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MEANS FOR STOPPING TRAINS.

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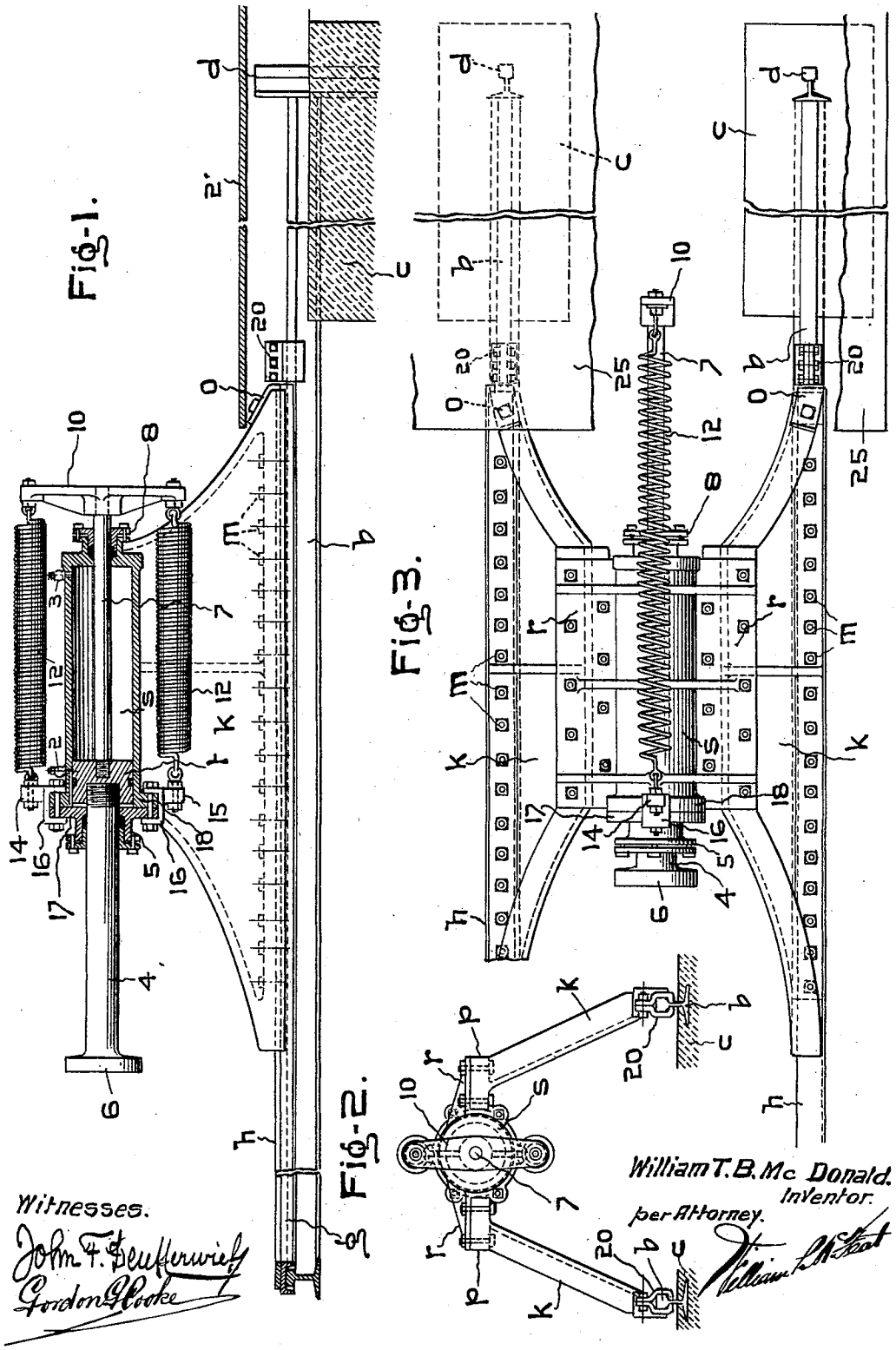


Fig-1.

Fig-3.

