

(No Model.)

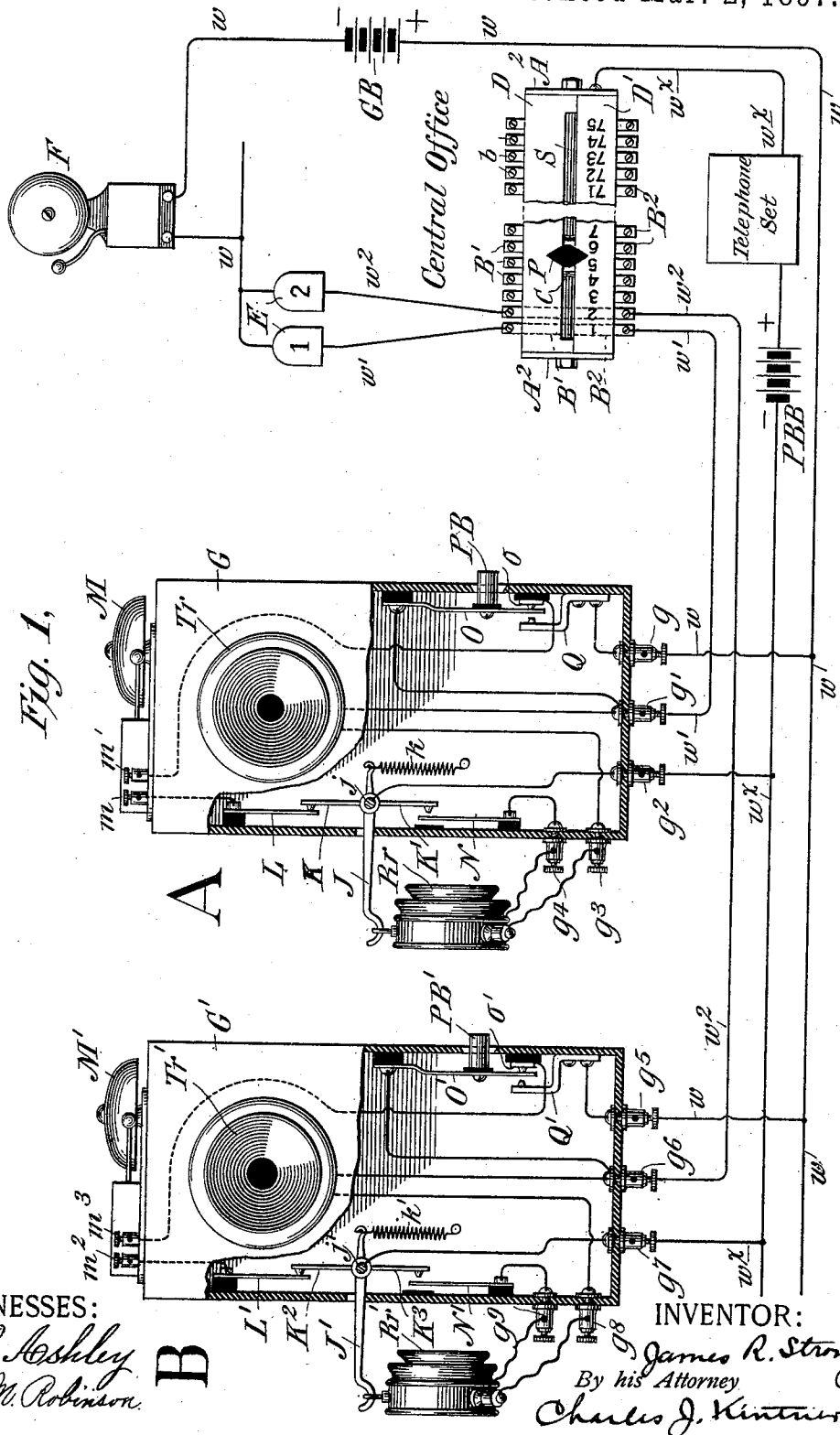
3 Sheets—Sheet 1

J. R. STRONG.

COMBINED TELEPHONE AND ANNUNCIATOR SYSTEM.

