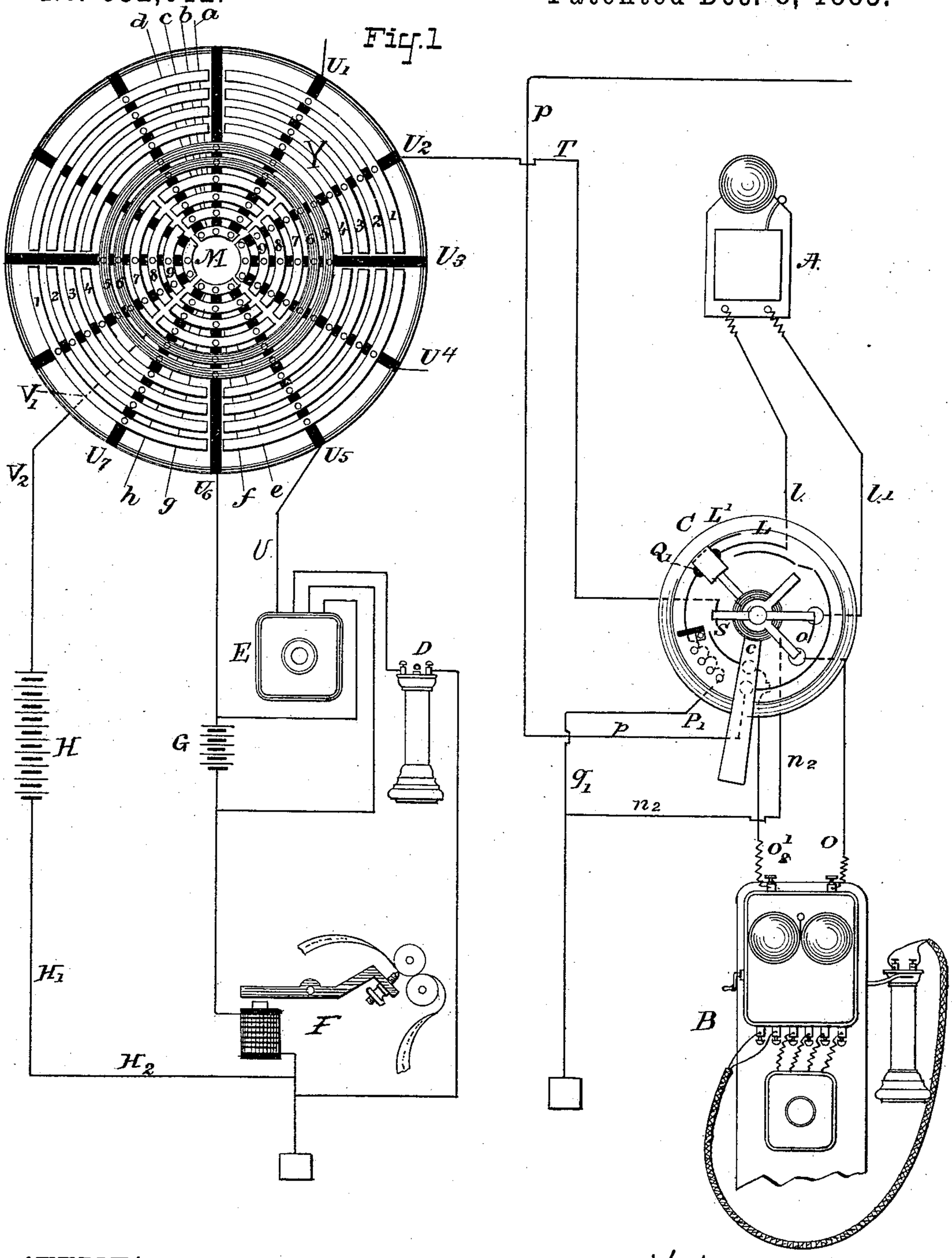
(No Model.) 2 Sheets—Sheet 1.

J. A. SEELY.

TELEPHONIC AND TELEGRAPHIC SIGNAL SYSTEM.

No. 332,012. Patented Dec. 8, 1885.

