(No Model.) 2 Sheets—Sheet 1.

M. HALEY.

BUMPING POST.

No. 562,297. Patented June 16, 1896.

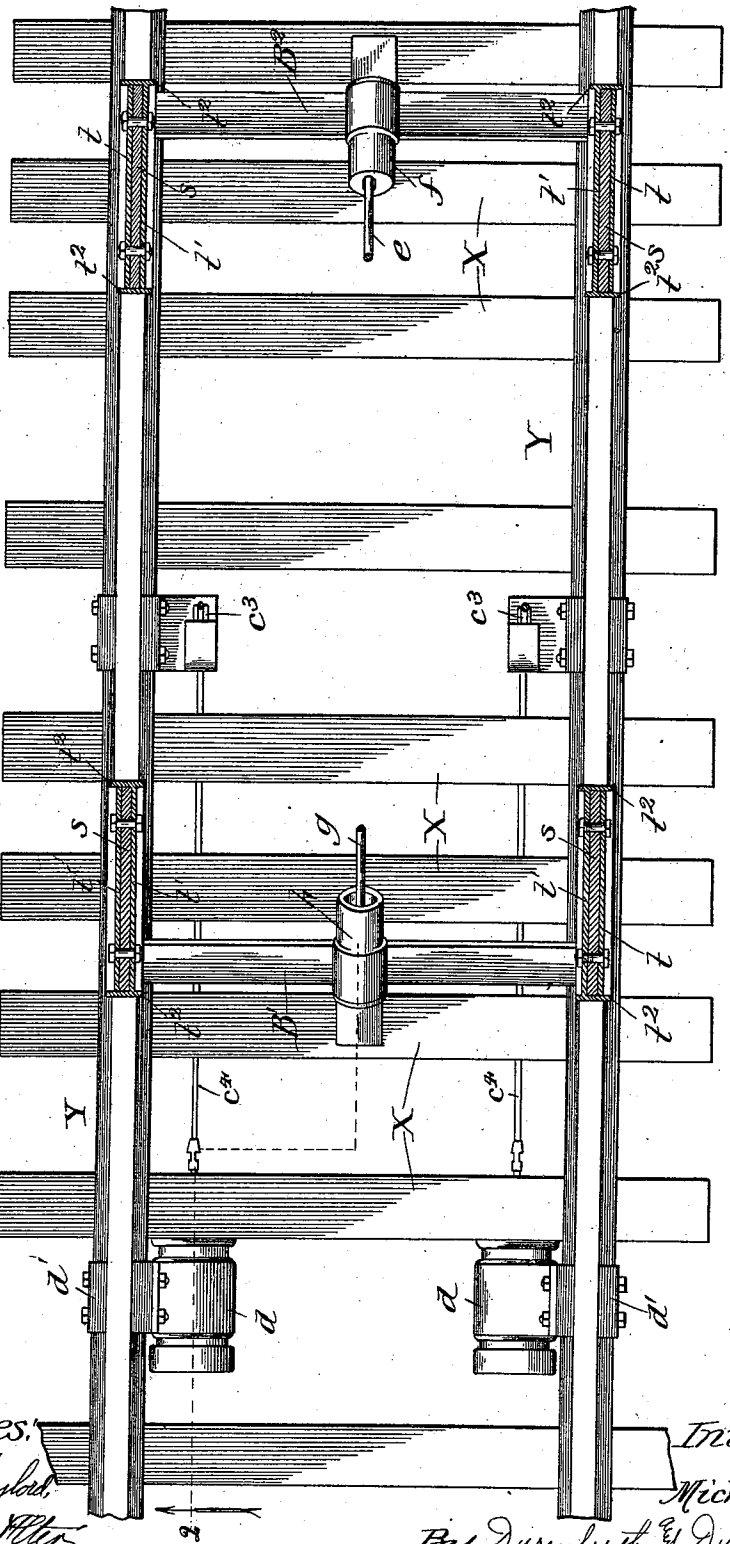

Fig. 1.

Witnesses:
Chas. E. Gaylord,
Lute J. Miller.

Inventor:
Michael Haley,
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(No Model.) 2 Sheets—Sheet 2.

