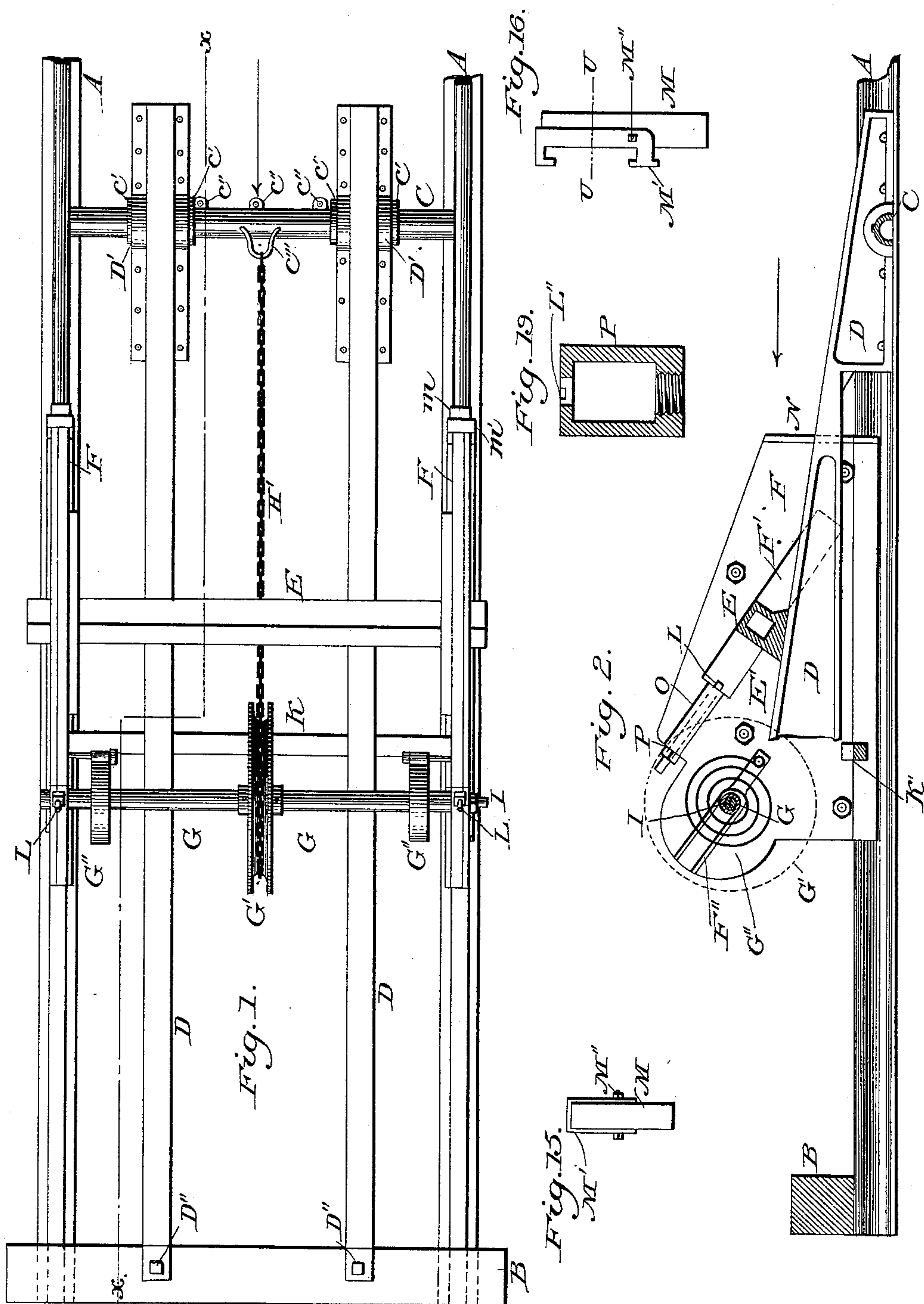


No. 330,009.