No. 578,122.

Patented Mar. 2, 1897.



WITNESSES:

C. E. Ashley
M. M. Robinson.

INVENTOR:

James R. Strong
By his Attorney
Charles J. Kintner

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Fig. 8.

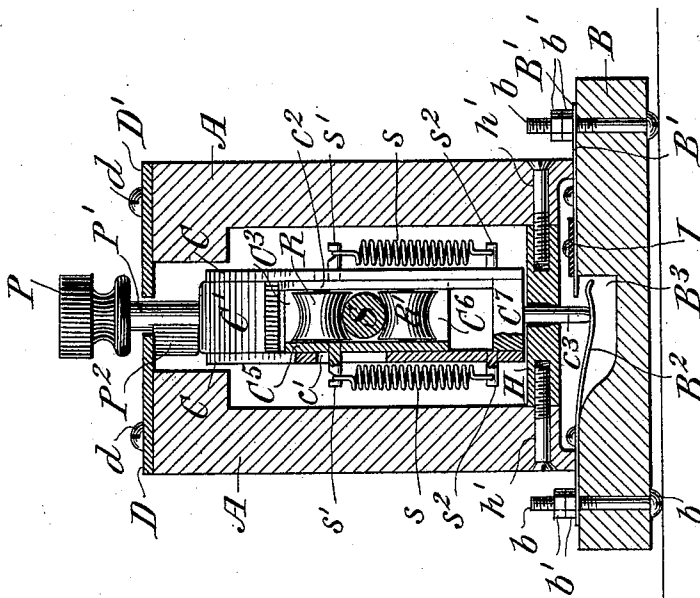
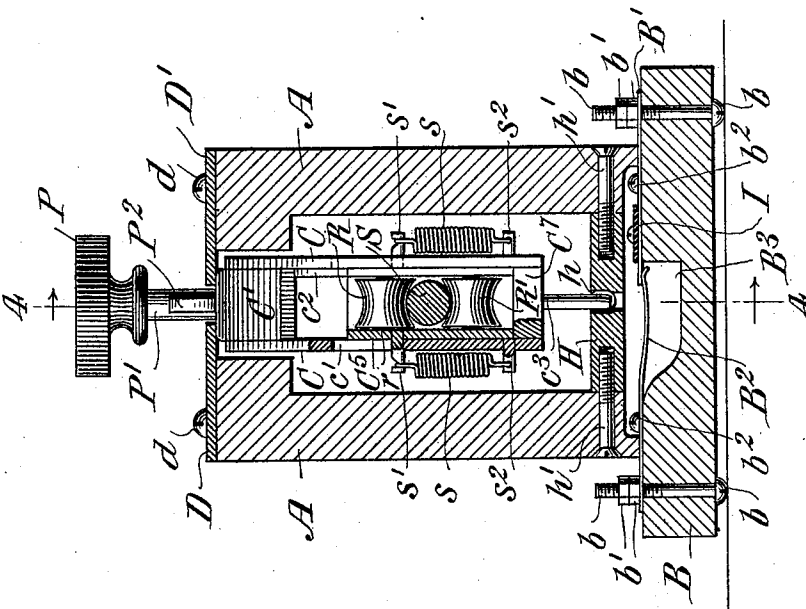


Fig. 7.



WITNESSES:

C. E. Ashley
W. M. Robinson

INVENTOR:

James R. Strong
By his Attorney
Charles J. Kintner

UNITED STATES PATENT OFFICE.

JAMES R. STRONG, OF NEW YORK, N. Y., ASSIGNOR TO THE TUCKER ELECTRICAL CONSTRUCTION COMPANY, OF SAME PLACE.

COMBINED TELEPHONE AND ANNUNCIATOR SYSTEM.

