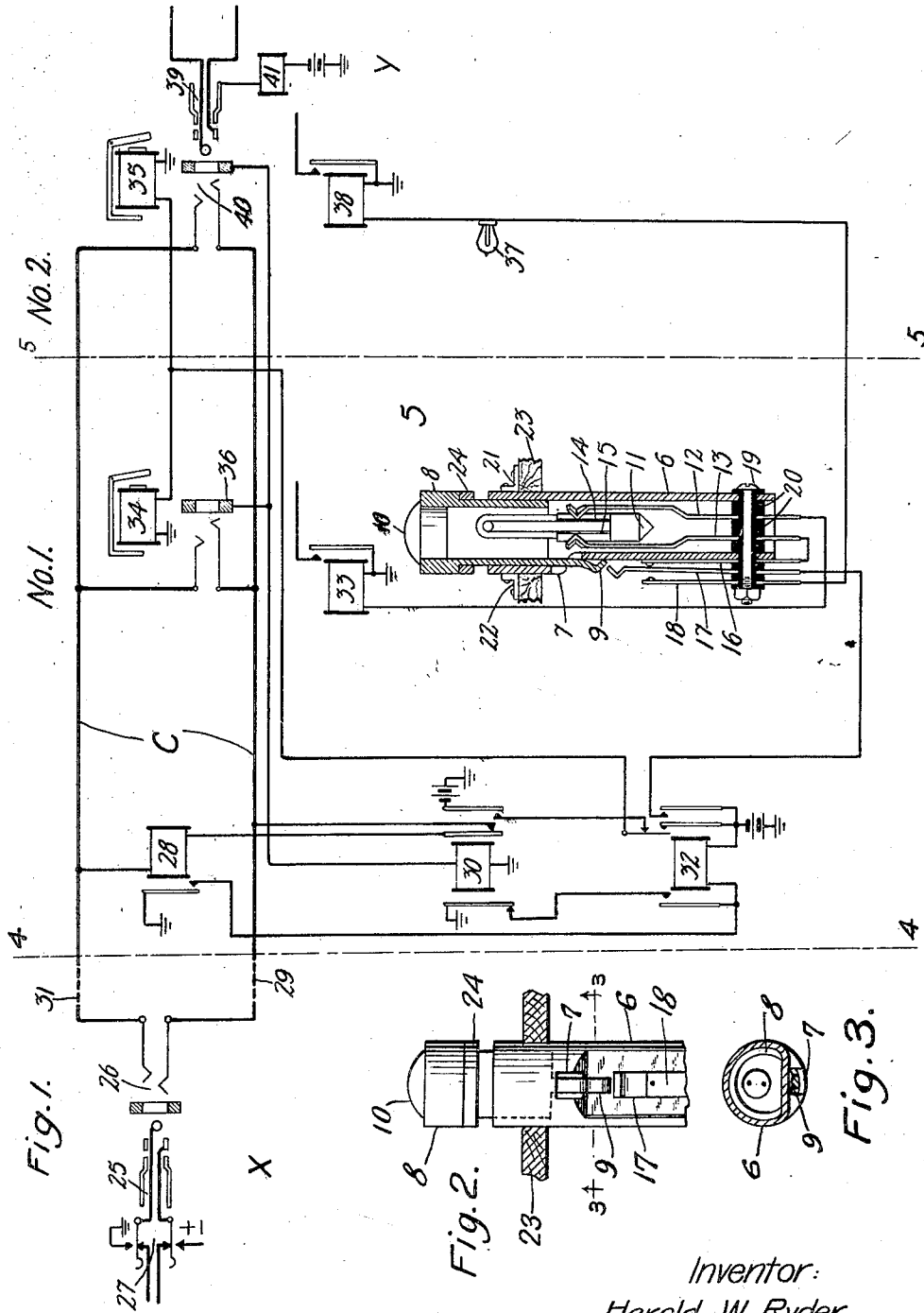


H. W. RYDER.
 SIGNALING DEVICE.
 APPLICATION FILED NOV. 8, 1919.

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UNITED STATES PATENT OFFICE.