Patented Nov. 10, 1885.



Witnesses:

Theo S Rand
J. W. Wilson

Inventor:

R. R. Garsed

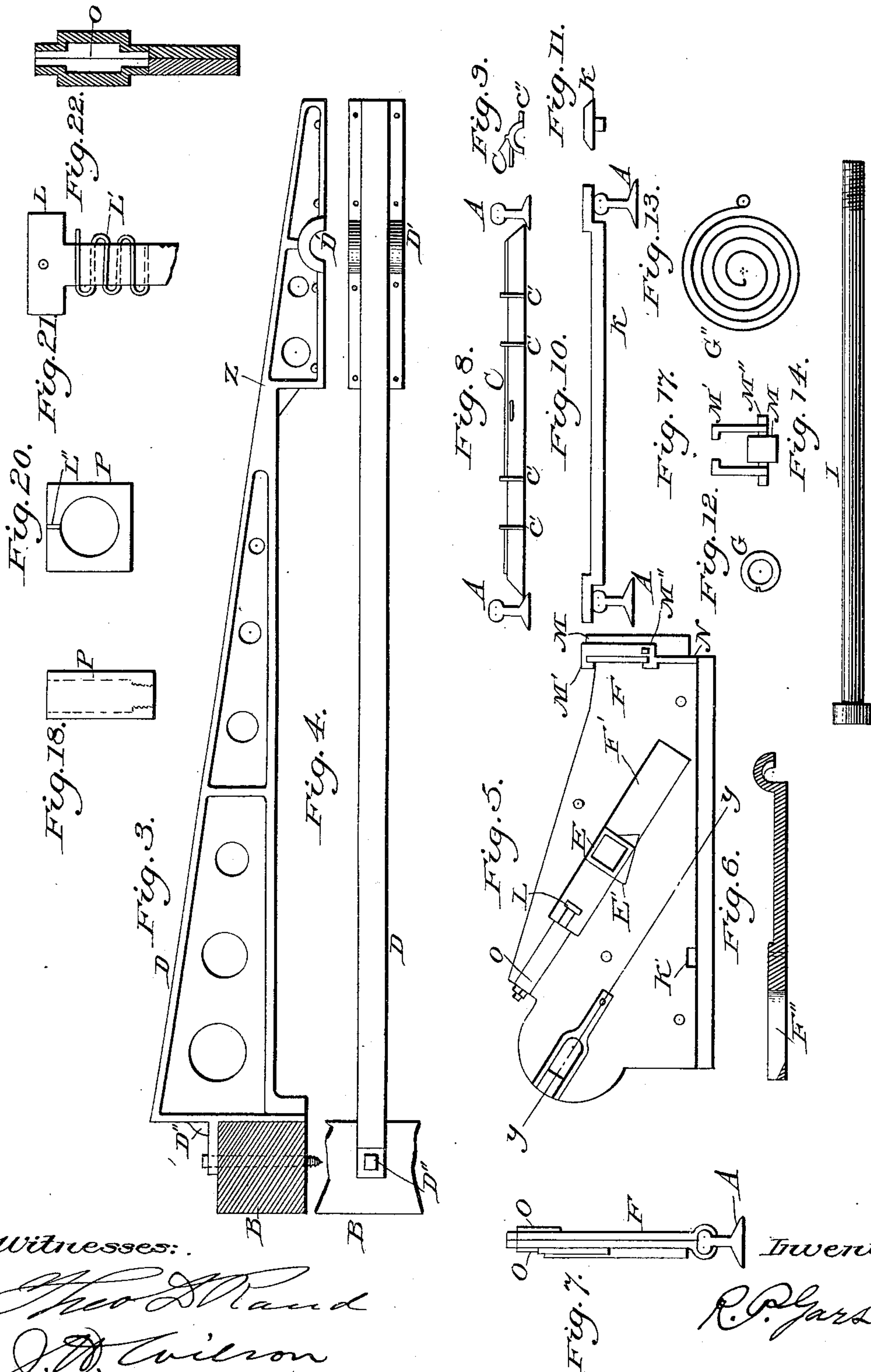
(No Model.)