Fig-2.

Witnesses.

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MEANS FOR STOPPING TRAINS.

1,077,286. Specification of Letters Patent. Patented Nov. 4, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM T. B. McDONALD, of Granby, in the Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Means for Stopping Trains; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to the buffers or bumping posts commonly used at railway terminals for preventing runaway trains or trains the speed of which is not checked in time owing to the lack of judgment, or for other reasons, from being wrecked or wrecking the station or doing other damage beyond the established end of the line.

The object of the invention is to provide a buffer which will absorb the inertia of the moving train by converting the weight of the forward part of the train into frictional resistance and supplementing the frictional resistance by a resistance increasing progressively until a rigid stop is presented.

The invention may be said briefly to consist of a buffer mounted slidably on the rails at a terminal and comprising in combination with a rigidly secured terminal stop, a pair of elongated friction members bearing slidably on the rails and adapted to have the forward end of a moving train run thereon, such buffer being adapted to offer a resistance increasing proportionately to the displacement of the buffer; and the invention further consists of the combinations, particular arrangement and specific construction of parts hereinafter described, and pointed out in the claims.

For full comprehension, however, of my invention reference must be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate the same parts, and wherein:

Figure 1 is a side elevation of means for stopping trains constructed according to my invention; Fig. 2 is an end elevation thereof; and Fig. 3 a plan view.

The rails of the terminal of a railway are indicated at *b*. These rails have their flanges embedded in concrete, *c*, for a distance of about fifteen feet from their terminal ends, and a pair of heavy rail sections, *d*, are set vertically in the concrete in positions with rails *b* abutting against them, the top ends thereof projecting a short distance above the rails *b*. Elongated shoes rest on the rails *b* and said shoes consist preferably of channel irons *g* with treads in the form of straps *h* rigidly secured on top of the channel irons. These shoes are preferably about sixty feet in length and fit the rail heads with a snug sliding fit. A pair of heavy cast webs *k* are secured rigidly to the shoes, preferably by bolts *m*, and the ends of the tread-straps *h* are bent over the ends of the webs and secured thereto as at *o*, such webs having flat tops *p* upon which flanges *r* extending laterally from the opposite sides of a cylinder are bolted. This cylinder is hermetically sealed and contains a piston *t* and the opposite ends thereof are provided with vacuum and compression safety valves 2 and 3, respectively. A plunger bar 4 projects from the front of the piston through a stuffing box 5 in the front cylinder-head and has a buffer head 6 formed or secured rigidly thereon. In order to yieldingly retain the piston, and with it the buffer normally in its extreme forward position a bar 7 is secured rigidly to the rear side of the piston and projects through a stuffing box 8 in the rear cylinder head, the rear end thereof having a vertically disposed cross-arm 10 connected at its opposite ends by a pair of helical springs 12 to a pair of bosses 14 and 15, respectively, formed upon brackets 16 clamped to the flanges 17 and 18 presented by the cylinder-end and cylinder-head. This sliding buffer, constituted by the shoes, webs, cylinder and the parts contained within and carried by the cylinder, and buffer head, is preferably located about forty feet from the rigid stops *d*, and the appliance is held semi-rigidly in that position by a pair of blocks 20 clamped to the rails, while a platform 25 extends over the stops *d* and the space between them and the blocks 20.

The hermetically sealed cylinder is for the purpose of insuring a proper confinement of the air under compression as well as but quite independently of the prevention of leakage of the atmosphere into the vacuum end of the cylinder, while the piston being of course effectively packed as usual maintains this hermetical sealing of the ends of the cylinder relatively to each other whatever its position may be.