Fig. 1



ATTEST!
J. A. Hurdle
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INVENTOR:
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(No Model.) 2 Sheets—Sheet 2.

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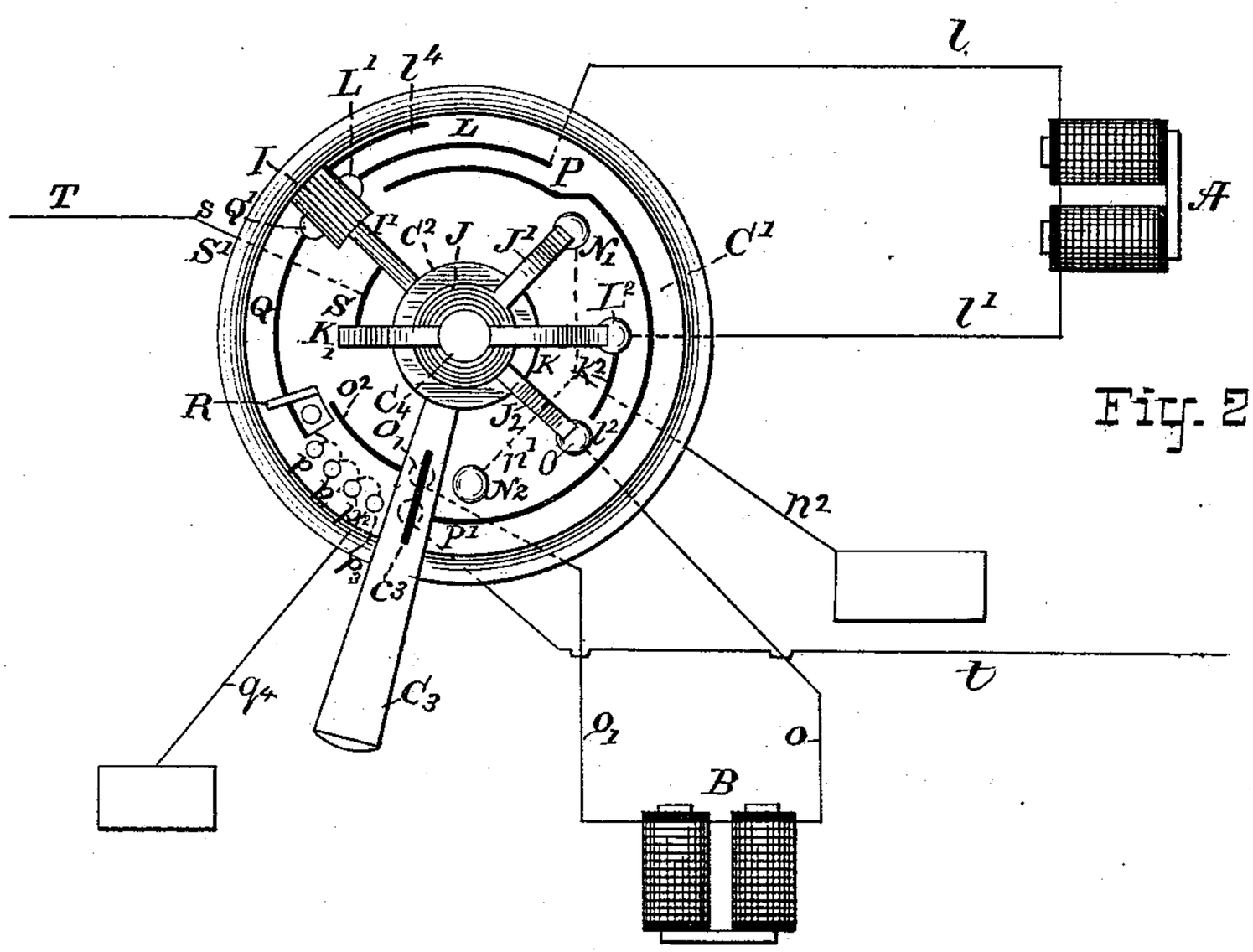
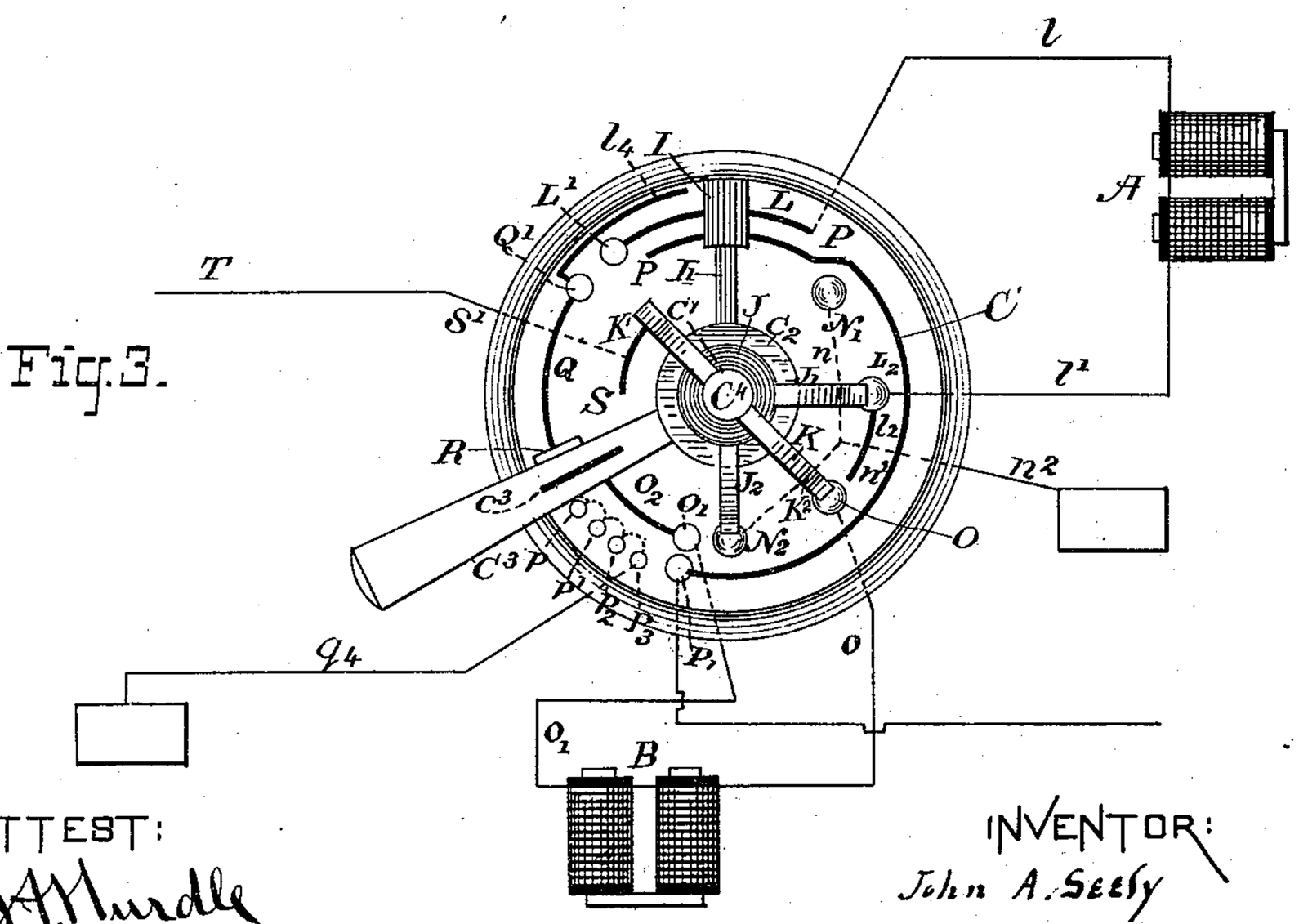


