

C. P. THOMAS & W. McQUEEN.
 AUTOMATIC SAFETY DEVICE.
 APPLICATION FILED JAN. 8, 1914.

1,124,185.

Patented Jan. 5, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

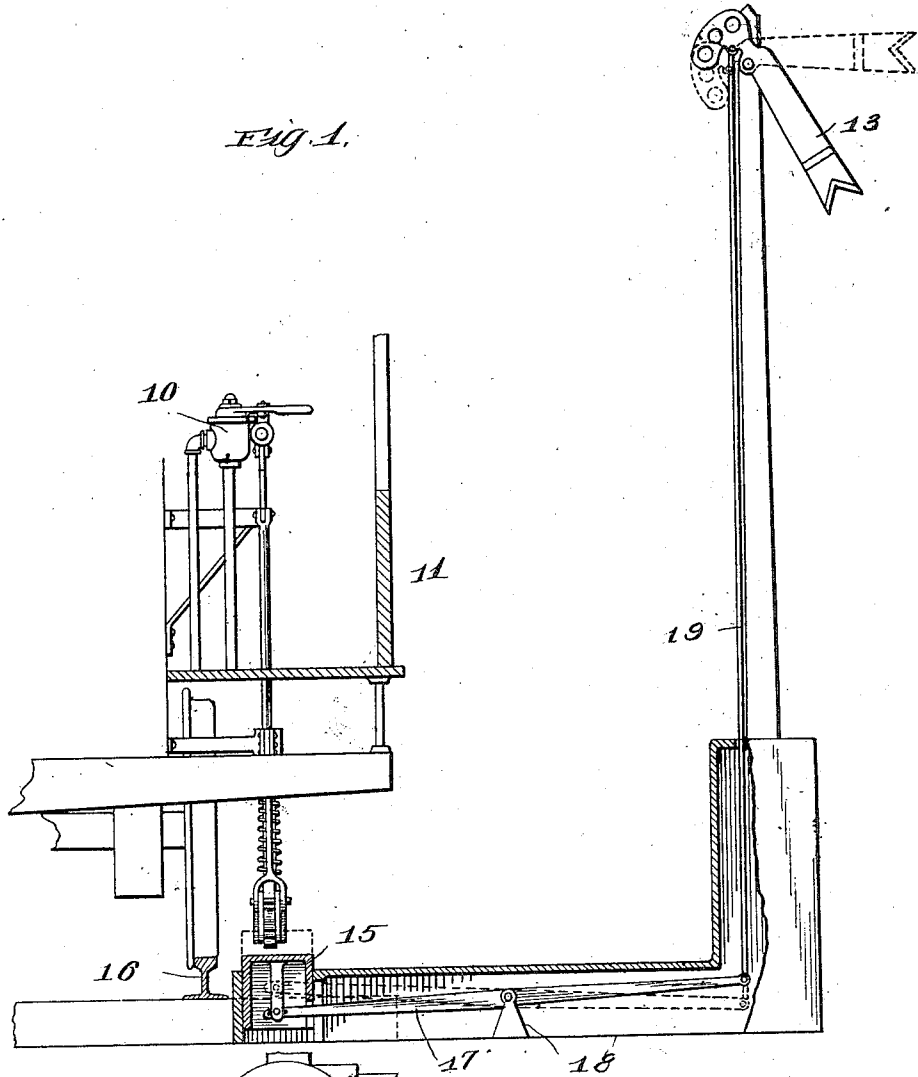
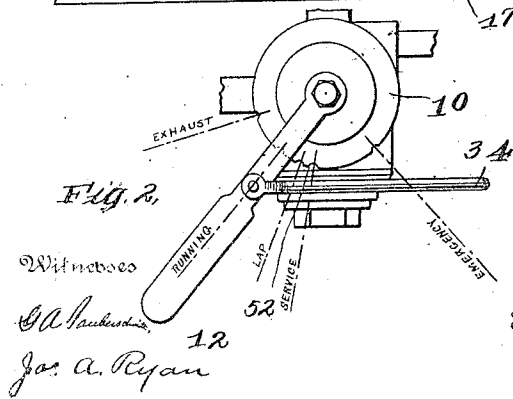


Fig. 2.



