April 5, 1932. S. B. HASELTINE 1,852,567

BUFFER

Filed July 12, 1928

Fig. 1

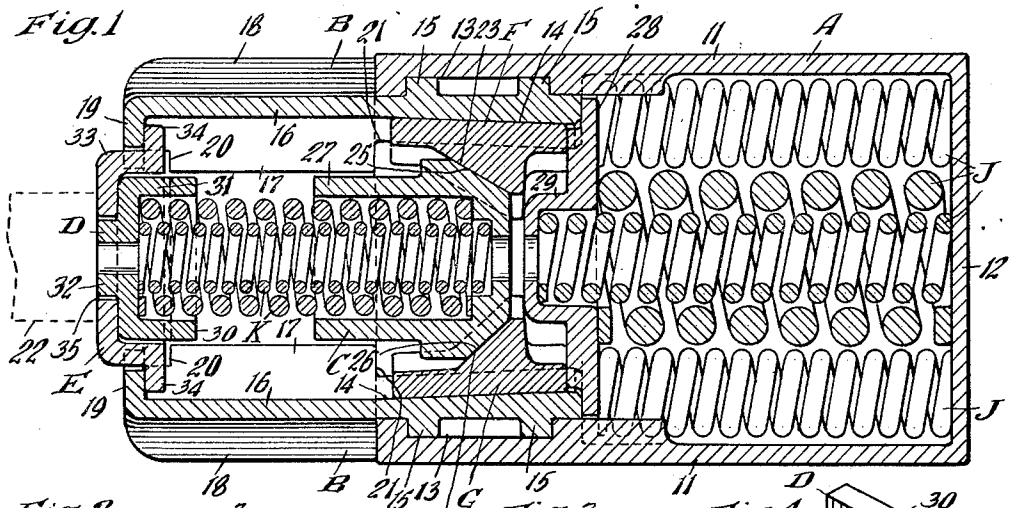


Fig. 2

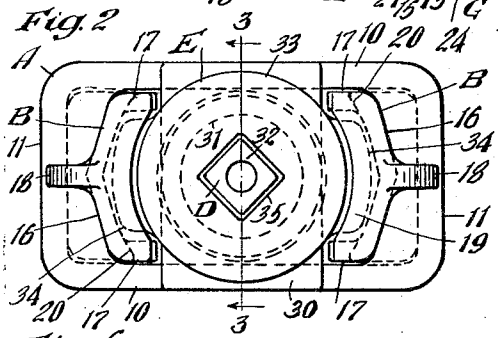


Fig. 3

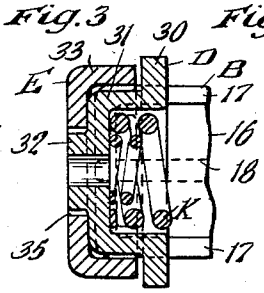


Fig. 4

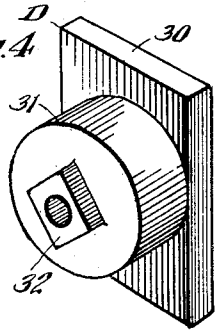


Fig. 6

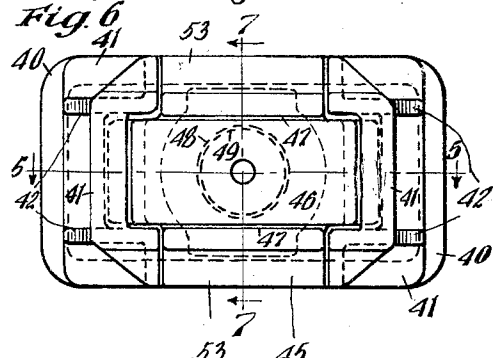


Fig. 5

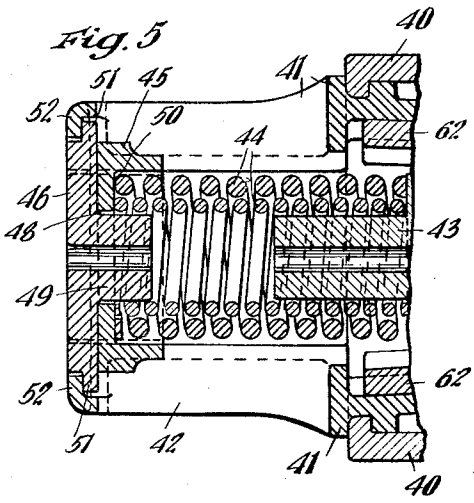
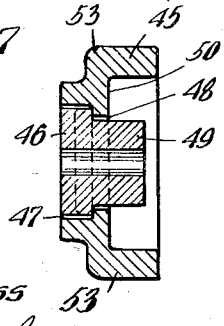