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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TELEPHONIC AND TELEGRAPHIC SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 332,012, dated December 8, 1885.

Application filed September 28, 1883. Serial No. 107,661. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. SEELY, a citizen of the United States of America, and a resident of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Telephonic and Telegraphic Signal Systems, of which the following is a specification.

My invention relates especially to devices employed for operating telephonic, telegraphic, and district messenger systems, singly or in combination with each other, by certain improved modes of arranging and adapting the circuits in such a manner that the instruments ordinarily used may be made, by means of suitable changes and modifications, to perform a double or triple function, whereby the complication of parts is materially reduced, and whereby new and useful results are obtained.

To attain the desired end, my invention consists, essentially, in certain devices adapted for use in situations where two or more independent systems of communication are employed—as, for instance, the ordinary telephonic system and the ordinary messenger-service system—said systems being introduced in the same house and arranged in such a manner that the instruments connected to the circuit of one system may be introduced into the circuit of the other.

In the present system the subscriber is provided with distinct circuits and apparatus. The telephonic system comprises its own special devices, whereby signals and communications may be conveyed to and from the central station or exchange in the well-known manner, and in the district telegraph or messenger system a call-box connected with the district-lines is placed in each subscriber's house, which serves to indicate at the district-office the want of a messenger, &c., the particular kind of service required being indicated by the signal; but as the number of signals is necessarily limited this mode of communication is very defective and unsatisfactory. Moreover, the communication is accomplished only in one direction—viz., from the subscriber's station to the district-office. Whenever it happens that the district-office requires to communicate with the subscriber, it must be done by means of messengers, and in urgent cases much time is lost by this procedure.

My invention obviates these difficulties, affording a larger range of communication by the transfer of the telephonic apparatus into the circuit of the district telegraph or messenger system, while at the same time it leaves both circuits complete and independent, so that signals may be conveyed on both.

In order that my invention may be fully understood, I will now proceed more particularly to describe the same, reference being made to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagram in which the novel parts are represented in elevation. Figs. 2 and 3 are details on an enlarged scale, showing an elevation of the switch device and different relative connections of the circuits.

A represents the call-bell, and B the telephonic apparatus, each having suitable connections to the switch device C.

M is a switch-board in the central office of the district messenger or telegraph system, made circular for convenience.

D E represent the telephonic apparatus used in communicating with the subscriber, and F is the registering device used to indicate the number or sign of the subscriber's station.

G is the main-circuit battery, and H is a special battery used for calling subscribers.

The switch C, Figs. 2 and 3, as shown in Fig. 1 by C, consists of a frame, C′, of wood or any other suitable insulating material, on which is mounted a post, C^2, which is free to turn, subject to the movement of lever C^3, rigidly attached thereto.

I is a metallic contact-piece, attached to an arm, I′, projecting from the post C^2, said arm being made of insulating material. To the post C^2 is attached a metallic ring, J, having two metallic arms, J′ J^2, projecting radially therefrom, and bending toward and pressing slightly against the surface of the frame C′ at their extremities. The post C^2 is extended outward by a prolongation, C^4, passing through the metallic ring J, and a metallic bar, K, passes through it at a distance that will avoid electrical contact with the ring J. The extremities K′ K^2 of bar K are bent downward and press lightly against the surface of frame C′. Mounted in the frame C′ are several contact buttons and strips, which serve to convey the

currents to and from the several arms mounted on the post C^2. The strip L, having a contact-button, L′, at one end, is connected by a wire, *l*, to the bell A. From the bell A the wire *l′* connects with button L^2. The buttons N′ N^2 are electrically connected, as shown by the dotted lines *n n′*, and by a common connecting-wire, n^2, to the ground.

The button O is connected to the telephonic apparatus B by the wire *o*, a wire, *o′*, forming the connection from thence to the button O′, which is joined by a conducting-strip, o^2. The contact-strip P terminates at one extremity in a button, P′, and is connected to the telephone-exchange wire *t*. The contact-strip Q, starting from contact-button Q′, extends to the small contact-button *p*. This contact-button *p* is connected by a wire passing beneath the surface of the frame C′ with the contiguous button *p′*, which is itself similarly connected to the next, p^2, of the series, which is in turn connected in like manner to the fourth, p^3, of the series. The last button, p^3, is connected to the ground by wire q^4.

The number of buttons and their distance apart varies in each instrument, and this variation enables the distinguishing-signal to be recognized at the central office, according to the principle hereinafter explained.