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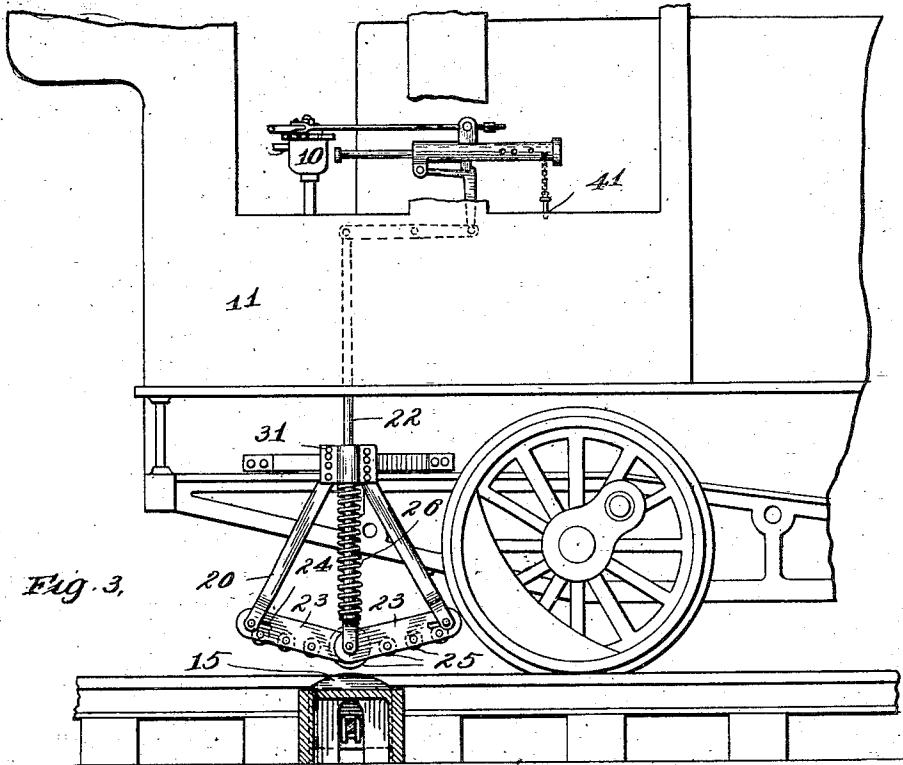


Fig. 3.

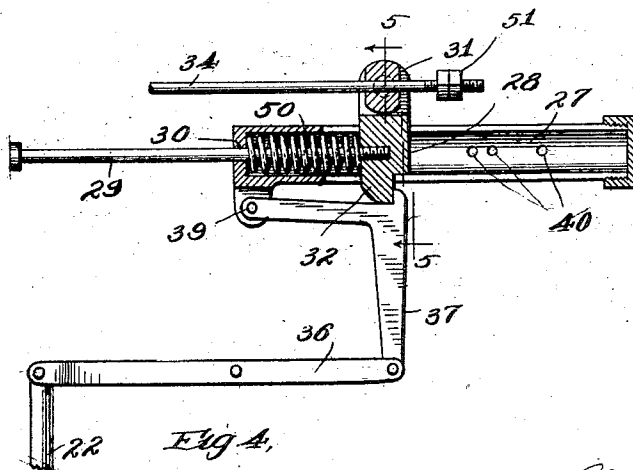


Fig. 4.

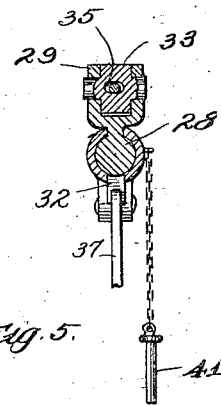


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES P. THOMAS AND WILLIAM McQUEEN, OF POMEROY, WASHINGTON.

AUTOMATIC SAFETY DEVICE.

1,124,185.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CHARLES P. THOMAS and WILLIAM McQUEEN, citizens of the United States, and residing at Pomeroy, in the county of Garfield and State of Washington, have invented certain new and useful Improvements in Automatic Safety Devices, of which the following is a specification.

