

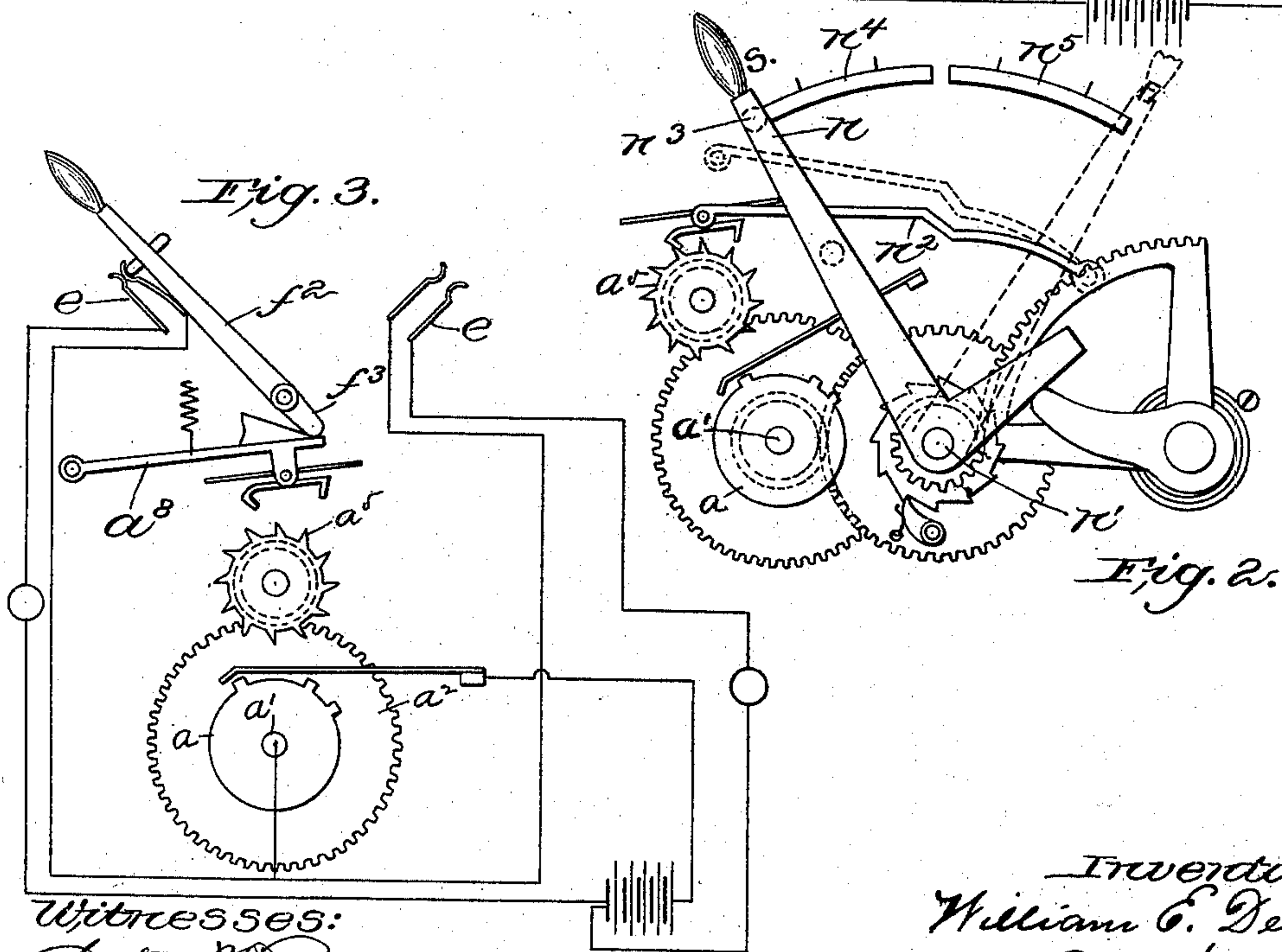
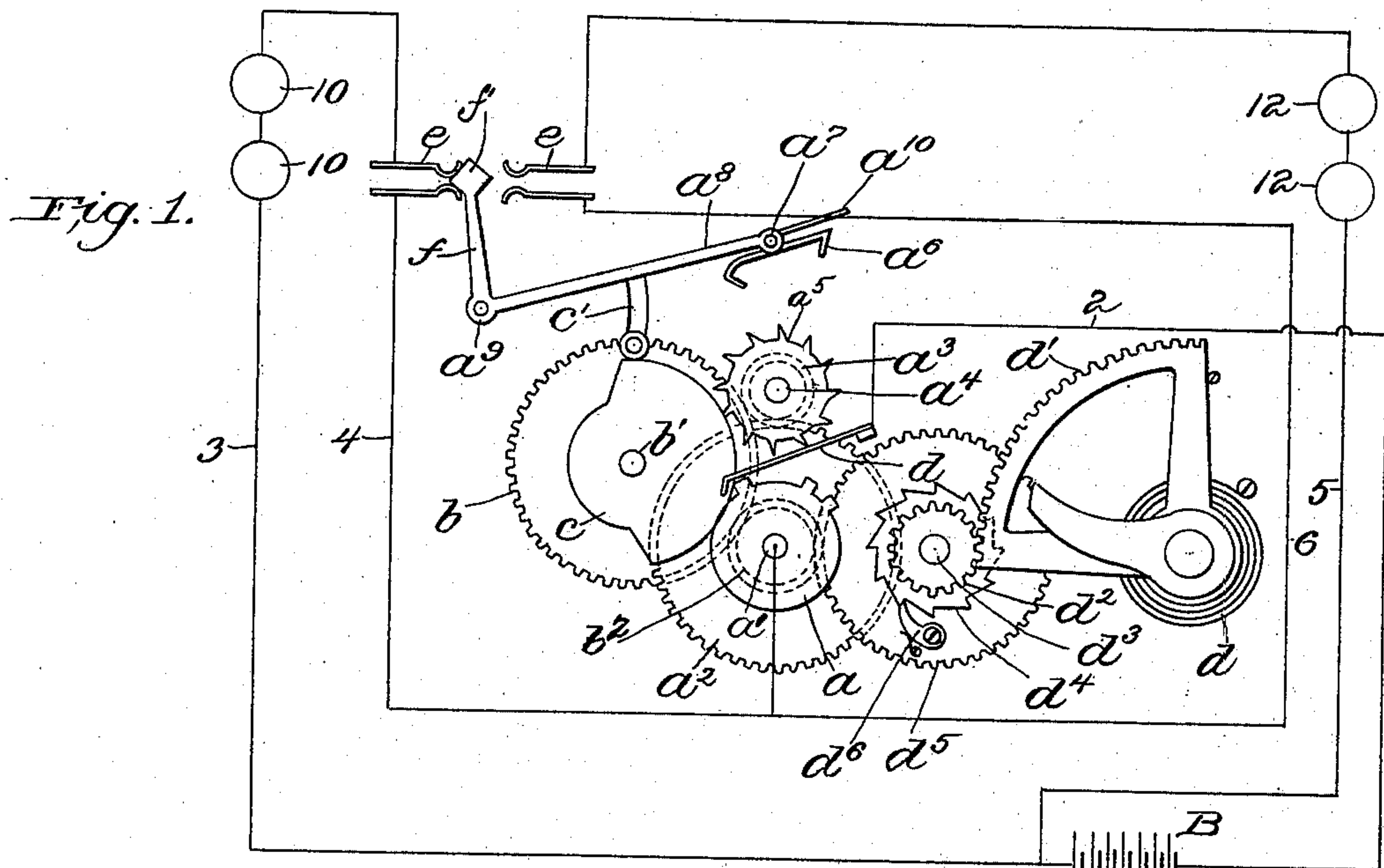
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W. E. DECROW.
ELECTRIC SIGNALING APPARATUS.

