No. 767,140. PATENTED AUG. 9, 1904.

F. FEHER.

TRAIN SIGNAL.

APPLICATION FILED APR. 14, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

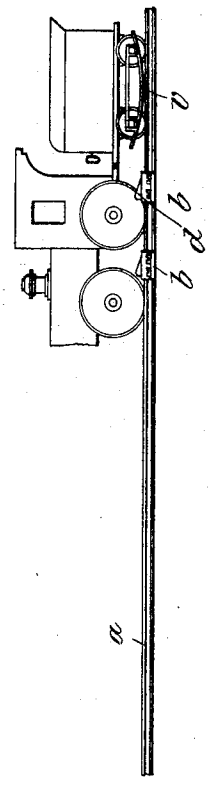


Fig. 1.

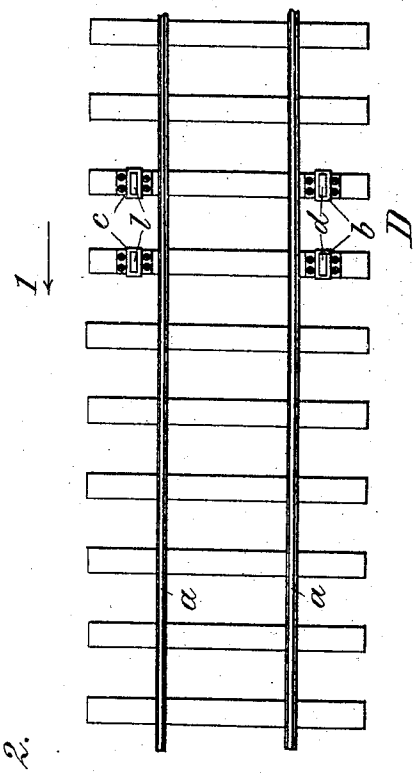
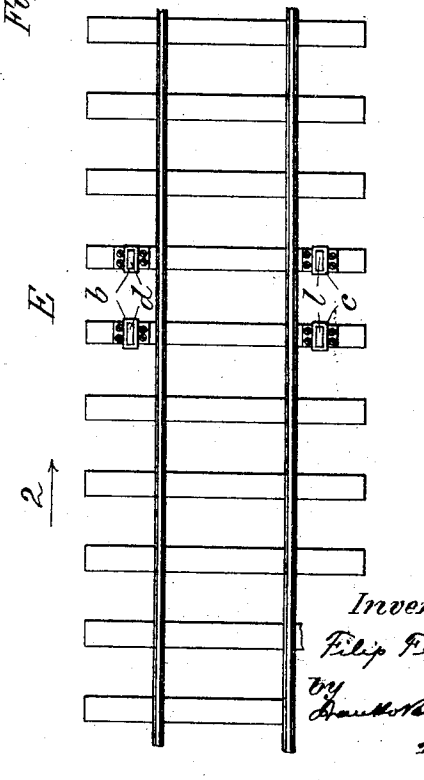


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

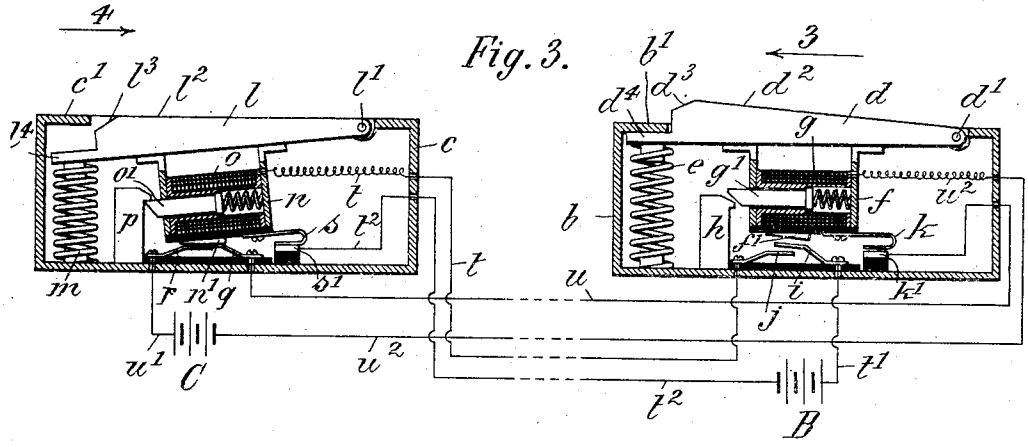


Fig. 4.