SPECIFICATION forming part of Letters Patent No. 578,122, dated March 2, 1897.

Application filed July 31, 1896. Serial No. 601,258. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. STRONG, a citizen of the United States, formerly residing at New York, in the county of New York and State of New York, but now temporarily residing at Seabright, in the county of Monmouth and State of New Jersey, have made a new and useful invention in Combined Telephone and Annunciator Systems, of which the following is a specification.

My invention is directed particularly to apparatus for use in a central office or station electrically connected through a series of conductors with annunciator or calling apparatus located in the central station or office and outlying individual signaling apparatus located at independent points, such systems, for instance, as are found in hotels, factories, and the like; and its object is to provide an apparatus which will render it possible to readily adapt such existing annunciator systems for use in connection with telephones and telephone calling apparatus in the individual rooms or apartments thereof with as little change as possible.

In existing return-call systems of annunciator call or signals it is customary to so arrange the electrical circuits that a guest in each room or apartment may individually signal to the main office by simply manipulating a circuit-closer or push-button and thereby actuate a call-bell and an annunciator-drop in said main office, indicating to the clerk or attendant at that point the particular room or apartment from whence the call was sent, and the clerk or attendant may in return ring an alarm in the room of the guest.

My invention contemplates the insertion of any well-known form of telephonic apparatus in the individual rooms or apartments of a hotel, factory, or the like, in the place of the ordinary push-buttons and return-call apparatus in such a system of annunciator apparatus and the use in connection therewith at the central station or office of a switching apparatus in connection with the annunciator or calling apparatus of the several rooms or apartments and a central office or station telephone set, in such manner that any guest or operator may call the clerk or attendant

at the central office and actuate an annunciator-drop and an alarm in such office, after which said clerk or attendant may so manipulate the switching apparatus as to connect said roomer or operator directly with the central-office telephone set and simultaneously disconnect him from the annunciator apparatus.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 illustrates in part plan part diagrammatic view the circuit connections of an annunciator system at a central office or station and two telephones located in independent rooms or apartments of a building and operatively connected through my improved switching apparatus located at the central office. Fig. 2 is a full-sized part plan part sectional view of my improved switching apparatus arranged for seventy-five rooms or apartments, said figure of the drawings being shown as broken at its center. Fig. 3 is a sectional view taken on the line 3 3, Fig. 2, the switch-controlling part of the apparatus being shown in side elevation and as seen looking in the direction of the arrows from the right toward the left hand side of the drawings upon that figure. Fig. 4 is a longitudinal sectional view of the switch-controlling apparatus alone, taken on the line 4 4, Fig. 7, and as seen looking in the direction of the arrows from the bottom toward the top of the drawings upon that figure. Figs. 5 and 6 are horizontal sectional views of the switch-controlling apparatus, taken upon the lines 5 5 and 6 6, Fig. 4, and as seen looking in the direction of the arrows from the left-hand toward the right-hand side of the drawings upon that figure. Figs. 7 and 8 are transverse sectional views of the entire switch-controlling apparatus, the former illustrating the circuit connections in normal condition and the latter illustrating the circuit connections after a caller has been connected in circuit with the central office or station telephone.

Referring now to the drawings in detail and first to Fig. 1, A and B represent two sets of telephonic instruments located, respectively, in independent rooms in a build-

ing, E a series of electromagnetically-controlled annunciator-drops, and F a trembler-bell connected in circuit with a central-office battery GB by conductors $w w' w^2$, the electrical connections between the independent telephone instruments, the battery, and the annunciators being all wire circuits, such as are now well known and in general use between existing forms of annunciator call apparatus in hotels and the like.

P B B represents a telephonic transmitting-battery which is in circuit with the central-office telephone set and the switching apparatus at the central office through the agency of a conductor w^x .