(Application filed Dec. 27, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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ELECTRIC SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 612,708, dated October 18, 1898.

Application filed December 27, 1897. Serial No. 663,520. (No model.)

To all whom it may concern:

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

10 In fire-alarm signaling it has been customary to send fast and slow signals from headquarters to the fire-stations, said fast and slow signals being transmitted over different circuits, and small gongs and other quickly-responsive electric apparatus are connected
15 with the circuits over which the fast signals are transmitted, and large gongs, tower-bell strikers, &c., which are more or less slow in action, are connected with the circuits over
20 which the slow signals are transmitted. Usually the fast signals are first transmitted, followed by the slow signals, and to accomplish this result two independent transmitters are ordinarily employed, one for transmitting the
25 fast signals and the other for transmitting the slow signals, each transmitter being separately set and operated.

My invention has for its object to improve the construction of a signal-transmitter
30 whereby a signal may be transmitted at several different speeds at every operation of the transmitter—as, for instance, a signal may be transmitted fast and slow over circuits provided for them—such a signal-transmitter being herein termed a “variable-speed” signal-transmitter, and the signal when transmitted fast being termed a “fast” signal, and
35 when transmitted slow being termed a “slow” signal, and the number of circuits arranged to be operated by said transmitter will correspond to the number of different speeds that the signals are to be transmitted.

