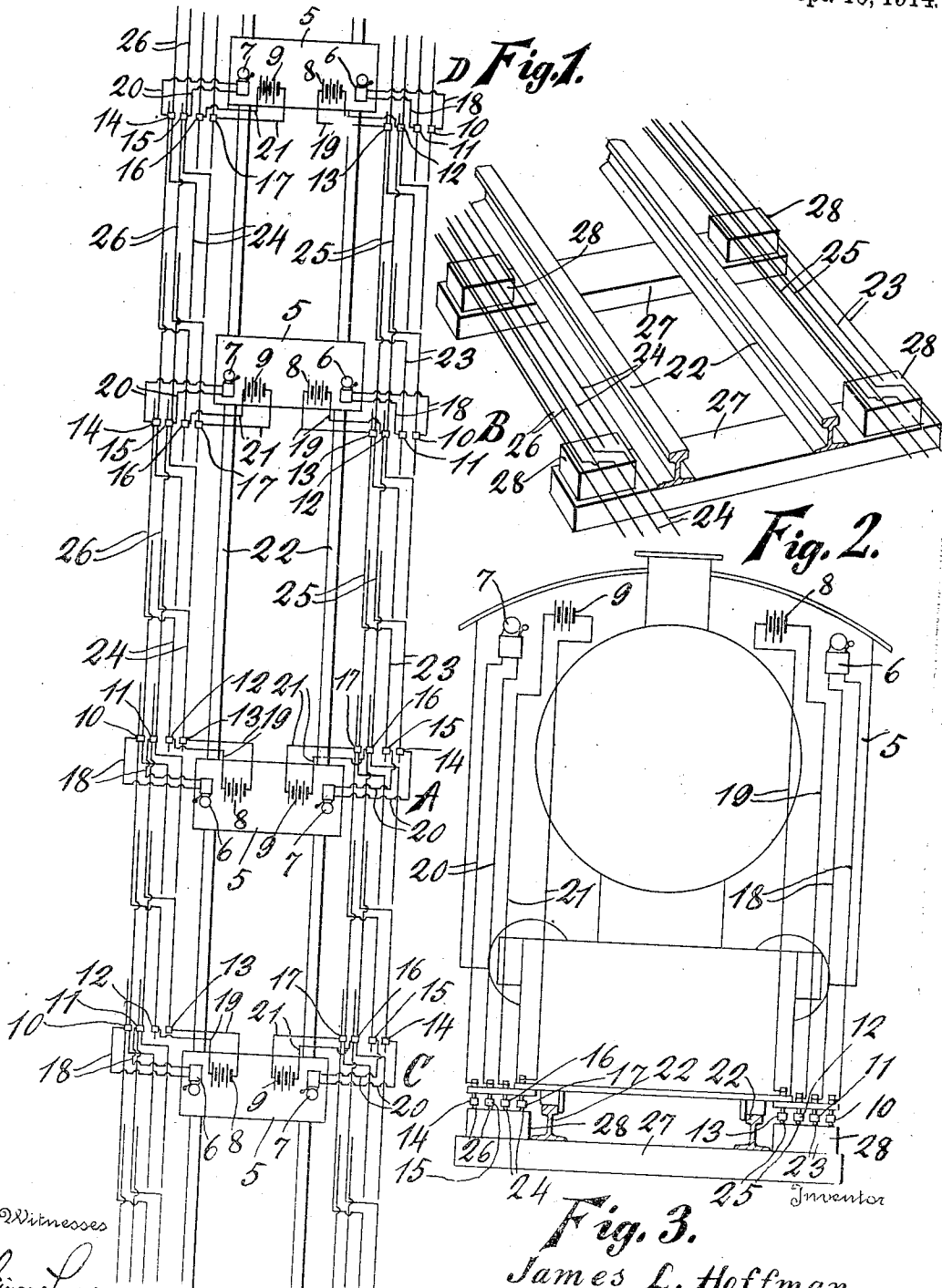


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RAILWAY SAFETY APPLIANCE.  
APPLICATION FILED JAN. 6, 1914.

1,110,326.

Patented Sept. 15, 1914.



Witnesses

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*Fig. 3.*  
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# UNITED STATES PATENT OFFICE.

JAMES L. HOFFMAN, OF CAMAS, IDAHO.

RAILWAY SAFETY APPLIANCE.

1,110,326.

Specification of Letters Patent.

Patented Sept. 15, 1914.

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To all whom it may concern:

Be it known that I, JAMES L. HOFFMAN, a citizen of the United States, residing at Camas, in the county of Fremont and State of Idaho, have invented certain new and useful Improvements in Railway Safety Appliances, of which the following is a specification.

This invention relates to railway safety appliances known as cab signals and characterized by a signal device located in the cab of the locomotive for the information and guidance of the engineer or motorman.

The invention has for its object to devise in a safety appliance of this kind a novel and improved arrangement of electric signals and means for operating the same, whereby, when two railway trains approach within certain distances of each other, a signal will be automatically given on both trains, thereby notifying both engineers of the fact of an impending collision and giving them time to slow down, stop their trains or take such other actions as the occasion may demand.