Fig. 7



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UNITED STATES PATENT OFFICE

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BUFFER

Application filed July 12, 1928. Serial No. 292,147.

This invention relates to improvements in buffers.

One object of the invention is to provide a buffing mechanism for railway cars, including a casing housing spring resistance means, an auxiliary spring means, friction means adapted to be actuated after a certain amount of compression of the auxiliary spring means, the auxiliary spring means being interposed between the friction means and a cap cooperating with the usual buffer stem of the buffing mechanism, wherein the parts may be readily assembled and simple and efficient means is provided for preventing accidental detachment of the spring cap.

A further object of the invention is to provide a mechanism of the character indicated, wherein the spring cap comprises two separable members, one of which forms the spring follower element and the other a locking element, which is interlocked with the spring follower element to anchor the same to the buffing mechanism.

A more specific object of the invention is to provide a buffing mechanism for railway cars, including a casing having detachable liners at one end thereof, presenting interior friction surfaces, the liners being provided with guide extensions; friction shoes engaging the liners; spring resistance means within the casing opposing inward movement of the shoes; a block having wedging engagement with the shoes to spread the same apart and hold the liners anchored to the casing; spring cap means engaged by the usual buffer stem; and additional spring means interposed between the spring cap means and block, the additional spring means being under initial compression to force the wedge against the shoes, the spring cap means including a locking element anchored to the guide extensions of the liners and a spring follower member interlocked with the locking element to prevent accidental removal of the latter and the spring follower member.

Yet another object of the invention is to provide a two-part yieldingly resisted spring cap for buffing mechanisms, wherein means is provided for guiding the spring cap in its movements and the parts of the spring cap are interlocked to prevent accidental removal of the same, one of the parts of the cap serving as a locking element and having means cooperating with guide means of the buffing mechanism and having shouldered engagement with the guide means to anchor the spring cap to the same, the other part of the spring cap forming a spring follower member and being interlocked with the locking element of the cap to prevent disengagement thereof from said guide means, said spring follower part being limited in its outward movement by the locking element and having means thereon cooperating with the guide means, to hold said spring follower part in a predetermined relation with respect to the buffing mechanism and thereby maintain said locking part in anchored relation to the guide means.

Other and further objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings, forming a part of this specification, Figure 1 is a horizontal, longitudinal, sectional view of my improved buffing mechanism, the usual buffing stem of the car platform structure being illustrated in dotted lines in said figure. Figure 2 is a front end elevational view of the mechanism shown in Figure 1. Figure 3 is a vertical longitudinal, sectional view, corresponding substantially to the line 3—3 of Figure 2. Figure 4 is a detailed perspective view of one of the parts of the spring cap of my improved mechanism. Figure 5 is a view similar to Figure 1 of the front part of the mechanism, illustrating a different embodiment of my invention. Figure 6 is a front end elevational view of the mechanism illustrated in Figure 5. And Figure 7 is a vertical, longitudinal, sectional view, corresponding substantially to the line 7—7 of Figure 6, certain parts being omitted.

Referring first to the embodiment of my invention as illustrated in Figures 1 to 4, inclusive, the same comprises, broadly, a casing A; two combined guide members and liners B—B; a wedge block C; a two-part spring cap means comprising a spring follower part D and a locking part E; two friction

shoes F and G; a main spring resistance J; and an auxiliary spring resistance K.

