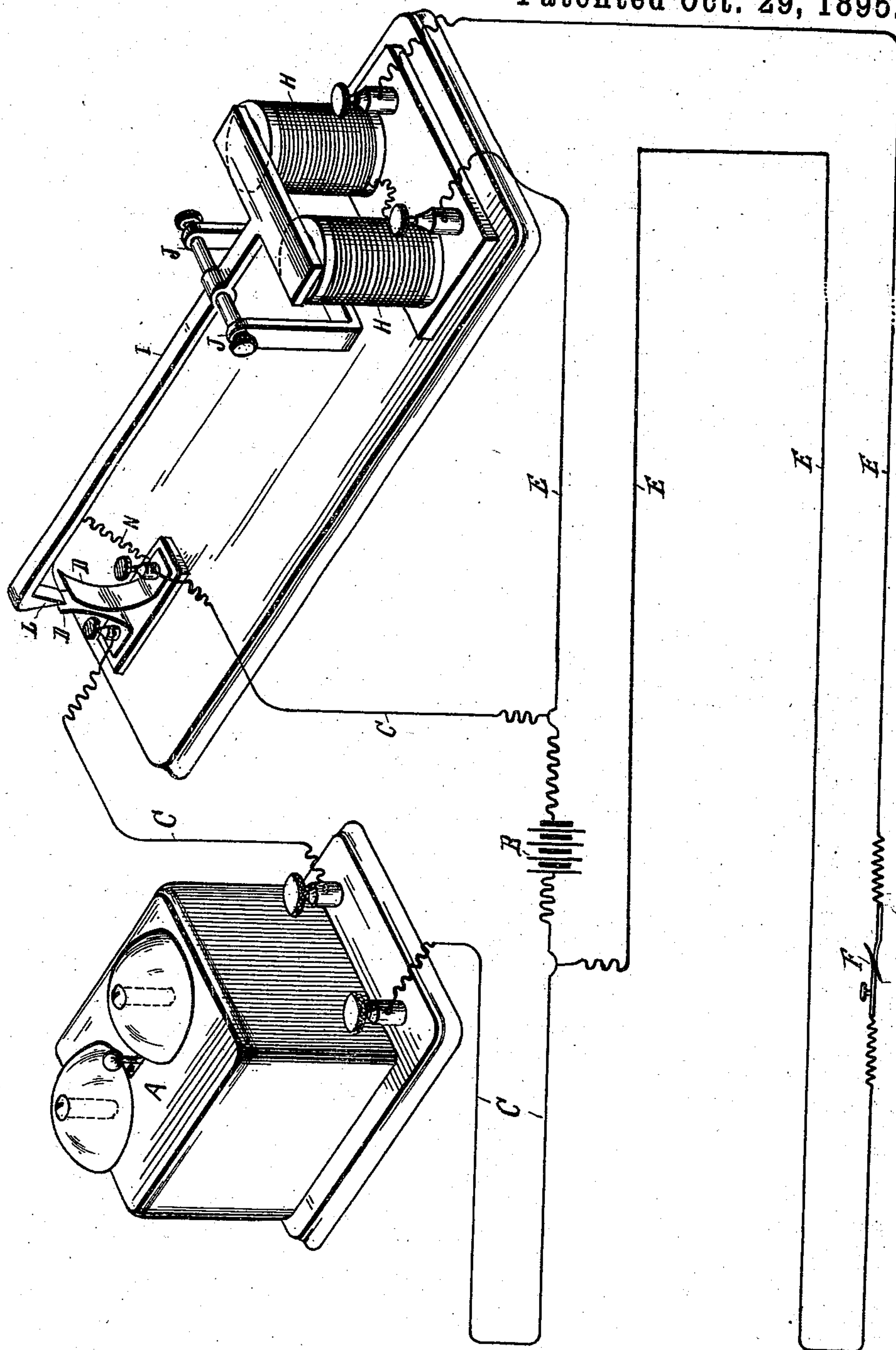


(No Model.)

M. W. PARRISH.
ELECTRIC TRAIN SIGNAL.

No. 548,924.

