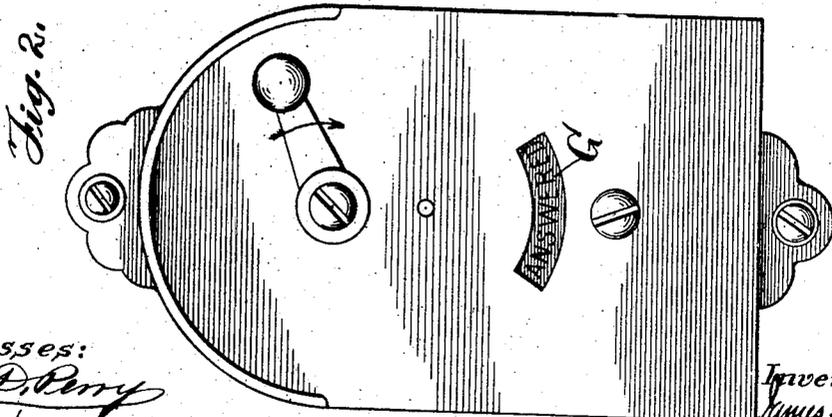
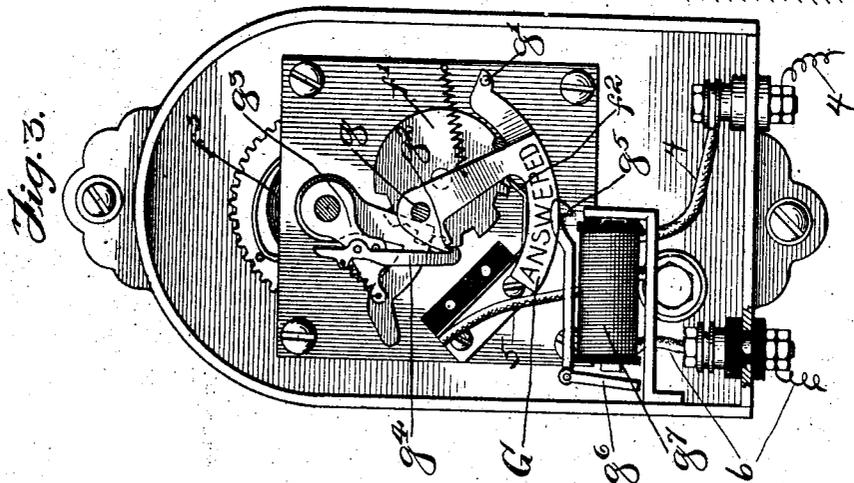
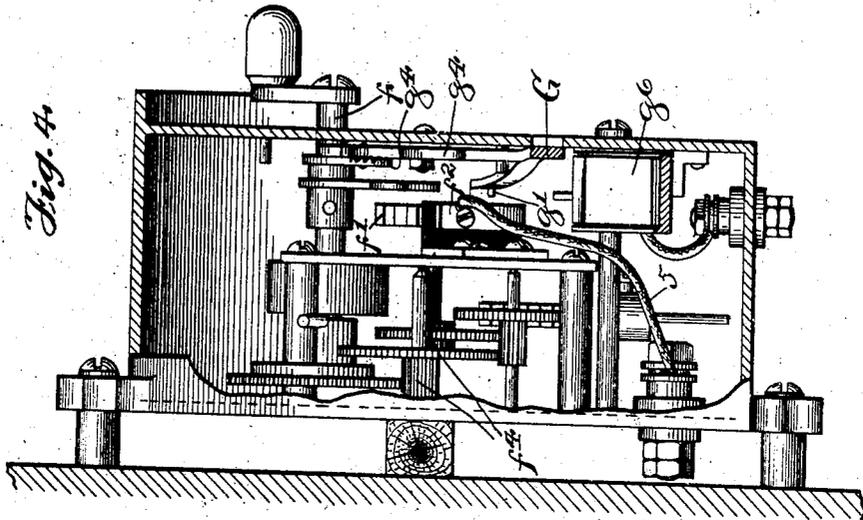




J. G. NOLEN.

COMBINED TELEPHONE AND DISTRICT MESSENGER SYSTEM.

APPLICATION FILED NOV. 26, 1902.



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# UNITED STATES PATENT OFFICE.

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## COMBINED TELEPHONE AND DISTRICT MESSENGER SYSTEM.

No. 838,136.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed November 26, 1902. Serial No. 132,856.

*To all whom it may concern:*

Be it known that I, JAMES G. NOLEN, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in a Combined Telephone and District Messenger System, of which the following is a specification.

My invention contemplates a combined telephone and messenger-service system in which each subscriber is provided with means—such, for example, as a call-box—for transmitting a signal to the switchboard operator at the central station. This signal can be employed for different purposes. For example, the call-box when operated may transmit a signal of such character as to indicate to the central operator that the subscriber desires a messenger-boy. Other uses are obvious, however, and for this reason I do not limit my invention to any particular use or purpose.

