

H. & L. R. JARVIS.
 TRAIN SIGNALING MECHANISM.
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1,030,307.

Patented June 25, 1912.

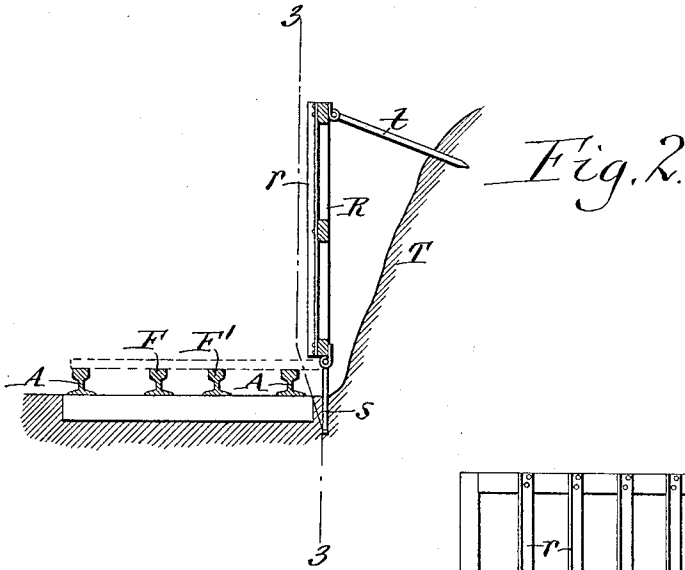
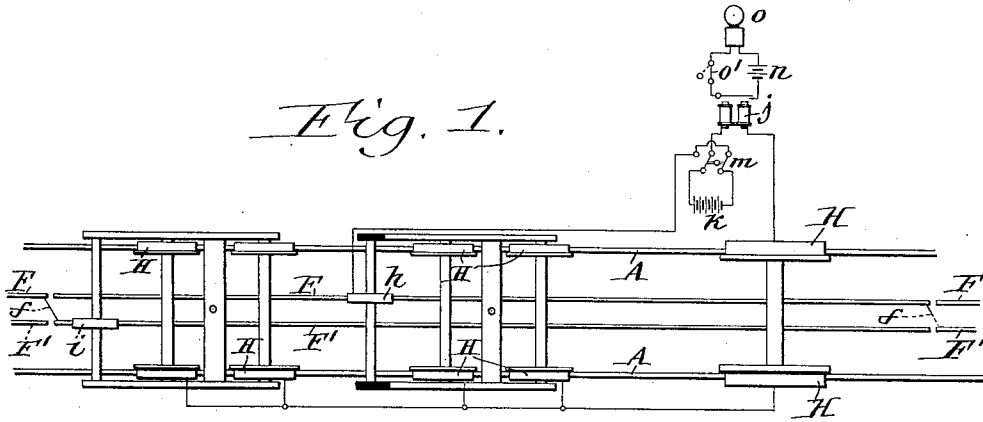
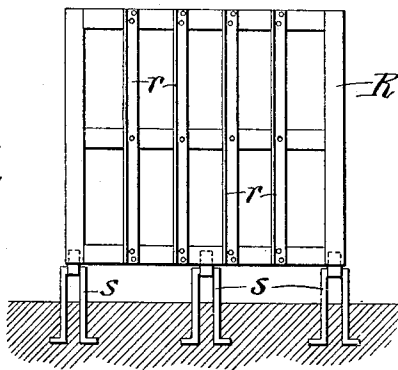


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TRAIN SIGNALING MECHANISM.

1,030,307.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HAROLD JARVIS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, and LOUIS RAYMOND JARVIS, a citizen of Canada, residing at Toronto, in the Province of Ontario and Dominion of Canada, have invented a new and useful Improvement in Train Signaling Mechanism, of which the following is a specification.

This invention relates to a train signaling mechanism and has the object to provide efficient and reliable means for preventing accidents in case of landslides or avalanches along the railway.

In the accompanying drawings: Figure 1 is a diagrammatic top plan view of the tender and locomotive of a train, the railway track, the stationary main electric conductors arranged lengthwise of the track, the contact wheels of the train which engage said conductors and electrical relay mechanism mounted on the train. Fig. 2 is a vertical transverse section, on an enlarged scale, showing the means for operating the train controlling mechanism by means of a landslide or avalanche adjacent to the railway track. Fig. 3 is a vertical longitudinal section taken in line 3—3, Fig. 2.

Similar characters of reference indicate corresponding parts throughout the several views.

A, A represent the two rails or tracks of the main line of the railway. Lengthwise of these several tracks and preferably between the same are arranged two longitudinal electrical conductors which are suitably insulated and which are divided at intervals into blocks, each block containing a pair of conductor sections F, F¹ and one of the conductor sections in each block being cross connected by a wire *f* or otherwise with the diagonally opposite section of the other conductor in an adjacent block.