In the handle of the lever C^3 is located a piece of metal, (shown by the broad line c^3,) which projects sufficiently from the lower surface of said handle to come into contact with the button O′ and strip O^2, so as to bring the wire *o′* in electrical connection with the button P′ and the series of buttons *p p′* p^2 p^3 as the contact-piece c^3 passes them successively, until it reaches stop R, secured to the frame C′, and which is in metallic contact with the strip Q. The contact-strip l^4 also connects with contact-button Q′. The end K′ of the bar K presses on a strip, S, which is connected to the wire S′, leading to the line T, running to the district central office.

The switch-board M of the district telegraph office is composed of circular metallic strips 1 2 3 4, &c., disposed concentrically, for convenience, at suitable intervals from each other, each strip extending around only for a portion of the circle, except two of the circular strips, 5 and 6, as shown by shaded lines in Fig. 1, which extend entirely around the circle. In the base of the switch-board M radial strips U′ U^2, &c., extend to the periphery. These strips are insulated from each other and from the circular strips placed upon the surface of the switch-board, and except when a plug is inserted through the circular openings in the circular strips, said plug serving in that case to connect a radial strip with a circular strip. It will be seen that by means of suitable plug-connections any radial strip may be connected with any circular strip. To the radial strips are connected wires leading from subscribers' stations, except the strip U^5, which connects by means of wire V with the telephone apparatus D E in the district-office.

The complete circular strip 5 is connected by a radial metallic strip, U^6, to the battery G, to the register F, and to the ground. The circular metallic strip 6, extending entirely around the switch-board, is connected by the wire V′ in the base of the switch-board M (shown by the dotted line) to the conductor V^2, leading to the battery H, which is itself connected with the ground by the wire H′ H^2.

The strips 1 2 3 4 serve to make connections between wires on the same section of the switch-board. The strips 7 8 9 serve to make connections between different sections of the switch-board, as will be readily understood from the figure.

When there is more than one switch-board in the district-office, it is convenient that communication be established between them. In my system the strips 7 8 9 are each attached to wires *a b c d*, &c., connecting between the switch-boards in the same office; or, if there are several stations situated in various portions of a city, a portion of these wires will serve to connect such central exchanges together.

The operation of my system is as follows: When the switching device stands in its normal position, as shown in Figs. 1 and 2, the two circuits connecting with the district-exchange and the telephone-exchange, respectively, are distinct from each other. The district-wire T, Fig. 2, connects with the contact-strip S, through the end K′ of the bar K to the contact-button L^2, through the wire *l′* to the call-bell A, to the wire *l*, to the contact-strip L, to and through the contact-piece I, to the contact-button Q′, to the contact-strip Q, and thence to the ground by the conductor between the contact-strips *p p′* p^2 p^3. This completes the circuit of the district-exchange, and in this position the district-office can summon the subscriber by causing the bell A to ring. This is accomplished as follows: The circular strip 6, Fig. 1, that is connected with the call-battery H in the district-office, is placed in connection with the radial strip U^2 by means of a plug inserted at Z, so as to let the current pass through the radial strip U^2 onto the line T. The circuit of the telephone-exchange is also distinct. The exchange-wire *p*, Fig. 2, goes to contact-button P′, through contact-strip c^3, to wire *o′*, to the telephone-bell B, to the wire *a*, to the contact-button O, to the radial arm J^2, (which is metallically connected to radial arm J′,) to the contact-button N′, thence through the wire *n* to the conductor n^2, leading to the ground. In this position of the apparatus the telephonic instruments may be used independently of the district-instruments, signals being exchanged at pleasure between the central office and the subscriber's station, just as in the well-known ordinary way.

