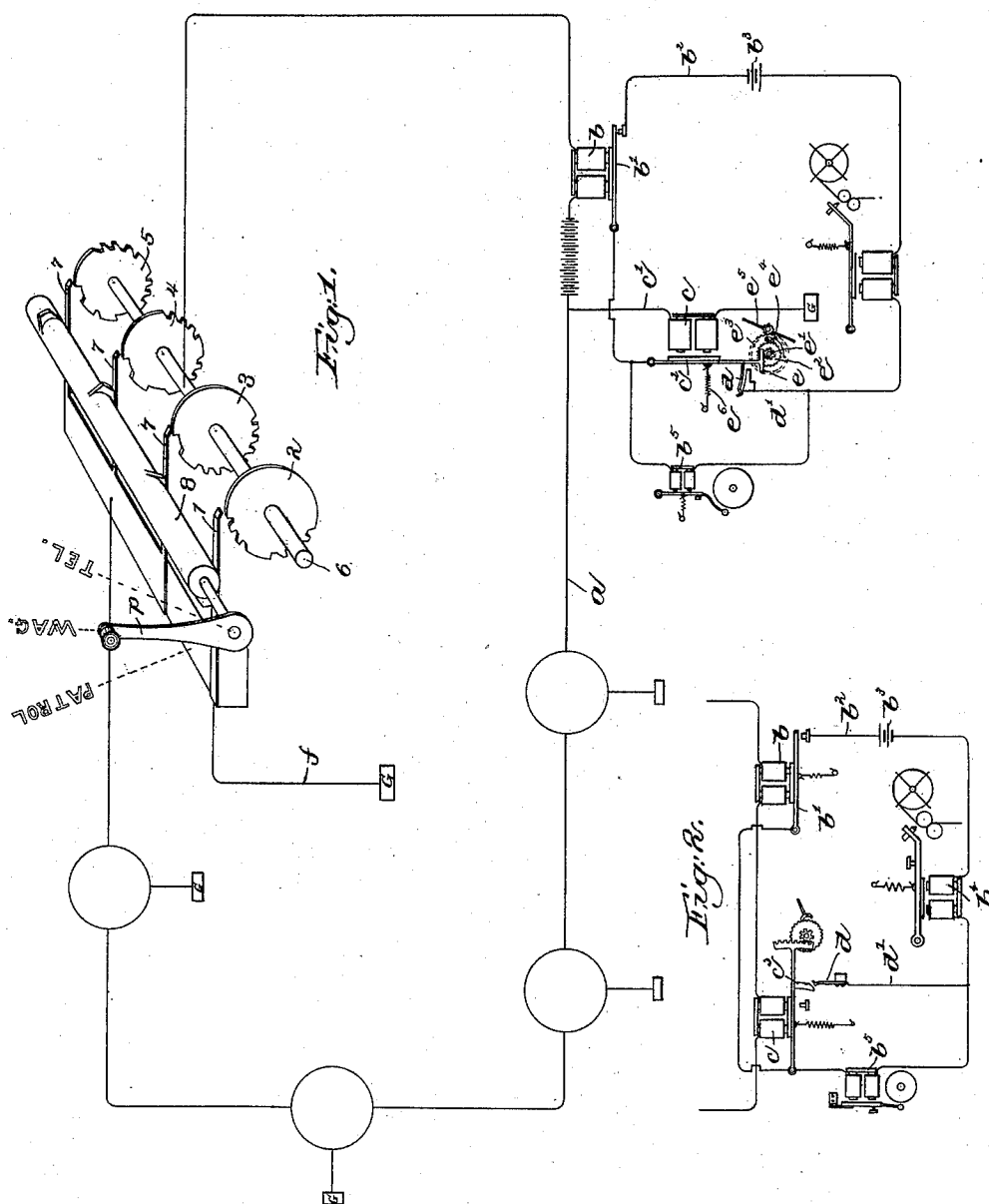


(No Model.)

B. J. NOYES.
SIGNALING APPARATUS.

No. 474,853.

Patented May 17, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

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SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 474,853, dated May 17, 1892.

Application filed September 17, 1889. Serial No. 324,181. (No model.)

To all whom it may concern:

Be it known that I, BERNICE J. NOYES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Signaling Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In United States Patent No. 359,688, dated March 22, 1887, an electric signaling apparatus is shown, comprising signal-transmitters located at transmitting-stations and a receiving apparatus located at a receiving-station
15 operatively connected in the signaling-circuit, the said signal-receiving apparatus comprising a register and a bell or other indicating signal, the latter responding to some but not to other signals.

20 In carrying out the invention the bell was arranged to be included or connected in circuit when desired that it should operate, and a distinguishing impulse was employed to effect such connection, the impulse therein
25 shown being one of different duration.

In another application filed by me concurrently with this, Serial No. 324,180, a signaling apparatus is shown comprising a register and a bell, both of which are normally included or operatively connected in the signaling-circuit, and a switch is employed to render inoperative, disconnect, or cut out the said bell for some signals and not for others.

This invention, generically showing means
35 for carrying out substantially the results of said application, Serial No. 324,180, has for its object the provision of novel and specific devices by which said results may be cheaply and efficiently carried out.