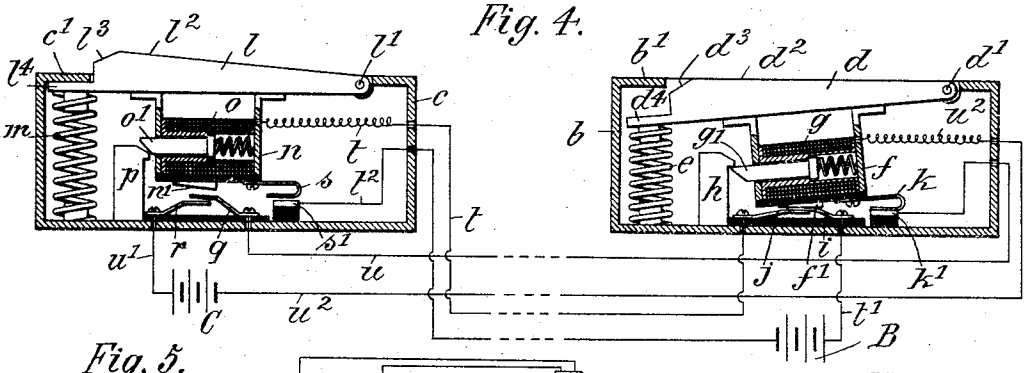


Fig. 5.

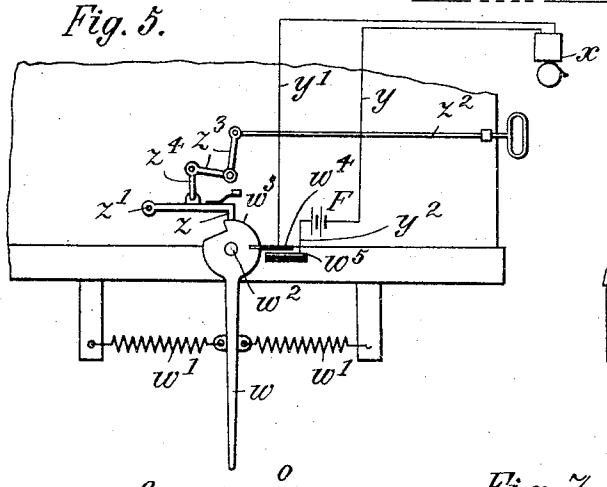


Fig. 6.

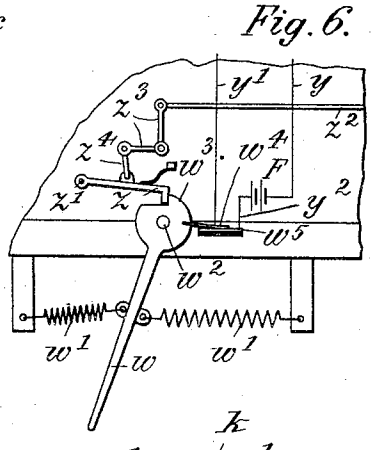
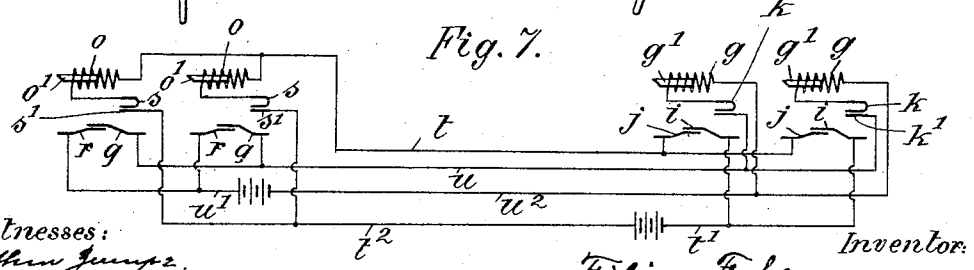


Fig. 7.



