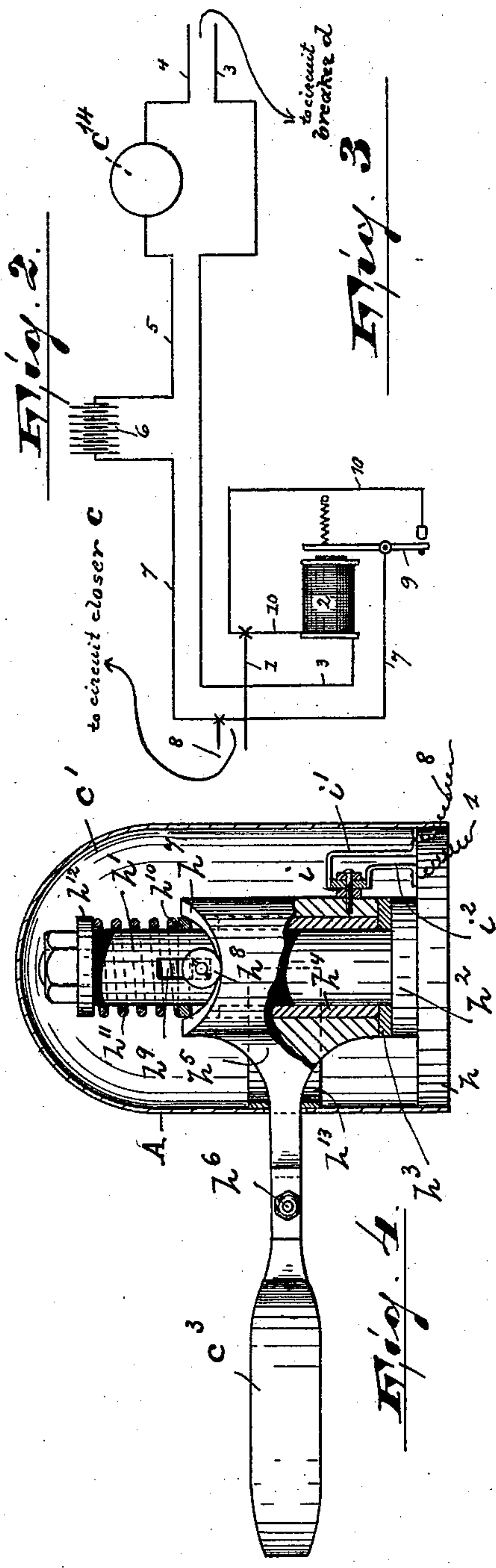
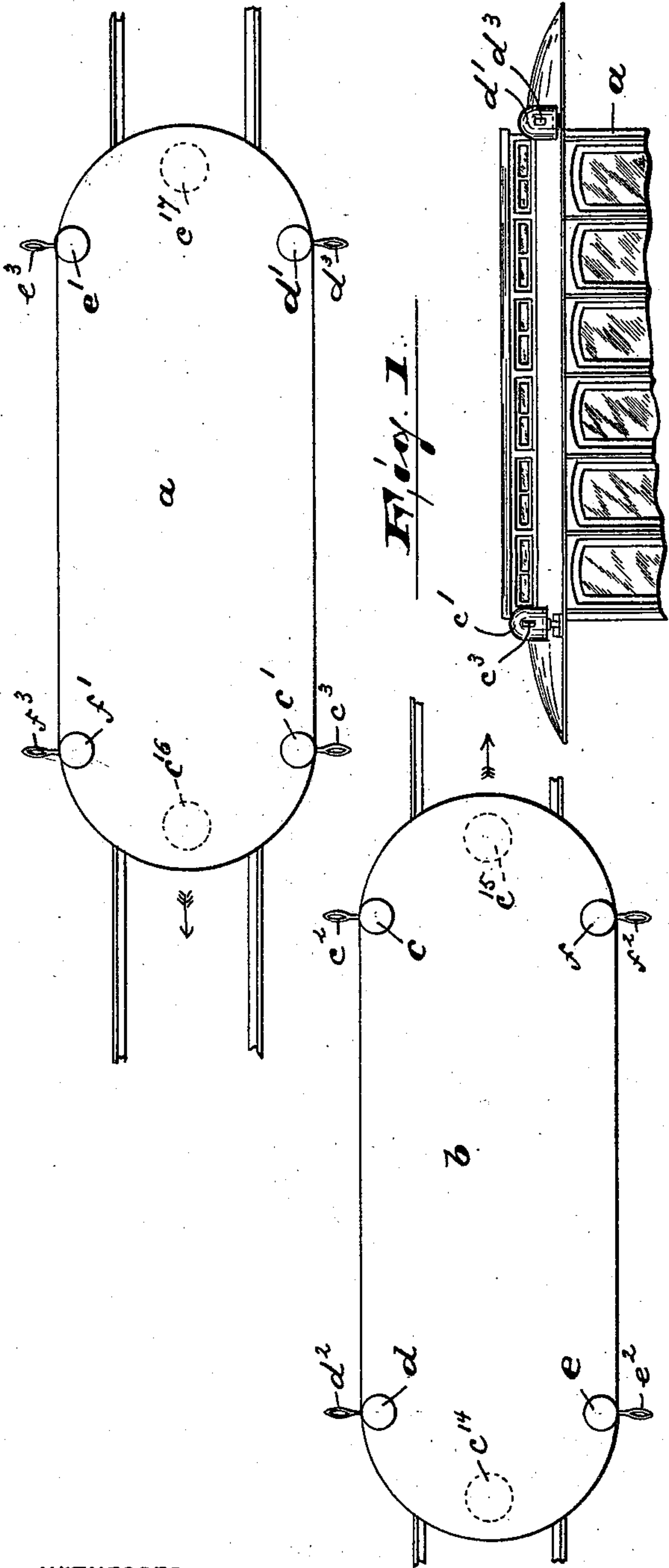


