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ELECTRICAL SIGNALING SYSTEM.

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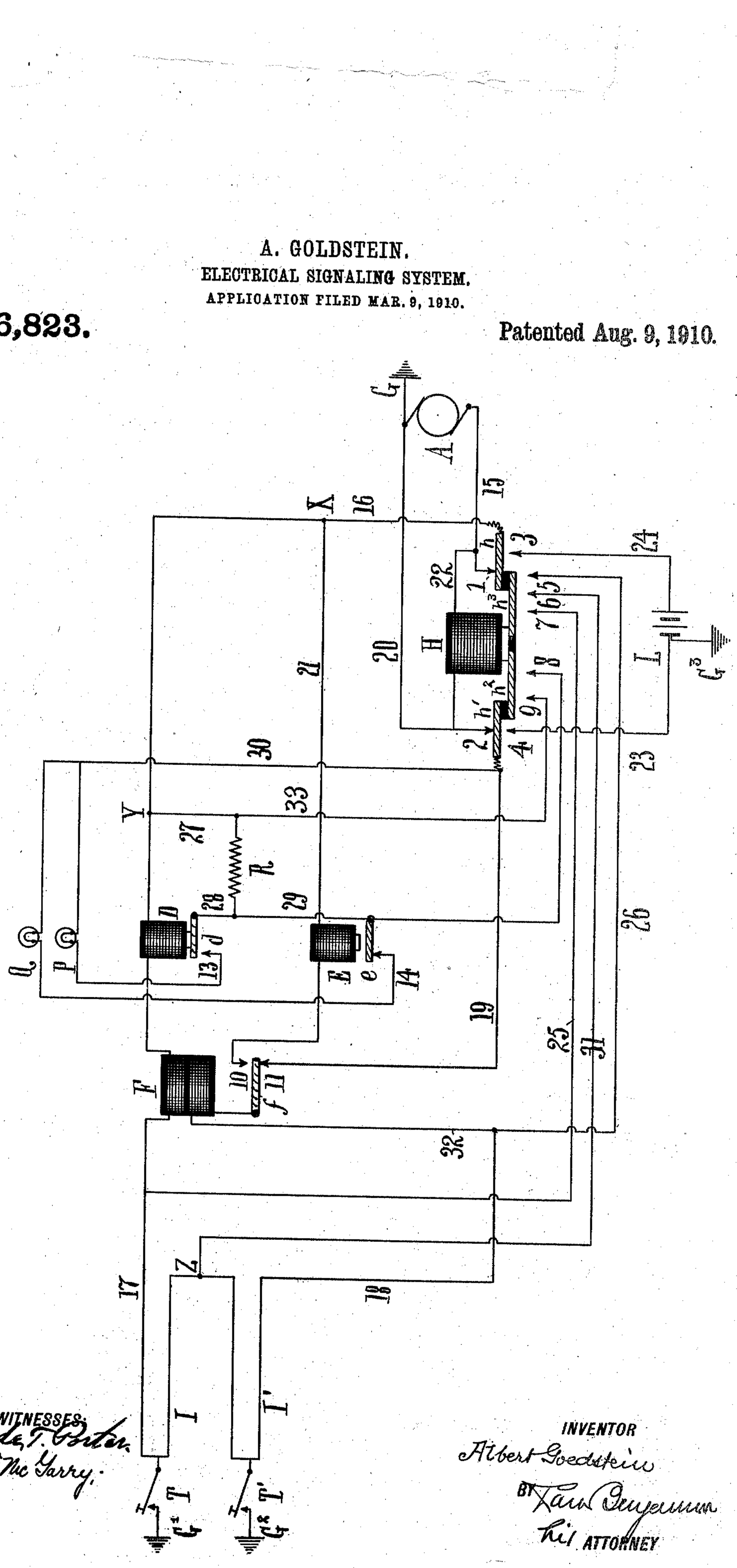

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ELECTRICAL SIGNALING SYSTEM.

966,823. Specification of Letters Patent. Patented Aug. 9, 1910.

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To all whom it may concern:

Be it known that I, ALBERT GOLDSTEIN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electrical Signaling Systems, of which the following is a specification.

The invention relates to an electrical signaling system, and consists in the construction hereinafter set forth, whereby upon the failure of the source of current normally energizing the system, another and weaker source is automatically cut into circuit and the circuit itself adjusted to suit said weaker source.