Patented Oct. 29, 1895.



WITNESSES

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INVENTOR.

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UNITED STATES PATENT OFFICE.

MYRON W. PARRISH, OF DETROIT, MICHIGAN, ASSIGNOR OF THREE-TENTHS
TO STEPHEN K. STANTON, J. H. CARSTENS, AND FREDERICK T. SIBLEY,
OF SAME PLACE.

ELECTRIC TRAIN-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 548,924, dated October 29, 1895.

Application filed December 24, 1894. Serial No. 532,830. (No model.)

To all whom it may concern:

Be it known that I, MYRON W. PARRISH, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented a new and useful Electric Train-Signal, of which the following is a specification.

This invention especially relates to that class of electric train-signaling apparatuses for conductors' use in signaling the engineer in which two circuits are employed, one of them being styled the "bell-circuit" and the other the "train-circuit."

The object of my invention is to insure greater certainty in the action of the signal and to enable the engineer to know when the bell rings by express design of the conductor or by accident or by lack of sufficient electric energy to prevent the bell from ringing when it otherwise should ring.

To this end I employ, in general terms, a bell-circuit, a train-circuit, a battery or other source of electric energy common to both of said circuits, the bell circuit being normally open and the train-circuit being normally closed, and both of said circuits never being nor remaining closed at one and the same time, and a magnetically-controlled circuit maker and breaker which is operated by the train-circuit and by virtue of its own peculiar construction and operates upon the bell-circuit to make and break the same, all as more particularly described and claimed below.

In the drawing forming a part of this specification is shown a diagrammatical view of my apparatus, the bell and the circuit maker and breaker being in perspective.

Referring to the lettered parts of the drawing, A is the bell or signal, which for clearness of description we will suppose to be in the cab of an engine, (not here shown;) B, the battery or other source of electric energy, and C C the bell-circuit. This bell-circuit is normally open, the severed or disconnected ends of the circuit-wires being attached, respectively, to metallic terminal plates D, which plates are separated, but contiguous to each other and preferably elastic, said bell-circuit, of course, being connected with the battery B. The train-circuit E E also connects with the battery B, and we will suppose it to be extended

throughout the train of cars. (Not here shown.)

As many circuit makers and breakers F are employed as necessary; but one will serve to illustrate the idea, this one F being for the conductor's use in the train to break the train-circuit with. This train-circuit is normally closed, as stated, and shown in the drawing. In this train-circuit E E are magnets H.

At I is an armature-lever between the metallic terminals D of the bell-circuit C C and the magnets H of the train-circuit E E. This armature-lever I is fulcrumed at J between its two ends and at a point sufficiently near the end next to the magnets to permit or cause the other end to overbalance it when the train-circuit is broken, and thus lower by gravity to contact with the circuit-terminals D to make the bell-circuit C C. Said heavier end of the armature-lever I is provided with a contact-point L, adapted to enter between the circuit-terminals D and contact with both to close the bell-circuit.

To always insure a certain and sufficiently close and steady contact of the contact-point L with the circuit-terminals D, which the jar of the engine or other causes might interfere with, I provide a spring N, attached to the end of the armature-lever I in a manner that the action of said lever to disconnect the contact-point L from the circuit-terminals D will be against a slight spring resistance.

The fulcrumed armature-lever I, with its contact-point L, the magnets H, and circuit-terminals D constitute the circuit maker and breaker.

While I design and have described my invention as especially adapted for train service, it can of course be employed on boats and for any and all signaling and alarm purposes desired.

As illustrated, the bell-circuit C C is open and the train-circuit E E is closed, as stated. This is the normal condition, both circuits never being closed at the same time, and when in this condition the bell A remains silent, since the magnets H hold one end of the armature-lever I in contact therewith, and the other end of said lever is disconnected from the terminals D of the bell-circuit. Any breaking of the train-circuit E E releases the

armature-lever I from contact with the magnets H, at which time the heavier end of said lever falls by gravity, contacting with the circuit-terminals D, and the bell A rings until the train-circuit is again closed. This breaking of the train-circuit E E might be caused either by express design of the conductor in operating the circuit maker and breaker F in one of the cars of the train, by act of train-robbers in cutting the circuit-wires between the cars, or by accidental separation of the train. The engineer can tell by the peculiar nature of the signal when the break is made by the conductor.