In order that the invention may be better understood, reference is had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a diagrammatic plan view illustrating the system; Fig. 2 is a perspective view showing the method of supporting the conductors, and Fig. 3 is an elevation, largely diagrammatic, showing the apparatus carried by the cab.

In carrying out my invention, every locomotive cab is provided with two electro-responsive signal devices, preferably bells, located respectively on opposite sides of the cab.

In the drawing the cab is shown diagrammatically at 5, and the bells at 6 and 7, respectively. In the cab are also located two batteries or other suitable sources of electrical energy 8 and 9, respectively.

The pilot of the engine carries, on each side, four circuit-controlling brushes, the brushes on one side being indicated at 10, 11, 12 and 13, respectively, and those on the other side at 14, 15, 16 and 17, respectively. The bell 6 is wired to the brushes 10 and 11, as indicated at 18; the battery 8 to the brushes 12 and 13, as indicated at 19; the bell 7 to the brushes 14 and 15, as indicated at 20, and the battery 9 to the brushes 16 and 17, as indicated at 21. Alongside the track

rails 22 are mounted parallel conductors with which the brushes hereinbefore described are adapted to contact.

The conductors on one side of the track are indicated at 23, and those on the other side at 24. These conductors are arranged in pairs of suitable length, and midway between the ends thereof the pairs are offset to one side and continued alongside the next pair.

The offset portions of the conductors 23 are indicated at 25, and those of the conductors 24 at 26. The conductors 23 are offset toward the rails, whereas the conductors 24 are offset in the opposite direction or outward from the rails. Thus a cross-connection is made and there are provided on each side of the track two pairs of conductors, the respective members of which are in alinement. The outer pairs are wiped by the outer brushes 10, 11, 14 and 15, and the inner pairs by the inner brushes 12, 13, 16 and 17. The herein described arrangement of conductors also divides the same into sections or blocks of suitable length which may be varied to suit local conditions. The distant ends of the offset portions 25 and 26 extend for a suitable distance closely alongside the next offset portions ahead at the starting point thereof. The conductors are strung over the ties 27 of the track, level with the rails 22, base blocks 28 being mounted on the ends of the ties, on top of which base blocks the wires are suitably made fast. To remove a tie all that is necessary to do is to unfasten the base blocks and replace and secure the same to the new tie. The conductors can be run through suitable conduits at crossings. Near switches and through stations suitable guards may be provided.

The operation of the system may be summarized as follows: Assuming a train is at the point A in Fig. 1, and that another train is approaching head-on from the point B. The brushes at A which engage the conductors 24 close the circuit of the battery to which said brushes are connected, and establish a connection with the bell 7 in the cab at B. The brushes at B which engage the conductors 25 close the circuit of the battery to which said brushes are connected, and establish a connection with the bell 6 on right hand side of the cab at A. Thus each cab is sending a signal to the other at the same time. Now, assuming that another

train is approaching the train at A from the point C. The brushes at C engaging the conductors 24 throw the bell 6 on the left hand side of the cab at A into circuit, thus warning the engineer in the cab at A that a train is approaching from the rear. The bell 7 on the right hand side of the cab at C is also thrown in circuit by the brushes at A engaging the conductors 25, thus giving a warning that there is danger ahead, and the train at B being at the same time warned. If still another train is approaching the train at B from the rear at the point D, the brushes at B engaging the conductors 24 make connection with the right hand bell 7 in the cab at D, thus indicating that a train is ahead. The brushes at D engaging the conductors 25 at this point make connection with the left hand bell in the cab at B, thus giving warning that a train is approaching from the rear.

From the foregoing it will be apparent that if a train is ahead, the right hand bell 7 will be sounded, and if a train is in the rear the left hand bell 6 will be sounded, and this is true regardless of the direction the train is heading. If two trains should be approaching head-on, the right hand bell would sound in each cab. If a train were running ahead of another train, the left hand bell in the cab of the train would sound showing that a train was approaching from the rear, and at the same time the right hand bell in the cab of the rear train would sound indicating a train ahead. Hence it would not be necessary for the engineer of the head train to bring the same to a stop, but rather to put on more speed is possible, while the engineer of the rear

train would receive a warning to stop and back up until his bell stopped ringing, and thus not take any chances as to whether the train ahead might be going toward or from him.

While the preferred embodiment of the invention has been shown, it is to be understood that many changes may be made without a departure from the spirit and scope of the invention as claimed hereinafter.

I claim:

A railway signal comprising independent electric circuits carried by the train, each circuit including a source of electric energy, contacts carried by the train and connected to the respective circuits, independent electro-responsive signal devices carried by the train, contacts carried by the train and electrically connected to the respective signal devices, sectional conductors mounted along the road-bed, said conductors being arranged in pairs, there being a pair of conductors for the contacts of each of the aforesaid circuits and a pair of conductors for the contacts of each of the aforesaid signal devices, each pair of conductors being offset intermediate the ends of a section, the conductors of the respective circuit contacts being parallel to the conductors of the corresponding contacts of the signal devices for a portion of a section, and in alinement for the remainder of the section.

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

JAMES L. HOFFMAN.

Witnesses:

FRANK BALL,  
EDWIN EDGLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."