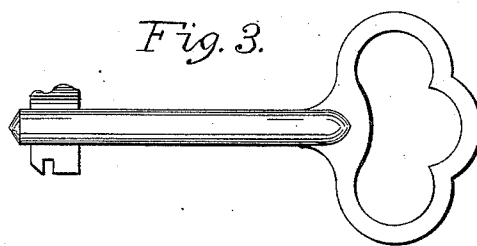
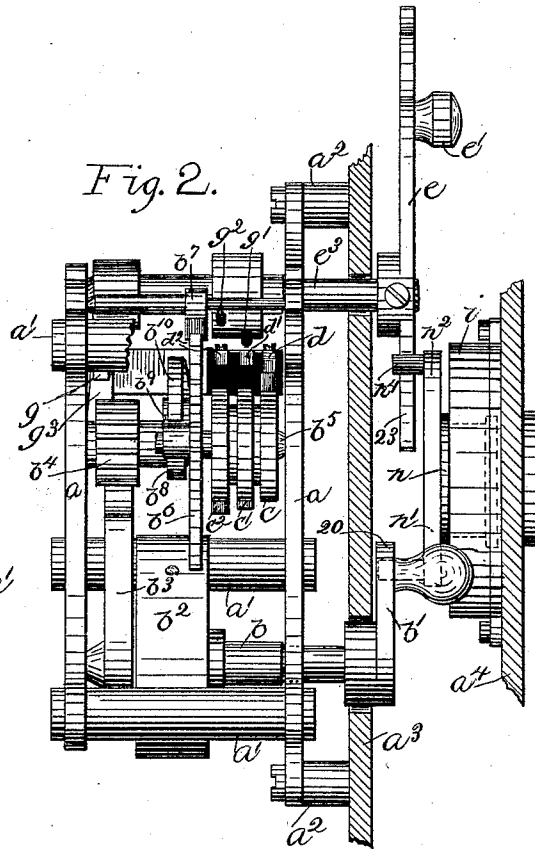
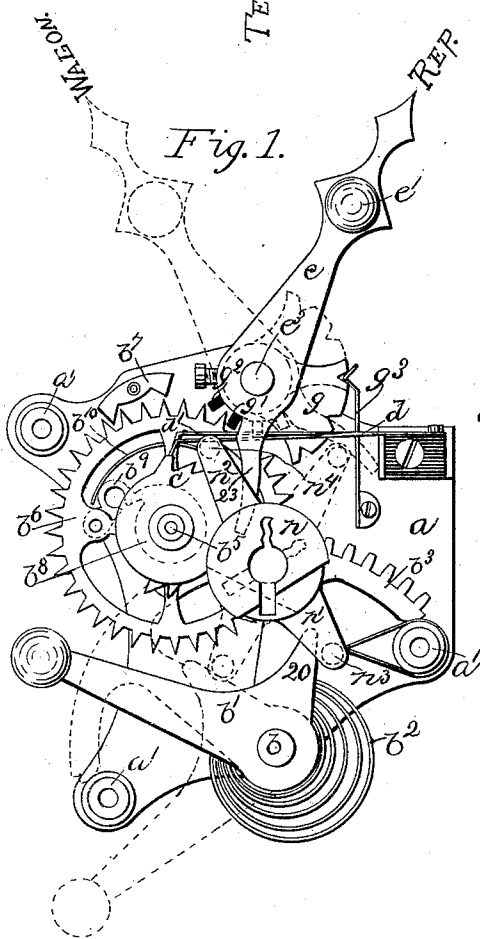


(No Model.)

C. E. NASH.
MULTIPLE SIGNAL TRANSMITTER.

No. 466,620.

Patented Jan. 5, 1892.



Witnesses
Jas. J. Maloney.
N. E. Hill.

Inventor.
Charles E. Nash.
by Jos. P. Lummere
Att'y.

UNITED STATES PATENT OFFICE.

CHARLES E. NASH, OF NEWTON, MASSACHUSETTS.

MULTIPLE-SIGNAL TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 466,620, dated January 5, 1892.