The only instance in which the bell might sound when the train-circuit has not been broken is in case the electric energy became too weak to cause the magnets H to hold the end of the armature-lever I in contact therewith, or at least continuously in contact, in which case (which by proper care and attention need never happen) the engineer would know the cause from the peculiar continuous and intermittent faint jingling of the bell, and the electric energy could be at once renewed. This feature is very important, since it obviates any necessity for the engineer to test the battery to ascertain if the electric energy is becoming too weak and which he might forget to do if there was any provision for so doing—as, for instance, in prior systems employing a key to be removed to break the circuit or other mechanical contrivances which have to be manipulated by hand to test the strength of the battery. It is further important, since the peculiar intermitting weak jingling of the bell shows the engineer a lack of sufficient electric energy which could be produced from no other cause, since it is the condition of the electric energy itself which operates to produce the signal, and this being automatic, by virtue of the construction and relation of parts, gives the warning without any need of forethought or attention on the part of the engineer. This results from the fact, as stated, that the armature-lever I is horizontally supported on a fixed fulcrum between its two ends, so that the end which is over the vertically-upright circuit-terminals overbalances the other end by gravity when the normally-closed circuit is broken, so that it nearly balances on said fulcrum and intermittingly rocks thereon when the electric energy becomes too weak, because the then weak attraction of the magnets for the end of the armature-lever over them intermittingly resists the attraction of gravity for the other end, and thus produces the continuous signaling of the nature described, and without any mechanical manipulation of parts by an operator and without the making or breaking of either circuit.

While I do not claim to be the first to employ a normally-open in connection with a normally-closed circuit in a system in which a breaking of the latter circuit operates to cause the former to sound a signal, yet so far

as I know such a system is new with me in which the armature-lever is so constructed and arranged in relation to the magnets and circuit-terminals that a weakened condition of the electric energy itself operates to give a warning signal to the engineer of the nature described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An electric signaling apparatus, comprising a circuit having separated contiguous circuit terminals projecting vertically upward from a horizontal base, a signal in said circuit, a closed circuit having signaling circuit-breakers therein at locations from which the signal is to be sent, a source of electric energy, and a fulcrumed overbalancing armature-lever adapted to operate to intermittingly contact with said circuit-terminals by an undue diminution of the electric energy, and to make positive contact by operating a circuit-breaker to break the closed circuit, substantially as set forth.

2. An electric signaling apparatus, comprising a normally closed circuit, magnets in said circuit, a normally open circuit and a signal in said circuit, and having the metallic separated circuit-terminals, a source of electric energy common to both circuits, and a lever between the magnets and circuit-terminals, said lever being fulcrumed at such a point that the end next the circuit-terminals will over-balance the other end, the latter of which is adapted to be held by the magnets in contact therewith, the heavier end of said lever being provided with a contact-point adapted to contact with the circuit-terminals by the breaking of the normally closed circuit, substantially as set forth.

3. An electric signaling apparatus, comprising a normally closed circuit and magnets in said circuit, a normally open circuit having the metallic separated circuit-terminals, a signal in said circuit, a source of electric energy common to both circuits, a lever between the magnets and circuit-terminals, said lever being fulcrumed between its two ends at such a point that the end next the circuit-terminals will over-balance the other end, the latter of which is adapted to be held by the magnets in contact therewith, the heavier end of said lever being provided with a contact-point adapted to contact with the circuit-terminals by the breaking of the normally closed circuit, and a spring attached to the overbalancing end of said lever in a manner that its disconnection from said circuit-terminals will be against a spring resistance, substantially as set forth.

In testimony of the foregoing I have hereunto subscribed my name in the presence of two witnesses.

MYRON W. PARRISH.

Witnesses:

HORACE B. PECK,
GEORGE B. DAVIS.