G G' represent the telephone-boxes in the rooms provided with transmitters Tr Tr', call-bells M M', push-buttons PB PB', operatively connected with conducting-springs O O', adapted to make electrical contact normally with front contact-stops $o o'$ and when operated with back contacts carried by arms Q Q'.

Rr and Rr' represent the telephonic receivers, supported by hooked levers J J', pivoted at $j j'$ and provided with contacting arms K K², adapted normally to make contact with yielding springs L L', $k k'$ being retractile springs for shifting the positions of the switches, so that additional contacting arms K' K³ make contact with additional yielding contact-springs N N' and at the same time break the circuit relations between the arms K K² and springs L L'.

$g, g', g^2, g^3, g^4, g^5, g^6, g^7, g^8$, and g^9 and $m m'$ $m^2 m^3$ are binding-posts for electrically connecting the several parts of the telephonic apparatus with the conductors w, w', w^2 , and w^x .

The switching apparatus located at the central office or station is provided with a base-plate B, of wood or other insulating material, and is of a length sufficient to sustain on its upper surface the desired number of independent sets of contact-plates B' B², said contact plates or springs being secured thereto by screw-bolts $b b$ and binding-nuts $b' b'$, adapted to be connected to the conductors, running, respectively, to the independent rooms on one side and the corresponding annunciator-drops of the annunciator E on the other side. The inner ends of the contact plates or springs B' project over a longitudinal groove B³ in the base B and are securely held by screws and an insulating-strip I above and in the path of the free ends of the yielding contact-strips B², which are additionally secured to the base B by screws b^2 .

A A represent the side plates, and A² A² the end plates, of the framework which sustains the switch-controlling apparatus, said side plates being secured together at their bottom by screws $h' h'$, extending into a bottom plate H, provided with a series of perforations or holes h , located directly above the inner ends of the several yielding contact springs or plates B².

D D' represent metallic top plates secured by screws $d d$ to the top of the side plates A

A in such manner as to leave between them a longitudinal opening or slot extending the entire length of the switching apparatus. 70

1 2 3 4 5 to 75, inclusive, Fig. 2, represent the numerals which indicate the numbers of the individual rooms or apartments, said numerals being located directly above the circuit-controlling springs of the switching apparatus, which are connected to the respective room or apartment circuits. 75

S represents a metallic rod secured to the end plates A² A² of the switching apparatus by nuts S' S², said rod being located directly beneath the slot between the two top plates D D', its function being to carry the switch-controlling apparatus, which will now be described. 80

P represents an operating and indicating handle attached to the upper end of a rod P', pivotally secured through the agency of a nut P³ in the top C' of a movable metal frame consisting of side plates C C, which side plates are in turn secured to each other by screws $c c$ at their bottoms by a metallic block C', to the under side of which is secured a metallic pin c^3 of such a diameter and length as to enable it to pass through any one of the perforations h in the bottom plate H and come into contact with the free end of any one of the yielding metallic contact-plates B² when pressed downward. (See Figs. 3, 7, and 8.) 90

p is a stop-pin attached to one side of the rod P' and adapted to permit said rod to rotate through an angle of ninety degrees by coming in contact with shoulders ninety degrees apart in the top C'. 100

P² is a lug upon one side of the rod P' and is located ninety degrees from the stop-pin p , the function of said lug being to maintain the operating and indicating handle in its lower or locked position, as shown in black in Fig. 2, for the normal condition of the apparatus. 105

$c^2 c^2$ are vertical ledges or ribs on the inner faces of the side plates C C, their function being to act as guideways for a second frame composed of additional side plates C⁴ C⁵, secured together by cross-bars or standards C³ C⁶, said additional framework acting as a support for four grooved rollers R R R' R', adapted to run in either direction upon the horizontally-disposed rod S. To the sides of this additional framework are secured pins $s' s'$ $s' s'$, extending outwardly through slots $c' c'$ $c' c'$ in the sides C C of the first-named frame, and to the outer ends of said pins are secured the ends of spiral springs $s s s s$, which spiral springs are in turn secured by pins $s^2 s^2 s^2 s^2$ to the first-named side plates C C at points near their bottoms, the normal condition of said springs and pins being that shown in Figs. 3 and 7, in which the springs are contracted, so that the first-named frame is held in its upper position with the pin h' just about to enter one of the apertures or openings h and the lug P² in the slot between the top plates D D'. 120 125 130