The object of the invention is to simplify the system and to render it unnecessary to employ two sources of current both of normal strength sufficient to energize the whole line and its several loops.

The accompanying drawing is an electrical diagram, showing my system.

The source of current grounded at G may be any source and is here represented at A by the conventional symbol of a dynamo.

The magnet H at the receiving station is provided with a switch lever which is in four parts h, h', h^2, h^3, insulated from one another. Part h opens and closes circuit at points 1 and 3: part h' at points 2 and 4: part h^2 at points 8, 9, and part h^3 at points 5, 6, 7. Magnet H is normally energized, thus closing circuit at points 1, 2 and opening circuit at the other points. Magnets D and E also at the receiving station, through their switch levers d, e, open and close circuit at points 13, 14. These magnets respectively control the indicating means, here shown as glow lamps P, Q. Magnet F also at the receiving station is a neutral wound relay having two coils, and controls its switch lever f to open and close circuit at points 10, 11. The distant stations of which two are shown, and of which any desired number may be present, are at the ends of the loops I, I′ connected in series. At each station is a signal transmitting device, here shown as keys T, T′, by means of which circuit at each station may be opened or closed to ground G′ or G².

The normal metallic circuit proceeds as follows: from non-grounded pole of source A, by wire 15, to switch lever h, wire 16, magnet D, one coil of magnet F, wire 17, loops I I′ and transmitters T T′ therein, wire 18, wire 32, other coil of magnet F, switch lever f, contact point 11, wire 19, switch lever h', contact point 2, and by wire 20 to A. When circuit is closed to ground G′ or G² by the transmitter T or T′ at any distant station, magnet F attracts its lever f to close contact at 10 and two leads are established as follows: 1. From non-grounded pole of source A, point 1, switch lever h, wire 16, magnet D, one coil of magnet F, wire 17 to transmitter T and ground. 2. From non-grounded pole of source A, to junction X, by wire 21, to magnet E, to contact point 10, switch lever f, other coil of magnet F, wire 32, wire 18 to transmitter T′ and ground.

The lamp circuit proceeds as follows: from non-grounded pole of source A, to point 1, switch lever h, wire 16, to junction Y, by wire 27 to resistance R, by wires 28, 29 to switch levers d, e, and when said levers close circuit at points 13, 14, to lamps P, Q, to wire 30, to switch lever h', point 2, wire 20 and grounded pole of A. By suitably manipulating the keys T, T′ signals are sent which will operate magnets D, E, and these in turn will correspondingly open and close the circuits to the lamps P, Q, by which said signals will be translated or indicated. Lamp Q is always lighted, except when signals are being transmitted. As soon as the ground G′ or G² comes in circuit, the neutral magnet F closes contact at 10, thus bringing magnet E into circuit, and so opening circuit at 14. Both lamps P and Q are then out, and the signal is translated by flashes occurring simultaneously in both lamps.

Assume that for any cause the source A of current becomes inoperative. Magnet H normally energized because in shunt 22, now becomes deënergized, and its switch levers thereupon break circuit at 1 and 2 and close circuit at 3, 4, 5, 6, 7, 8, 9. Magnets D, E and F also are deënergized. Contact points 3 and 4 are connected by wires 23, 24 to the terminals of a local battery L which is grounded at G³. Hence the failure of magnet H and retraction of switch levers h, h' bring this battery into circuit in place of the inoperative source A.

The circuit from battery L proceeds as follows: from non-grounded pole of battery L to wire 24, point 3, switch lever h, wire 16, magnet D, one coil of magnet F, wire 25,

point 7, switch lever h^3, point 5, wire 26, wire 32, other coil of magnet F, switch lever f, point 11, wire 19, switch lever h', point 4, wire 23 to grounded pole of battery L. The lamp circuit now proceeds as follows: from non-grounded pole of battery L, wire 24, point 3, switch lever h, wire 16, point Y, wire 27, point 9, switch lever h^2, point 8, wires 29 and 28 to switch levers d, e, to lamps P, Q, wire 30, switch lever h', point 4, wire 23 to grounded pole of L.

Attention is now particularly called to wire 31 which extends from junction Z between loops I, I' to point 6. This wire forms an additional return lead to short-circuit each loop individually, and hence in practice if the number of loops or distant stations is increased, the number of return wires 31 and points 6 will be correspondingly increased.