2 Sheets—Sheet 2.

R. P. GARSED.
BUFFER.

No. 330,009.

Patented Nov. 10, 1885.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT P. GARSED, OF NORRISTOWN, PENNSYLVANIA.

BUFFER.

SPECIFICATION forming part of Letters Patent No. 330,009, dated November 10, 1885.

Application filed August 29, 1885. Serial No. 175,634. (No model.)

To all whom it may concern:

Be it known that I, ROBERT P. GARSED, a citizen of the United States, residing at Norristown, Montgomery county, in the State of Pennsylvania, have invented a new and useful Improvement in Buffers, of which the following is a specification, and which, taken in conjunction with the drawings which accompany it, will enable others to understand it, like letters indicating like parts throughout.

The object of my invention is to furnish a compact, easily-made, and powerful device to stop trains gradually and without jarring, and, when placed at the termini of railways, occupying short space, and without any alteration to road bed or rails; and it relates, also, to the saving of metal in its construction, which construction also affords facility in putting it together or taking it apart. It relates, as well, to especial means of restoring it to its original position after being struck by a moving body; also to fenders, where the blow of such moving body is received; and, finally, it relates to gaining different and increasing frictions, whereby a suitable resistance is furnished for a moderate blow, and a greater one for a blow terrific without any rebound from the device, it being well understood that a rebound to a buffer (such as one finds in the ordinary spring or rubber ones) does as much damage to the train as the blow.

These features of the apparatus having been gained by expensive experiments, labor, time, and patience, the sizes of the parts, and the incline of bed-bars with the angles of openings in bearings may be considered as practical.

Figure 1 represents a plan view of the device; Fig. 2, a side view through line *xx*, Fig. 1; Fig. 3, a side view of the inclined bed-bars, with section of head-support and gage-bar; Fig. 4, a top view of the same; Fig. 5, a side view of the inside housings, which, with the outside, are adapted to hold friction-bars and spring-shaft in place; Fig. 6, a section of the same through line *yy*; Fig. 7, a front view of the housings upon a track; Fig. 8, a front view of an anchoring and gage bar for rear end of inclined bed-bars; Fig. 9, an end view of the same; Fig. 10, a front view of supporting friction-bar; Fig. 11, an end view of the same; Fig. 12, an end view of spring-shaft; Fig. 13, a side view of the springs; Fig. 14, a

view of spring-shaft rod which goes through spring-shaft and unites the housings; Fig. 15, a front view of fender and frame; Fig. 16, a side view of the same; Fig. 17, a top view through line *uu* of Fig. 16; Fig. 18, a view of the screw-box for holding screw which allows the rails to lower; Fig. 19, a section of same; Fig. 20, a top or bottom view; Fig. 21, the screw, and Fig. 22 a view of a sectional part of inside of housings with screw-box chamber *o*.

A A represent the rails of a railroad; B, a fixed cross beam resting thereon, which supports and gages in position the bed-bars D D at their head; C, an anchor-bar with flanges C', lugs C'', and a staple, C''', the ends of which bar, when in place, resting between rails A A on the bases thereof, and at its intermediate part fastened to a tie.

D D are inclined faced bed-bars placed between rails A A, and while supported at their head end by beam B are gaged to their position at their other end upon the ties of the road by anchor-bar C, between the flanges of which they rest, the circular openings D' of these bars securing them better in position upon C.

E is a hollow rectangular metal friction-bar with feet or cams E', which rest upon the upper faces of bars D, the ends of said friction-bar projecting through the inclined openings F' in the housings F.

G is a hollow metal spring-shaft extending through inner halves of housings F, and in length reach from the centers of across the rails A A. They are supported in place by ribbed slots F'' on these housings, as shown, the outer ends of these slots having an inwardly-slanting face, by which the housings have a continuous and strong outer edge, which, by slight outward spreading permits shaft G to be put in or out of place without taking said housings off the rails A A, around whose top they are loosely bolted.

