E. UNVERRICHT.

TRAIN STOPPING DEVICE.

APPLICATION FILED JULY 11, 1911.

1,036,753.

Patented Aug. 27, 1912.

Fig. 1.

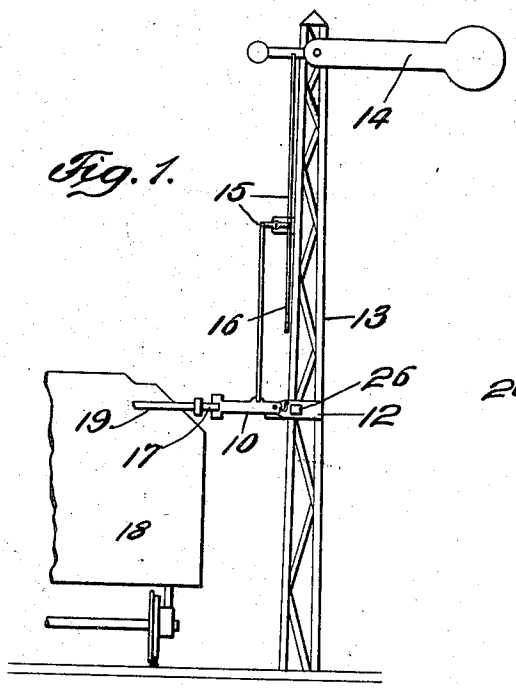


Fig. 2.

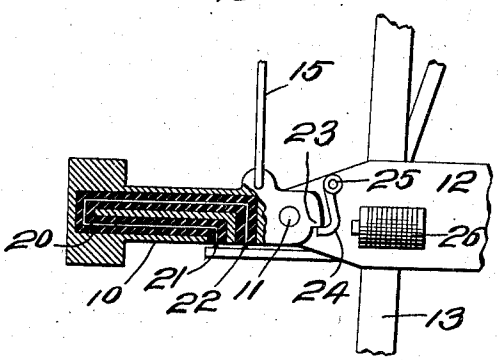
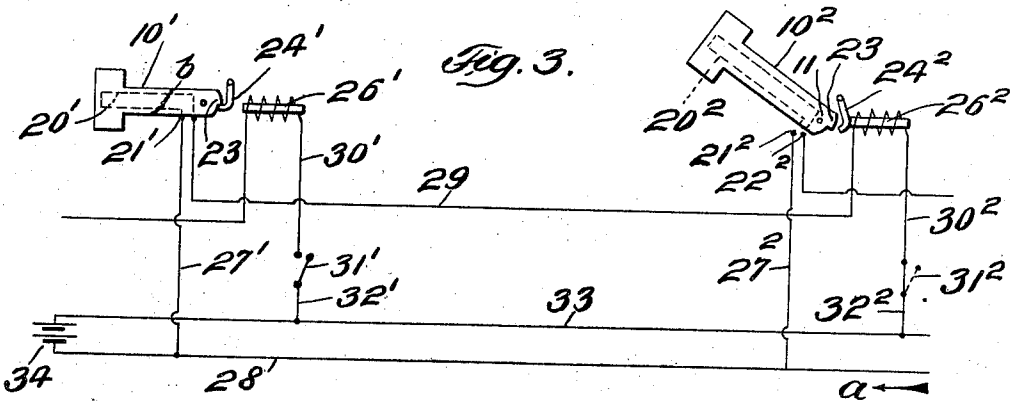


Fig. 3.



Witnesses:

Julius Thuz.

Daniel Holmgren.

Inventor

Eduard Unverricht

By his Attorneys

Briesen & Knupp

UNITED STATES PATENT OFFICE.

EDUARD UNVERRICHT, OF HAMBURG, GERMANY.

TRAIN-STOPPING DEVICE.

1,036,753. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed July 11, 1911. Serial No. 637,880.

To all whom it may concern:

Be it known that I, EDUARD UNVERRICHT, a citizen of the State and free city of Hamburg, Germany, and residing at Hamburg, Germany, have invented a new and useful Train-Stopping Device, of which the following is a specification.

This invention relates to railway safety devices, more particularly of that class in which a plurality of trips or train stops is provided along the track, said trips dividing the track into a corresponding number of safety zones. Each trip is adapted to either occupy a "danger" position or a "clear track" position. When in a "danger" position, the trip is projected into the path of certain devices projecting from the train or cars, which devices when engaged by the trip, will automatically apply the brakes to bring the train to an immediate standstill and thereby prevent a collision with another train or car. The several trips are so interrelated that a trip can only be raised into its "clear track" position if the neighboring trip is in its danger position, so as to effectively prevent collisions. For this purpose, connecting electric circuits are provided which control the trip locks, the circuit for each of such locks being closed by the lowered neighboring trip. In order to render my system protective even if such a neighboring trip should be damaged by an accident or otherwise, an electric conductor is carried along each trip that forms part of the circuit to be closed. This conductor is preferably made of brittle or otherwise readily disintegrable material, so that a breakage of the trip will unfailably cause an interruption of the conductor and a circuit cannot be closed for unlocking the neighboring trip.

