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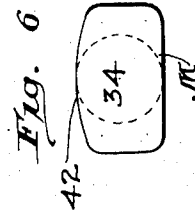
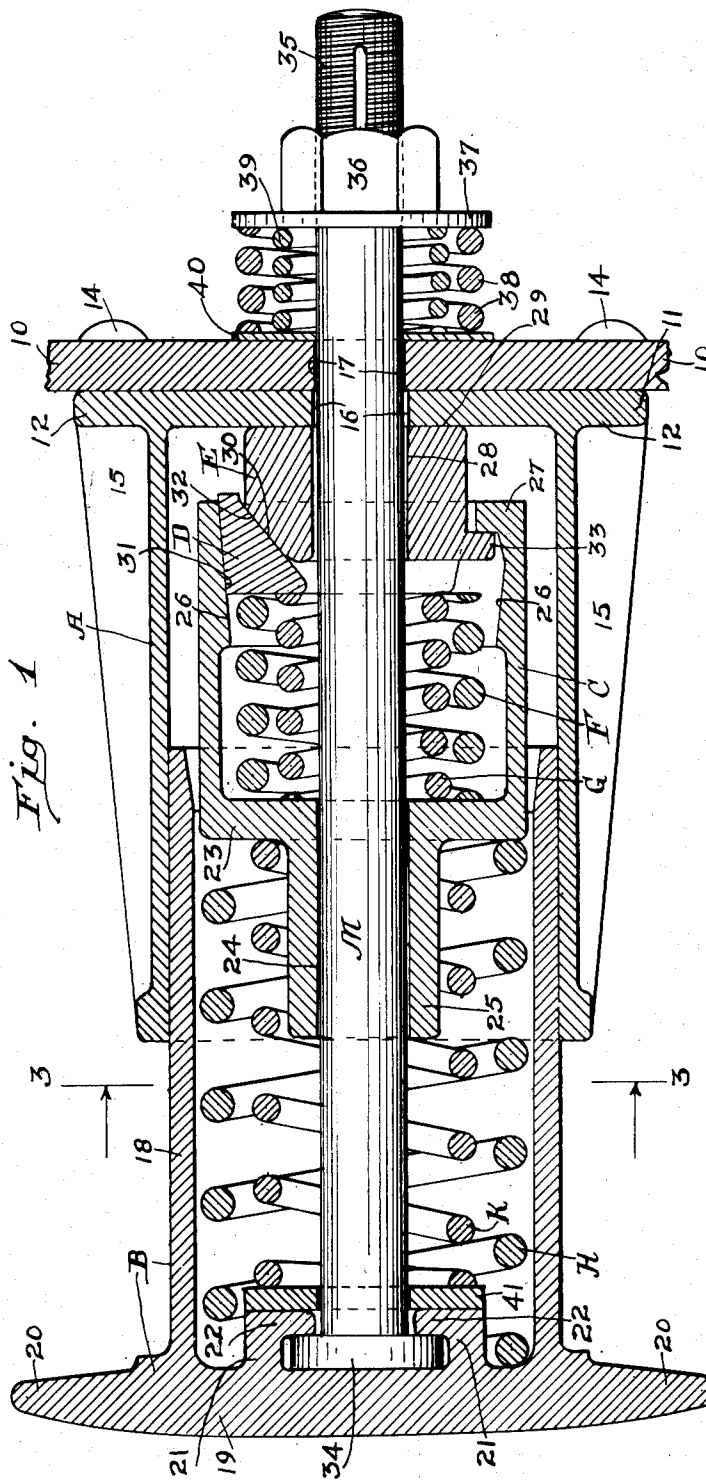
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2,656,938