This invention relates to improvements in automatic safety devices and is adapted for employment upon any form of railroad or other traction conveyance.

The primary object of the device is the prevention of collisions between different vehicles and trains and is adapted for employment in connection with the standard block signals used upon railways.

A further object is to provide cooperating means carried by the engine and the track and whereby the air brakes of the train will be automatically set whenever the train reaches a block signal which is set at "danger".

A further object is not only to automatically apply the air brakes at a danger signal but to at all times allow the same to be manually operated by the engineer as desired and also to predeterminedly fix the degree of brake application which would be effected by a tripping of the automatic means.

It will be apparent that this invention may be used upon open railways and upon bridges and at any desired points so as to either stop or merely slow down the moving train by reason of the prevailing necessary conditions thereat.

The structural mechanism is such as to not interfere with any of the ordinary operation of either the train or the block signals and is positioned so as not to interfere or hinder the workman upon the road and may be applied either upon steam or electric lines and is serviceable regardless of weather conditions.

With these objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application and in which like reference numerals designate corresponding parts throughout the several views: Figure 1 is a

partial sectional view taken transversely of a railroad track showing a portion of the engineer's cab and a semaphore signal with the present invention applied hereto. Fig. 2 is a plan view of an engineer's brake valve showing the automatic connecting rod. Fig. 3 is a side elevation of a portion of a locomotive and disclosing the trip device and the automatic means connected to the brake valve lever. Fig. 4 is a central transverse sectional view taken through the automatic cylinder, and, Fig. 5 is a vertical transverse sectional view taken upon the line 5-5 of Fig. 4.

It being desired to provide a safety device whereby the air brakes of the train are automatically operated, it will be noted that the engineer's valve 10 illustrated in the engine cab 11 is manually controlled by the engineer by means of the hand lever 12 and by which the air is controlled for either the running, lapped, service, or emergency application of the brakes as shown in Fig. 2. The semaphore signal as shown in Fig. 1 provides the semaphore arm 13 pivoted to the post 11, the arm being illustrated in the "danger" position by dotted lines. A trip block 15 positioned vertically movable adjacent the track 16 is operatively connected to the outer end of the lever 17 fulcrumed at 18 and having its opposite end pivoted to the connecting rod 19 of the semaphore arm. From this construction, the trip block 15 it will be noted, will always remain in its inoperative or lowermost position when the semaphore arm is down or at "clear" position of the signal. The upward or "danger" position of the arm likewise elevates the trip block 15 and thereby positions the same for operative contact by the automatic brake actuating trip carried by the train or locomotive.

The cab 11 is provided with downwardly projecting diverging arms 20 upon a frame 21 through which is slidably mounted the connecting rod 22 which in turn is pivoted to the toggle levers 23 having a sliding connection with the arm 20 by means of the slots 24. The levers 23 along their lower sides as well as the pivotal connecting point of the rod 22 are provided with anti-friction rollers 25 while a spring 26 encircling said rod normally projects the same and said rollers in a lowered position for resilient actuation by the trip block 15 when said block is elevated during the "danger" posi-

tion of the semaphore arm while obviously the entire train carried mechanism passes unobstructed thereover during the "clear" position of the arm.

A cylinder 27 positioned in the engineer's cab has the piston 28 slidably mounted therein and carrying a rod 29 extending through an end perforation 30 of the cylinder while said piston is provided with the bearing ears 31 projecting through the longitudinal slot at one side of the cylinder while the lug 32 projects through the opposite slot thereof. A swivel block 33 is mounted in said lugs 31 having the rod 34 loosely-mounted and slidably positioned through the central slot 35 of the block while one end of said rod is pivoted to the engineer's brake lever 12.

The trip lever 22 is pivoted at its upper end to the rock bar 36 which in turn is pivoted to the latch 37 adapted to engage the lug 32, it being noted that said latch is angular in form having one end pivoted as at 39 to an end of the cylinder 27.