The casing A is in the form of a substantially rectangular box-like casting having spaced top and bottom walls 10—10, longitudinally disposed, spaced, vertical side walls 11—11, and a transverse end wall 12. The forward end portions of the side walls are thickened, as shown in Figure 1, the thickened portions being interiorly recessed to form seats 13 for anchoring the combined guide members and liners B to the casing A. The combined guide members and liners B are disposed at opposite sides of the mechanism and are of similar design. Each liner comprises a relatively thick, heavy, inner end section, having a V-shaped friction surface 14 on the inner side thereof. The opposed friction surfaces 14 of the two liners are preferably converged inwardly of the mechanism, as most clearly shown in Figure 1. On the outer side, each liner is provided with a pair of vertically disposed, spaced, relatively wide ribs 15—15 adjacent the inner end thereof, which are disposed within the corresponding seat 13 of the casing A. As will be evident, when the ribs 15 are engaged within the seat 13 the combined guide member and liner B is locked against longitudinal movement with respect to the casing. The members B extend outwardly beyond the casing A, as clearly shown in Figure 1, the extended portions of each comprising a vertically disposed V-shaped side wall 16, provided with top and bottom horizontally disposed flanges 17—17. The extended portion 14 of each member B is preferably reinforced by a longitudinally disposed, heavy rib 18. At the forward end, each member B is provided with a laterally inwardly extending vertical flange 19, which forms a front limiting shoulder, as hereinafter more clearly pointed out. As most clearly illustrated in Figure 2, the inner edges of the flanges 19 are concave to accommodate the projecting portion of the locking part E of the spring cap. The top and bottom flanges 17 of the members B are cut away at the front and rear ends, as indicated at 20 and 21, the cut-away portion 20 being provided to facilitate the assembling of the locking element with the combined guide members and liners B.

The entire buffing mechanism, including the casing A with the combined guide members and liners B attached thereto, is accommodated in the usual pocket provided for this purpose, and the end wall 12 of the casing bears on the rear end wall of said pocket.

The buffer stem of the buffing mechanism, which is shown in dotted lines in Figure 1 and is designated by 22, cooperates with the spring cap of my improved buffing mechanism in the usual manner, the stem being properly guided by the usual means and having the front end thereof cooperating with the movable platform buffer section of the car.

The friction shoes F and G are disposed at opposite sides of the mechanism and are of similar design, except as hereinafter pointed out. Each friction shoe is provided with a V-shaped friction surface on the outer side thereof, cooperating with the V-shaped friction surface of the corresponding combined guide and liner B. On the inner side, each shoe is provided with a lateral enlargement having a front wedge face, the wedge face of the shoe F being designated by 23 and that of the shoe G being designated by 24. As shown in Figure 1, the wedge face 23 is disposed at a relatively keen wedge-acting angle with respect to the longitudinal axis of the mechanism, while the wedge face 24 is disposed at a relatively blunt releasing angle with respect to said axis.

The wedge block C, which cooperates with the friction shoes F and G, has a pair of wedge faces on the opposite sides thereof, the same being respectively indicated by 25 and 26. As shown, the wedge face 25 is disposed at a relatively keen angle with respect to the longitudinal axis of the mechanism and is of V-shaped section, so as to cooperate with the wedge face 23 of the block F. The wedge face 26 is disposed at a relatively blunt angle and is of V-shaped section also, so as to cooperate properly with the wedge face 24 of the friction shoe G. As most clearly illustrated in Figure 1, the wedge block C is provided with a forwardly extending, hollow, cylindrical post-like section 27, which is engaged by the spring cap after a predetermined compression of the auxiliary spring resistance to actuate the wedge block.

Inward movement of the friction shoes F and G is resisted by the main spring resistance means J, which has its opposite ends bearing respectively on the rear end wall 12 of the casing and a spring follower 28 engaging the inner ends of the friction shoes. As shown, the spring resistance J comprises four outer coils and a central unit, including a relatively heavy outer coil and a lighter inner coil. The outer coil of the central unit bears directly on the inner side of the spring follower 28, while the front end portion of the inner coil is seated within a forwardly projecting hollow boss 29, formed centrally of the spring follower.

The two-part spring cap means, which comprises the spring follower part D and the locking part E, is guided between the extensions of the members B, and the auxiliary spring resistance K is interposed between the cap and the wedge block C. As shown, the auxiliary spring resistance K comprises inner and outer coils having their front and rear ends bearing respectively on the spring follower part D of the spring cap and the wedge block C, the rear end portion of the

spring resistance K being seated within the cylindrical section 27 of the wedge.