Broadly considered, my invention contemplates the provision of signal-transmitting mechanism which is independent of and distinct from the subscriber's telephone apparatus and which when operated is capable of transmitting a signal of a distinct and predetermined character to the switchboard operator at the telephone-exchange station.

The nature and operation of my invention will, however, more fully appear.

As a matter of further and special improvement my invention further contemplates the provision of means whereby the switchboard operator may, through the medium of the telephone-circuit and the call-box, answer the signal transmitted from the call-box to the central exchange and may in this way notify the subscriber that the call for a messenger has been observed. This feature of my invention will also hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a diagram of a subscriber's line-circuit equipped with a signaling mechanism, which is in the form of a call-box bridged across the line at the subscriber's station. Fig. 2 is an enlarged front elevation of the signal-transmitting mechanism or call-box shown in Fig. 1. Fig. 3 is a front elevation of the same with the front plate or cover removed. Fig. 4 is a side elevation of the said call-box with the casing broken away.

Referring to Fig. 1, my improved combined telephone and signaling system may comprise a subscriber's telephone A of any suitable known or approved construction. From this telephone two conductors 1 and 2 lead to the spring-jack B on the switchboard at the central station. Thus it will be seen that the system is of the complete metallic-circuit type. The switchboard apparatus at the central station can also be of any suitable known or approved construction. For example, the said jack may consist of the sleeve-contact *b* and the tip-spring *b'*. The operator's connecting-plug C may have the tip and sleeve contacts *c* and *c'* adapted to register with the said contacts *b* and *b'*. The line-signal or signal by which the subscriber attracts the attention of the switchboard operator may consist of a line-relay D, bridged across the line and connected in series with the battery *d*. One end of this bridge can be permanently secured to the line conductor 1, and the other end can be secured to the contact or anvil *d'*, upon which latter the spring *b'* normally rests. The said relay can be provided with an armature *d<sup>2</sup>*, adapted to close a local-battery circuit through the line-lamp *d<sup>3</sup>*. With this arrangement the current, both for signaling and talking purposes, is supplied from a central source, and when the subscriber wishes connection with some other line he removes the receiver from the hook-switch of the telephone set at A, so as to close the line-circuit and cause the lamp *d<sup>3</sup>* to glow as a result of the energizing of the relay D. The operator's cord-circuit is not described; but it will be readily understood that this may be of any suitable or approved construction. Preferably, however, the plug C, which may be the calling-plug of the cord-circuit, is connected to ground through a test-battery E. This of course is with respect to the usual well-known use of multiple switchboards, in which it is desirable that each operator be provided with means whereby a busy test may be made by simply touching the plug-tip to the test-ring of the jack connected with the line called for. These, however, are matters well understood by those skilled in the art.

The signal-transmitting mechanism F may be of any suitable character, its purpose being to provide means independent of the sub-

scriber's telephone or hook switch whereby a distinctive signal may be transmitted over the telephone-line to the switchboard operator at the central station. For example, this signal-transmitting mechanism may be in the form of the usual and well-known call-box employed in district-messenger systems. In such case the box may be bridged across the subscriber's line, as shown in Fig. 1, providing the telephone system is of the complete metallic type, such as shown. With this provision the subscriber when a messenger is desired can rotate the crank or handle  $f$  of the call-box in the usual manner, and this crank or handle while returning to its normal position will then open and close the line-circuit, and thereby cause an intermittent flashing or glowing of the lamp  $d^2$ . This, it will be seen, is due to the operation of the make-and-break device inclosed within the call-box, which causes a well-known and predetermined character of signal to be given by the lamp  $d^2$ . This of course attracts the attention of the switchboard operator, who, observing the peculiar character of the signal and recognizing this signal as meaning that the subscriber desires a messenger, then touches the tip of the plug C to the sleeve  $b$  of the jack, so as to complete a ground-circuit from the battery E through one side of the line to the call-box, thence to the ground through the answering mechanism of the call-box, and back through earth to the said battery. The closing of this grounded line-circuit causes a signal to be displayed on the front of the call-box advising the subscriber that the central operator has understood the signal and has given the order for a messenger. Thus it will be seen that by my improved arrangement the ordinary telephone system may be easily and quickly modified, so as not only to subservise its natural function of transmitting telephone messages from one subscriber to another, but so as also to enable each subscriber to turn in a call for a messenger without doing any telephoning. Prior to my invention it has of course been the custom to turn in a call for a messenger to the central telephone-exchange by taking down the receiver and explaining what is wanted to the central operator; but with my improved arrangement this is no longer necessary, and the subscriber can now give the switchboard operator an order for messenger by simply operating a crank or handle, and, furthermore, the order is given in this simplified manner without leaving the subscriber uncertain as to whether or not the order has been received and acted upon.

The construction of the call-box herein shown may be of any suitable or approved character. In other words, the make-and-break device within the call-box may be of the ordinary or well-known type. In Figs.