Application filed May 2, 1891. Serial No. 391,357. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. NASH, of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Multiple-Signal Transmitters, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

My invention is embodied in a multiple-signal transmitter for municipal or police telegraph systems in which it is desired to provide means for transmitting any desired one of a number of distinct messages or signals from each signal-box or transmitting-station. Such transmitters are commonly inclosed in an iron case or box having a door with a suitable lock, and the transmitting mechanism consists of a time-train or motor actuated by a weight or spring and operating a number of the break-wheels or signaling-surfaces capable of producing distinct signals, one only of which is sent at a given operation of the box. The said signaling-surfaces are adapted to each transmit its own message, and a shifting device is provided by which any one of the said signaling-surfaces can be placed in condition to control the circuit during a given operation of the box. In the plan of operation generally adopted the boxes are so arranged that they can be operated by a key, which is really a winding or tripping device for the motor of the box, but resembles an ordinary lock-key in appearance and is applied through a suitable hole in the door or other part of the box, so that one signal at least can be transmitted by persons holding such keys, hereinafter referred to as citizens' keys, without opening the door of the box. Other properly-authorized persons—as, for example, police officers—are also provided with keys by which the door of the box may be unlocked and the box opened, giving persons holding such officers' keys access to the interior of the box and to the shifting device by which any desired one of the signaling-surfaces may be operated, so that the persons having officers' keys may cause the box to transmit any desired one of the signals within the capacity of the box, while those having only citizens' keys can cause only the one signal to be transmitted that

corresponds to the signaling-surface that may be in control of the circuit when the said key is operated. Unless some means were provided by which the signal-shifting device is always brought to the same position when or before the citizen's key is operated it is obvious that the citizen's key would transmit any one of the signals of the box corresponding to the position in which the shifting device happened to be last left; but it is necessary for the proper performance of the apparatus that the citizen's key should always transmit one and the same signal; and the present invention consists, mainly, in means by which the citizen's key itself sets the shifting or signaling-selecting device to a definite point corresponding to the citizen-signal in the same operation of said key that causes said signal to be transmitted, but just before the changes in the circuit that constitute the signal take place. Various other means have been heretofore employed to cause the citizen's key to always transmit the proper one of the number of different signals that can be transmitted by the box; but such plans are open to objections, which are obviated by the present invention.

Figure 1 is a front view of the transmitting mechanism with the inclosing case removed; Fig. 2, a side elevation thereof, showing portions of the inclosing case in section; and Fig. 3, a side elevation of the citizen's key.

The operating parts of the transmitting mechanism are supported in the usual manner between frame-pieces *a*, connected by posts *a'* and supported by studs *a''* upon a part of the inclosing case, (shown as the inside door or front plate *a'''*, Fig. 2,) which case is also provided with an outside door, a portion of which is shown at *a''''*, Fig. 2. The train of wheel-work of the transmitting-motor is operated from a main winding-shaft *b*, provided with a winding crank or handle *b'* and connected with the main spring *b''*, by which the train is driven, said shaft carrying a toothed sector *b'''*, meshing with a pinion *b''''*, loosely mounted upon the shaft *b'''''*, which carries a scape-wheel *b''''''*, that engages suitable pallets *b'''''''*, constituting a governor to control the speed at which the motor runs under the action of its mainspring *b''* in the usual manner. The pinion *b''''* has connected with it a one-toothed

ratchet b^8 , (shown in dotted lines, Fig. 1,) which co-operates with a pawl b^9 , pivoted upon the scape-wheel b^6 and acted upon by a spring b^{10} , that throws the said pawl into engagement with the tooth of the ratchet after the latter passes it. By this construction a movement of the main shaft b by the winding-crank b' from full to the dotted line position, Fig. 1, strains the spring b^2 , which tends to move said shaft backward and also causes a complete rotation of the pinion b^4 and ratchet b^8 in a direction to carry the tooth of the ratchet first away from the pawl b^9 and then around past the said pawl, so that in this movement the scape-wheel b^6 is not turned; but in the return movement produced by the spring b^2 when the winding-crank b' is released the scape-wheel is caused to make a complete rotation by the action of the ratchet b^8 upon the pawl b^9 . The shaft b^5 , to which the scape-wheel b^6 is fixed and which is thus caused to rotate with the scape-wheel under the action of the mainspring b^2 , also has fastened to it a series of break-wheels or signaling-surfaces c c' c^2 , of any desired number, with which corresponding contact-springs d d' d^2 may co-operate, said springs d' d^2 tending by their elasticity to remain out of contact with the corresponding wheels. The spring d , however, is arranged to remain in contact with the wheel c , the effect of the surface of which thus enters into all of the signals or messages transmitted by the box, the said wheel, for example, being notched to produce a number-signal, by which the box is characterized, and which thus gives information at the receiving-station of the locality from which the call is received. Such number-signal, when unaccompanied by any further marks, may be employed as a notification that the officer is present at the box, and is commonly designated as the "report," "patrol," or "on-duty" signal in apparatus of this kind. The spring d' , if pressed into such position as to make contact with the teeth or projections of the wheel c' , will produce circuit changes in addition to those produced by the wheel c and spring d , which would be understood as another distinct message—as, for example, a call to the telephone—and if the spring d^2 were pressed into contact with the wheel c^2 it would give other circuit changes in addition to those of the wheel c and spring d , which would be understood as a call for assistance at the box indicated by the signal of the wheel c , this being what is commonly known as the "wagon-signal" and the one which should be transmitted by the citizen's key. It is necessary, therefore, in order that the desired signal may be sent at any time to provide means by which either one of the springs d' or d^2 may be placed in position to co-operate with the corresponding wheel or by which both the said springs may be left out of contact with their corresponding wheels in case only the report or on-duty signal is to be transmitted. Such signal-controlling means

