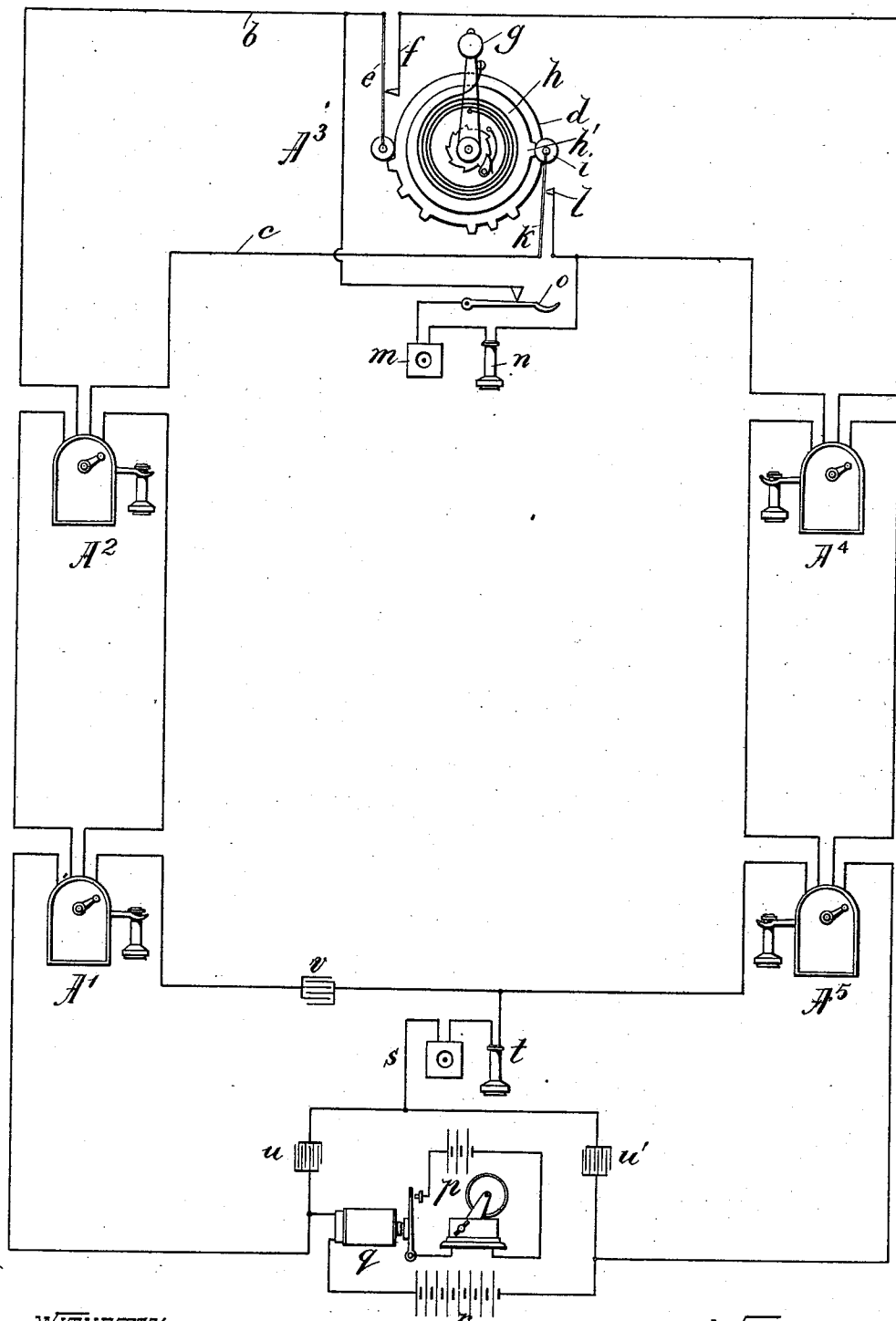


(No Model.)

C. E. SCRIBNER.
ELECTRIC POLICE SIGNAL SYSTEM.

No. 563,324.

Patented July 7, 1896.



WITNESSES:

George L. Gragg.
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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC POLICE-SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 563,324, dated July 7, 1896.

