

H. S. BULLOCK, JR.

CALL BOX.

APPLICATION FILED JAN. 17, 1907.

932,753.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.

Fig. 1,

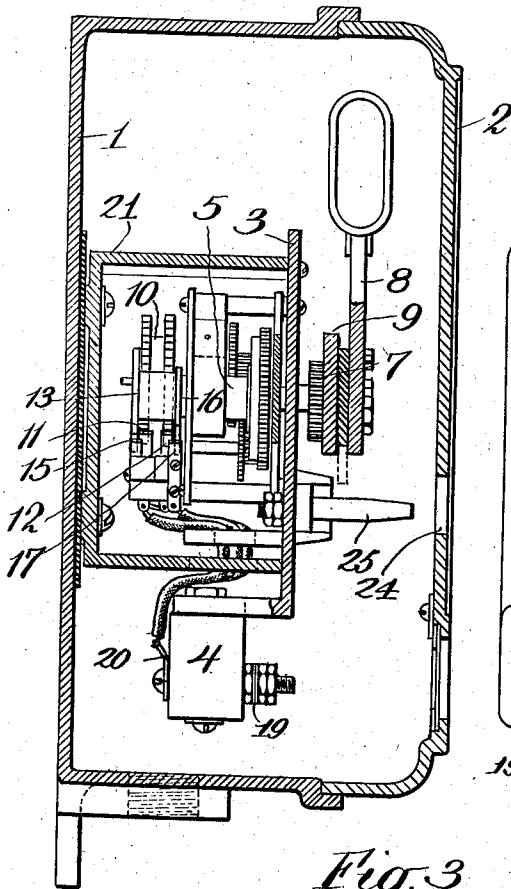


Fig. 2,

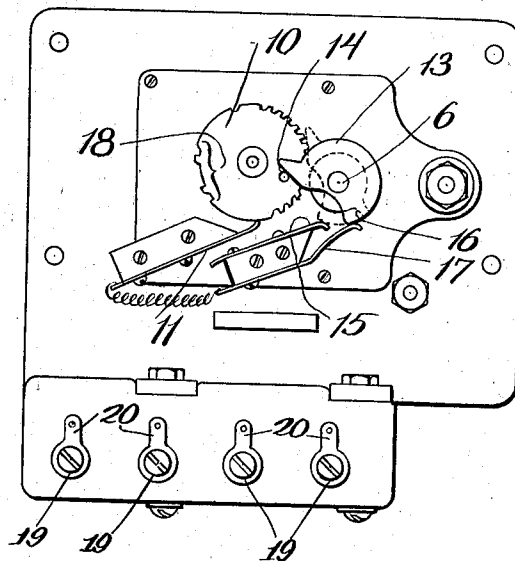
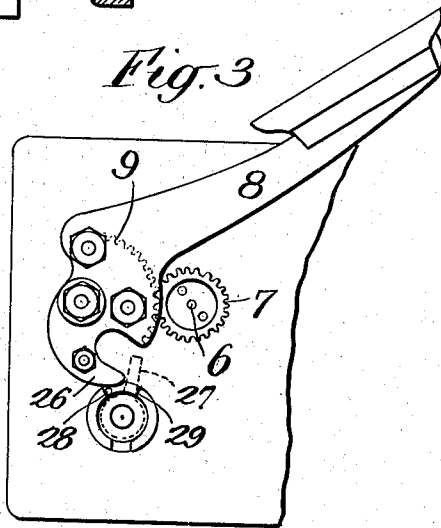


Fig. 3



WITNESSES:

Harry Lee

J. D. and J. E. Dyer

INVENTOR

H. S. Bullock, Jr.

BY

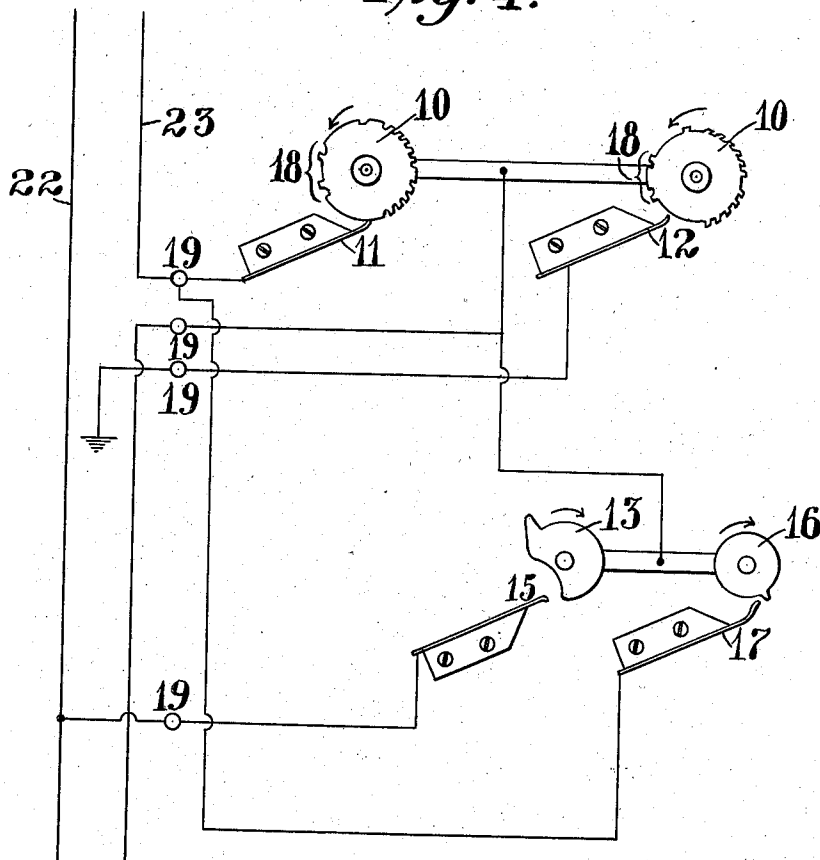
Marble D. E. E. E.
ATTORNEYS

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CALL BOX.
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2 SHEETS—SHEET 2.

Fig. 4.



Attest:
B. S. Daniels
Paul H. Frank

by

Inventor:
H. S. Bullock Jr.
Marble McElroy
Attys

UNITED STATES PATENT OFFICE.

HENRY S. BULLOCK, JR., OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN DISTRICT TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CALL-BOX.

932,753.

Specification of Letters Patent.

Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that I, HENRY S. BULLOCK, Jr., a citizen of the United States, residing at New York, in the borough of Manhattan, county of New York, and State of New York, have invented certain new and useful Improvements in Call-Boxes; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in call boxes or transmitters such as are used in combined services, as for example combined watchman signal and fire alarm systems, and which are required to give two classes of signals. The patents to John C. Barclay, Nos. 761,026 dated May 24, 1904, and 777,327, dated December 13, 1904, describe boxes or transmitters of this class. Such boxes or transmitters usually comprise means for sending in a station signal (usually the number of the box) and, to distinguish one class of signals from the other, means for sending in an additional distinctive signal. In a combined watchman and alarm system, for example, the distinction between the character of signals transmitted is usually made by sending in only the number of the box for the watchman's signal, and by sending same in only once or a very small number of times, each time the box is operated for a watchman's signal; and, for the alarm signal, by sending in both the box number and a distinctive Morse or other code letter or designation, and causing the box number and this distinguishing character to be repeated a number of times. The box number or station signal, and the said distinctive signal or Morse code letter, have customarily been transmitted by the same transmitting mechanism, and in fact by the same break wheels and pens or contact brushes; and to prevent the said distinctive signal or Morse code letter from being sent in while the watchman's signal is being transmitted, contact means have been provided for shunting the break wheels and pens during the time the portions of the break wheels containing said distinctive signal are passing the pens. On the break wheels, the distinctive signal has followed the box number. Also for sending in the watchman's signal the boxes have been operated by a key. It has been found in some cases that the watchman, in withdraw-

ing his key carelessly before the contact mechanism has come to rest, may turn his key backward somewhat, and thus open the shunt, cutting out the distinctive signal, thereby permitting such distinctive signal to come in; it being possible in such case to mistake the watchman's signal for an alarm signal. In the call box illustrated in the accompanying drawings I have avoided the possibility of false transmission of the distinctive signal, by placing same in advance of the box number on the signal wheel, and arranging the shunt contact device so that when the box is operated to send in merely the box number or "station signal", the shunt contact is closed and the main circuit practically shunted while the notches on the break wheel corresponding to the said distinctive signal are passing the pen. With the said notches of the two signals thus located, and the shunt contact device thus arranged, it is impossible for anyone operating the box by means of the key to send in the distinctive signal.

