provide a novel intercommunicating telephone which may be used as an interior station-telephone in both styles—the wall or desk telephone. The instrument comprises three distinct parts—namely, the station-indicator with switching device, the transmitter, and the receiver. The station-indicator and the switching device are combined in such a way as to form one self-contained part of the instrument, which is interchangeable as a whole, whereas transmitter and receiver, together with an element performing the function of a switch-hook, are combined to constitute a second self-contained part of the instrument, which also is interchangeable as a whole. These two parts are in such a relation to each other that the element performing the duty of a switch-hook retains the receiver in the second self-contained part and at the same time actuates the switching device of the first self-contained part with station-indicator.

My novel intercommunicating telephone is plain, very compact in construction, and is cheaply manufactured. All single parts of the instrument are interchangeable, and the combination of the single parts to two self-contained main parts, which are interchangeable as a whole, makes it possible to use different casings or frames for the instrument, as is shown, for instance, in my wall-telephone and my desk-telephone.

As station-indicator for my telephone I employ a circular dial on which are printed the names of all the stations connected with the instrument. Selection of the station with which it is desired to communicate is made by means of a prominent radial hand pointing toward one of the stations printed on the dial. Thus the dial, with its hand, is in plain view of the person using the instrument and affords great facility for making the proper selection. The hand on the dial is set by means of a centrally-located knob, which at the same time performs the function of a push-button. Owing to this construction only one push-button is required for indicating all stations, while the number of stations is only limited by the size of the dial. The receiver is of the watchcase type and is located directly in front of the transmitter, where it is held by means of a suitable clamping device. A station may be called up with the receiver on or off the instrument, and arrangements are provided whereby the calling may be effected either by means of a bell or through the receiver without the use of a bell. In order that two stations be electrically disconnected when through talking with each other, each receiver is placed again in front of the respective transmitter, whereby the talking-circuit is automatically opened and the calling-circuit again restored.

Another advantage of my telephone is derived from the way the connections to the wires of the house-cable are made. These wires are directly connected to binding-posts or contact-dowels without the use of so-called "intermediate" cables or flexible wires. All the connections from the house-cables lead to a connection-board on the base of the instrument, while the transmitter, receiver, and station-indicator, with switching device, are mounted and interconnected in the front part of an independent casing, the latter having no connections whatever with the base except when the instrument is closed.

The intercommunicating telephone is operated by a novel dial-switch which is actuated by the push-button. The button engages a switch-spring of peculiar shape which makes contact with one of a number of contact-dowels at a time. Said contact-dowels have combined therewith binding-posts to which the single wires of the house-cable are directly connected. This combination is of great advantage, as the intermediate cable or flexibles leading from this base to the instrument proper are thereby dispensed with. Thus the switch-spring of the dial-switch is used to form the electric connection with the desired station. A pointer or hand, also operated by the push-button, indicates the desired station directly on the name-plate, and the pushing in of the button does not dislodge the pointer. This combination then renders it possible to dispense with the extra push-buttons used in combination with dial-switches in former constructions. The button employed in this

system is first used to set the pointer over the name of the desired station on the name plate or dial. Then it is pushed in in order to make the call. The pushing in of the button depresses the curved switch-spring, the pointed end of which always rests on one contact-dowel, and still further pushing in will bring the inner end of the button in contact with a spring forming part of the call-circuit. When the finger is released from the push-button, the curved switch-spring forces the latter back far enough to interrupt the call-circuit. At the same time it establishes an electrical connection with a latch forming part of the talking-circuit. The removal of the receivers from the instruments on both stations establishes now the proper connections, so that conversation may be carried on. When the party is through talking, the receivers are placed back in front of the transmitters, whereby these last-named connections are interrupted, and at the same time a mechanical movement is actuated which allows the push-button to return to its normal position. Hereby the talking-circuit is also disconnected from the dial-switch, although the switch-spring itself may remain in the same position. In this way I dispense with the so-called "fly-back" movement of the switch employed in former constructions.

By virtue of the novel construction and shape of the switch-spring I derive two distinct advantages, as follows: The pointed end of the spring has a slight curvature or notch snugly fitting over the rounded head of the contact-dowels. The purpose of this notch is to lock the switch-spring in its position when making electrical contact with a dowel. Thus I dispense with the pawls and ratchets used for the same purpose in other constructions. When the button is pressed in, not only is the pressure of the switch-spring upon the dowel greatly increased, but there is also a slight rubbing action between these two elements, affording a very substantial electrical contact, which cannot be effected by the means generally employed in intercommunicating telephones.