The invention consists in constructing a variable-speed signal-transmitter whereby a
45 signal may be transmitted at several different speeds at every operation of the transmitter; also, in constructing a variable-speed signal-transmitter whereby two or more rounds of a signal may be transmitted at different speeds at every operation of the trans-

mitter; also, in constructing a variable-speed signal-transmitter whereby the signal or signals transmitted at different speeds may be transmitted successively, first the fast signal, and then the slow signal, at every operation of the transmitter; also, in providing a
55 circuit-selecting device or switch in combination with a variable-speed signal-transmitter having aforesaid capabilities and a number of circuits corresponding to the number of
60 different speeds that the signal is transmitted, whereby the correct circuits may always be selected for the signals of different speeds; also, in providing an adjusting device for the variable-speed signal-transmitter whereby
65 the speed of the transmitter-train may be varied, and in combining such element with a circuit-selecting device whereby they may be operated simultaneously or conjunctively with the signal-transmitter; also, in providing
70 automatic means for operating the circuit-selecting device and for operating the adjusting device, and for simplicity of construction such automatic means will be operated by or conjunctively with the transmitter-train; and
75 also in combining with a variable-speed signal-transmitter having means for operating it to transmit a signal at different speeds at every operation, a number of circuits for the differently-speeded signals transmitted by it,
80 a circuit-selecting device for selecting the circuits that shall be operated by said signal-transmitter for the differently-speeded signals, and means for operating said circuit-selecting device with the transmitter which
85 is to transmit the signal at different speeds, whereby the transmitter when once set or started may transmit its signal first fast over one circuit or circuits, which is herein termed the “fast” signal, and then slow over another
90 circuit or circuits, which is herein termed the “slow” signal, and the parts will finally be restored to their normal position.

Figure 1 shows in diagram a conventional representation of a signal-transmitter and
95 two circuits connected with it which are adapted to be operated by it an adjusting device for said transmitter whereby its signal may be transmitted at different speeds, and a circuit-selecting device whereby a dif- 100

ferent circuit will be selected for each different speed that the signal is transmitted, and automatic means for operating said adjusting and circuit-selecting devices. Fig. 2 is a modification whereby the circuit-selecting device and adjusting device are operated by the actuating-lever of the transmitter. Fig. 3 is a modification whereby the circuit-selecting device is manually operated and the adjusting devices for the signal-transmitter operated simultaneously with it.

a represents a break-wheel which may be of any suitable or usual construction and fixed to a shaft a' , which may be driven by any suitable form or construction of motor.

a^2 is a toothed gear secured to said shaft a' , which meshes with a pinion a^3 , secured to a shaft a^4 , to which an escape-wheel a^5 is secured, with which coöperates a suitable pallet a^6 , secured to a pallet-shaft a^7 , having its bearings in an ear or projection at the outer end of an arm a^8 , which is pivoted at a^9 . A fan a^{10} is also secured to the pallet-shaft a^7 to retard the action of the pallet.

b represents a toothed gear which is secured to a shaft b' and which is engaged by a pinion b^2 , secured to the shaft a' , and c is a cam which is secured to said shaft b' . An arm c' depends from the pivoted arm a^8 , which bears upon the periphery of said cam c , and the parts are so proportioned relatively to each other that when the depending arm bears upon the high part of the cam the pivoted arm a^8 will be in its most elevated position, as shown by full lines in Fig. 1, and the pallet will be removed from its engagement with the escape-wheel a^5 , and when the depending arm bears upon the low part of said cam said pivoted arm a^8 will be depressed and the pallet will be brought into engagement with said escape-wheel.

It will be seen that when the pallet is in engagement with the escape-wheel the transmitter-train will run at a slow rate of speed, and when said pallet is removed from its engagement with said escape-wheel the transmitter-train will run at a high rate of speed, and as a consequence the signal which said transmitter sends will be transmitted slow or fast, depending upon whether or not the pallet is in engagement with the escape-wheel.

It is herein designed and intended that the break-wheel a shall make, say, four revolutions and thereby transmit four rounds of the signal, and the parts are so arranged that the cam c will make but one complete revolution for each four rounds of the break-wheel, and said cam is so shaped as to cause the pallet to engage the escape-wheel of the transmitter-train for an interval of time during the transmission of two rounds of the signal and to be removed therefrom during the transmission of two rounds of the signal, thereby enabling the transmitter to send two rounds of the signal fast and two rounds of the signal slow.

