

W. BREWER.
TIME LIMIT TRAIN STOP.
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928,355.

Patented July 20, 1909.

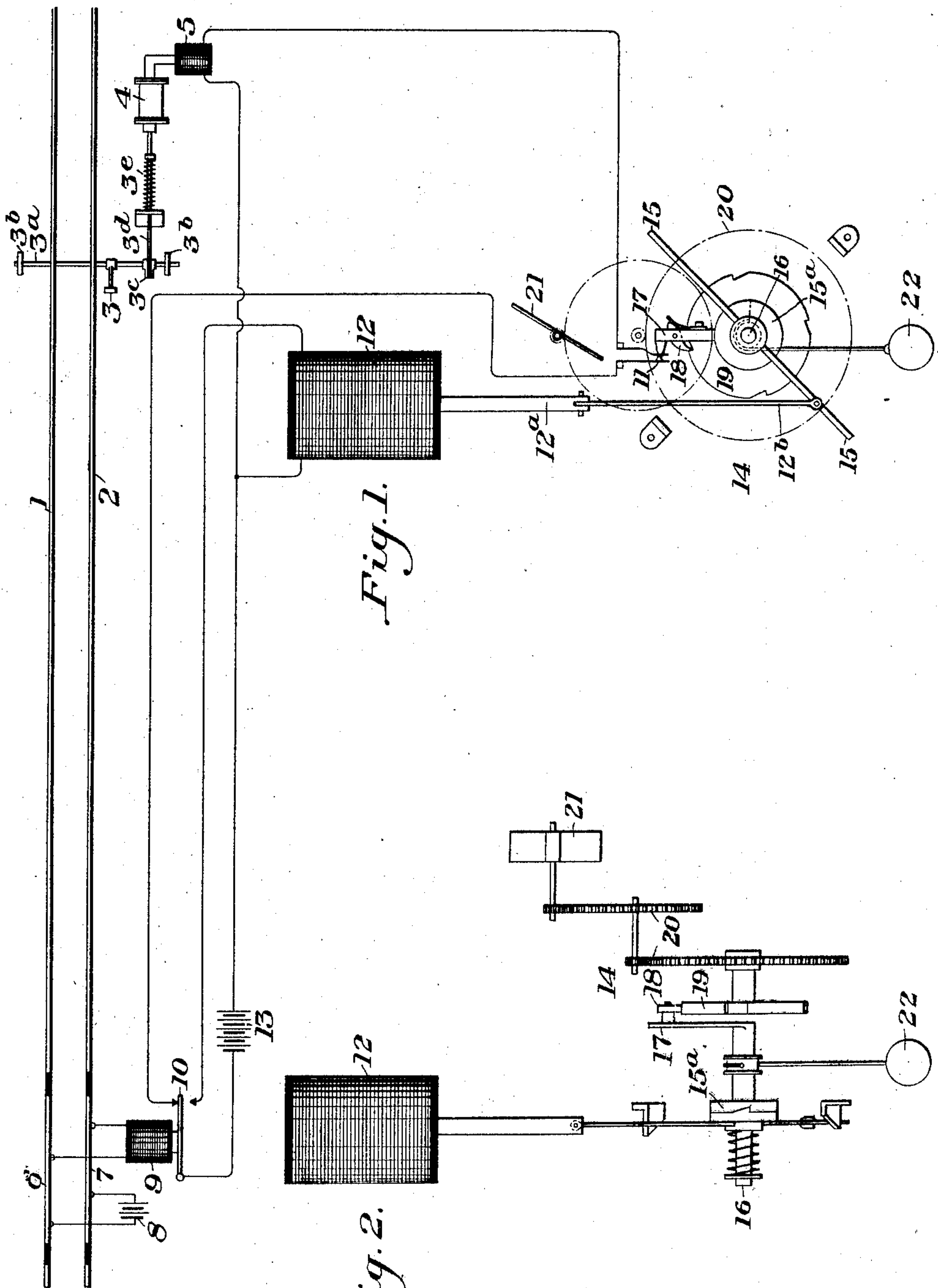


Fig. 1.

Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM BREWER, OF LONDON, ENGLAND, ASSIGNOR TO THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TIME-LIMIT TRAIN-STOP.

No. 928,355.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM BREWER, of 241 Victoria road, Alexandra Park, London, N., England, have invented a new and useful Improvement in Time-Limit Train-Stops, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to apparatus for regulating or checking the speed of railway and like vehicles at a determined point in the track.

It is customary at certain places on a railway system to instruct the drivers of locomotives to proceed at a speed which is not higher than a fixed amount, such places for example as junctions, crossings, the entrances to terminal stations and other places such as curves, where too high a speed would involve danger to the train. It is however difficult to enforce the observance of such regulations and in order that drivers shall be prevented from continuing at a rate of speed higher than the desired limit, according to my invention I provide the following arrangement.

At or about the place where the speed limit is to be applied I provide a device such for instance as a train stop, annunciator or switch of any suitable description located adjacent to the track, and at a selected distance in advance of this device I arrange a second device which, when the train passes, causes the first mentioned device to assume an operative position for a predetermined length of time. This period of time and the distance between the two devices are proportioned in accordance with the speed to which it is desired to limit the vehicle at the predetermined place. If the train proceeds over the portion of line immediately preceding the first mentioned device at a higher speed than the desired limit the device will not have returned to its inoperative position, and consequently will cause the brakes to be applied or an audible or visible signal to be given or will cut off the supply of power to the vehicle.

My invention may be carried out in many different ways depending upon the type of device which is employed adjacent to the track and the means adopted for operating the same. In order, however, that the nature of my invention may be fully understood, I will proceed to describe one method

by which it may be carried into effect with reference to the accompanying drawings, in which—

Figure 1 is a diagram representing my invention applied to a portion of a railway track and Fig. 2 is another view of a portion of the apparatus indicated in Fig. 1.

Referring now to Fig. 1, 1 and 2 indicate the track rails, 3 indicates the train stop adapted to be operated by means of compressed air, the admission and exhaust of which from the operating cylinder 4 is controlled by an electro-magnet 5 in such a manner that so long as the magnet is energized the stop is caused to assume an inoperative position and assumes an operative position when the magnet 5 is deenergized. While, as above stated, this track stop may be of various forms, I have shown it as consisting of an arm secured to a transverse rock-shaft 3^a journaled in suitable bearings 3^b, and having a crank arm 3^c which is connected by a rod 3^d with the piston of the cylinder 4. A spring 3^e acts upon said rod in a direction to normally hold the arm 3 in inoperative position and to return the arm to that position when the exhaust of cylinder 4 is opened. At a suitable distance in advance of the train stop I provide an insulated track circuit 6, 7; a battery 8 and a relay magnet 9 being connected across the insulated portion of the track circuit as shown. The relay magnet 9 operates a two-way switch 10, the circuit leading from one of the terminals of this two-way switch being connected through a second switch 11 to the magnet 5, while the circuit leading from the other terminal of the switch 10 is connected to a solenoid 12; the common terminal of the switch 10 is connected both to the magnet 5 and the solenoid 12 and a battery 13 is included in this connection. The time limit mechanism is indicated at 14 and comprises a lever 15 connected with the plunger 12^a of the solenoid 12 by a link 12^b. The lever 15 is secured by a clutch device 15^a to a shaft 16 having an arm 17 carrying a pawl 18 engaging with a ratchet wheel 19 driving a clockwork device 20 ending in a suitable fly 21. A weight 22 is provided for driving the clockwork mechanism and fly. In the position shown in the drawings, the solenoid 12 is deenergized, and the switch 11 is held closed by the arm 22, when, however, the solenoid 12 is ener-

gized and has moved the lever 15 and with it the arm 17, the switch 11 will open.