The operation of my improved apparatus

is as follows: Suppose the operating and indicating handle P to be normally standing in the position shown in Figs. 2 and 7, so that it points to the figure 5 on the top plate D', and that the occupant of, say, room 1 desires to call the clerk or operator in the office. He simply manipulates the push-button PB, Fig. 1, thereby closing a circuit from the — pole of the annunciator-battery GB, as follows: by way of wire *w* to binding-post *g*, thence by way of back contact upon the arm Q through the yielding push-button spring O by way of the conductor connected thereto, to binding-post *g'* by way of conductor *w'*, to contact-spring B² of room 1, (see Fig. 7,) to contact-spring B', thence by wire *w'* through the annunciator-magnet of room, by conductor *w* to the call-bell F, and wire *w* to the return or negative pole of the battery. This causes the annunciator-drop 1 to fall, and at the same time gives a warning indication upon the bell F that some one has called. The clerk or attendant then takes hold of the operating and indicating handle P and slides it from right to left until one of the ends of said handle points to the center of the numeral 1 upon the top plate D' and in such position that the pin *h'* (see Figs. 7 and 8) is directly above the contact-spring B², connected to the conductor *w'*. He then forces the operating and indicating handle downward until the under surface of said handle comes into mechanical contact with the top plates D D', so that the upper surface of the lug P² is entirely beneath said plates. He then gives it a quarter-turn to the right, or until the stop-pin *p* comes into mechanical contact with the rear shoulder in the top of the top plate C'. In doing this the upper surface of the lug or stop P² passes beneath the top plate D, locking the switch in its lower position, and the electrical circuit is interrupted between the yielding contact-plate B² and the fixed or stationary contact-plate B', as clearly indicated in Fig. 8 of the drawings, and a new circuit is now made from battery P B B through the telephone-call-bell magnets in the room and central-office telephone sets and the call-bells both ring until interrupted by the guest or clerk. He now releases his hold upon the operating-handle and removes his telephone-receiver from its hook in the central-office telephone set and is placed in direct connection with the guest in room 1 for talking purposes, the operator in said room in the meantime having removed his telephone-receiver Rr from the hook J. The talking-circuit is closed as follows: from the — pole of the telephonic battery P B B by way of the transmitter and receiver in the office telephone set, by wire *w*^x, metallic end and top plates A² D D', metallic lug P, post P', side plates C C, bottom plates C', metallic pin *c*³, yielding contact-spring B², conductor *w'* to binding-post *g'*, thence to the transmitter Tr, thence to the binding-post *g*³, receiver Rr, thence to binding-post *g*⁴, thence to yielding spring N, arm K', the telephone-

hook J having been tilted into its reverse position through the influence of the spiral spring *k* when the receiver Rr was removed, thence to binding-post *g*², thence by wire *w*^x back to the telephone-battery. Should any other guest call during the time that this conversation is taking place, his annunciator-drop will indicate the fact and the bell F will ring, as before, after which the clerk or attendant may disconnect the first guest by simply rotating the operating and indicating handle P a quarter of a revolution to the left and unlock or release it, whereby the annunciator-circuit is again restored between the yielding spring B² and fixed contact-strip B', after which the indicating and operating handle is moved to the number indicated by the annunciator-drop and that person communicated with as before.