G' is a flanged chain-wheel fastened to shaft G, and G'' are coil-springs fastened at their inner ends to the ends of shaft G and at their outer ends to the housings F'.

H' is a chain, one end of which is fastened to face of wheel G', and the other to anchor-bar C.

I is a rod, with fixed head on one end and

nut on the other, the function of which is before referred to.

K is a metal bar, in length to span rails A A and rest upon their faces, and when in position passes beneath bars D and through the openings K' of the housings. It serves to produce an additional friction in the device, as well as gage its backward movement by abutting against the shoulder beneath end of line 3 in Fig. 3.

When the device is moved to its normal position by the action of the springs G'', it being meant that the device is in its normal position when rear face of bar K is against shoulders shown under bed-bars D, toward their rear ends, and the rear faces of cams E' of the bar E are flush with the ends of said bed-bars.

The fender and frame shown in Figs. 15, 16, and 17 consist of a rubber or wooden rectangular piece, M, placed within metal frame M', with bolt M'' holding said fender and frame in place on the front of the housings, the clamps of the frame fitting over ribs N of the housings. This fender and frame are readily adjusted, and when the part M becomes worn out it is with ease put in position.

The operation of the device is as follows: A train comes in the direction of the arrow, Figs. 1 and 2, when the fenders on the housings F engage the same, and said housings move forward upon the rails A A, causing the bar E to move upon the faces of bars D D and upon the upper facing of inclined openings F' of the housings F, and thus produce friction in proportion as said bars D D or the slots F' in the housings F may be slanting. After bar E passes beyond the dotted line 3, Fig. 3, the bar K, being carried with the housings, receives pressure from the under face of bars D, and thus an additional friction is produced at these points; and where said bar K bears upon the rails A A a face-plate within the base of housings may, if desired, be put to receive such bearing, the openings K' being made large enough to allow bar K to be adjusted, and thus a light blow is met by movement of bar E forward from its normal position to line 3, and a heavier one beyond the same. This bar K tends also to keep rails A A from rising when bar E is at the extreme upper ends of slots or openings F', and the force of a blow from train continues. During the advance of the device the springs G'' are wound up, and as the end of chain is hooked stationary to bar C (or by passing through the staple it may be hooked to its own links) the other part uncoils from the wheel G'. Upon the retreat of train the device moves to its first position, the springs coiling the chain again upon said wheel.

In putting the device together, the beam B and bar C being first put in position, no leveling of ties is necessary, as the height of beam B being suited to fit beneath the brackets D'' of the bars D, and the bar C disallowing the other ends of bars D to go below the level-point

as fixed by the rails A A, and thus a desired incline of upper face of bars D D is preserved, whether the rails A A settle or not. Next, the bar E is placed in position, resting upon the faces of D D. The inner housings being then fitted, the outer ones are with no difficulty put on, and when bolted and the spring-shaft in place they should be moved backward to a position where shaft G is near or over bar C, when the hook end of chain is passed through staple C''' and hooked to a desired length. The bar E then being raised and packed up within the housings, the device may be pushed forward slowly by the train to a point where bar K may be put in place, and this winding up of springs will be sufficient to move the device to its extreme rear position when required.

When the device has been sent violently to the head end of its throw, the ends of bar E, as before stated, would bear against upper ends of openings F', which, when train has retreated, leaves rails A A with downward tension and a consequent jamming of bar E upon the faces of D D, and thereby disallowing springs G'' to operate. To obviate this result, I furnish screw-rods L, whose ends take pressure from upper face of bar E, when, if these rods are unscrewed, such tension of rails is relieved, after which the spiral springs L', surrounding these rods, and at one end passing through them and at the other held by the groove L'' in the upper end of screw-rod box, will advance them again to their distance below upper end of the slots F'. The boxes P for these screws are rectangular in shape on their outside, to prevent their turning within the chambers of the housings, and on their inside so shaped as to admit of the screw and its spring, and have a female thread at their lower end, by which screw-rod L is raised and lowered. The housings being in parts and not readily handled, such female threads are almost impossibly made through their edges. The chambers cast in these housings are in shape to retain the boxes P with their screws, as shown in Fig. 22.