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SIGNALING DEVICE.

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To all whom it may concern:

Be it known that I, HAROLD W. RYDER, a citizen of the United States, residing at Cicero, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Signaling Devices, of which the following is a full, clear, concise, and exact description.

This invention relates to a signaling device but more particularly to a signaling device in combination with an electric switch.

The object of the invention is the provision of a combined signaling device and electric switch of a compact construction.

In accordance with the invention, a signaling device is provided with a movable casing or housing so arranged when moved to cause the actuation of contact springs.

A device of the character herein referred to is especially applicable to telephone exchange systems where the various lines terminating at a switchboard are multiplied to several positions of the switchboard. A call therefor incoming on one of these lines first causes a signal to be displayed before one of the operators and if, at the time the call comes in, she is unable to properly handle the call, she may transfer the same to another operator located at a position at which the particular line is multiplied by the actuation of a key. In the construction of the switchboards which are adapted for this purpose, the space allotted for the individual signal and key is very small and it has been found very difficult to manufacture a satisfactory key for accomplishing this purpose,—while with a signaling device and switch of the type as herein described, the space occupied by both the lamp and switch is no greater than that occupied by the individual signal.

A more definite understanding of the invention may be had from the following description taken in conjunction with the accompanying drawing in which there is shown a signaling device embodying a fea-

ture of the invention as is employed in a telephone exchange system.

In the drawing, Figure 1 shows a trunk circuit C extending from a switchboard X as shown to the left of the dotted line 4—4 to a switchboard Y located at a distant office and terminating therein at positions No. 1 and No. 2, as shown to the right of the dotted line 4—4. The apparatus between the dotted lines 4—4 and 5—5 represents that which is associated with the trunk circuit C as regards to position No. 1, while that to the right of the dotted line 5—5 is located at position No. 2. Fig. 2 is a side view of the signaling device shown in Fig. 1. Fig. 3 is a sectional view taken along the broken line 3—3 of Fig. 2.

Referring now to the drawing and especially to the signaling device as represented by the numeral 5, the signaling device 5 has a hollow tube or casing 6 having an aperture 7 cut in one side thereof together with a cap portion 8 which is adapted to close one end of the casing 6.

The cap 8 is arranged so that it may be depressed and has a portion 9 thereof which extends through the aperture 7. A transparent member 10 is mounted in the upper portion of the cap 8 for enabling the operator to detect the lighting of the lamp 11 which is secured within the casing 6. The lamp 11 is secured in place by means of contact springs 12 and 13 which are adapted to make contact with the terminals 14 and 15 of the lamp 11. These contact springs together with contact springs 16, 17 and 18 are secured to the casing 6 by means of a bolt 19, and are insulated from one another by means of insulating members 20. The casing 6 is fitted with a pair of L shaped pieces 21 and 22 for the purpose of mounting the same to a member such as 23.

The contact spring 17 is normally in engagement with contact spring 16 and is adapted to be disengaged therefrom and brought into engagement with contact spring 18 by means of the portion 9 of the

cap 8 which projects through the aperture 7 in the casing 6.

The switch or key part of the signaling device 5 as disclosed in the drawing is designed to be of the non-locking type but if it is desired to provide a key of the locking type, it will only be necessary to remove the member 24 which is secured to the cap 8, thereby lengthening the travel of the cap 8 and allowing the V shaped portion of the member 9 to engage a like portion of the contact spring 17. This contact will thereby be maintained until the operator releases the same, by pulling out on the cap 8.