It will be observed that when the indicating and operating handle stands in its upper position under the influence of the springs *s s s* one of the ends thereof always points toward some one of the numbers "1" to "75," inclusive, according to its position in the slot through which the supporting-rod P' extends, thereby indicating to the clerk or attendant that the annunciator-circuits are all closed at the office, and also that when it is held in its lower position, by virtue of the lug P² acting against the pressure of the springs *s s s s*, the pivoted ends thereof are located in the plane of the supporting-rod S, as indicated in dotted lines in Fig. 2 of the drawings, in which position the circuit will be closed through the telephonic battery P B B and the call-bell M or M' in the room from whence the call came and the like call-bell in the office telephone set, which bells will continue to ring after the guest and the clerk have hung their telephones upon the switching-hooks J, thereby giving warning to the clerk or attendant that he should restore the switch to its normal position. It will also be apparent that this arrangement of apparatus admits of the calling of persons in the individual rooms by the simple manipulation of the operating and indicating handle P in the manner already described if the telephone-receivers in the several rooms are in proper position upon their hooks J or J', the alarm-circuits being thus closed through the bells M or M'.

The present specification and drawings describe and illustrate the application of my invention to a system embodying seventy-five rooms or apartments. Should it become necessary to apply the invention to a large hotel where a much larger number of rooms exist, I contemplate the use of several sets of switching and telephonic apparatus at the office in connection with the two independent batteries GB and P B B, it being only necessary to distribute the circuit connections to the independent sets of apparatus and to connect the same in multiple-arc relation with the opposite poles of both of said batteries, whereby the wants of a large number of

guests may be attended to by two or more clerks or attendants in the office should a number of calls be made simultaneously, and my claims hereinafter made contemplate such an arrangement.

I do not limit my claims hereinafter made to the use of my improved switching apparatus in connection with a combined system of telephones and annunciators, as it obviously might be used with any well-known form of combined alarm and indicating apparatus and any well-known form of electrical message transmitting and receiving apparatus, and my claims contemplate generically such a combination and use.

I am aware of United States patents granted to Charles A. Cheever on the 1st day of October, 1878, No. 208,463, and to Thomas R. Brimmer, No. 545,402, granted August 27, 1895, for improvements in telephone systems, in which patents are disclosed combined annunciator and telephonic systems adapted for use in connection with hotel service, and I make no claim hereinafter broad enough to include anything disclosed in either of said patents.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A switch having a series of yielding contact-arms and a corresponding series of stationary contacts with circuit connections running to independent calling-circuits and an annunciator provided with an independent drop for each pair of such contacts, in combination with controlling mechanism having movement over said yielding contacts and provided with an indicator adapted to indicate the number of the circuit to be controlled or effected, substantially as described.

2. A switch consisting of a number of yielding and a number of stationary contacts connected in multiple to two independent battery-circuits and an operating and indicating handle adapted to move over said yielding

contacts so as to change the circuit relations when depressed and to simultaneously indicate that the circuit change has or has not been effected according to its position, substantially as described.

3. A switch consisting of a number of yielding and a number of stationary contacts connected to two independent battery-circuits, and an operating and indicating handle provided with means for locking it from turning when the indicating-handle points in one direction and additional means for locking or holding it in operative relation with the yielding contacts when depressed and rotated to a second position, substantially as described.

4. A switch consisting of a number of pairs of yielding and a number of pairs of stationary contacts normally in contact with each other and a traveling circuit-controller adapted to move over said contacts and thereby shift or change the circuit relations; said controller being provided with means for indicating its position relative to the independent pairs of contacts and additional means for locking it in that position which changes the normal relation of the circuits, substantially as described.

5. A switch consisting of a number of pairs of yielding and stationary contacts, a traveling circuit-controller adapted to move over said pairs of contacts, and an indicator adapted to indicate the individual number of each circuit, in combination with an indicating and operating handle carried by the controller and adapted when moved to various positions to indicate the circuit relations, together with yielding means for holding said controller out of operative relation with the contacts, substantially as described.

In testimony whereof I have hereunto subscribed my name this 27th day of July, 1896.

JAMES R. STRONG.

Witnesses:

C. J. KINTNER,
M. M. ROBINSON.