Witnesses:
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Fred. Unfricht.

Inventor:
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No. 767,140. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

FILIP FEHER, OF TRENTON, NEW JERSEY.

TRAIN-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 767,140, dated August 9, 1904.

Application filed April 14, 1904. Serial No. 203,154. (No model.)

To all whom it may concern:

Be it known that I, FILIP FEHER, a citizen of Austria-Hungary, residing at Trenton, New Jersey, have invented new and useful Improvements in Train-Signals, of which the following is a specification.

This invention relates to a train-signal for single-track railroads which is so constructed that trains traveling in opposite directions mutually exchange signals at opposite ends of the block, so as to avert collisions.

In the accompanying drawings, Figure 1 is a side view of the track provided with my improved signal; Fig. 2, a plan thereof with the engines omitted; Fig. 3, a vertical section through the signal delivery and receiving boxes; Fig. 4, a similar view showing the parts in a different position. Figs. 5 and 6 are side views of the alarm-actuating mechanism, showing the parts in different positions; and Fig. 7, a diagram of the currents with a duplicate arrangement of boxes.

The letters *a* represent the rails of a single-track railroad, provided at the end of each block with a signal-delivery box *b* on one side of the track and a signal-receiving box *c* at the opposite side. These boxes are arranged in proximity to the track and are somewhat higher than the rails. The box *b* is slotted at the top to accommodate a lever *d*, fulcrumed to the box at *d'*. This lever has an inclined tread d^2, a beveled offset d^3, and a flange d^4, projecting beyond said offset. A spring *e* normally raises lever *d*, the upward movement of the lever being limited by the engagement of its flange d^4 with the cover *b'* of box *b*. From the lever *d* depends a frame *f*, carrying the coil *g* and the spring-influenced core *g'* of a solenoid. This core is adapted to engage a catch *h* for locking lever *d* in its depressed position. The frame *f* is provided with an insulated projection *f'*, which is arranged vertically above a pair of overlapping contact-springs *i j*. When the lever *d* is swung up, the projection *f'* will clear spring *i* and cause contacts *i j* to open. When the lever *d* is swung down, the projection *f'* by pressing spring *i* against spring *j* will close the contacts. One pole of the coil *g* is connected to a yielding contact-spring *k*, which is pressed upon an insulated block *k'* when lever *d* is lowered and raised off said block when the lever is elevated.

The receiving-box *c* and its inclosed mechanism is a duplicate of box *b* and the mechanism described. The lever *l* of box *c* corresponds to lever *d* of box *b*. Lever *l* is fulcrumed at *l'*, has inclined tread l^2, beveled offset l^3, and flange l^4, adapted to engage cover *c'*. *m* is the spring that influences lever *l*, and *n* is the depending frame carrying the coil *o* and spring-influenced core *o'* of the solenoid. *p* is the catch, *n'* the projection on frame *n*, and *q r* are the contacts. *s* is the contact-spring secured to frame *n* and adapted to engage insulated block *s'*.

The contact-spring *j* is connected by line-wire *t* with one pole of coil *o*, while the spring *i* is connected by wires *t' t²* with block *s'*. In like manner the spring *q* is connected by line-wire *u* with block *k'*, while spring *r* is connected by wires *u' u²* with one pole of coil *g*.

By the mechanism described the delivery-box *b* of a station D is adapted to communicate with the receiving-box *c* of station E, which is situated at the same side of the track. So, also, the delivery-box *b* of station E is adapted to communicate with receiving-box *c* of station D at the other side of the track. Thus in Fig. 2 a train moving in the direction of arrow 1 will send a signal from box *b* of station D to box *c* of station E. On the other hand, a train moving in the direction of the arrow 2 will send a signal from box *b* of station E to box *c* of station D.