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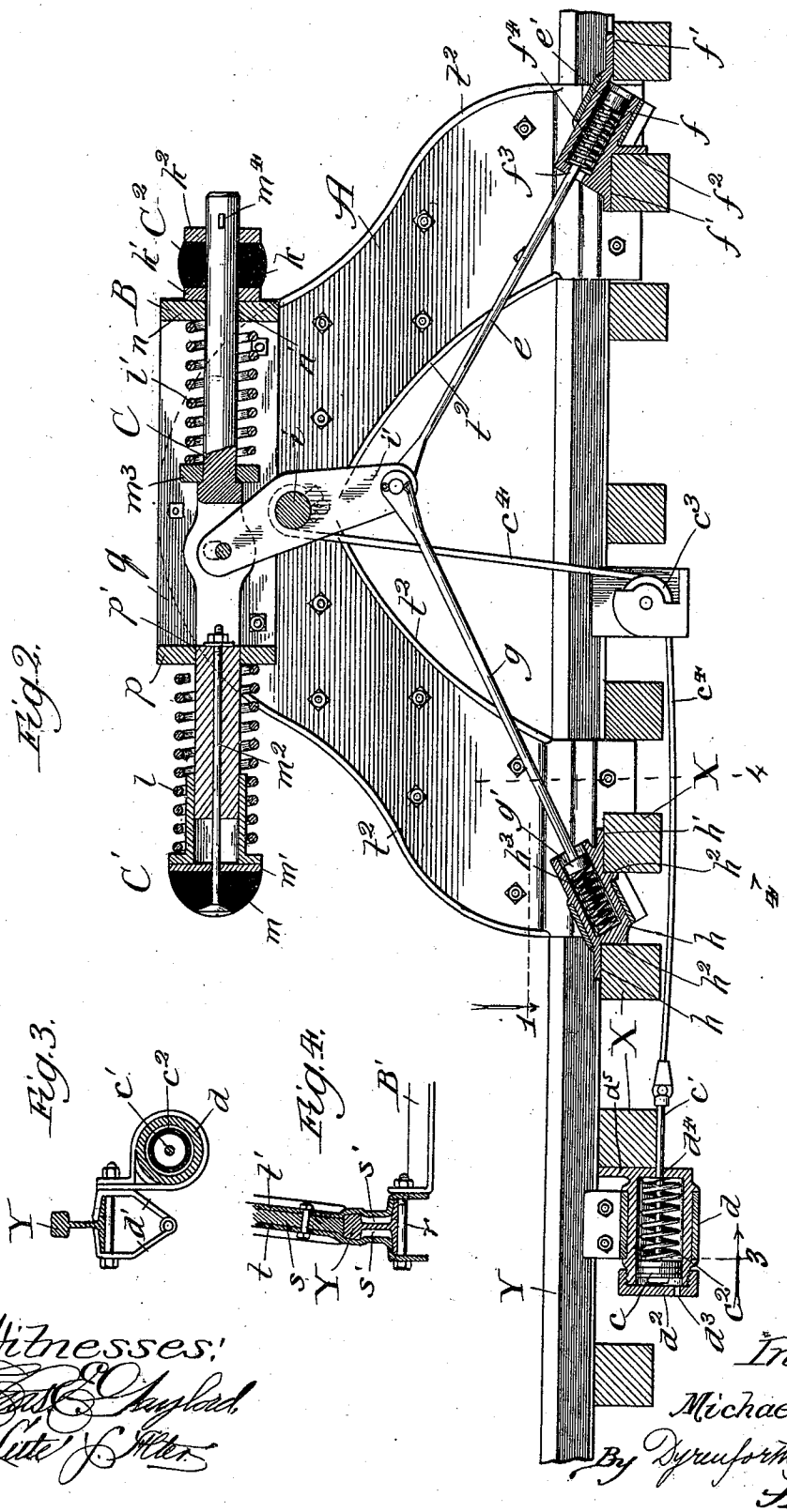

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses:
Chas. E. Smyland.
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Inventor,
Michael Haley,
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UNITED STATES PATENT OFFICE.

MICHAEL HALEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO EDWARD RYAN, OF SAME PLACE.

BUMPING-POST.

SPECIFICATION forming part of Letters Patent No. 562,297, dated June 16, 1896.

Application filed March 24, 1896. Serial No. 584,654. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL HALEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Bumping-Posts, of which the following is a specification.