The invention further consists in the details of construction and arrangements of the different parts.

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

Figure 1 represents in front elevation an intercommunicating wall-telephone which embodies my invention, having the receiver removed. Fig. 2 is a central longitudinal section of Fig. 1, showing the receiver inserted in the transmitter. Fig. 3 illustrates in elevation the telephone with certain rear parts removed. Fig. 4 shows same in elevation with certain front parts removed. Fig. 5 shows in top plan view the switch-spring. Figs. 6, 7, 8, and 9 are detail views of the switch or mechanical movement in various positions. Fig. 10 represents in vertical section a desk-telephone with receiver in elevation inserted into the transmitter. Fig. 11 shows a detail of the switch or mechanical movement for the desk-telephone. Fig. 12 is an electrical diagram comprising a bell-call, and Fig. 13 is another electrical diagram comprising a receiver-call.

Similar characters of reference denote like parts in all the figures.

All parts of the telephone are mounted within a casing shown in Figs. 1, 3, and 4. This casing consists of a base-plate $a$ and a frame $a'$ with its top $a^2$. An opening $a^3$ is provided in the frame, through which the house-cable passes. On the base-plate a fiber disk $b$ is secured in its top central portion. The fiber disk carries the combined binding-posts and contact-dowels $c$, which are circularly-arranged, as shown in Fig. 4, thus forming a multiple plug. Each of these binding-posts and contact-dowels represents a station. One, for instance, is connected to the parlor instrument and the other with the billiard-room instrument, &c. In the drawings ten of these contact-dowels are illustrated; but their number can be greater or smaller, according to the number of stations, and is only limited by the size of the dial used. The combined binding-posts and contact-dowels consist each of the dowel $c'$, which is threaded about half-way of its length, so that it may be secured in the fiber disk $b$ and receive the binding-posts. A lock-nut $c^2$ on the dowel rests on the fiber disk. Then follows the binding-post $c^3$, on which again rests a nut $c^4$. The nut $c^4$ may be screwed up or down for the purpose of inserting and tightening the wires of the house-cable. The opposite and rounded ends or heads of the dowels form the contact-points for the switch-spring.

Inside of the frame and next to the top there is secured a circular plate $d$, of insulating material, directly opposite the fiber-disk. This plate has a number of conical openings $d'$, corresponding with the number of contact-dowels. The free end of each contact-dowel passes through and slightly extends beyond one of these openings, which are also circularly arranged. A block $e$ is also secured to the plate $d$, carrying three contact-springs $f$, $g$, and $h$. The central relatively short spring $g$ forms part of the call-circuit. The longer springs $f$ and $h$ extend down to a mechanical movement, which will be described later. A contact plate or latch $i$, having a circular conical opening right before the central spring $g$, is pivotally mounted on the plate $d$. It forms part of the talking-circuit. The latch has on its lower end a cam $i'$ and a spring $i^2$, acting on the latch and tending to press same continuously against a stop $i^3$, so that the center of the conical opening in the latch is somewhat lower than the

center of the push-button located directly opposite it.

On the top part $a^2$ of the frame and in front of the supporting-plate $d$ there is mounted a dial or name-plate $j$, which has a circular central opening coinciding with the opening in the supporting-plate $d$. A switch-spring $k$, of peculiar shape, is held by the push-button between the dial or name-plate and the supporting-plate. The switch-spring is shown in top plan view in Fig. 5. The extension $k'$ on one side is the end resting on one of the contact-dowels. The central portion $k^2$ extends inwardly opposite from the extending portion $k'$ and reaches somewhat beyond the center of the spring. Here the central portion has an oblong opening through which passes a certain part of the stem of the push-button. The spring is curved, as shown in Fig. 2.

As mentioned before, the end of the spring resting on the dowels has a notch $k^3$, so that when the switch-spring is moved over the dowels by the push-button it will positively snap in as soon as the notch drops over the head of a dowel, thus indicating that the spring is properly located, and when the switch-spring is depressed by pushing in the button then a more perfect contact is effected than heretofore.