40 In accordance with this invention the signal-transmitters are constructed and arranged to transmit the signals by any well-known kind or character of impulse, and for some, or in conjunction with some, of the signals a distinguishing impulse is transmitted, and at the
45 receiving-station a register and a bell or other indicating signal are connected in the signaling-circuit, both of which respond to all signals unless one of them—as the bell or indicating signal—shall be cut out or disconnected.
50

As herein shown, a time-switch is placed at the receiving-station, the movement of which is controlled by an electro-magnet. The switch
55 is so timed that when moved it will disconnect or cut out the bell for a sufficient length of time to permit the reception of the signal. The electro-magnet of said time-switch is effected by the distinguishing impulse.

Figure 1 shows in diagram an electric signaling apparatus embodying this invention, and Fig. 2 a diagram of a central office or receiving-station to be referred to.

The signaling-circuit *a* connects the signal-boxes at the sub-stations with a signal-receiving station. At each sub-station a multiple-signaling apparatus is shown of some suitable construction, many forms being now well known, the one herein shown, however, comprising a series of wheels 2 3 4 5, arranged
65 on a shaft 6, which may be revolved by any suitable motor, a series of contact-pens 7, (one for each signal-wheel,) and a selecting-cylinder 8, turned into different positions by means of a pointer *p*. This signal-transmitter when
70 constructed as herein shown or otherwise must be arranged to transmit the signals by impulses of any well-known kind or character, and also transmit with some, or in conjunction with some, signals a distinguishing impulse. As shown in Fig. 1, the transmitter is
75 arranged in a metallic circuit and the regular signal impulses are sent over that circuit, while the distinguishing impulse is sent over a ground-circuit.

85 At the receiving-station (see Fig. 1) a receiving-relay *b* is included in the signaling-circuit, the armature *b'* of which closes and opens a local circuit *b²*, containing a local battery *b³*, a register *b⁴*, and a bell *b⁵*. An electro-magnet *c* is also arranged at said receiving-station, included in a ground tap or branch
90 *c'*, leading from the main signaling-circuit. The armature *c²* of this electro-magnet *c* has attached to it, one member of a switch *d*, arranged to open and close a shunt-wire *d'* for
95 the bell *b⁵*. When the armature is retracted, the bell *b⁵* is not shunted out, and hence will respond to the movement of the armature *b'* of the relay *b*; but when said armature *c²* is
100 attracted the said bell *b⁵* is shunted out and will not respond.

The armature c^2 has co-operating with it a retarding device, herein shown as comprising a sector e , engaging a pinion e' , fixed to a shaft carrying a ratchet-wheel e^2 , a toothed wheel e^3 , arranged on said shaft and carrying a pawl e^4 , which engages the said ratchet-wheel, and a fan-escapement e^5 . As represented, the armature c^2 can move toward the poles of the electro-magnet c quickly, but will return to its normal position by means of the retractile spring e^6 slowly.

A switch d , as shown, comprises a stationary block or armature and an arm, the latter being attached to the armature c^2 . The block has quite a long contacting-surface, so that during the time the armature is being attracted a contact is made or the switch closed, remaining closed during the time the armature is returning to its normal position, opening just as the armature ceases to move. Whenever a signal is transmitted by the signal-wheels 3 4 5, the impulses pass over the metallic circuit and the armature of the relay b closes the local circuit and both the register and bell respond. Whenever the signal is transmitted by means of the signal-wheel 2, which, as shown, is connected in a ground-tap, the impulse is sent over a ground-circuit, including the relay c . On the reception of this signal the first impulse draws the armature c^2 into contact with the poles of the electro-magnet c and closes the switch d , so that as the other impulses are transmitted the bell b^5 will be shunted out.

I have arranged the switch d so that on the reception of a ground impulse the switch will be closed before the armature b can close the local circuit, although in practice the action will be substantially simultaneous, the object being to close the switch before the bell b^5 will operate.

Referring to Fig. 2, the electro-magnet c is included in the signaling-circuit, and instead of being responsive to ground impulses alone, or to an impulse different in character to the regular signal impulses, the distinguishing impulse employed will be one of different duration. To effect the desired results, the retarding device is arranged to retard the move-

ment of the armature c^2 alike or substantially so in each direction, so that on the reception of an impulse of long duration it will retract sufficiently to close the switch and shunt out the bell b^5 . The switch is arranged to remain closed during nearly the whole movement of the armature c^2 and the retarding device is timed so that the switch will remain closed a sufficient length of time to receive the signal. Thus it will be seen that in either instance shown the same results are carried out in substantially the same way.

I claim—

1. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and normally responsive to the signal impulses, a controlling device for rendering said bell non-responsive, consisting of a shunt-switch and retarding device for it, and an electro-magnet for said shunt-switch responsive to a distinguishing impulse, combined with a signal-transmitter, also connected with said circuit and contained in a box, and a circuit-changer for transmitting said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

2. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and normally responsive to the signal impulses, a controlling device for rendering said bell non-responsive, consisting of a shunt-switch, a retarding device for it, and an electro-magnet in another circuit for said shunt-switch responsive to a distinguishing impulse, combined with a signal-transmitter, also connected in said circuit and contained in a box, and a circuit-changer in another circuit for transmitting said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

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

BERNICE J. NOYES.

Witnesses:

GEO. W. GREGORY,
E. J. BENNETT.