That part of the train controlling mechanism which is mounted on the train preferably comprises a contact *h* constructed in the form of a wheel which engages one of the main electrical conductors, preferably the conductor F, and is pivotally supported upon one of the tender trucks but insulated therefrom so that it is out of electrical connection with the main railway tracks which

are engaged by the supporting wheels H of the respective truck. *i* represents another contact constructed in the form of a wheel which engages with the other main electrical conductor F¹ and which is also supported on one of the tender trucks but not insulated therefrom, so that the same is practically in electrical connection with the main railway tracks through the medium of the supporting wheels H of the respective tender, their axles and the truck frame.

j represents a relay mounted preferably on the locomotive of the train and having its coils arranged in an electric circuit which contains a battery or electric generator *k* and one end of which terminates at the insulated contact wheel *h* while the other end terminates at the supporting wheels H of the locomotive or other train wheels running on the track. A pole changer *m* is arranged in the circuit of the battery *k* and the relay *j*, and a local signaling circuit is arranged on the locomotive or other part of the train and controlled by said relay and embodies a battery *n* and an electric bell or gong *o*. This train controlling mechanism is so organized that when the train is in danger, the main circuit including the coils of the relay *j* and the main battery *k* will be closed and the relay will in turn close the local circuit, so as to operate the signal bell *o* and warn the engineer. When a train thus equipped is arranged on a track more than one block from adjacent trains, the circuit of the signal device of said first mentioned train will remain open and therefore indicate to the engineer of this train that he is safe. When two trains going in the same direction are arranged in adjacent blocks, the circuit of the train ahead will remain open and no signal will be given to the engineer of the same so that he will continue in his course, but the circuit of the following train will be closed and the engineer will be warned so that he may either slow down his train or stop to avoid a rear end collision with the train ahead. A switch *o*¹ is preferably placed in each local circuit containing the gong *o* and battery *n*, so that ringing of the gong may be stopped until the train ahead is off the block ahead. If the engineer of the following train after being informed of the presence of a train

in the next block ahead should decide to proceed slowly and enter the next following block ahead, he should first reverse the current of main signal circuit by means of the pole changer which for the time would stop his bell or gong from ringing, inasmuch as the main battery of the following train would be opposed to that of the train ahead. When, however, the following train enters the block ahead and its insulated contact wheel *h* engages the same conductor as that engaged by the insulated contact wheel of the train ahead, then the main batteries of both of these trains will be connected in series, thereby causing the signal devices of both of these trains to operate simultaneously and warn both engineers.

For the purpose of automatically signaling trains in the event of a landslide or an avalanche of snow covering the track, the following means are provided:—*R* represents a frame which is normally arranged upright adjacent to that side of the track on which the latter is in danger of land or snow slides and which is provided with an electrical contact facing of metal, preferably in the form of upright metal strips, wires or lattice work *r*, giving the whole the appearance of a grid. At its lower end this grid is pivoted on stakes, posts or other supports *s* secured in the ground, so that the grid or circuit closer can swing vertically. The grid is held in an upright position by means of one or more stakes or pins *t* pivoted horizontally at one end to the upper part of the grid while its opposite end is driven or secured in the bank *T* adjacent to the road bed. When the land or snow of the bank slides over the railway track it carries the grid with it, as shown by dotted lines in Fig. 2, whereby the metal

face of the grid produces an electrical connection between one or both of the main conductors *F*, *F*¹ and one or both of the tracks *A*, *A*¹ and thereby closes the main circuit of the signal devices of trains approaching the obstruction on the track in either direction and warns the engineers of the danger.

We claim as our invention:—

A train signaling mechanism comprising a railroad track upon which the train runs, an electric conductor arranged lengthwise of said track, an electric translating device arranged on the train and electrically connected with said track and conductor, and means for electrically connecting said conductor and track adapted to be operated by a landslide or avalanche and comprising a grid normally arranged upright adjacent to the side of the track and provided with vertical contact members which electrically connect said conductor and track upon moving said grid into a horizontal position over the track and conductor, posts supported on the ground at the side of the track and pivotally supporting the grid at its lower end and retaining stakes pivotally connected with the upper part of the grid and entering the bank of earth at the side of the road bed.

Witness our hands this 6th and 23rd day of August, 1909.

HAROLD JARVIS.

LOUIS RAYMOND JARVIS.

Witnesses to the signature of Harold Jarvis:

THEO. L. POPP,
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Witnesses to the signature of Louis Raymond Jarvis:

FRED. C. JARVIS,
WILFRED COOK.