Where it is advisable, the tension-screw L may be placed head end downwardly, extending within the cross friction-bar E, and with a nut or head on its other end. It may be used to raise or lower said bar to give a certain stroke to the device. It is shown of this construction in Fig. 5. The bar E is of metal and cast hollow, whereby strength and lightness are obtained. The bars D, having much of their under part cut away, are rendered lighter, as well as serving for passage of bar K. The shaft G is of wrought-iron and hollow, thus giving lightness and strength, as well as affording room for passage of rod L, as before mentioned. The brackets D'' of the bed-bars D are of a further use in preventing a rocking motion of said bars, and in saving breadth of metal on their bases, where they rest upon the ties. The width of supporting-beam B is eight inches upon the rails A A. The length

of bars D D being nine feet without the bracket, and commencing at their lower end at a height to suit that of the rails A A, they will be in a line with rear of cams on bar E, which will then bear upon them. The length of housings is three feet six inches, and from their fender end, when in position, to the forward side of supporting-bar B is just ten feet. The stroke allowed the device with these dimensions is five feet ten inches upon the rails A A, between which and the clamps or bases of the housings great friction is produced by upward pressure of the housings during their advance. Upon such advance the bar E moves forward also, but at a greater rate of speed than the housings, because of its having the length of the slots F' to travel, in addition to the five feet ten inches which is the stroke of the housings, this additional length in the present instance being just sixteen and one-half inches, and thus between bars D D, bar E, and the upper faces of slots F' additional frictions are gained, and during the production of such friction both the upward tendency of rails to rise and the separating of the housings by breaking at points in continuation of the ends of their slots are overcome by the very object giving the blow, as it will be understood from the construction of the device that a longitudinal blow imparts as well a downward pressure to the parts. The bed-bars D D rise one and one-half inch to every foot of length, or at an angle of seven degrees, and this incline is about as high as possible for the road-bed, as the brake-beam of passenger-cars would press upon their surfaces before much stroke could be had, and so to produce a required friction the inclined slots F' must be at a suitable angle, which in the present instance is forty degrees, it being found that thirty-five degrees scarce permitted the device to move, though the crushing or downward force imparted to it then saved it whole, although struck by a train of eight cars and a locomotive moving at ordinary depot speed. The bar E is of cast-iron five feet six inches long, six inches square, and seven-eighths inch thickness of metal, and the cams or feet thereon are short upon their rear facing, to insure a prompt disengagement with the bed-bars D D, upon the retreat of the housings to their normal position. The housing slots or openings F' are in width to allow three-sixteenths or one-fourth inch play of the bar E, and at their outer edges are ribbed or re-enforced. The housings proper are of cast-iron each seven-eighths inch thick. The springs G'' are of three-eighths-inch steel three inches wide, and made from a sheet twenty-three feet long each, and when in place only occupy a space fifteen inches in diameter.

As it is apparent the device may be operated in various ways or with an increase or decrease of its parts—as, for instance, with one housing upon one rail in the center of tracks, with inclined bars at either side, or with two hous-

ings and one inclined bar at the center of bar E, or with spring-shaft G extending through both housings, and with two chain-wheels and chains on the outside ends—it is meant in the claims that the elements, whether in singular or plural, shall be equivalent, and so two or more anchor-bars C may be used, the others without staples C'', and with the lugs C'' on either side, as by this means a tie for fastening may be reached, as in their ordinary distribution upon the road-bed they may not be within reach of wood-screws, or spikes used through lugs C'' in holding anchor-bar in position, which bar prevents as well a longitudinal motion of the bars D, especially after bar K is pressed upon, which takes place upon the downward yielding of bars D. The rod I, through shaft G, permits said shaft to revolve as well as holding the housings in position.