As shown in Fig. 1, the parts are in the po-

sition that they will normally occupy when ready to begin the transmission of the fast signal.

d is a contact-pen which is engaged by the break-wheel a , and it is connected by wire 2 with the battery B. Two separate circuits are herein shown, one over which the fast signal is transmitted and the other over which the slow signal is transmitted. The circuit over which the fast signal is transmitted is represented by wires 3 4, one of which leads to the battery and the other to the break-wheel, and the circuits over which the slow signal is transmitted is represented by wires 5 6, one of which leads to the battery and the other to the break-wheel, and in each circuit a pair of contact-pens e are connected and a circuit-selecting device is provided for closing one or the other pair, as required.

The circuit-selecting device is herein shown as an arm f , bearing at or near its upper end a wedge f' , which is adapted to engage one or the other pair of pens e and to close the circuit according to the position of said circuit-selecting device. The arm f is attached to the arm a^8 or movable with it, so that the two arms will operate simultaneously.

The circuit 3 4 will include the rapidly-responsive instruments, as small bells, &c., (represented at 10,) and the circuit 5 6 will include the slow-acting instruments, as the tower-bell strikers, &c., (represented at 12.) When the transmitter is started, the break-wheel a will travel two rounds rapidly and the signal will be transmitted over circuit 3 4, the circuit-selecting device at such time being in position to close said circuit or render it operative and the pallet being removed from its engagement with the escape-wheel of the transmitter-train, which, it will be understood, serves as an adjusting device for said train, and as said transmitter continues to operate the circuit-selecting device will be moved to render circuit 5 6 operative and to render inoperative circuits 3 4, and also to throw the adjusting device of the transmitter-train into operative position, and then the break-wheel will make two rounds slowly and the slow signal will be transmitted over circuit 5 6, after which the parts will be restored to their normal position.

The motor herein shown for the transmitter consists of an actuating-spring d , a sector d' , which engages a pinion d^2 , loosely mounted upon a shaft d^3 , a ratchet-wheel d^4 , connected with said pinion, a toothed wheel d^5 , secured to the shaft d^3 , and a pawl d^6 , carried by it, which engages said ratchet-wheel, said toothed wheel d^5 engaging the pinion b^2 on the shaft a' .

It will be understood that while I have herein shown two circuits I may provide as many circuits as necessary, and also that while I have herein shown two classes of circuits—viz., one for the fast and the other for the slow signals—I desire it to be understood that as many different classes of circuits will

be provided as there are different speeds of signals to be transmitted. Furthermore, that while the circuits herein shown are normally open it is obvious that normally-closed circuits may be substituted therefor.

The variable-speed signal-transmitter thus produced is herein shown as having a break-wheel and contact-pen, thus adapting it to transmit a predetermined signal; but in practice a removable break-wheel may be provided whereby any box-number may be transmitted, or the transmitter may be otherwise made variable, as well known in the art, and as my invention does not relate to any particular form or construction of variable transmitter it is not deemed necessary to further illustrate this feature. It is very desirable, however, to provide a cam or some equivalent means for thus automatically operating the circuit-selecting device and the adjusting device of the transmitter-train simultaneously; but I do not desire to thus limit my invention—as, for instance, the circuit-selecting device may be operated manually, as shown in Fig. 3, wherein it will be seen that an arm f^2 is provided with a knob by which it may be operated, and said arm operates the circuit-closer e , and the shaft bearing said arm has a projection f^3 , which engages a cam-like projection on the arm a^8 , to thereby vary the position of said arm. Nor do I desire to limit my invention to any particular way of constructing the various parts, as it is obvious that they may be changed in many ways, and yet come within the spirit and scope of this invention, and, furthermore, I desire it to be understood that said circuit-selecting device and adjusting device may be operated by any other part of the transmitter-train—as by the actuating-lever, for instance, (see Fig. 2,) wherein it will be seen that n represents the actuating-lever, pivoted at n' , and n^2 represents a pivoted arm bearing the pallet, and said lever n has a pin which engages and moves said arm to adjust the speed of the train, and said lever n has on it a contact-point n^3 , which engages the plate n^4 or n^5 , according to the position of said lever, thereby forming a circuit-selecting device.

I claim—

1. An electric signal-transmitter comprising a train, a box-number-circuit-operating device operated by it to transmit a box-number signal at different speeds at every operation of the train, and an actuating-lever for said train, substantially as described.

2. An electric signal-transmitter comprising a train, a box-number-circuit-operating device operated by it to transmit two or more rounds of the box-number signal at different speeds at every operation of the train, and an actuating-lever for said train, substantially as described.