My invention relates to improvements in bumpers or bumping-posts placed at the terminals of railway-tracks to limit the movement of cars in that direction.

My object is to provide a bumping-post of generally-improved construction, for use, more especially, in the railway-depots of cities, where trains are backed along walks or platforms for convenience in receiving passengers, and where it is particularly desirable to arrest movement of the train with as little shock and noise as possible.

In the drawings, Figure 1 is a broken plan section of my bumping-post, the section being taken on line 1 of Fig. 2; Fig. 2, a broken vertical section taken on line 2 of Fig. 1 and viewed in the direction of the arrow; and Figs. 3 and 4, sections taken, respectively, on lines 3 and 4 of Fig. 2 and viewed in the direction of the arrows.

The frame consists of cheeks or posts A, and a top frame or yoke B, secured at opposite sides to the inner faces of the cheeks. Each cheek or post consists of two metal plates $t\,t'$, secured, preferably, by bolts against opposite sides of wood or other preferably non-resonant filling s. Below the filling s the plates $t\,t'$ are shaped to fit snugly over a T-rail, and they project downward below the flange or base of the rail, as shown in Figs. 2 and 4. Between the plates and web of the rail are filling-pieces s', which may be of wood. At the under surface of the rail the plates are tied together by means of bolts r, which bear against the under surfaces of the rails, and, besides securing the lower ends of the plates together, fasten the cheeks, against any upward movement, to the rails. The object of this construction is to secure the cheeks firmly in place without the necessity of anchoring them below the ties, and it not only facilitates placing them securely in position, but, by exposing all parts, renders it possible to inspect the fastenings and to tighten them readily in the event that they become loose. Furthermore this construction renders it easy to remove and replace the bumping-post, if necessary, without disturbing the foundation of the track. The cheeks are preferably of the inverted U or V shape shown, and the plates $t\,t'$ are formed with marginal strengthening-flanges t^2. The top frame or yoke B is formed with two end plates q, a front bar or cross-plate p, having a central opening p', and a back bar or cross-plate n, having a central opening n'.

C is a buffer-bar mounted in the openings $p'\ n'$, and longitudinally movable therein. On the forward end of the bar C is a buffer-head C', formed, preferably, with a rubber or other resilient cushion m, fastened against a plate m' by means of a rod or bolt m^2. Surrounding the bar C, between the buffer-head C' and cross-bar p, is a helical spring l, and surrounding the bar C between a stop m^3 thereon and the bar n is a helical spring l'. Beyond the bar n on the buffer-bar C is a stop C^2, consisting, preferably, of a rubber or other resilient cushion k, confined between plates $k'\ k^2$. The plate k^2 is held against backward movement upon the buffer-bar by a pin m^4. Journaled at opposite ends in the cheeks A is a rock-shaft i. Rigidly secured to the rock-shaft is a lever i', pivotally connected at its upper end to the buffer-bar C. Extending between the lower parts of the cheeks at the front and rear ends thereof are forward and rear cross-bars B' B^2. At the center of the cross-bar B' is a cylinder h, provided with bearing-surfaces $h'\ h'$, which bear upon the upper surfaces of ties X, and surfaces or shoulders h^2, fitting between the ties. The cylinder h is inclined as shown, and open at its upper end. In the cylinder is a spring h^3. A rod g is pivotally connected at one end to the lower arm of the lever i' and at its opposite end is provided with a head g', fitting the cylinder h and bearing against the spring h^3. At the center of the bar B^2 is a cylinder f, provided with bearing-surfaces f', at which it rests upon ties X, and with bearing surfaces or shoulders f^2, fitting between the ties. The cylinder f is placed at approximately the same angle to the horizontal as the cylinder h and is open at its lower end and provided at its

upper end with a reduced opening f^3. A rod e is pivotally connected at one end to the lower end of the lever i', and at its opposite end is provided with a head e', movable in the cylinder f. Confined between the head e' and the end of the cylinder, at the opening f^3, is a spring f^4.