The accompanying drawings illustrate one form of call box embodying my invention.

In said drawings: Figure 1 shows a side view of the mechanism of the box, the main casing and door and a portion of the mechanism being shown in section. Fig. 2 shows a detail rear elevation of the contact mechanism. Fig. 3 is a detail front view of the hand lever and associated parts. Fig. 4 is a diagram showing the electric connections of the box.

In said drawings, numeral 1 designates the box casing, 2 the door thereof, and 3 a mechanism plate removably secured within the casing and carrying the contact device, the clock train for operating same, and the terminal block 4.

5 designates the clock train generally. I do not illustrate or describe in detail this clock train, as any suitable clock train may be used and clock trains for the purpose are well known. 6 (Fig. 3) is the winding staff of said clock train and carries a pinion 7 arranged to be rotated by a hand lever 8 carrying a gear segment 9 engaging said pinion.

10 is a break wheel, which is double, as is common in call boxes arranged to operate on both open circuit and closed circuit, and 11 and 12 are pens or brushes adapted to coact with the two disks of the break wheel 10.

13 is a stop cam arranged to engage a stop pin 14 on the break wheel and stop the clock train at the conclusion of the signal; cam 13 being mounted on the main winding staff 6. Said cam also is arranged to coact with a contact brush 15 forming a line shunt to cut out boxes beyond the one to which said contact device belongs, in case the box is operated to send in the distinctive signal. It does not make contact with brush 15 when the box is operated to send in merely the station signal (usually the number of the box), but does make contact with said brush when the box is operated to send in the distinctive (usually an alarm) signal.

Behind cam 13, and on the same staff, is another cam, 16, adapted to make contact with another brush, 17, in electrical connection with main line brush 11. Cam 16 is so shaped that immediately the box begins to operate, and while the part 18 of the break wheel 10, which is the part containing the notches for the "distinctive" signal, is passing the brush 11, cam 16 and brush 17 are in contact, so completing a shunt around the main line contacts, and preventing the "distinctive" signal from being transmitted. But the cam 16 is so shaped that after the part 18 passes brush 11, and before the part of the break wheel 10 containing the station signal reaches said brush, contact is lost between brush 17 and cam 16, so that the "station" signal is sent in. If the box is operated to rotate the break wheel 10 one revolution only (as is the case when only a station or watchman's signal is sent in), the line contacts are shunted during the passage of the notches for the "distinctive" signal, which is not sent in at all. But if the box is operated to send in the "distinctive" signal as well, as is the case when the operating handle 8 is used and said handle is pulled down the full, or nearly the full distance, the line contacts for the "distinctive" signal are not shunted by contacts 16 and 17 until the last round of the break wheel 10, owing to the fact that in winding up the spring by means of handle 8 to send in the "distinctive" signal, the spring-winding staff, on which cams 16 and 13 are mounted, is rotated so far backward that cam 16 does not contact with brush 17 until just before portion 18 of the break wheel 10 passes brush 11 in the last round of the break wheel. It will be seen that "alarm" signals are differentiated from "periodic" or "watchman" signals, both by the fact that the number of the box is transmitted a greater number of times for "alarm" signals than for "watchman" signals, and by the fact that the "distinctive" signal is sent in alternately with the box number, during alarm signals, but not during periodic or "watchman" signals.

It has been mentioned previously that in

former boxes of this class intended for use in combined services and adapted to send in both station and distinctive signals, the distinctive signal has been placed in rear of the station signal on the break wheel; and that when such is the case, it is possible for the watchman, in withdrawing his key carelessly before the mechanism has come to rest, to turn the key backward enough to open the contact intended to shunt the main line contact during the passage of the distinctive signal notches, and so permit the distinctive signal to be sent in. In this box this difficulty is obviated by placing the notches for the "distinctive" signal in advance of those for the station signal or box number. The shunt contact 16—17 being closed immediately the break wheel begins to rotate, so cutting out the "distinctive" signal, and remaining closed during the time the notches of this signal are passing, accidental backward rotation of the spring winding staff during this period cannot open such shunt contact, and so can do no harm; and once contact between 16 and 17 is broken, the notches of the distinctive signal have passed brush 11, and accidental backward rotation of the key cannot bring these notches under the brush 11 again, (until the break wheel has completed one full revolution), and so can do no harm, or cause the distinct signal to be sent in when it should not be.