On the top of the frame and in front of the name-plate there is a glass cover $l$, having a central circular opening in which a bushing $l'$ is fitted. This opening coincides with the circular opening in the name-plate and the circular opening in the supporting-plate.

The push-button $m$ (see Fig. 2) passes through the openings in the various plates. Outside of the instrument it forms a knob $m'$, from which extends the stem $m^2$. Near the switch-spring the stem is shaped so as to fit the oblong opening in said spring and to afford a shoulder retaining the same. Below the switch-spring the stem is reduced in diameter, and further down it terminates in a cone $m^3$, this latter having a short elongation of the same diameter as the preceding reduced part of the stem. A longitudinal groove or key-seat $m^4$ is cut into the part $m^2$ of the stem. Between the glass cover and dial a pointer $n$ is located. This pointer is attached to a sleeve $n'$, which loosely surrounds the stem of the push-button. The pointer extends through the body of the sleeve into the groove $m^4$, thus forming a small key or feather for the key-seat of the stem. Normally the switch-spring presses the push-button so that its cone $m^3$ will stop against a seat provided therefor in the plate $d$.

Upon the lower portion of the plate $d$ is mounted a narrow bar $o$, provided with a slot $o'$, through which passes a screw $o^2$, and in its upper portion it carries a pin $o^3$. The slot $o'$ allows the bar a limited movement up or down, and a spring $o^4$, attached to the bar on one end and fastened to a pin $o^5$ in the plate at the other end, tends to pull the bar down and at the same time sidewise against a stop-pin $o^6$. The top of the bar has a cam $o^7$, operating the similar cam $i'$ on the latch. The length of the slot is so selected as to allow the bar to be moved up and down far enough to engage the cam of the latch and to get clear of same. The pin $o^3$ engages either one of the springs $f$ and $h$, mounted on the block $e$, according to the position of the bar $o$. A block $o^8$ is riveted to the lower end of the bar, as shown in Fig. 2. This block extends somewhat beyond the bar.

Into the lower top part $a^2$ of the casing there is mounted the transmitter. The carbon button $p$ usually employed is mounted in a metal frame, in front of which is clamped a diaphragm by means of a clamp-ring $p^2$. To this clamp-ring is securely attached a bracket $p^3$, forming one or the lower part of the support for the receiver, while the other or upper part of the support is an angularly-shaped hook $p^4$, pivotally mounted on the transmitter-frame $p'$, extending through a suitable opening in the top portion therein and terminating into a cap $p^5$ of similar shape as the bracket below. The receiver is thus clamped between the bracket and the cap of the hook. The bar $o$ rests upon the hook $p^4$ by means of the block $o^8$, and the spring $o^4$, acting on the bar, imparts to the hook enough pressure so that the latter is enabled to firmly hold the receiver in its place.

Assuming now that connection is desired with the music-room, for instance, then the knob in front of the glass cover is turned around until the pointer or hand which moves with the knob comes to stay over "Music-room" on the dial. Simultaneously the switch-spring $k$ will be moved along at the same rate, since the stem engages the oblong opening in the tongue or inner part $k^2$ of the switch-spring. When the pointer stands above "Music-room," the notched front end of the switch-spring rests on the contact-dowel which makes connection with that station. Now the knob is pushed in. Owing to the key-seat in the stem of the push-button this latter is free to pass through the sleeve supporting the hand without disturbing its position. While the push-button is moving in, the curved switch-spring leaning against the shoulder of the stem is depressed and the pressure of its pointed end increased on the contact-dowel. When passing further in, the cone $m^3$ at the end of the stem will come in touch with the latch $i$, raise this latter until the cone is free to pass through the conical opening provided in the latch, and then passing on until the extreme end of its small elongation finally reaches the central spring $g$, whereby the call-circuit is completed. As soon as the cone has

passed the opening in the latch the latter drops down again against its stop $i^3$. The knob after being released will spring back by virtue of the force of the curved switch-spring until the base of the cone comes to rest against the latch, whereby contact is established with the talking-circuit.