In cases where it is desirable to operate the device from the pilot of a locomotive, bar K becomes of further use in supporting any suitably-shaped piece of material made to engage with said pilot and leading from the rear of the device to said bar. This engaging piece of material is not shown in the drawings.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in a buffer, of the rails A A, the housings F, with bar E, the supporting and gaging beam B, and the bed-bars D, supported and gaged thereon, substantially as and for the purposes set forth.

2. In combination, in a buffer, the rails A A, the supporting and gaging beam B, the bed-bars D, with brackets D'', and the anchoring-bar C, adapted to retain bars D and gage them to position, substantially as and for the purposes set forth.

3. In a buffer, the combination of the housings F, adapted to advance and retreat while supporting shaft G, said shaft G, with coil-springs G'', fastened thereon, and the chain-wheel G', attached to said shaft and carrying chain H', the one end of which being stationary permits the advance of the housings, while being a medium to cause their retreat, substantially as and for the purposes described.

4. In combination, the housings F, adapted to advance and retreat, the hollow shaft G, supported thereon, the coil-springs G'', fastened thereto, the rod I, adapted to pass through shaft G and retain housings in place, and the chain H', adapted to serve as a medium to wind up the springs and cause the retreat of the device, substantially as and for the purposes set forth.

5. In combination, the housings F, adapted to advance and retreat, the shaft G, supported thereon, the coil-springs G'', fastened thereto, the chain H', serving as a medium to operate the device, and the bar C, with the staple C'', adapted to hold the chain in place, substantially as and for the purposes set forth.

6. In a buffer, in combination, the rails A, the housings F, the bars E and D, the latter with openings for engagement with bar C, and one or more gaging-bars, C, having flanges 5 C' for such engagement, and lugs C'' to hold the device in place, substantially as and for the purposes described.

7. In combination, the rails A, the housings F, adapted to slide thereon and having 10 chambers o to receive screw-rod boxes P, said screw-rod boxes and the screw-rods L, the bar E, adapted to raise and lower, and the bars D, substantially as set forth.

8. In combination, in a buffer, the rails A, 15 the housings F, adapted to advance and retreat, and having chambers o to receive screw-rod boxes P, said screw-rod boxes and the screw-rods L, with springs L' attached, the bar E, adapted to raise and lower, and the 20 bars D, substantially as set forth.

9. In a buffer, the combination of housings F, having slots F'' with inwardly-slanting face, the spring-shaft G, adapted to fit within said slots and permitted to revolve upon the 25 advance and retreat of the device, the springs G'', and the chain H', serving as a medium by which said springs are wound up to return the device to its normal position.

10. In combination, in a buffer, with the 30 rails A A, the housings F, with ribs N and the fenders of wood or rubber, M, the metal

frame M', having clamps thereon adapted to fit over ribs N of the housings, and the screw M'', adapted to hold the parts in place, substantially as and for the purposes set forth. 35

11. In a buffer, in combination, the rails A A, the housings fastened thereto and adapted to support bar E, the bed-bars D, bar E, and the bar K, passing beneath the bars D, through the housings, and over the rails A A, substantially as described, for the purposes set 40 forth.

12. In a buffer, in combination with the rails A, the housings F, adapted to advance and retreat, the shaft G, supported thereby 45 and adapted to revolve, the coil-springs G'', fastened thereto, and the wheel G', attached to said shaft and serving as a medium by which said springs are made available, substantially as and for the purposes set forth. 50

13. The combination, in a buffer, with the rails A, of the housings F, with ribs N, the fenders M, of wood or other yielding material, and the frame M', having clamps thereon adapted to fit over ribs N of the housings and 55 serving as a medium by which said frame and wood are held in place, substantially as set forth.

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