At each of the rails Y, preferably a short distance in advance of the bumping-post, is a cylinder d, located below the rails, and fastened against opposite sides thereof by means of clips d', which are held in position by bolts, as shown. The rear end of each cylinder d is formed with a plate d^5, presenting a bearing-surface against the adjacent tie X. At the forward end of each cylinder d is a cap d^2, provided with an air-opening d^3, and in the opposite end of each cylinder d is a central opening d^4. Working in each cylinder d is a piston c, having, preferably, a peripheral packing, and mounted upon the end of a piston-stem c', which works through the opening d^4. Confined between the end of each cylinder d at the opening d^4, and the piston c therein, is a spring c^2. Extending from each piston-stem c', under a pulley c^3, and up to the rock-shaft i, is a cable c^4, fastened to the rock-shaft.

The moving parts of my improved bumping-post are so arranged with relation to each other that pressure exerted against the buffer-head C' will tend to turn the lever i, force the rod g and its head g' into the cylinder h against the resistance of the spring h^3, and draw the rod e in a direction of compressing the spring f^4 in the cylinder f. The spring l on the buffer-bar is of a length slightly less than the normal distance between the buffer head and bar p, whereby it is not compressed by the movement of the buffer-head until after a more or less slight resistance is effected by the springs h^3 f^4. The spring l' is shorter than the distance between the stop m^3 and the bar n, whereby in the movement of the bar C it will not commence to compress the spring l' until after the spring l has become more or less compressed. The cables c^4 are preferably normally slack, so that in the movement of the buffer-head and consequent turning of the lever and rock-shaft i strain will not be exerted to draw upon the pistons c until after the spring l' has become more or less compressed. In the cylinders d movement of the pistons c is against the resistance of the springs c^2 and also against the resistance of the air in the cylinders, which can only escape through the openings d^4 around the piston-stems c'. The said openings are caused to fit closely about the piston-stems to retard the escape of air and thus form air-cushions.

In practice if a car impacts but gently against the buffer-head C the combined resistance of the springs h^3 f^4 will be sufficient to stop the car and cushion it against shock. If the car impacts less gently against the buffer-head, the buffer-bar will be moved to compress not only the springs h^3 f^4, but also the spring l. If the car strikes the buffer-head with still greater force, it will meet the resistance of the springs h^3, f^4, l, and l', due to the increased movement of the buffer-bar. Should the car strike with great force against the buffer-head, it will, as in the last case, first meet the resistance of the springs h^3 f^4, then that of the spring l, and afterward of the spring l', and finally the increased turning of the shaft i will wind up the cable c^4 so far as to draw the pistons c against the resistance of the springs c^2 and the air-cushions in the cylinders d. The combined resistance of all the springs and air-cushions, brought about in succession as described, will stop the car by exerting a gradually-increasing resistance and thus cushion it against shock even when it strikes the buffer with very great force. The action of the bumping-post in stopping a car will be practically noiseless on account, more particularly, of the non-resonant filling above described.

During the ordinary careful handling of trains, cars would rarely strike the bumper with greater force than that necessary to retract the buffer-bar to the spring l or l', so that there would be comparatively little strain upon the cheeks or posts A. In the event of accident or carelessness should a car strike the bumper with such force as to compress all the springs to the limit, it will then meet not only the resistance of the frame B and posts, but also that of the rods g e, cable e^4, and cushion devices, all of which latter are fastened to rails and bear against the ties. The abutment thus presented would be so firm that it is little likely that cars could strike with sufficient force to overthrow the bumping-post.

While I have shown and described only springs at the cylinders or cushion devices h f, the ends of the rods g e may carry pistons in those cylinders, working against air-cushions, as in the case of the cushion devices d. My invention contemplates the use of cushion devices, whether springs or compressed air, or both, form the cushioning medium.

While I prefer to construct my improved bumping-post in every way as shown and described, it may be modified in the matter of details of construction without departing from the spirit of my invention as defined by the claims.

The rod e may be stiff or flexible, and therefore, if desired, may be a chain or cable, as the strain is longitudinal. The rod g, however, should be of sufficient stiffness to prevent its becoming bent under the pressure which it may have to withstand.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a bumping-post for railroad-tracks, the combination with the buffer-head, of a support therefor comprising a frame formed with side cheeks, each having downward extensions fitting against the opposite sides of a track-rail and secured together beneath the

rail to clamp the rail between them, substantially as and for the purpose set forth.