3. In an electric signaling apparatus, a variable-speed signal-transmitter comprising a train, a box-number-circuit-operating device

operated by it to transmit a box-number signal at different speeds at every operation of the train and an actuating-lever for said train combined with a number of circuits operated by it corresponding to the number of different speeds of the box-number signal transmitted, substantially as described.

4. In an electric signaling apparatus, a variable-speed signal-transmitter comprising a train, a box-number-circuit-operating device operated by it adapted to transmit a box-number signal both fast and slow at every operation of the train, and an actuating-lever for said train combined with two circuits, one of which is operated by the transmitter when sending the fast signal, and the other of which is operated by the transmitter when sending the slow signal, substantially as described.

5. In an electric signaling apparatus, a variable-speed signal-transmitter adapted to transmit a signal at several different speeds at every operation, combined with a number of circuits operated by it, there being at least one circuit for each different speed of signal transmitted, and a circuit-selecting device for selecting the circuits to be operated, substantially as described.

6. In an electric signaling apparatus, a variable-speed signal-transmitter adapted to transmit both fast and slow signals at every operation, combined with two circuits, one of which is operated by the transmitter when sending the fast signals, and the other of which is operated by the transmitter when sending the slow signals, and a circuit-selecting device, substantially as described.

7. In an electric signaling apparatus, a variable-speed signal-transmitter, combined with a number of circuits operated by it corresponding to the number of different speeds of signals transmitted, and a circuit-selecting device operated conjunctively with the means employed for varying the speed of the signals transmitted, substantially as described.

8. In an electric signaling apparatus, a variable-speed signal-transmitter, combined with a number of circuits operated by it corresponding to the number of different speeds of signals transmitted, and an automatically-operated circuit-selecting device for selecting the circuit that shall be operated by said transmitter, substantially as described.

9. In an electric signaling apparatus, a variable-speed signal-transmitter, combined with a number of circuits operated by it corresponding to the number of different speeds of signals transmitted, an automatically-operated circuit-selecting device for selecting the circuit that shall be operated by it, and an automatically-operated adjusting device for varying the speed of the signals transmitted, substantially as described.

10. In an electric signaling apparatus, a variable-speed signal-transmitter, combined with a number of circuits operated by it corresponding to the number of different speeds

of signals transmitted, an adjusting device for the signal-transmitter and a circuit-selecting device operated simultaneously with said adjusting device, substantially as described.

11. In an electric signaling apparatus, a variable-speed signal-transmitter, combined with a number of circuits operated by it corresponding to the number of different speeds of signals transmitted, a circuit-selecting device, and an adjusting device for the signal-transmitter, and automatic means for simultaneously operating said circuit-selecting and adjusting devices, substantially as described.

12. In an electric signaling apparatus, a variable-speed signal-transmitter, and means for operating it to transmit two or more rounds of the signal at different speeds, combined with a number of circuits operated by said transmitter corresponding to the number of different speeds of signals transmitted, a circuit-selecting device, and means for operating it conjunctively with said transmitter, substantially as described.

13. In an electric signaling apparatus, a signal-transmitter, means for operating it to repeatedly transmit a signal and an adjusting device for said transmitter whereby the signal will be repeated at different speeds, combined with a number of circuits operated by said transmitter corresponding to the number of different speeds of signals transmitted, and a circuit-selecting device operated simultaneously with said adjusting device, substantially as described.

14. In an electric signaling apparatus, a signal-transmitter, means for operating it to repeatedly transmit a signal, and an adjusting device for said transmitter, whereby the signal will be repeated at different speeds, com-

bined with a number of circuits operated by said transmitter corresponding to the number of different speeds of signals transmitted, a circuit-selecting device, and means operated by the transmitter-train for simultaneously operating said circuit-selecting device and the aforesaid adjusting devices, substantially as described.

15. In an electric signaling apparatus, a signal-transmitter, means for operating it to repeatedly transmit a signal, and an adjusting device for said transmitter whereby the signal will be repeated at different speeds, combined with a number of circuits operated by said transmitter corresponding to the number of different speeds of signals transmitted, a circuit-selecting device, and means operated by the transmitter-train for simultaneously operating said circuit-selecting device and the aforesaid adjusting devices, and for finally restoring them to their normal position, substantially as described.

16. In an electric signaling apparatus, a signal-transmitter, means for operating it to repeatedly transmit a signal but at different speeds, combined with a number of circuits corresponding to the number of different speeds of signals transmitted, and a circuit-selecting device operated in conjunction with said transmitter, whereby said circuits will be operated consecutively by the transmitter according as the differently-speeded signals are transmitted, substantially as described.

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

WILLIAM E. DECROW.

Witnesses:

GEORGE F. MILLIKEN,
HARRY E. STOVER.