The terminals of resistance R are respectively connected by wires 29 and 33 to contact points 8, 9. Hence when circuit is closed by switch lever h^2 between these points, said resistance is short-circuited.

The advantages gained will now easily be followed. Upon the failure of one source of current, namely, A, a new source of current is instantly and automatically cut into the circuit. The strength of the original source being greater than that necessary merely for lamp feeding, the resistance R is interposed in the normal lamp circuit. Now instead of providing a second source of current of equal strength for use in case of failure of the first source, I am enabled to utilize a very much weaker source, first, because the resistance R is automatically cut out of circuit with this new and weaker source, and, second, because of the return wire 31, each of the loops to stations I, I' becomes individually short-circuited; or, in other words, signals may be sent from the transmitter of any loop without requiring the current to pass through all the loops in series, and the current path is therefore greatly shortened. Thus having two sources of current of different potentials, I bring the weaker source automatically into circuit upon the failure of the stronger source, and at the same time automatically adjust the circuit to suit said weaker source. When the source A of current is restored magnet H again becomes energized, and the circuit resumes its normal condition.

I claim:

1. The combination of a metallic circuit, a source of current therefor, means for transmitting current impulses in said circuit, means for translating said impulses, a second source of current, and means actuated by the failure of said first source for cutting in said second source, and means for varying the electrical conditions on said circuit.

2. The combination of a metallic circuit, a source of current therefor, means for transmitting current impulses in said circuit, means for translating said impulses, a second source of current weaker than the current from said first source, and means actuated by the failure of said first source for cutting in said second source, and means for reducing the resistance of said circuit.

3. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit, a ground connection from said metallic circuit, a transmitter in said ground connection, translating means in said metallic circuit actuated by said transmitter, a second source of current weaker than the current from said first source, and means actuated by the failure of said first source of current for cutting said second source into said circuit, and means for short-circuiting said metallic circuit around said transmitter.

4. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit, a ground connection from said metallic circuit, a transmitter in said ground connection, translating means in said metallic circuit actuated by said transmitter, a second source of current weaker than the current from said first source, and means actuated by the failure of said first source of current for cutting said second source into said circuit, and means for reducing the resistance of said circuit.

5. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit, a ground connection from said metallic circuit, a transmitter in said ground connection, translating means in said metallic circuit actuated by said transmitter, a second source of current weaker than the current from said first source, means actuated by the failure of said first source of current for short-circuiting said metallic circuit, means for reducing the resistance of said circuit and means for cutting said second source into circuit.

6. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit including a plurality of loops in series, a ground connection from each of said loops, a transmitter in each of said ground connections, translating means in said circuit actuated by each of said transmitters, a second source of current weaker than the current from said first source, means actuated by the failure of said first source, for individually short-circuiting each of said loops and means for cutting said second source into circuit.

7. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit including a plurality of loops in series, a ground connection from

each of said loops, a transmitter in each of said ground connections, translating means in said circuit actuated by each of said transmitters, a resistance in circuit with said translating means, a second source of current weaker than the current from said first source, means actuated by the failure of said first source for individually short-circuiting each of said loops, means for short-circuiting said resistance and means for cutting said second source into circuit.

8. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit, a ground connection from said metallic circuit, a transmitter in said ground connection, an electro-magnet normally energized in said metallic circuit, translating means in said circuit actuated by said transmitter, a second source of current weaker than the current from said first source, and circuit connections controlled by said electro-magnet for short-circuiting said metallic circuit around said transmitter and for cutting in said second source of current.

9. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit, a ground connection from said metallic circuit, a transmitter in said ground connection, an electro-magnet normally energized in said metallic circuit, translating means in said circuit actuated by said transmitter, a resistance in circuit with said translating means, a second source of current weaker than the current from said first source, and circuit connections controlled by said electro-magnet for short-circuiting said resistance, for short-circuiting said metallic circuit around said transmitter and for cutting in said second source of current.

10. The combination of a source of current, a ground connection at one pole thereof, a line metallic circuit including a plurality of loops in series, a ground connection from each of said loops, a transmitter in each of said ground connections, translating means in said circuit actuated by each of said transmitters, an electro-magnet normally energized in said metallic circuit, a second source of current weaker than the current from said first source, and circuit connections controlled by said electro-magnet for individually short-circuiting each of said loops, for short-circuiting said resistance and for cutting in said second source of current.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT GOLDSTEIN.

Witnesses:

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