While calling, the receiver may be on or off the instrument. After calling, the receiver is removed from the bracket. Accordingly, the hook will drop and with it the bar $o$, carrying the pin $o^3$. This pin, it will be noticed, makes contact with either one of the two long springs $f$ and $h$, mounted in the block on the plate. Normally, when the receiver is in the bracket the pin $o^3$ makes constant contact with the spring $f$, forming part of the call-circuit, so that the station may be called up, while when the receiver is removed and the bar has assumed its lower position the pin will make contact with the spring $h$, closing the talking-circuit, as will be explained later. When through talking, the receiver is replaced into the bracket, whereby hook and bar are raised, the latter striking the latch and forcing the same up until the cone of the push-button is free to pass through the opening therein, returning to its normal position in the space provided in the supporting-plate $d$, as is shown in Fig. 2. The movements of the switching device are shown in section in Fig. 2 and detailed in front elevation in Figs. 3, 6, 7, 8, and 9. Fig. 6 shows the switching device in its normal position. Fig. 7 shows the cone of the button having already passed through the opening in the latch, this latter being again in its normal position resting against the stop $i^3$. After releasing the finger from the push-button the top rear part of the cone will rest against the top part of the latch above its opening. Now the receiver is taken off the bracket. The hook and bar are pressed down by means of the spring $o^4$ acting on the bar. The bar is shown in Fig. 7 in a position half-way between its extreme upper and extreme lower position. A slight downward motion of the bar will bring its cam into touch with the cam of the latch, and a still further downward motion will force the cam of the bar to slide along the cam of the latch until both cams free each other, so that the bar can assume its lower position. Since the pull of the spring $o^4$ in a downward direction is greater than in sidewise direction, the cam of the bar will easily overcome the friction presented to it by the angle of the latch-cam, while the slight pull sidewise will bring the bar against the stop-pin $o^6$ the moment the former has assumed either one of its extreme end positions. As soon as the bar has assumed its lower position, as shown in Fig. 8, the pin rests against the contact-spring $h$ and establishes connection with the talking-circuit. When through talking, the receiver is inserted into the bracket, whereby the hook $p^4$ and with it the bar $o$ are moved up. Fig. 9 shows the position when the cam of the bar has engaged the cam on the latch and has raised the latter far enough that the center of the conical opening and cone coincide, thus allowing the cone to pass this opening. The switch-spring $k$ forces now the push-button back, leaving the cone behind the latch in the space provided therefor in the supporting-plate, as shown in Fig. 2. While the latch is being pushed up by the cam of the bar, the cams move relatively away from each other. Subsequently a position will be reached where both cams are able to pass each other and the spring on the latch will press this latter down against the stop, while the bar will again assume its normal and final upper position, as shown in Fig. 6. This arrangement of the switching device makes it possible to call up another station, no matter whether the receiver is in its place or not, since the push-button is released only when the bar is pushed up and not affected when the bar moves in a downward direction.

On the fiber disk are further mounted four binding-posts $r$, $s$, $t$, and $u$, which also receive wires from the cable. One of them is the positive wire of the ringing or calling battery, one the positive wire of the talking battery, one is the common return or negative for both, while the fourth wire on the binding-post is connected to the wire representing its own instrument. These binding-posts extend up to the supporting-plate $d$. They are circularly arranged, as shown in Figs. 2 and 4, and somewhat shorter than the contact-dowels. Four contact-clips $r'$, $s'$, $t'$, and $u'$, one for each of these binding-posts, are secured upon the supporting-plate. These clips have a U-shaped extension, and the outer member of the U-shaped part is in contact with the free end of one of the binding-posts. These four clips are interconnected with the different elements mounted within the frame, as contact-springs, the receiver, transmitter, and impedance-coil. This arrangement again dispenses with flexible wires or intermediate cables.

The desk-telephone (illustrated in Fig. 10) is constructed along the same line as the wall-telephone and embodies all of the described novel features. The dowels are again mounted on a plate forming the base of a casing, from the periphery of which issues a metal tube $v$, which carries the transmitter and receiver, as shown in Fig. 10. The casing contains again the station-indicator and switching device, while the transmitter and receiver are mounted at the top of a tubular extension $v'$ of the tube $v$. The clamping device for the receiver is similar to the one used in the wall-telephone, except that the hook has an extension on which is fastened a flexible metal band $w$, confined within the tube $v$

and passing over an idler *x* down to the bell-crank *y*, mounted within the casing. Thus the movement of the hook is imparted to the the flexible band and to the bell-crank, which will shift the bar of the switching device, as required and explained above. Two sets of batteries are used in connection with this system, one battery for calling and one for talking purposes. Both batteries are joined with, say, their negative terminals to a common return-wire, whereas the two other terminals of like polarity are connected to two different wires. The different connections are shown diagrammatically in Figs. 12 and 13. Fig. 12 shows an arrangement where an ordinary gong or bell is used for calling up. In Fig. 13 is shown an arrangement where the receiver of the instrument is used for the purpose of calling up. In this case calling is effected by closing a circuit comprising the call-battery, a buzzer, and a receiver. The buzzer may be adjusted so as to give a high rate of interruptions. Then the receiver will give a loud and clear whistling noise, loud enough for ordinary calling purposes.