The operation of the device is as follows:

As soon as the train enters the insulated section of the track 6, 7 it will short-circuit the battery 8, whereupon the relay magnet 9 will be deenergized and the switch 10 will move so as to open the circuit leading from the battery 13 to the magnet 5 and close the circuit of the solenoid 12, which will consequently be energized by the battery 13. The deenergizing of the magnet 5 will cause fluid pressure to be admitted to the cylinder 4 and the train stop 3 will assume its operative position, and the energizing of the solenoid 12 will cause the time limit mechanism to be brought into operation. The plunger of the solenoid 12 being attracted will move the levers 15 and the arm 17 and the pawl 18 will pass over a certain number of the teeth of the ratchet wheel 19, thereby raising the weight 22 and setting the clockwork mechanism 20 and fly 21 in operation. The switch 11 will also be opened and remain open until the clockwork has run down and restored the parts to their original position. If now the train reaches that part of the track in which the train stop 3 is located, before the time limit mechanism 14 has returned to its original position, the train stop 3 will act to set the brakes and bring the train to rest in the well known manner. If, however, before the train reaches the train stop 3, the time limit mechanism 14 has returned to its original position, the switch 11 will again be closed and the magnet 5 will again be energized thereby permitting the train stop 3 to move to its inoperative position.

The distance between the insulating portion of the track 6, 7 and the stopping device 3 and the period during which the time limit device holds the switch 11 open, are so adjusted that the train stop 3, after having been moved to its operative position will be returned to its inoperative position before the train reaches the stop, provided that the train, in passing over the track from the insulated portion 6, 7 to the stop 3 does not exceed the predetermined speed. If, however, this speed is exceeded, the train will reach the stop before the latter has returned to its inoperative position and will consequently be brought to rest in the well known way.

I wish it to be understood that my invention in its broadest aspect does not reside in the details of construction of any of the particular devices used, which may be of any usual or well known type, and is not limited to devices of the character indicated. For instance, instead of the train stop 3 a device may be employed in the track to give an audible or visible signal in the cab of the locomotive or at any other desired place such

as the station master's office and in place of using an insulated portion of the track whereby when the train passes this point it short-circuits or otherwise de-magnetizes the relay magnet, any device, whether electrically or mechanically operated may be used for the purpose of bringing the train stop mechanism into operation.

The use of my invention is not limited to arresting or reducing the speed of a train but may be employed for recording an excessive speed of the train at a predetermined point. Any usual or suitable speed reducing signaling or controlling means may be employed on the train or vehicles to be actuated by the track stop.

I claim:

1. In apparatus of the character described, a device placed adjacent to the railway track to be engaged by a passing train, an actuator for said device, a magnet which controls the actuator, train operated means for controlling the circuit of the magnet to thereby cause the actuator to move the said device to operative position upon the approach of a train, and a timing device also controlled by said means and operating to cause the actuator to move the device back to inoperative position after a predetermined interval; substantially as described.

2. In apparatus for the purpose described, a track stop, an actuator therefor, means operated by the approach of a train or vehicle to cause the actuator to move the stop to operative position, and a timing device operating to cause the actuator to move the stop back to inoperative position after a predetermined time interval; substantially as described.

3. In apparatus of the character described, a track stop, an electrically controlled actuator therefor, an insulated track section in advance of the actuator, a relay connected across the said section, a double acting switch operatively connected to the relay, and controlling in part the circuit of the actuator controller, a second switch also controlling said circuit, electro-magnetic means controlled by the first named switch for effecting the operation of the second switch in one direction, and timing means for operating the second switch in the reverse direction; substantially as described.

4. In apparatus of the character described, the combination with a track stop, an actuator therefor, and means whereby the approach of a train will cause the operation of the actuator to move the stop from an inoperative to an operative position, of means for returning the stop to inoperative position, comprising a time limiting device, and motive means therefor which is rendered operative when the track stop is moved to operative position; substantially as described.

5. In apparatus of the character described,

the combination with a track stop, an actuator therefor, and means whereby the approach of a train causes the operation of the actuator to move the stop from an inoperative to an operative position, of means for returning the stop to an inoperative position after a predetermined time interval, comprising a time limiting device, a weight motor for operating the same, and means oper-

ated when the track stop is moved to operative position to re-wind the motor; substantially as described. 10

In testimony whereof, I have hereunto set my hand.

WILLIAM BREWER.

Witnesses:

WM. O. BROWN,
F. C. SMITH.