(No Model.)

F. HENIUS.  
AUTOMATIC DANGER SIGNAL APPARATUS.

No. 549,789.

Patented Nov. 12, 1895.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FREDERICK HENIUS, OF NEWARK, NEW JERSEY.

## AUTOMATIC DANGER-SIGNAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 549,789, dated November 12, 1895.

Application filed April 22, 1895. Serial No. 546,686. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK HENIUS, a citizen of the United States, residing in Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Automatic Danger-Signal Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a system and apparatus for signaling cars passing on parallel tracks in opposite direction, said apparatus being of simple and durable construction, automatic and reliable in operation.

The invention consists in the improved system of signaling cars passing in opposite directions on parallel tracks, (especially when the tracks are close together,) and also in the means and apparatus used with said system, and in the combination and arrangements of the various parts thereof, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and figures of reference indicate corresponding parts in each of the several views, Figure 1 is a diagrammatic view of two cars supposed to run in opposite directions and provided with my improved signaling apparatus; Fig. 2, a side elevation of a portion of one of the cars, illustrating the relative position of the signal operating and controlling apparatus; Fig. 3, a diagrammatic view illustrating the signaling-circuit of one of the cars; and Fig. 4 an enlarged detail view, partly in section, of one of the circuit closers or breakers.

In said drawings, *a* and *b* represent two cars supposed to run on parallel tracks in opposite directions, as indicated by the arrows in Fig. 1. The left-hand sides of the cars—that is to say, the inner sides with relation to each other—are provided at or about the front portions thereof with circuit-closers *c* and *c'*, while their rear portions are provided with

circuit-breakers *d* and *d'*. Said circuit closers and breakers are either secured to adjustable brackets on the roof, as illustrated in the drawings, or to brackets projecting from the sides of the car, as will be manifest, provided, however, that both circuit-closers are in one plane while the circuit-breakers are in another plane parallel to the first one, for purposes hereinafter specified. The right-hand sides of the cars (or their outer sides) are provided with similar circuit-closers *e* *e'* and circuit-breakers *f* and *f'*, but are reversed in relation to their respective positions—that is to say, the circuit-closers are on the rear and the circuit-breakers on the front portion of the car. The circuit or wire connection is such that the circuit-closers *c* and *c'* will operate the bells *c<sup>14</sup>* and *c<sup>17</sup>*, respectively, while the circuit-closers *e* and *e'* will operate the bells *c<sup>15</sup>* and *c<sup>16</sup>*. The circuit-breakers *d* and *d'* are in the circuit of the bells *c<sup>14</sup>* and *c<sup>17</sup>*, respectively, while the circuit-breakers *f* and *f'* are in the circuits of the bells *c<sup>15</sup>* and *c<sup>16</sup>*.

In Fig. 3 of the drawings is illustrated, in a diagrammatic view, the respective connections of the circuit-closer *c*, circuit-breaker *d*, and the electromagnet 2, battery 6, and bell *c<sup>14</sup>*.

When the circuit-closer *c* is operated—that is to say, an electrical connection is established between the wires 1 and 8, (said operation will be hereinafter more fully described,)—the current from the battery 6 passes through wire 5, bell *c<sup>14</sup>*, wire 4, to the circuit-breaker *d*, (which normally is closed,) from there through wire 3 into the electromagnet 2, from thence through wire 10, wire 1, circuit-closer *c*, and through wire 7 back to battery 6. The circuit is then closed and the armature 9 attracted by the electromagnet 2. Although the circuit-closer is now returned to its normal position, (by means hereinafter stated)—that is to say, the electrical connection between the wires 1 and 8 is broken—the electric circuit remains closed, as it is completed through wire 7, armature 9, and wire 10, said armature coming in electrical contact with wire 10. The bell continues to ring until the circuit is broken by means of the circuit-breaker *d*, (which after having performed its duty returns by mechanical means to its normal position, whereby the armature is released and the system



again ready for a repetition of the hereinbefore described operation.