The spring follower part D of the spring cap comprises a rectangular plate-like section 30, having a forwardly extending, hollow, cylindrical cap-like section 31, formed integral therewith. Centrally of the cap-like section 31, a square locking boss 32 is provided.

The locking boss 32, as hereinafter more clearly pointed out, serves to lock the two parts of the spring cap against relative rotation. The hollow, cylindrical section 31 of the member D receives the front end portions of the two coils of the auxiliary spring resistance K. The plate-like portion 30 of the spring follower part D is of such a width as to be freely guided between the flanges 17 of the combined guide members and liners B. As will be evident, the spring follower part D is thus held against rotation with respect to the buffing mechanism proper.

The locking part E comprises a cylindrical cap-like section 33 which receives the cylindrical section 31 of the spring follower part D. At the opposite sides, the locking part E is provided with wings 34—34 which are guided within the guideways formed between the top and bottom flanges 17 of the extensions of the members B. As clearly shown in Figure 1, the wings 34 project beyond the flanges 19 of the members B and have shouldered engagement therewith to limit outward movement of the locking element or part E. The end wall of the cylindrical cap-like section 33 of the locking element is provided with a square opening 35, adapted to receive the square boss 32 of the spring follower part D. As will be evident, when the parts are assembled, the expansive action of the auxiliary spring resistance K will tend to hold the spring follower part D in its outermost position, thereby holding the cylindrical cap-like section 31 thereof seated within the cap section 33 of the locking element E and holding the boss 32 engaged within the opening 35. As will be evident, the boss 32, when engaged within the opening 35, will interlock the two parts of the spring cap against relative rotation.

Inasmuch as the plate-like section 30 of the spring follower part D is held against rotation, the locking element will also be held against rotation, thereby preventing disengagement of the wings thereof from the guides of the combined guide members and liners B.

In assembling the parts of my improved buffing mechanism, the main spring resistance J and spring follower 28 are inserted in the casing A in the usual manner, and the combined guide members and liners B are then anchored to the casing by engaging the ribs 15 within the seats 13. The friction shoes and wedge block and the spring resistance K are then placed in position and the spring follower part D of the spring cap engaged over the front end of the spring resistance K, with the top and bottom portions of the plate-like section 30 of the spring follower part D disposed between the guide flanges 17 of the opposed combined guide members and liners B. The spring follower part D is then forced inwardly to an extent that the boss 32 thereof will be disposed rearwardly of the cut-away portions 20 of the flanges 17. The retaining or locking part E of the spring cap is then inserted between the extensions of the members B, with the wings thereof disposed vertically between the guide members. The locking part E is passed inwardly between the extensions of the combined guide members and liners B, until the wings 34 are disposed inwardly of the end flanges 19. The locking part E is then rotated through an angle of ninety degrees to position the wings 34 thereof back of the flanges 19 and between the top and bottom guide flanges 17 of the combined guide members and liners B. The pressure is then released from the spring follower part D, permitting the boss 32 to seat within the opening 35. The parts are thus locked against relative rotation and the locking part E is held in its outermost position in shouldered engagement with the flanges 19. As hereinbefore pointed out, when the parts are assembled, the expansive action of the spring resistance K holds the spring follower part D and the locking part E of the spring cap interlocked against rotation and the rectangular plate-like section of the spring follower part D prevents rotation of the two-part spring follower cap with respect to the buffing mechanism by engagement with the flanges 17 of the combined guide members and liners B.

When it is desired to remove the parts of the buffing mechanism, the spring follower part D is forced inwardly by applying inward pressure to the boss 32 until the part D is disengaged entirely from the locking part E. The locking part E may then be rotated through an angle of ninety degrees, while the part D is held in position. When the wings 34 are in vertical position, the entire spring cap, comprising the parts D and E, may be readily removed, thereby making it possible to remove the remaining parts of the buffing mechanism. Upon removal of the spring cap, the pressure on the wedge C is removed, thereby permitting detachment of the combined guide members and liners from the casing A.