The operation and function of the switching device are as follows: Supposing the subscriber desires to summon a messenger, the lever C^3 is turned to the right until it comes up against the stop R, as shown in Fig. 3. As soon as

the contact-strip c^3 leaves contact with button P′ the district-circuit is opened; but when the contact-strip c^3 touches contact-button q^3 the circuit is closed again, and the impulse of current is transmitted over the district-wire to the district-office, which produces a signal on the register. As the strip c^3 passes between p^3 and p^2 another intermission occurs, which is followed by another impulse when the strip c^3 touches the button p^2. Thus, if the distance between any two of the small contact-buttons is longer, the signal at the district-office will be correspondingly longer, and with the ordinary Morse register a dash would be produced. If they are all equidistant, then a succession of dots would be produced. In the present case four equidistant dots would be produced. The signal being automatically registered, the place of the subscriber is understood from the signal. In this situation the subscriber's telephone is now found to be included in the circuit of the district-exchange. The wire T, Fig. 3, leads to the contact-strip S, through the bar K, to the contact-button O, to the wire *o*, to the telephone apparatus B, to the wire *o′*, to the contact-button O′, to the contact-strip O^2, through the contact-strip c^3, and thence through contacts p p' p^2 p^3 to the wire q^4, leading to the ground. The telephone apparatus at the central station is now included in the line of the subscriber, which is done by plugging between the strips, so as to make the circuit between them, or by means of a connecting-cord having a plug at each extremity, one plug being inserted through any opening in the radial strip U^2, and the other plug being inserted through any opening in the radial strip U^5. In this situation conversation can be carried on between the district-office and the subscriber's station. The nature of the service required can be definitely and exactly ascertained; but while the telephone apparatus is included in the district-telegraph circuit it is important that the exchange-circuit shall not be opened, and in case communication might be desired with the subscriber by other subscribers connected with the telephone-exchange, it is desirable that a means of signaling be available to notify the subscriber that telephone communication is desired with him.

In my invention the result is obtained automatically by the same motion of the lever of the switching device which transfers the telephone onto the district-circuit. When the lever is thus moved, the district-bell A becomes transferred to the telephonic circuit, as will be understood on following the connections in Fig. 3. The wire *t* leads to contact P′, to contact-strip P, which is put into communication with the contact-strip L by means of the contact-piece I′; thence to the wire *l*, to the district-bell A, to the wire *l′*, to the button L^2, to the radial arm J′, and through the radial arm J^2, connected with it by the ring J, to the contact N^2, and thence by the wire n' n^2 to the ground. It will be seen that the two circuits still remain distinct, and will not interfere with the operation of each other.

If while the subscriber is using the telephone apparatus to communicate with the district messenger office, he hears the bell A ring, he knows at once that telephonic communication is desired with him, and when his communication with the district-office is ended the lever C^3 is moved back to its original position, as in Fig. 2, by which the telephone apparatus is again switched onto its normal circuit, as before.

In addition to the above-described automatic signaling of the district messenger office by means of the lever C^3 and contacts p p' p^2 p^2, signals may be sent by drawing the lever down and moving it over the contacts two or more times, or over only a portion of them, thus producing the desired signal, and registering the same in the district-office.

I do not limit myself to any particular form of switching device or of commutator, since it will appear evident that the same can be varied or modified in many ways to accomplish the same result. The essence of the invention is, broadly, the mode of arranging and adapting the circuits so as to bring about the results hereinbefore described, for it is obvious that a burglar-alarm or fire-alarm circuit may be placed in the combination, as well as that shown and described herein.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a combined telephonic and telegraphic signal system, a signaling device comprising concentrically-arranged contact strips and buttons, substantially as shown, circuit-completing pieces J′ J^2, electrically connected, and circuit-completing pieces I, K′, K^2 and c^3, insulated from each other, all of said pieces being secured to a common handle, substantially as shown and described.

2. A combined telephonic and telegraphic system comprising a call-bell and telephonic apparatus, each having suitable electrical connections to the switch device C, the said bell, telephonic apparatus, and switch being located at the subscriber's station, a register for indicating the number or sign of the subscriber's station, telephonic apparatus in communication with the subscriber's station, a switch-board, M, a main-circuit battery, and a special battery for calling subscribers, said register telephonic apparatus, which is in communication with the subscriber's station and the said batteries, being located at the central station, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses.

JOHN A. SEELY.

Witnesses:
C. O. MAILLOUX,
P. RANDOLPH MORRIS.