To more fully comprehend the above, it is necessary to go into more complete details of a circuit-breaker (or closer) used in connection with the system described.

In Fig. 4 of the drawings is illustrated a circuit-closer consisting of an insulated base  $h$ , to which is secured, by means of its flanges  $h^2$ , a vertically-arranged shaft  $h'$ , which forms the bearing for the elongated sleeve  $h^5$ , (with intermediate bushing  $h^4$  and resting on washer  $h^3$ ,) provided on one side with a horizontally-arranged arm, to which is adjustably secured, by means of bolt  $h^6$ , a looped spring  $c^3$ , (see Figs. 1 and 4,) adapted to be engaged by the looped spring  $c^2$  of the circuit-closer  $c$  on the opposite car. The top of the sleeve  $h^5$  is provided with two oppositely-arranged inclined planes  $h^7$ , (the rear one not being visible in the drawings,) on which the wheels  $h^8$  are adapted to operate. Said wheels are fulcrumed on the rounded ends of a square shaft adapted to move up and down in the vertical slot  $h^9$  of the shaft  $h'$ . On said square shaft and surrounding the shaft  $h'$  is a collar or disk  $h^{10}$ , on which bears one end of the spiral spring  $h^{11}$ , the other end of which rests against the washer  $h^{12}$ , secured to the shaft  $h'$  by a nut or in any desired manner. On one side of the sleeve  $h^5$  is arranged and insulated therefrom a contact-block  $i$ , adapted when said sleeve is turned to engage the contact-springs  $i'$  and  $i^2$ , connected with the electric wires 8 and 1, respectively.

The device (except the spring loop) is inclosed in a circular box A, provided with an elongated horizontal slot, in which the spring loop-carrying arm is adapted to operate. To prevent dirt or rain from entering said box, a semicircular ring or band  $h^{13}$  is secured to the projecting arm of the sleeve  $h^5$  and covers the elongated slot in said box A.

The circuit-breaker is of similar construction to the circuit-closer above described, with the exception that when in normal position the block  $i$  is in contact with the springs  $i'$  and  $i^2$  (in that case connected to the wires 4 and 3 of Fig. 3) and becomes disengaged from said springs when the sleeve  $h^5$  is turned out of its normal position.

In operation, when the cars  $a$  and  $b$  are moving in opposite directions or either one has stopped to let off passengers while the other is passing by, the spring-loop  $c^2$  strikes against the spring-loop  $c^3$ , thus turning their respective sleeves  $h^5$  on their shafts  $h'$  and thus closing the circuits for the bells  $c^{14}$  and  $c^{17}$ , as hereinbefore described. During this op-

eration the spring-controlled wheels  $h^8$  are forced upward on the inclined plane  $h^7$  of shaft  $h'$ , and as soon as the spring-loops are released said wheels, by the action of the spring  $h^{11}$ , will force the sleeves back to their normal position. The bells continue to ring until the spring-loop  $d^2$  strikes against the spring-loop  $d^3$ , thus breaking the circuits of the respective bells  $c^{14}$  and  $c^{17}$ . Passersby are thus made aware of an approaching car and frequent accidents may thus be avoided.

I do not intend to limit myself to the precise construction shown and described, as various alterations are possible without changing the scope of my invention; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic danger signal for cars passing in opposite directions on parallel tracks, an electric bell circuit on each of the cars and means operated by opposite cars to control automatically the said bell circuits, substantially as and for the purposes described.

2. In an automatic danger signal for cars passing in opposite directions on parallel tracks, an electric bell circuit on each of the cars, a series of circuit closers and breakers in said bell circuits and means operated by opposite cars to control automatically the respective circuit closers and breakers, substantially as described.

3. In an automatic danger signal for cars passing in opposite directions on parallel tracks, an electric bell circuit on each of the cars, a series of circuit closers in said bell circuit, means operated automatically from opposite cars to control said circuit closers and means for automatically breaking the electric bell circuits, substantially as described.

4. A circuit closer for an automatic danger signal for cars (passing in opposite directions on parallel tracks), consisting of a stationary vertically arranged shaft, a spring controlled sleeve on said shaft, and provided with a horizontal arm, a spring loop adjustably arranged on and projecting from said arm, and means for respectively closing and breaking an electric circuit, when said sleeve is turned on its shaft, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of March, 1895.

FREDERICK HENIUS.

Witnesses:

ALFRED GARTNER,  
WM. D. BELL.