In the operation of my improved buffing mechanism, the combined spring cap, comprising the parts D and E, is forced inwardly through the inward movement of the buffing stem 22, thereby compressing the auxiliary spring resistance K until the follower part D of the spring cap comes into engagement

with the post of the wedge C, whereupon the wedge is forced inwardly, wedging the friction shoes apart and carrying the same inwardly of the casing opposed by the spring resistance J. When the buffing force is reduced in release of the mechanism, the spring resistance J will force the spring follower 28 outwardly, carrying the friction shoes and wedge block therewith. Outward movement of the spring follower is limited by engagement with the inner ends of the combined guide members and liners B. The spring cap will be restored by the expansive action of the auxiliary spring resistance K, outward movement of the cap being positively limited by the wings 34 of the locking part E coming into engagement with the flanges 19 of the members B.

Referring next to the embodiment of the invention illustrated in Figures 5, 6 and 7, the casing of the buffing mechanism, which is designated by 40, is of substantially the same construction as the casing A, hereinbefore described, and has combined guide members and liners 41—41 anchored thereto in a manner similar to the members B, hereinbefore described. The members 41 are of slightly different construction, having the guide extensions thereof provided with top and bottom guide walls 42—42, thereby permitting insertion of the locking part of the spring cap laterally between said walls in a horizontal direction. The combined guide members and liners B are provided with interior friction surfaces and have a pair of friction shoes 62—62 cooperating therewith, the shoes being engaged by a wedge member similar to the wedge member C, hereinbefore described, but having a substantially solid post 43 formed integral therewith. The cooperating wedge faces of the wedge and shoes, and the cooperating friction surfaces of the shoes and combined guide members and liners, are all preferably of V-shape section similar to the corresponding faces and surfaces of the mechanism illustrated in Figures 1 to 4, inclusive. A main spring resistance, similar to the spring resistance J, is employed to oppose inward movement of the friction shoes. An auxiliary spring resistance 44 is also employed to oppose relative movement of the wedge and two-part spring cap of the buffing mechanism.

The two-part spring cap of the buffing mechanism comprises a spring follower part 45 and a locking part 46. The spring follower part 45 is cut away between the top and bottom sides thereof, at the front side, as indicated at 47, to accommodate a portion of the locking part 46. The top and bottom sections of the spring follower part 45 are reduced in width to provide guide sections 53—53 which engage between the extensions of the combined guide members and liners 41. The spring follower part 45 is provided with a central circular opening 48 adapted to accommodate a rearwardly extending cylindrical stem or post 49 on the locking part of the cap. On the inner side, the follower part 45 is provided with a seat 50 accommodating the front end portions of the two coils of the auxiliary spring resistance 44.

The locking part 46 is in the form of a heavy rectangular plate, cut away at opposite ends to provide shouldered portions 51—51 engaging in back of the end walls 52—52, cut away at the inner side to provide cooperating stop shoulders. The plate-like portion of the part 46 is of such a width as to fit between the top and bottom sections 53 of the spring follower part 45. The two parts of the spring follower cap are thus locked against relative vertical displacement. The spring resistance 44, which is under initial compression, holds the spring cap and wedge member separated, thereby maintaining the shoulders 51 in engagement with the end walls 52 in the full release position of the mechanism.

In assembling the parts of my improved buffing mechanism, the main spring resistance and the spring follower are inserted within a casing and the combined liners and guide members 41 are anchored to the side walls of the casing by engaging the ribs at the inner ends thereof within the seats provided in the side walls. The friction shoes, wedge block and auxiliary spring resistance are then inserted between the members 41 and the spring follower part of the spring cap engaged over the front end of the auxiliary spring resistance. The spring follower part of the cap is then forced inwardly, so that the locking part 46 may be inserted laterally between the top and bottom walls of one of the combined guide members and liners. When the locking part 46 is inserted, the spring follower part of the cap is so disposed that the post 49 will clear the front side of the spring follower part. After the post 49 has been brought into longitudinal alignment with the opening 48 of the follower part of the cap, the auxiliary spring resistance is permitted to expand, thereby engaging the post 49 within the opening 48 and bringing the front side of the spring follower part in engagement with the back of the retaining or locking part 46. The top and bottom sections 53 of the spring follower part will thus be brought into overlapping relation with the main body portion of the locking part, thereby preventing vertical displacement of the spring follower part. It will be evident that lateral displacement of the spring follower part is prevented by the top and bottom sections 47 which are guided between the guide sections of the combined guide members and liners 41. Relative displacement in all directions laterally of the two parts of the spring cap is prevented by the post 49 which engages within the opening 48 of the spring follower part.