In the accompanying drawing: Figure 1 is a front elevation of my improved train stopping device and of part of a coöperating car; Fig. 2 an enlarged elevation partly in section of the train stop proper, and Fig. 3 a wiring diagram.

The numeral 10 indicates a train stop or trip pivoted at 11 to a suitable plate 12 which is in turn secured to a semaphore post 13. The semaphore arm 14 is by a suitable link system 15 operatively connected to trip 10, while a rod 16 is engaged by suitable means for simultaneously operating said semaphore arm and trip. The latter is adapted to be engaged by correspondingly arranged means 17 provided on a train or car 18 and controlling the air brake conduit 19 thereof. These means consists preferably of frangible caps which are broken by striking trip 10 if the engineer should overrun a semaphore signal set against him. Along trip 10 extends a wire 20 of brittle metal or some other conductor adapted to be interrupted upon a breakage of the trip. When the latter is in its "danger" position (Figs, 1 and 2) the ends of conductor 20 are in engagement with a pair of stationary contacts 21, 22 while when the trip is raised, conductor 20 is out of engagement with said contacts. Trip 10 is provided with a nose 23 adapted to be engaged by a hook or keeper 24 pivoted at 25 to plate 12. Keeper 24 is made of iron and constitutes the armature of an electromagnet 26 also carried by plate 12. When this electromagnet is energized, it will attract keeper 24 to withdraw it from the nose 23 of trip 10 and thus permit a raising of the latter from the "danger" position into the "clear track" position. When electromagnet 26 is disenergized, keeper 24 is released and will by gravity engage nose 23, so as to prevent the raising of trip 10.

In Fig. 3 the electric connections between a pair of neighboring trips are shown, the numerals indicating said trips and coöperating parts being distingushed by the coefficents 1 and 2 respectively. The contact 21^1 of trip 10^1 is by wire 27^1 connected to the main 28 extending along the track to be protected. Contact 22^1 is by wire 29 connected to the electromagnet 26^2 of the neighboring semaphore. Electromagnet 26^2 is in turn by wires 30^2, 32^2 connected to the main 33, the mains 28, 33 receiving current from a suitable source of electricity 34. Between the wires 30^2, 32^2 are interpolated suitable circuit closing means which are illustrated by a conventional circuit closer 31^2. Assuming trip 10^1 to be lowered into the danger position, and a train to approach trip 10^2 in the direction of arrow *a*, the circuit closing means 31^2 are actuated, thereby establishing a circuit, the current of which flows from main 28 through wire 27^1, contact 21^1, conductor 20^1, and contact 22^1 of trip 10^1, thence through wire 29 to the electromagnet 26^2 of the neighboring trip 10^2, and finally through wire 30^2, circuit closing means 31^2 and wire 32^2 to main 33. In this way, electromagnet 26^2 is energized to at-

tract keeper 24^2, thereby freeing trip 10^2 so that the latter may be raised upon the proper operation of its rod 16. It will thus be seen that the giving of a clear track signal is only then possible when the neighboring trip is in the "danger" position, as otherwise contacts 21^1, 22^1 would be disconnected, thereby preventing electromagnet 26^2 from becoming energized. In order to prevent collisions even if the last named trip should have been damaged by an accident, etc., the trips 10 themselves are so constructed as to contain part of the circuit-forming elements described. If for instance trip 10^1 should be broken along the line *b* indicated in Fig. 3, conductor 20^1 would also be broken, so that a current could not be sent from wire 28 through wire 27^1 and conductor 20^1 to electromagnet 26^2. In this way the keeper 24^2 will hold trip 10^2 in its locked position, so that the train cannot pass trip 10^2 until trip 10^1 has been repaired or other appropriate steps have been taken for remedying the defect.

It is obvious that the fragile conductor 20 may be replaced by a liquid conductor or a conductor of other readily disintegrable material without departing from the spirit of my invention.

I claim:

1. A train stopping device comprising a first trip, an electric conductor carried thereby, a second trip, and locking means therefor which are controlled by said conductor.

2. A train stopping device comprising a first trip, an electric conductor extending along said trip, an electromagnet in circuit with said conductor, a second trip, and a keeper adapted to engage said last named trip and controlled by the electromagnet.

3. A train stopping device comprising a first trip, a conductor composed of a readily disintegrable material extending along said trip, a second trip, locking means therefor, and means controlled by said conductor for unlocking said second trip.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

EDUARD UNVERRICHT.

Witnesses:

ERNST GOPECA,

ERNEST H. L. MUMMENHOFF.