2, 3, and 4 I have illustrated the usual and well-known form of call-box. The make-and-break mechanism in this box involves the rotary disk  $f^1$  and the spring contact-finger  $f^2$ . These two devices, the disk and the contact-finger, are, it will be readily understood, connected, respectively, with wires 4 and 5, bridged across the wires 1 and 2, and the notches in the periphery of the disk cause the make-and-break action when the disk is revolved and returned to its normal position by the action of the spring  $f^3$ . As is well known, this spring is wound up by the rotation of the handle or crank  $f$  and in unwinding then slowly rotates the said disk through the medium of the gearing  $f^4$ .

As to the means in the call-box by which the subscriber's call is answered, it will be understood that any suitable devices or instruments can be employed. For example, the front of the box may be cut away, so as normally to expose the target or shutter G. This target or shutter can be pivoted at  $g$  and can be provided with a pin  $g^1$  and also with the projections  $g^2$ . The crank-shaft, upon which the crank  $f$  is mounted, can be provided with an arm  $g^3$ , carrying a spring-pressed pawl or hook  $g^4$ . Normally this hook engages the projections  $g^2$ . Therefore when the crank is rotated in a clockwise direction the hook causes the target to rotate upon this pivot until the pin  $g^1$  engages the latch  $g^5$ . This latch, it will be seen, is in the form of an arm mounted on the armature  $g^6$  of the relay or electromagnet  $g^7$ , connected between wire 4 and the ground 3, as by wire 6. With this arrangement the crank-shaft after being rotated can return to its normal position, leaving the target held away from the opening in the front of the box by the latch  $g^5$ . The relay or electromagnet  $g^7$  may be located in a conducting-path extending from the sleeve side of the line to ground, as indicated at 3. Thus when the target or shaft has been set and after the make-and-break device has run down and transmitted the signal over the line to the switchboard operator the latter can then close a grounded circuit from the battery E through the magnet  $g^7$  by simply touching the tip of the plug C to the testing ring of the jack B. This of course energizes the relay or electromagnet  $g^7$ , causing it to attract this armature and in this way releasing the target or shutter. The latter then returns to its normal or displayed position behind the opening in the call-box casing, thereby letting the subscriber know that the order for a messenger has been received and understood. Thus it may be seen that my invention not only contemplates a simple way of modifying a telephone system, so as to combine a telephone service with a district messenger service, but also a special form of call-box, whereby the

latter may be employed as a signal-receiving device as well as a signal-transmitting means.

When the call-box is pulled, the signal-receiving device in the call-box is automatically set and is then not released until the central operator touches the jack with the tip of the plug. Thus both the signal-transmitting mechanism and the signal-receiving mechanism are distinct from and independent of the telephone hook-switch and bell. In other words, these additional signal transmitting and receiving devices are independent of and in no way related to the devices usually involved in a subscriber's telephone set for sending and receiving calls.

My improved signal-transmitting arrangement is adapted to operate in conjunction with any of the usual signal-receiving devices which may be found on a switchboard at the central station. My improved signal-receiving devices are adapted to operate in conjunction with any of the signal-transmitting instrumentalities or agencies which may be found on a telephone-switchboard. For example, the usual and well-known busy-test may be employed, as explained, for operating the signal-receiving devices in the call-box.

What I claim as my invention is—

1. The combination of a subscriber's telephone set, suitable switchboard apparatus, a suitable line connection between the switchboard apparatus and the telephone set, a call-box associated with the subscriber's telephone set and connected with the line, said call-box involving a signal-receiving device located in a conducting-path extending from one side of the line to ground, whereby the central operator may employ the usual busy-test for operating said signal, said box being normally in condition to prevent the passage therethrough of any of the currents employed in telephoning.

2. The combination of a switchboard apparatus involving a plug connected through

battery to ground, and involving also a jack with a testing-ring, a subscriber's telephone set, a signal-receiving device connected with the line and associated with said telephone set, said signal-receiving device being located in a conducting-path extending between one side of the line and ground, whereby the said signal-receiving device may be caused to give a signal by touching the tip of said plug to the testing-ring of said jack, but said signal-receiving device being normally in condition to prevent the passage therethrough of any of the currents employed in telephoning.

3. The combination of the subscriber's telephone set, suitable switchboard apparatus, suitable line connection between the switchboard apparatus and the telephone set, the call-box associated with the telephone set and connected with the line, said call-box involving a signal-receiving device adapted to be automatically set when the call-box is pulled, and adapted to be released by means located at the central station, but said box being normally in condition to prevent the passage therethrough of any of the currents employed in telephoning.

4. In a system of the character described, a telephone system involving, at the subscriber's station, a telephone set, and, at the central station, line-signal apparatus, and a grounded busy-test apparatus; combined with a signal-transmitter having circuit-controlling devices arranged to actuate the line-signal, and a grounded signal-receiving device, arranged to be automatically operated through a grounded circuit when the busy-test apparatus is associated with the line in the usual manner by the central operator.

Signed by me, at Chicago, Cook county, Illinois, this 21st day of November, 1902.

JAMES G. NOLEN.

Witnesses:

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