Operation: Under normal conditions the appliance rests in contact with the blocks 20 which are, as above stated, about forty feet from the rigid stops, and at the outer edge of the platform. When a train exceeds the point at which it should stop it will run onto the shoes and if its excessive travel is sufficient but the inertia comparatively low the train may be stopped by the resistance offered by the air compressed in the forward end of the cylinder augmented by the vacuum created in the rear end of the cylinder. If, however, the train runs at a comparatively high speed over the predetermined point at which it should stop, it will run onto the shoes and into contact with the buffer head and drive the piston to the forward end of the cylinder, and, continuing, the inertia will carry the entire appliance and the blocks 20 with it until the friction of the shoes sliding upon the rails while sustaining the locomotive and whatever portion of the train runs upon the shoes, stops the train, the platform giving away. The trains of approximately five hundred tons and crossing the terminal at a speed of, say, thirty miles an hour will be stopped well within the forty feet allowed, but heavier trains or trains crossing the terminal at a higher speed may possess sufficient inertia to reach the rigid stops *d* before being arrested. The fact that the terminal ends of the rails *b* and the vertical rails *d* are embedded in a solid foundation of concrete or cement supplements the resistance of the air compressed and vacuum created in the buffing cylinder and the friction of the shoes on the rails sufficiently to absorb the inertia of and bring to a stop practically the heaviest train running over the terminal at maximum speed.

What I claim is as follows:—

1. In a railway train stopping appliance, the combination of a pair of rails, a buffer mounted slidably upon the rails, and a pair of blocks clamped to and under certain conditions slidable along the rails contiguous to the buffer.

2. A railway train stopping appliance comprising a pair of shoes supported slidably upon the rails at a railroad terminal, and a buffer mounted yieldingly upon the shoes in position to receive the impact of a train running upon the shoes, such buffer comprising a pair of webs mounted rigidly upon the shoes, a hermetically sealed cylinder rigidly secured upon the webs, a piston in the cylinder, a bar secured to the piston and projecting through one of the cylinder heads and having a buffing head at its outer end; and pressure and vacuum safety valves located at the opposite ends of the cylinder.

3. A railway train stopping appliance comprising a pair of shoes supported slidably upon the rails at a railroad terminal, and a buffer mounted yieldingly upon the shoes in position to receive the impact of a train running upon the shoes, such buffer comprising a pair of webs mounted rigidly upon the shoes, a hermetically sealed cylinder rigidly secured upon the webs, a piston in the cylinder, a bar secured to the piston and projecting through one of the cylinder heads and having a buffing head at its outer end; pressure and vacuum safety valves located at the opposite ends of the cylinder, and means returning the said last mentioned means to normal position.

4. A railway train stopping appliance comprising a pair of shoes supported slidably upon the rails at a railroad terminal, and a buffer mounted yieldingly upon the shoes in position to receive the impact of a train running upon the shoes, such buffer comprising a pair of webs mounted rigidly upon the shoes, a hermetically sealed cylinder rigidly secured upon the webs, a piston in the cylinder, a bar secured to the piston and projecting through one of the cylinder heads and having a buffing head at its outer end; a bar secured to the opposite side of the piston and projecting through the cylinder head at that side and having a cross-arm at its outer end, a pair of lateral bosses upon the cylinder, and helical spring connected between the ends of the cross-arm and the bosses.

5. In a railway train stopping appliance, the combination of a pair of rigid stops at a railroad terminal, a pair of rails abutting the stops, a buffer mounted slidably upon the rails and spaced from the stops.

6. In a railway train stopping appliance, the combination of a pair of rigid stops at a railroad terminal, a pair of rails abutting the stops, a buffer mounted slidably upon the rails and spaced from the stops; a pair of blocks clamped to the rails contiguous to the buffer.

7. In a railway train stopping appliance, the combination of a pair of rigid stops at a railroad terminal, a pair of rails abutting the stops, a buffer mounted slidably upon the rails and spaced from the stops, and a platform covering the space between the rigid stops and the slidable buffer.

8. In a railway train stopping appliance, the combination of a pair of rigid stops at

a railroad terminal, a pair of rails abutting the stops, a buffer mounted slidably upon the rails and spaced from the stops; a pair of blocks clamped to the rails between the rigid stops and buffer and contiguous to the buffer; and a platform covering the space between the rigid stops and the slidable buffer.

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

WILLIAM T. B. McDONALD.

Witnesses:
LILLIAN HAWKES,
ALEXINA JONCAS.

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