The operation of the improved buffing mechanism, as illustrated in Figures 5 to 7, inclusive, is substantially the same as that of the form of the invention illustrated in Figures 1 to 4, inclusive, the two-part spring cap being forced inwardly by the buffing stem of the buffing mechanism, thereby compressing the auxiliary spring resistance. This action will continue until the post 49 engages the post of the wedge member, whereupon the wedge member will be forced rearwardly, setting up a wedging action between the wedge and friction shoes and forcing the shoes inwardly of the casing against the resistance of the main spring. In release, the parts will be restored to their normal position by the main spring resistance until outward movement of the wedge block and friction shoes is limited by engagement of the spring follower with the inner ends of the detachable combined guide members and liners. The expansive action of the auxiliary spring resistance will restore the two-part spring cap to its normal full release position, as shown in Figure 5, outward movement of the locking part of the spring cap being limited by engagement with the shoulders on the combined guide members and liners. Outward movement of the follower part of the spring cap is limited by engagement with the locking part thereof.

As will be evident from the preceding description, taken in connection with the drawings, I have provided a buffing mechanism which may be readily assembled, wherein the friction surfaces are carried on detachable liner members which also form guide extensions for the spring cap, the liner members being held in anchored relation with the casing by expansive action of the auxiliary spring resistance which cooperates with the wedge and friction shoes. The assembling of the mechanism is further facilitated by the two-part spring cap which comprises the locking part and the follower part which are interlocked against relative lateral displacement and rotation, thereby preventing disengagement of the locking member or part of the cap and the guide means of the casing.

While I have herein shown and described what I consider the preferred manner of carrying out my invention, the same is merely illustrative and I contemplate all changes and modifications which come within the scope of the claims appended hereto.

I claim:

1. In a buffer for railway cars, including a casing provided with guide members, the combination with a spring resisted buffing cap receiving the buffing shocks, said cap including an element anchored to the guide members and guided thereby and a spring follower element; and means for interlocking said first named element and spring follower element against rotation, said spring follower element having means thereon engaging said guide members and holding said spring follower element against rotation by such engagement.

2. In a buffer for railway cars, the combination with a casing; of guide members on said casing; a spring resisted two-part buffing cap receiving the buffing shocks, said two-part buffing cap comprising a locking part and a spring follower part, said parts being interlocked against relative rotation, said locking part having means cooperating with said guide members to guide the locking part longitudinally of the mechanism, said means having shouldered engagement with the guide members to limit outward movement of the locking part; and means on said spring follower part, engaging with said guide members to hold the spring follower part against rotation.

3. In a buffer for railway cars, the combination with a casing housing the buffing mechanism proper, said casing having spaced guide extensions; of a spring resisted buffer cap receiving the buffing shocks, said cap including a locking element and a spring follower element, said locking element being guided between said guide extensions and having shouldered engagement therewith, to limit outward movement of the locking element, said spring follower element bearing on the inner side of said locking element and having its outward movement limited thereby, said spring follower element being interlocked with the locking element to prevent relative rotation thereof and held against rotation by said spaced guide extensions.

4. In a buffer for railway cars, the combination with a casing housing the buffing mechanism proper; of a spring resisted buffer cap, said cap including a locking part and a spring follower part, said locking part having a lost motion connection with the casing, said casing and spring follower part having cooperating means thereon for holding the spring follower part against rotation; and interlocking means on said spring follower part and locking part to hold said parts against relative rotation and maintain said locking part in anchored relation with the housing.

5. In a buffer for railway cars, the combination with a casing housing the buffing mechanism proper; of guide means on said casing; spring resistance means forming a part of the buffing mechanism; a two-part spring cap comprising a spring follower part and a locking part, said locking part having wings guided by said guide extensions and having shouldered engagement with said guide extensions to limit outward movement of the locking part, said spring follower part having extensions guided between said guide extensions; and an angular

projection on said spring follower part, having shouldered engagement with the locking part to hold said parts against relative lateral displacement and rotation.

In witness that I claim the foregoing I have hereunto subscribed my name this 10th day of July, 1928.

STACY B. HASELTINE.