Application filed May 14, 1894. Serial No. 511,208. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Police-Signal Systems, (Case No. 354,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to police telegraph-signal systems in combination with telephonic apparatus connected with the same circuits. Its object is to provide improved means for preventing telephonic appliances from interfering with the transmission of telegraphic signals.

My invention applies particularly to signaling systems in which signal-transmitting instruments are arranged at a number of different stations in series in a single-line circuit, the signal-transmitter operating to momentarily open the signal-circuit, and thus, by interrupting the current in the circuit, to affect a suitable receiving instrument at another station. In combining such a signaling system with telephonic apparatus, it has been customary to make use of an additional circuit extending to each of the stations and to connect the telephonic appliances at each station in a bridge or cross connection between the two circuits, the telephones being thus in parallel with one another. With this arrangement it has been necessary to include a condenser in the branch with each telephone in order that in the event of two telephones being in use or connected in their branches between the two circuits they may not shunt out or short-circuit the intermediate signaling instruments and thus interrupt the service between the stations in use. My invention aims to avoid the condenser in this system of circuits, and to accomplish the same end by simpler and more reliable means, namely, by automatically opening the auxiliary or "return-wire" circuit at any station during the operation of a signaling instrument at that station.

My invention consists, therefore, in the com-

bination with a signaling-circuit, with transmitting instruments in series therein, of an independent return-wire circuit, telephones bridged between the signaling-circuit and the return-circuit at the different stations, and a switch for opening the return-wire circuit at any station during the operation of the signaling instrument thereat. This switch may preferably be automatically actuated by the transmitting instrument itself. In connection with individual signal-transmitters of the type commonly in use, a suitable plan is to provide an additional wheel upon the spindle carrying the break-wheel, and a pair of contact-points controlled by this additional wheel to open the return-circuit excepting while the instrument is in its position of rest.

My invention is fully illustrated in the accompanying drawing.

In the drawing a central station A is represented, connected by a signaling-circuit *b* and a return-circuit *c* with five substations A', A², A³, A⁴, and A⁵. The essential elements of the mechanism at the substations are represented at station A³. This mechanism is seen to comprise a break-wheel for transmitting signals, a wheel upon the same spindle for controlling the switch-contacts in the return-circuit, a telephonic receiver and transmitter, and a switch for connecting the telephonic apparatus with the circuits when the telephone is in use and removed from its switch-hook. The break-wheel *d* is provided, as usual, with projecting teeth upon its periphery, adapted to engage with a roller carried at the extremity of a spring *e* and to force the latter away from a resting-anvil *f* as each tooth passes under the roller, thus interrupting the signaling-circuit *b*. The teeth upon the break-wheels of the different boxes are differently distributed around the periphery of the wheel, so that each wheel shall produce a distinctive succession of interruptions in the signaling-circuit.

The break-wheel is mounted upon a spindle carrying a lever *g*, actuated by a coiled spring, the lever being connected with the break-wheel through the medium of a ratchet-wheel, which permits the lever to be moved in one direction without actuating the break-wheel.

The same spindle carries also an additional wheel *h*, provided with a single tooth *h'*, engaging a roller *i* when the break-wheel is in its position of rest, and forcing the spring *k*, carrying the roller *i*, against its contact-anvil *l*. The spring *k* and its anvil *l* are included in the return-wire *c*. Hence in the normal position of the apparatus both the signaling-circuit *b* and the return-circuit *c* are complete through the mechanism. When the lever *g* is moved from its position of rest, in opposition to the spring, through a nearly complete revolution until it makes contact with the fixed stop, and is then released, the spindle which it controls is rotated. In the first movement of the spindle the tooth *h'* of wheel *h* passes from under the roller *i* and permits the spring *k* to open the return-circuit *c*, after which the teeth upon the periphery of the break-wheel pass successively under the roller-controlling spring *e*, and thus produce the distinctive succession of current impulses in signal-circuit *b*.

A telephone transmitter *m* and a receiver *n* are provided at each station, included in a branch between conductors *b* and *c*, the continuity of the branch being controlled by an automatic switch *o* of well-known form.