Each locomotive or its tender is provided at one side with means for sending the signal and at its other side with means for receiving the signal. The signal-sending device consists of a curved shoe *v*, (right side of Fig. 1,) which projects laterally beyond the track. This shoe is adapted to depress lever *d* of box *b* against the action of spring *e* and cause the lever to close the circuit. The signal-receiving device consists of a finger *w*, influenced by springs *w'* and adapted to be tilted by the beveled offset l^3 of lever *l*. The finger *w* turns on fulcrum w^2 of the tender

and is provided with a notched disk w^3, having a contact w^4. This contact is adapted to engage a fixed contact w^5 in circuit with the alarm x. When the finger is tilted into the position shown in Fig. 6, it will close this secondary circuit, the current traveling as follows: from battery F, through wire y, alarm x, wire y', contacts w^4 w^5, and wire y^2 back to the battery. Thus the alarm will be set off. The finger w is held in its tilted position by the engagement of the notched disk w^3 with a spring-influenced detent z. This detent is pivoted at z' and may be lifted out of engagement with the disk by a handle z^2, bell-crank z^3, and link z^4. The alarm will therefore continue to ring until the handle z^2 is manipulated to withdraw detent z from disk w^3, when the finger will be righted by its springs w' to reopen the secondary circuit.

In use the lever d of each signal-delivery box b is normally raised, while the lever l of each receiving-box c is normally depressed, Fig. 3. If a train travels in the direction of arrow 3, Fig. 3, its shoe v will depress lever d until the core g' becomes interlocked with catch h. The contact i j is thus closed, and the current will travel as follows: from battery B, through wire t', contacts i j, wire t, coil o, contacts s s', and wire t^2 back to the battery. The core o' will thus be drawn into the solenoid-coil to release catch p, and then the lever l will be thrown up by its spring m, Fig. 4. If a second train now approaches box c in the direction of arrow 4, Fig. 3, its finger w will strike the beveled offset l^3 of lever l to tilt the finger into the position shown in Fig. 6 and set off the alarm x in the manner already described. The second train is thus forewarned and is supposed to take a siding. The first train on passing box c will depress lever l and relock the same in its lowered position, (left side of Fig. 3.) In this way a circuit will be closed, the current traveling as follows: from battery C, through wire u', contacts r q, wire u, contacts k' k, coil g, and wire u^2 back to the battery. By this current the core g' will be drawn into the solenoid-coil g to clear catch h and permit the spring e to raise lever d into its normal position, Fig. 3.

The object of the contacts s s' and k k' is to open the circuits as soon as the current has performed its work, and thus prevent the batteries from becoming exhausted.

I prefer to duplicate the boxes b and c for each station, so as to avoid the failure of the system by the simultaneous arrival of oppositely-traveling trains at the signal-boxes. Fig. 7 shows the wiring for this double arrangement of the boxes, which will be readily understood, it being the same as already described with reference to the single boxes.

What I claim is—

1. A train-signal provided with a spring-influenced lever, a frame depending therefrom, a solenoid carried by the frame, a catch adapted to engage the solenoid-core, and a contact adapted to be closed by the frame, substantially as specified.

2. A train-signal composed of a pair of boxes, spring-influenced levers pivoted thereto, frames depending from the levers, solenoids carried by the frames, catches adapted to engage the solenoid-cores, contacts adapted to be closed by the frames, and circuits connecting the contacts of one box with the solenoid-coil of the other box, substantially as specified.

3. A train-signal provided with a spring-influenced lever, a solenoid, and a contact-spring carried thereby, a catch adapted to engage the solenoid-core, a contact adapted to be closed by the frame, and an insulated block adapted to be engaged by the contact-spring, substantially as specified.

4. In a train-signal, a spring-influenced lever, a frame depending therefrom, a solenoid carried by the frame, a catch adapted to engage the solenoid-core, and a contact adapted to be closed by the frame, combined with a second lever having a solenoid in circuit with the contact, a spring-influenced finger adapted to engage the second lever, a secondary circuit adapted to be closed by the finger, an alarm in said secondary circuit, and means for locking the finger in position, substantially as specified.

Signed by me at Trenton, New Jersey, this 9th day of April, 1904.

FILIP FEHER.

Witnesses:
SIGMUND ZEISLER,
ALBERT OSISLINNKYE.