Referring to Figs. 12 and 13, the push-button with cone is represented by 1, the switch-spring by 2, the dowels by 3, the three springs by 4, 5, and 6, the bar by 7, which at the same time acts as switch-hook. There is also shown an impedance-coil in the circuit. In Fig. 12 two stations are represented, one having already called and removed the receiver from its support. Calling is effected by pressing the push-button until the cone strikes the spring 4 in the diagram. Thus a complete closed circuit is established from the positive call-battery, over the push-button through the switch-spring, through line 9 to the home wire 10 of the called station through the bell 11, through the switch-hook 12, through impedance-coil 13 and back through common return 14. It will be noticed that the receiver is shunted across the bell; but owing to the low resistance of the latter in comparison with the high resistance of the former an insignificant amount of current will flow through the receiver without affecting the bell-current. The push-button of the calling-station is shown locked behind the latch, and the switch-hook, which represents the bar *o* with pin $o^3$, closes in its upper position the local circuit. The current passes from the positive of the talking-battery 15 to transmitter 16, spring-hook 7, impedance-coil 18 back to common return 14. This local circuit constitutes one branch of the Wheatstone bridge method employed in this system. The removal of the receiver from the hook at the called-up station closes likewise its own local talking-circuit. The two stations are then connected from two points midway between their transmitter and impedance coils, respectively, the line including both receivers and going, as explained, through the push-button, switch-spring, and dowel of the calling-station. In Fig. 13 an arrangement is shown whereby the call is affected through the receiver, like in the former arrangement, by pressing the push-button 1 until it strikes spring 4. The calling-circuit, comprising battery 19, buzzer 20, and receiver 21 of called station, is closed. The receiver of the called-up station will then whistle as intended. The removal of both receivers from their support will, like in the preceding arrangement, close the local talking-circuit of each station, and the push-button of the calling-station being locked against the latch will again complete the connection of the two points midway between transmitters and impedance-coils of each station, this connection comprising the two respective receivers.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an intercommunicating telephone a station-indicator comprising a name plate or dial displaying openly the various stations, a pointer above said dial for selecting the stations, one push-button for all the stations passing through said dial and through said pointer, said pointer being so arranged as to be laterally actuated when the push-button is turned and remaining stationary when the push-button is depressed.

2. In an intercommunicating telephone a dial-switch comprising a multiple of circularly-arranged combined binding-posts and contact-dowels adapted to receive directly the single wires of the house-cable, one push-button for all the contact-dowels and a curved switch-spring attached to the push-button and having an elongated pointed contact portion resting always and at any time on the head of one of the contact-dowels independent of any other electric connection and adapted to be laterally turned and downwardly depressed by said push-button whereby perfect contact is made with the desired station.

3. In an intercommunicating telephone a dial-switch comprising a name plate or dial, a pointer in front of the dial, one push-button for all the stations passing through said dial and through said pointer, said pointer being so arranged as to be laterally actuated by said push-button, a multiple of combined binding-posts and contact-dowels circularly arranged and adapted to receive directly the single wires of the house-cable, and a curved switch-spring attached to the push-button with an elongated contact-point which rests always and at any time on the head of one of the contact-dowels, independent of any other electric connection and adapted to be laterally turned and downwardly depressed by said push-button arranged so that upon turning the push-button laterally the pointer and

contact-spring are moved simultaneously whereby the desired station is indicated and contact made therewith.

4. In an intercommunicating telephone a push-button for all stations, a station-indicator attached to and operated by the push-button, a curved switch-spring attached to and operated by said button, a contact-spring opposite the front end of same so arranged that by pushing in the button contact is made by the inner end of the button with the contact-spring and thereby with the call-circuit and upon release the curved spring forces back the button interrupting thereby the call-circuit.