In the latched position as shown in Figs. 3 and 4, it will be apparent that the engineer's lever 12 may be freely actuated manually to any position of the brake valve. Perforations 40 are provided transversely through the cylinder 27 and correspond to the lapped, service and emergency positions of the brake valve so that upon the positioning of the stop pin 41 with either of said sets of openings, the automatic tripping of the latch carries the piston 28 and consequently the rod 34 and brake lever 12 to the pre-determined position and thereby automatically places the brake valve in any of the operative positions which it is possible to assume.

The operation of the device will be clear from the above description in that a setting of the semaphore arm 13 at "danger" elevates the trip block 15 into the path of movement of the train-carried trip rollers 25 so that an engagement between said members imparts a sudden upward impulse to the rod 22, thus tilting the rock bar 36 and releasing the latch 37 from the piston carried lug 32. Such release of said piston allows the spring 50 within the cylinder 27 and encircling the rod 29 to force the piston forwardly in the cylinder until the same contacts the stop pin 41 which by way of example, we may assume is positioned through the middle set of perforations 40. Such movement of the piston engages the block 33 with the lock nuts 51 adjacent the end of the brake rod 34 and thus shifts said rod longitudinally, thereby bringing the brake valve lever to the service application position indicated by the notch 52 in Fig. 2. By the positioning of the pin 41 through the other sets of perforations, the movement of the piston 28 is stopped to place the brake valve lever

as may be desired. After such an automatic actuation of the lever and brakes, a reverse movement of the lever 12 by the engineer returns the piston 28 to its normally latched position with the latch 37 engaging the lug 32 and placing the brake lever in the running position as illustrated.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it is nevertheless to be understood that minor changes may be made in form, proportion and details of construction without departing from the spirit and scope of the invention as set forth in the appended claims.

What we claim as new is:—

1. A safety device comprising a shiftable trip block positioned adjacent a track, a semaphore signal operatively connected to said block, a resilient trip adapted to be carried by a train, an air brake valve, a cylinder having opposite longitudinal slots, a spring-actuated piston within said cylinder, a lug and spaced ears carried by said piston and projecting through said cylinder slots, a releasable latch engaging said lug and operatively-connected with said trip, a swivel block carried by said spaced ears, and connecting means between said block and valve.

2. A device of the class described comprising a trip, an air brake valve, a cylinder having longitudinal slots therein, a spring-actuated piston within said cylinder, a projecting lug and oppositely-positioned spaced ears carried by said piston and projecting through said slots, a releasable latch engaging said lug and operatively connected with said trip, a perforated block trunnioned between said ears, connecting means between said block and valve, and adjustable means carried by said cylinder for limiting the movement of said piston and valve.

3. In combination, a trip, an air brake valve, a cylinder having opposite longitudinal slots extending part way of its length and having one closed end and a perforation through the other end thereof and also having a plurality of transverse perforations therethrough, a piston slidable within said cylinder, a lug and spaced ears carried by said piston and projecting through said slots, a perforated block trunnioned in said ears; a rod slidably-positioned through said block perforation and having one end operatively-connected to said sleeve adjustably positioned nuts upon the free end of said rod adapted for engagement with said block, a headed rod carried by said piston and slidably-positioned through the end projection of said cylinder, an expansion spring within said cylinder encircling said headed rod and bearing upon said piston, a releasable latch pivoted to one end of the cylinder and engaging said lug and operatively-connected

to said trip, and a stop pin for the piston positioned in the desired ones of said transverse perforations.

4. In combination, a trip, a brake valve, a cylinder having longitudinal slots extending for a portion of its length, a piston slidable within said cylinder, a lug and spaced ears carried by said piston and projecting through said slots, a perforated block trunnioned in said ears, a rod slidably-positioned through said perforation and connected to said valve, adjustable block-engaging nuts upon said rod, a headed rod carried by said

piston, an expansion spring within said cylinder encircling said headed rod, and resiliently engaging said piston, and a releasable latch engaging said lug and operatively-connected to said trip. 15

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES P. THOMAS.
WILLIAM McQUEEN.

Witnesses:

E. V. KINGKENDALL,
C. ALEX McCABE.