The clock train and contact mechanism are mounted on a mechanism plate, 3, as above stated, and when said plate is in place, these parts are all within an inner box 21, by which they are completely protected. Attached to mechanism plate 3 is the terminal block 4, of insulating material, located directly beneath this inner box 21, and provided, on one side, with binding posts 19, for the various circuit wires, and on the other side with lugs 20 to which may be soldered connecting wires leading to the brushes 17, 11, 12, 15, and the frame of the clock train. These short connecting wires pass through a suitable hole in the lower side of the inner box 21. By this construction, and by providing suitable slack in the external-circuit wires connected to binding posts on block 4, it is possible to take the plate 3 with the clock train and contact mechanism out of the box, inspect and operate it, without breaking connections.

Fig. 4 shows diagrammatically the connections, 22 and 23 indicating line conductors and the other parts having the same reference numerals as in Figs. 1, 2 and 3.

In operating the box to send in the watchman's signal, a suitable key is inserted through key hole 24 in the front door, this key fitting over a spindle 25. Said key will have a projection adapted to engage the hook shaped portion 26 of the lever 8; the position of such projecting lug being indi-

cated in dotted lines in Fig. 3, where reference numeral 27 is applied to it. This lug 25 fits between shoulders 28 and 29 which serve to limit the motion of the key. The key having been inserted as shown, it is turned to the left (of Fig. 3) its lug 27 engaging the portion 26 of the lever 8 and turning said lever until the key is arrested by shoulder 28; the spring of the clock train being thereby wound up sufficiently and the stop cam 13 being rotated sufficiently, to permit one rotation of the break wheel 10.

What I claim is:—

1. A signal transmitter comprising in combination transmitting means for transmitting successively and in alternation two different signals, mechanism arranged to operate said transmitting means a greater or less number of times at will, and contact means for closing a shunt connection around said transmitting means, arranged to close said shunt connection during the last transmission, by said transmitting means, of the first of said signals.

2. A signal transmitter comprising in combination transmitting means comprising a break wheel having thereon spaces corresponding to two different signals, mechanism arranged to rotate said wheel to send a greater or less number of rounds of said signals at will, and contact means for closing a shunt connection around said transmitting means, arranged to close said shunt connection during the last transmission, by said transmitting means, of the first of said signals.

3. A signal transmitter comprising in combination transmitting means including means for transmitting successively and in alternation a station signal and a distinctive signal, the distinctive signal in advance of the station signal, operating means for said transmitting means, arranged to be operated to send in either said station signal alone, or to send in both said distinctive signal and said station signal, at will, and contact means for closing a shunt connection around said transmitting means, arranged to close such connection during the transmission of said distinctive signal when said operating means is operated to send in said station signal alone.

4. A station signal comprising in combination transmitting means including means

for transmitting successively and in alternation a station signal and a distinctive signal, the distinctive signal in advance of the station signal, operating means for said transmitting means including a driving member arranged to be moved a shorter distance when the station signal alone is to be transmitted and to be moved a longer distance when both signals are to be transmitted, and contact means for closing a shunt connection around said transmitting means, arranged to close such connection during the first part of the operation of said transmitting means and while said distinctive signal is being transmitted when said driving member is moved to send in the station signal alone.

5. A signal transmitter comprising in combination transmitting means comprising means for transmitting successively and in alternation a station signal and a distinctive signal, the latter in advance of the former, operating means for said transmitting means including a driving member arranged to be moved a shorter distance for one class of signals than for another, a contact brush, and a contact cam therefor arranged to contact therewith and to close therewith a shunt connection around said transmitting means, during the first part of the operation of said transmitting means and the transmission of said distinctive signal, when said driving member is moved the shorter distance.

6. A signal transmitter comprising in combination transmitting means including a break wheel and brush, said break wheel toothed for a station signal and for a distinctive signal, the latter in advance of the former, operating means for said transmitting means including a driving member arranged to move a shorter distance for one class of signals than for another, and shunt connection contact means arranged to close a shunt connection around said brush and break wheel during the passage of the distinctive signal past said brush, when said driving member is moved the shorter distance.

In testimony whereof I affix my signature, in the presence of two witnesses.

HENRY S. BULLOCK, Jr.

Witnesses:

JAMES F. EGAN,
H. M. MARBLE.