5. In an intercommunicating telephone a dial-switch comprising a push-button for all the stations, a station-indicator loosely attached to the button and operated thereby, combined binding-posts and contact-dowels circularly arranged, a curved switch-spring attached to and operated by the push-button and making contact with one contact-dowel at a time and thereby with a station, a cone with narrow elongation in the front part of said button, a contact-spring opposite the front end of the push-button so arranged that by pushing in the button its front end strikes the contact-spring in front of same establishing thereby connection with the call-circuit and upon release the button is forced back by the curved contact-spring interrupting thereby the call-circuit.

6. In an intercommunicating telephone a push-button for all stations, a curved switch-spring attached to its stem near the center, a cone formed on the stem near its front end, a contact-spring directly opposite said front end and a contact latch or plate with opening mounted between the cone of the button and the contact-spring in front of same so that upon pushing in the button the cone passes the opening in said latch and its front end establishes contact with the contact-spring and call-circuit and upon release the button is forced back by the force of the curved switch-spring interrupting the call-circuit and resting said cone against the contact-latch, and means connected to said latch whereby contact is established with the talking-circuit.

7. In an intercommunicating telephone a push-button for all stations, a station-indicator, a curved switch-spring attached to its stem near the center, a cone formed on the stem near its front end, a contact-spring directly opposite said front end and a contact latch or plate with an opening mounted between the cone of the button and the contact-spring in front of same so that upon pushing in the button the cone passes through the opening in said latch and its front end establishes contact with the contact-spring and call-circuit and upon release the button is forced back by the force of the curved switch-spring interrupting the call-circuit and resting said cone against the contact-latch, and means connected to said latch whereby contact is established with the talking-circuit.

8. In an intercommunicating telephone a push-button for all stations, a station-indicator, a multiple of combined binding-posts and contact-dowels circularly arranged, a curved switch-spring attached to the stem of the button near the center making contact with one of the dowels at a time and thereby with a station, a cone formed on the stem near its front end, a contact-spring directly opposite said front end and a contact latch or plate with an opening mounted between the cone of the button and the contact-spring in front of same so that upon pushing in the button the cone passes through the opening in said latch and its front end establishes contact with the contact-spring and call-circuit and upon release the button is forced back by the force of the curved switch-spring interrupting the call-circuit and resting said cone against the contact-latch, and means connected to said latch whereby contact is established with the talking-circuit.

9. In an intercommunicating telephone a dial-switch comprising a push-button for all stations, a dial, a pointer loosely attached to and operated by said button, combined binding-posts and contact-dowels circularly arranged acting as a multiple plug and adapted to receive the wires of the house-cable thus dispensing with the intermediate cables, a curved switch-spring secured to and actuated by the push-button, a cone formed on its stem near the inner end, a contact-spring directly opposite said front end, and a contact latch or plate with an opening pivotally mounted between the cone of the button and the contact-spring so that normally its opening is somewhat lower than the cone, and means on the latch for connecting with the talking-circuit so that upon turning the button the pointer and dial-switch are simultaneously set on the desired station and upon pushing in the button the switch-spring is depressed making perfect contact with said dowel and upon further pushing in the inner end of the button strikes the contact-spring and connects with the call-circuit and upon release the curved spring forces back the button interrupting the call-circuit, and resting the cone against the latch whereby connection is established with the talking-circuit.

10. In an intercommunicating telephone a push-button with a cone near its inner end, three contact-springs mounted opposite said button, a contact-latch with an opening pivotally mounted between said springs and the cone so that normally its opening is somewhat lower than the cone, a movable bar pivotally mounted below the latch engaging said latch, a contact-pin on said bar normally in contact with the outer contact or

call-spring so arranged that upon pushing in the button the latch is slightly raised, then contact is established with the inner spring and call-circuit, and upon release the cone rests against the latch, and means in connection with said bar for operating same whereby the pin makes contact with the second outer spring forming part of the talking-circuit.

11. In an intercommunicating telephone a dial-switch consisting of a push-button with a cone near its inner end, a station-indicator and a switch-spring both attached to and operated by said button, circularly-arranged combined binding-posts and contact-dowels acting as a multiple plug in connection with the dial-switch, three contact-springs mounted opposite the push-button of which one outer spring is in constant contact with the call-circuit while the inner and shorter one closes the call-circuit when the push-button strikes it and the second outer one establishes contact with the talking-circuit, and means for establishing connection with said second outer spring and thereby with the talking-circuit.