At the central station *A* a registering instrument *p* is provided, in a local circuit with a relay *q*, which is included in the signaling-circuit *b*. A battery *r* is also provided at the central station in the signaling-circuit, to maintain a current in the signaling-circuit so long as this is uninterrupted. Each interruption of the current releases the relay *q*, which actuates the register *p*. A telephone transmitter *s* and receiver *t* are connected in a bridge between the signaling-circuit and the return-circuit, the connection with the signaling-circuit being made to a shunt about the relay and the battery, including two condensers *u u'*, to prevent the escape of battery-current to the return-circuit, the object of the shunt being to avoid the resistance of the relay and battery in the telephone-circuit. A condenser *v* is included in the return-circuit *c* also, to prevent the shunting of battery-current from the signaling-circuit through the return-circuit.

It will be noted that if the return-circuit were permanently continuous the station *A*³ would be shunted during the simultaneous use of the telephone at stations *A*² and *A*⁴, in which case a signal transmitted from station *A*³ might fail to actuate the relay *q*. With my invention, however, opening the return-circuit during the operation of the break-wheel, this could not occur. For example, suppose that the telephones at stations *A*² and *A*⁴ be in use. Two crosses exist then between the wires *b* and *c*, one at each side of the station *A*³, so that the contacts *e f* of the break-wheel at that station are shunted by a circuit from wire *b* through the telephone at station *A*² to wire *c*, thence through the contacts *k l*,

thence through the telephone at station *A*⁴ to wire *b*. If an attempt were made to transmit a signal from station *A*³ under this condition, the contacts *k l* remaining uninterrupted, the signaling-current in the wire *b* would not be interrupted by the break-wheel and no effective signal would be transmitted. In my invention, however, the wire *c* between stations *A*² and *A*⁴ will be interrupted at the contacts *k l* from the moment the break-wheel begins its rotation, so that no such shunt exists and the distinctive signal of the station may be transmitted without interference.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In combination, a signaling-circuit, signal-transmitters in the signaling-circuit adapted to interrupt or vary the current therein, a telephonic return-circuit, telephones in parallel bridges between the signaling-circuit and the return-circuit, a signal-receiving instrument in the signaling-circuit, and means for interrupting the return-circuit at any station upon the signaling-circuit, substantially as described.

2. The combination with a signaling-circuit including signal-transmitting instruments at different stations, of a return telephone-circuit, telephones at the different stations connected in parallel bridges between the signaling-circuit and the return-circuit, and a switch in the return-circuit at each station actuated by the signal-transmitting instrument during its operation to open the return-circuit, substantially as described.

3. The combination with the break-wheel of an individual signal-transmitter and the signaling-circuit controlled by the same, of an auxiliary circuit extending parallel with the signaling-circuit, the signaling-circuit being connected at each side of the transmitting instrument through an electrical instrument with the auxiliary circuit, and a switch controlled by the mechanism which actuates the break-wheel, adapted to open the auxiliary circuit during the operation of the break-wheel, substantially as described.

4. In combination, a signaling-circuit including a registering device and a battery at a central station and a signal-transmitting instrument adapted to vary or interrupt the current through it at each of several substations, a telephone return-circuit extending to each substation, a telephone at each substation in a bridge-wire between the return-circuit and the signal-circuit, a switch in the return-wire at each station controlled by the mechanism which actuates the signal-transmitter and adapted to open the return-circuit during the operation of the transmitter, and a telephone at the central station bridged between the signaling-circuit and the return-circuit, substantially as described.

5. The combination with a signaling-circuit including a battery and registering apparatus

at a central station and signal-transmitters
at each of several substations, of an auxiliary
circuit parallel with the signaling-circuit,
electrical instruments in different parallel
5 branches between the signaling-circuit and
the auxiliary circuit, a switch in the auxiliary
circuit at each station adapted to open the
auxiliary circuit, and a condenser in the aux-

iliary circuit at the central station, substan-
tially as described. 10

In witness whereof I hereunto subscribe my
name this 9th day of April, A. D. 1894.

CHARLES E. SCRIBNER.

Witnesses:

ELLA EDLER,

LUCILE RUSSELL.