are shown in this instance as operated by a pointer e , that points to indications corresponding to the different signals and is provided with a handle e' , by which it may be set by hand when the box-door a^4 is open, such hand-setting thus being only in the power of persons provided with officers' keys to open the box. The said pointer is fastened upon the shaft e^3 , which carries selecting projections g' g^2 , that co-operate with the springs d' d^2 , so that when the pointer is in one position—for example, midway between the full and dotted line positions, Fig. 1—the said projection g' causes the springs d' to co-operate with the wheel c' and while said pointer is in dotted-line position the projection g^2 causes the spring d^2 to co-operate with the wheel c^2 , and when the pointer is in full-line position both springs d' d^2 are permitted to remain out of reach of the corresponding wheels, so that only the signal of the wheel c and spring d is transmitted. The shaft e^3 is also provided with a notched plate g , which, in connection with a spring-latch g^3 , serves to retain the pointer in whatever position it may be put, although said latch is yielding, so that the pointer may be moved when sufficient force is applied thereto, as when it is to be intentionally turned by the operator.

As before stated, the citizen's signal is the one that includes the effect of the spring d^2 and wheel c^2 , and which is therefore produced when the pointer e is in the position shown in dotted lines, Fig. 1. The said pointer may, however, remain in any position after the box is closed after the last signal has been sent—as, for example, in the full-line position if the last signal was an officer's report or in the intermediate position if the last signal was a call to the telephone. In order to provide, therefore, for the proper transmission of the citizen's signal, it is necessary that the pointer e should in some way be set to the dotted-line position, Fig. 1, before said signal is transmitted. As shown in this instance, the citizen's key works in a case i , somewhat similar to an ordinary lock, fastened to the box-door a^4 in front of and between the winding-handle b' , before described, and the pointer e . The said lock may contain any of the usual devices to prevent improperly-shaped keys from operating and to entrap or prevent removal of the key after a signal has been transmitted by it, for the purpose of affording a check against improper use of such keys by persons holding them. The said lock also contains a hub or rotating piece h , which is engaged and turned by the proper key—such, for example, as the one shown in Fig. 3. The said hub h is provided with arms h' h^2 , carrying projections h^3 h^4 , which co-operate, respectively, with projections 20 23 on the winding-lever b' and the selecting-pointer e , so that when the key is turned so as to bring its projection from the position indicated by the correspondingly-shaped socket in full lines, Fig. 1, to the position shown in dotted lines, Fig. 1, the projec-

tion h^3 , by acting on the arm 20, moves the winding-lever b' from full to dotted lines position, and thus winds the motor, and at the same time the projection h^4 , acting on the arm 23 of the pointer e , moves the latter to the dotted-line position, and thus causes the spring d^2 to co-operate with the wheel c^2 , as is required. The break-wheels run only in the return movement of the winding-shaft b produced by the mainspring b^2 , and consequently the circuit is not affected until after the pointer has been placed in proper position by the action of the key that was employed to wind the mainspring preparatory to having the latter drive the motor.

The hand-operative lever b' has been herein described as a winding-lever, as the mechanism is shown as of that kind in which the mainspring is wound and released each time that the box is operated. It is essential, however, only that the said lever b' should be properly constructed to set the box in motion, and any kind of hand-operative pull or starting device such as commonly employed in the different classes of signaling boxes or transmitters, if adapted to be operated by hand and also by the citizen's key, as herein

shown, could be substituted for the winding device shown and would be a substantial equivalent for it in the combination forming the subject of this invention.

I claim—

The combination, with a motor provided with a number of signaling-surfaces for transmitting distinct signals, a hand-operative pull or starting device therefor, and a hand-operative signal-selector by which the desired signaling-surface is placed in control of the circuit, of a case inclosing said hand-operative devices and preventing access thereto when shut, and a citizen's key or operating-handle which may be introduced when the said case is shut, and projections operated by said key, adapted to operate the hand-pull and also to engage with the said hand-operative pointer and move it to a definite position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. NASH.

Witnesses:

JOS. P. LIVERMORE,
JAS. J. MALONEY.