12. In an intercommunicating telephone a push-button-operated station-indicator and switching device, a transmitter, and a receiver, three contact-springs mounted opposite the inner end of the push-button, a switch-movement mounted between said contact-springs and the push-button consisting of a pivotally-mounted contact-latch, a movable bar pivotally mounted below the latch and engaging same, a contact-pin on said bar in contact with one outer contact-spring when the telephone is not used, a clamping device on the transmitter for supporting the receiver having a rigid bracket below and a cap above attached to a pivotally-mounted lever which is normally in contact with the lower end of the movable bar so that upon taking off the receiver the bar is moved down whereby the contact-pin connects with the talking-circuit and upon inserting the receiver the bar is moved up whereby the talking-circuit is interrupted and the outer spring of the call-circuit again in contact with the pin of the bar.

13. In an intercommunicating telephone a push-button-operated station-indicator and switching device forming a self-contained part of the instrument and a transmitter and receiver electrically independent of the other so that each of these two parts is interchangeable as a whole.

14. In an intercommunicating telephone a push-button-operated station-indicator and switching device, a multiple plug consisting of combined binding-posts and contact-dowels circularly arranged and secured to a fiber disk, and a house-cable connected to said binding-posts, all forming one self-contained part of the instrument, and a transmitter and receiver electrically independent of the other so that each part is interchangeable as a whole.

15. In an intercommunicating telephone a push-button-operated station-indicator and switching device, a multiple plug consisting of combined binding-posts and contact-dowels circularly arranged and secured to a fiber disk, and a house-cable connected to said binding-posts, all forming one self-contained part of the instrument, a transmitter with movable hook and a receiver normally in front of the transmitter forming a second self-contained part, each self-contained part being interchangeable as a whole.

16. In an intercommunicating telephone a push-button-operated station-indicator and switching device, a multiple plug consisting of combined binding-posts and contact-dowels circularly arranged and secured to a fiber disk, four connecting binding-posts on said fiber disk circularly arranged within the multiple plug, and a house-cable having its single wires connected to the binding-posts all forming one self-contained part, and a transmitter with clamping device and movable hook connected to the upper part of the clamping device, and a receiver normally inserted in said clamping device, all forming a second self-contained part, each being interchangeable as a whole.

17. In an intercommunicating telephone a push-button-operated station-indicator and dial-switch, a multiple plug consisting of combined binding-posts and contact-dowels circularly arranged and secured to a fiber disk on a base-plate, three contact-springs opposite the push-button, a switch-movement mounted between said springs and the push-button, a transmitter and a receiver normally on said transmitter, and means for operating said switch-movement by the removal and insertion of said receiver.

18. In an intercommunicating telephone a push-button with a cone near its front end, a station-indicator and dial-switch simultaneously operated by said button, a multiple plug in connection with said switch, three contact-springs mounted opposite the push-button and a switch-movement comprising a movable contact-latch with a cam, stop-pin and spring, a movable bar with a cam, contact pin and spring adapted to engage said latch, a transmitter and receiver, a clamping device for the latter on said transmitter having a movable top part with hook pivotally secured to the transmitter-frame and adapted to keep the bar of the switch-movement in its normal position so arranged that the contact-pin on the bar rests against the outer contact-spring so that one may be called up and by pushing in the button contact is made with the inner spring whereby another party is called up and upon release of the receiver from the transmitter the bar is pulled down

by its spring putting the contact-pin on the bar against the other outer contact-spring making connection with the talking-circuit which is closed by the cone upon release of the button when said cone rests against the contact-latch of the movement.

19. In an intercommunicating telephone a push-button-operated station-indicator and dial-switch, a multiple plug consisting of combined binding-posts and contact-dowels, a switch-movement controlling the electric circuits, a transmitter, a receiver normally on said transmitter, and means for operating said switch-movement by the insertion of said receiver into the transmitter and the removal of same therefrom.

Signed at New York, N. Y., this 25th day of August, 1905.

LAMBERT SCHMIDT.

Witnesses:
FRITZ F. P. MAURBENDEL,
DANL. A. SLATTERY.