2. In a bumping-post for railroad-tracks, the combination with the buffer-head, of a support therefor comprising a frame formed with side cheeks, resting upon the track-rails and each having downward extensions fitting against the opposite sides of the respective rail and bolted together beneath the rail to clamp the rail between them, substantially as and for the purpose set forth.

3. In a bumping-post for railroad-tracks, the combination with the buffer-head, of a support therefor comprising a frame formed with side cheeks, each said cheek comprising metal plates with an intermediate layer of non-resonant material, all secured together, the said plates being formed with downward extensions fitting against opposite sides of the track-rail and secured together beneath the rail to clamp the rail between them, substantially as and for the purpose set forth.

4. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a shaft mounted at opposite ends in the cheeks and extending below the cross-frame, a lever mounted between its ends on the shaft and pivotally connected at its upper end with the buffer-bar, a rod, or the like, connected at one end with the lower end of the lever, and bearing at its opposite end against a cushion, whereby retraction of the buffer-bar turns the said lever and forces the said rod against the cushion, substantially as and for the purpose set forth.

5. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a shaft mounted at opposite ends in the cheeks and extending below the cross-frame, a lever mounted between its ends on the shaft and pivotally connected at its upper end with the buffer-bar, a cushion device resting upon the railroad-ties between the rails, a rod, or the like, connected at one end with the said lever and bearing at its opposite end against the said cushion device, whereby retraction of the buffer-bar turns the said lever and causes the said rod to compress the said cushion device, substantially as and for the purpose set forth.

6. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a shaft mounted at opposite ends in the cheeks and extending below the cross-frame, a lever mounted between its ends on the shaft and pivotally connected at its upper end with the buffer-bar, cushion devices resting upon the railroad-ties between the track-rails and at opposite sides of the said shaft, and rods, or the like, connected at one end to the lower end of the said lever, and bearing at their opposite ends against the said cushion devices, whereby retraction of the buffer-bar turns the said lever and causes the said rods to compress the said cushion devices, substantially as and for the purpose set forth.

7. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a lever fulcrumed in the frame and pivotally connected with the said buffer-bar, a cushion device fastened at the ties between the railroad-tracks, and a cable, or the like, having a connection at one end with the cushion device, and at its opposite end with the said lever, whereby retraction of the buffer-bar turns the said lever and causes the said cable to compress the said cushion device, substantially as and for the purpose set forth.

8. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a rock-shaft mounted in the support below the buffer-bar, a lever fulcrumed between its ends upon the rock-shaft and pivotally connected at its upper end with the said buffer-bar, cushion devices resting upon the railroad-ties between the track-rails at opposite sides of the said shaft, rods, or the like, connected at one end to the lower end of said lever and bearing at their opposite ends against the said cushion devices, one or more cushion devices anchored at the ties, and a cable, or the like, connected with the last-named cushion devices and the rock-shaft, whereby retraction of the buffer-bar turns the rock-shaft and lever and causes the said rod and cables to compress the said cushion devices, substantially as and for the purpose set forth.

9. In a bumping-post for railroad-tracks, the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a bar extending between the tracks and secured at opposite ends to the said cheeks, a cushion device on the said bar provided with bearing-surfaces engaging ties between the track-rails, a buffer-bar provided with a buffer-head and mounted in the said cross-frame, a lever fulcrumed in the support and connected at its upper end with the buffer-bar, and a rod, or the like, extending between the said cushion device and the lower end of the lever, whereby retraction of the buffer-bar turns the said lever and causes the said rod, or the like, to compress the said cushion device, substantially as and for the purpose set forth.

10. In a bumping-post for railroad-tracks,

the combination with the support comprising side posts or cheeks, and an upper cross-frame, all secured together, of a buffer-bar mounted in the said cross-frame, a spring on the said buffer-bar between the buffer-head and said cross-frame, a stop on the buffer-bar, a second spring on the buffer-bar confined between the said stop thereon and the said cross-frame, and one or more cushion devices at the ties between the track-rails having a lever connection with the said buffer-bar, the said springs and cushion devices being so arranged with relation to the buffer-bar and to each other that in the retraction of the buffer-bar they are brought successively into action in resisting the said compression, substantially as and for the purpose set forth.

MICHAEL HALEY.

In presence of—
M. J. FROST,
J. H. LEE.