The operation of a device as heretofore described as applied to a telephone exchange system is as follows: Let us assume that the operator at X desires to be connected with a telephone line terminating at Y. The operator at X would thereupon insert plug 25 into jack 26 associated with the trunk circuit C which terminates at Y. This having been done, she would then actuate ringing key 27 for connecting a source of ringing current with the trunk circuit, the connection of which with the trunk circuit thereby causes the operation of relay 28, the energizing circuit of which may be traced from the source of ringing current at X through the lower alternate contact of ringing key 27, ring contacts of the plug 25 and the jack 26, conductor 29, right-hand normal contact of relay 30, winding of relay 28, conductor 31, tip contacts of the jack 26 and the plug 25 and the upper alternate contact of ringing key 27 to ground. Relay 28, in operating, closes, at its contact an energizing circuit for relay 32 which extends from battery through the winding of relay 32 and the contact of relay 28 to ground. The operation of relay 32 thereby establishes a circuit including the lamp 11 of the signaling device 5 located at position No. 1. This circuit extends from battery through the right-hand contact of relay 32, contact springs 17, 16 and 13, the filament of the lamp 11, contact spring 12 and the winding of relay 33 to ground. The establishment of this circuit causes the lighting of the lamp 11 for signaling the operator at position 1. The attraction of the left-hand contact of relay 32 establishes a locking circuit for relay 32 extending from battery through the winding of relay 32, left-hand contact of relay 32, left-hand contact of relay 30 to ground. This locking circuit will cause the lamp 11 to remain lighted until the actuation of relay 30, as will be described hereinafter. Relay 33 is operated at this time for connecting an auxiliary signal (not shown) in circuit with a contact thereof. Relay 32, in operating, also causes the operation of the busy signals 34 and 35 which are located at both positions No. 1 and No. 2, the operating circuit of which ex-

tends from battery through the middle alternate contact of relay 32 and the winding of the magnets associated with the busy signals 34 and 35 to ground.

The operator at position No. 1, upon observing the lighted condition of lamp 11, may thereupon insert the answering plug associated with her cord circuit (not shown) into jack 36 after which she may ascertain the number of the party with which the operator at X desires to be connected.

If the operator at position No. 1 is unable to handle the call she may transfer the same to another position such as position No. 2. In doing this, she would merely depress the cap 8 of the signaling device 5 which thereupon opens at contact 17, the circuit including the filament of the lamp 11 and establishes a circuit including the lamp 37 located at position No. 2. This circuit extends from battery through the right-hand contact of relay 32, contact spring 17 and 18, lamp 37 and the winding of relay 38 to ground. The operator at position No. 2, upon observing the lighted condition of lamp 37, inserts plug 39 into jack 40 which thereupon causes the energization of relay 30 over a circuit extending from battery through the winding of relay 41, sleeve contacts of the plug 39 and the jack 40 and the winding of relay 30 to ground. When relay 30 is energized, the energizing circuit for relay 28 is broken at the right-hand normal contact of relay 30. At the same time the locking circuit for relay 32 is broken at the left-hand contact of relay 30 and as a result the lamp is extinguished. The operator is now in a position to ascertain the number of the desired party and complete the connection with the line associated therewith.

The signaling device 37 located at position No. 2 may be of the type as described in connection with position No. 1, or it may be an individual signaling device or a lamp, as occasion demands. In many cases, however, it may be desirable to provide a signaling device of the same type as that represented by the numeral 5 for the purpose of transferring the call to still another position where the operator is not so busy and is able to properly handle the call.

It is, however, obvious that a device of the character as herein described is applicable to systems other than telephone systems and although it is described in connection with a telephone system, it is not intended to limit the invention to that particular use.

What is claimed is:

1. A signaling device comprising a casing, a lamp enclosed by said casing, a contact spring mounted on the exterior of said casing, said casing having two relatively movable parts, one of said parts having

means adapted to slide through an aperture in the other of said parts to engage said contact spring, and circuit connections controlled by said contact spring for causing
5 the operation of said lamp.

2. A signaling device comprising a casing, said casing having a stationary part and a movable part, said stationary part having an aperture in one side thereof, ac-

tuating means attached to said movable part 10 and extending through the aperture in said stationary part, and contact springs mounted on the outside of said stationary part and arranged to be engaged by said actuating means. 15

In witness whereof, I hereunto subscribe my name this 3rd day of Nov. A. D., 1919.
HAROLD W. RYDER.