FRICION BUFFER FOR RAILWAY CARS

Filed Oct. 22, 1949

2 Sheets-Sheet 1



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Fig. 2

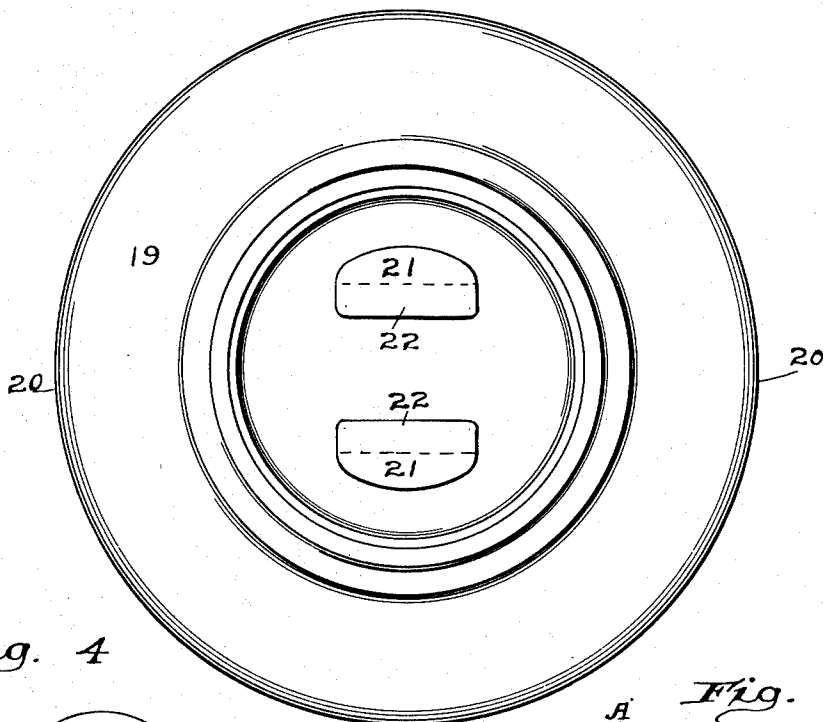


Fig. 4

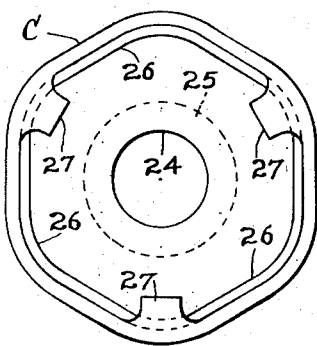


Fig. 3

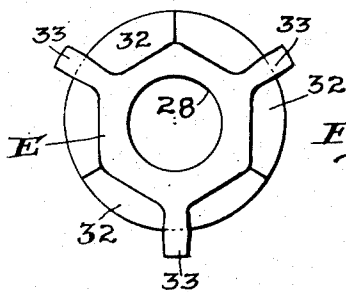
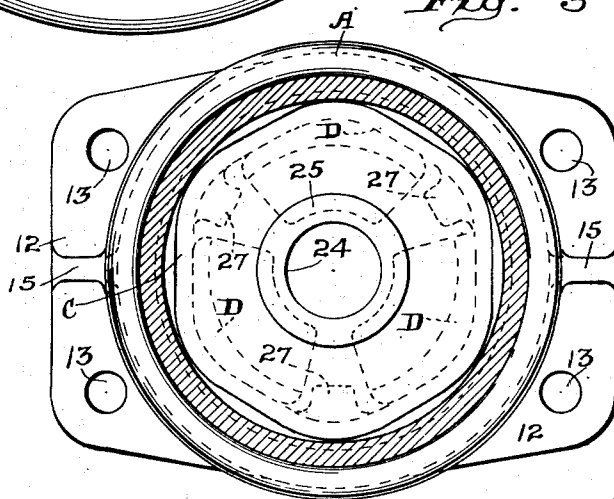


Fig. 5

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UNITED STATES PATENT OFFICE

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FRICTION BUFFER FOR RAILWAY CARS

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2 Claims. (Cl. 213—221)

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This invention relates to improvements in buffers for railway cars.

One object of the invention is to provide a simple and efficient buffer mechanism for railway cars, having relatively high shock absorbing capacity provided by friction means.

A further object of the invention is to provide a buffer mechanism of the character indicated, comprising a housing secured to the car, a buffing head slidably telescoped within the housing, a friction casing within the housing, open at its rear end, friction shoes slidably telescoped within the open end of the casing, a wedge block buttressed against the rear wall of the housing and having wedging engagement with the shoes, a spring within the casing yieldingly opposing inward movement of the shoes, and spring means reacting between the buffer head and casing to yieldingly oppose inward movement of the buffer head, wherein the buffer head is engageable with the friction casing, after the mechanism has been compressed to a predetermined extent less than the full compression stroke of the same, to force the casing rearwardly and produce relative movement of said casing and wedge, together with the friction shoes, to provide high frictional resistance during the remainder of the compression stroke.

A more specific object of the invention is to provide a buffer mechanism, as set forth in the preceding paragraph, wherein the parts are held assembled by a bolt detachably anchored to the buffer head, and wherein the friction casing is designed to hold the bolt in its anchored position when the parts of the mechanism have been completely assembled.

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

In the accompanying drawings forming a part of this specification, Figure 1 is a horizontal sectional view of the improved buffing mechanism and a portion of the end sill of a railway car. Figure 2 is an end elevational view, on an enlarged scale, of the buffer head, looking toward the left in Figure 1. Figure 3 is a transverse, vertical sectional view, corresponding substantially to the line 3—3 of Figure 1, showing the mechanism detached from the car. Figure 4 is an end elevational view of the friction casing of the improved mechanism, looking from right to left in Figure 1. Figure 5 is an end elevational view of the wedge of the improved mechanism, looking from left to right in Figure 1. Figure 6 is an end elevational view of the retainer bolt

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shown in Figure 1, looking from left to right in said figure.

In said drawings, referring to Figure 1, 10 indicates the usual end sill of a railway car on which the improved buffing mechanism is mounted.

My improved buffing mechanism, as illustrated in the drawings, comprises broadly a housing A, a buffing head B, a friction casing C, three friction shoes D—D—D, a wedge block E, springs F and G within the casing C, springs H and K reacting between the buffer head B and the casing C, and a retainer bolt M.

The housing A is in the form of a tubular, cylindrical shell, open at its front end and closed at its rear end by a vertical, transverse wall 11. The wall 11 is extended laterally beyond the sides of the tubular shell portion of the housing, providing a pair of flanges 12—12 for securing the housing to the end sill 10 of the railway car in the usual manner. The flanges 12—12 are provided with suitable bolt receiving openings 13—13, adapted to accommodate bolts 14—14 for securing the housing to the end sill 10. The flanges 12—12 of the housing A are preferably reinforced by horizontal webs 15—15, extending lengthwise of the housing. The rear wall of the housing is provided with a central opening 16, adapted to accommodate the shank of the bolt M, and the end sill 10 is provided with a similar opening 17, aligned with the opening 16.

The buffer head B includes a cylindrical shell or sleeve 18, which extends rearwardly from the head proper, which closes the front end of the sleeve and forms the end wall 19 of said sleeve. The wall 19 projects laterally outwardly of the cylindrical sleeve 18, providing an annular flange 20, as clearly shown in Figures 1 and 2. The sleeve portion 18 of the buffer head B is slidably telescoped within the housing A and has its movement inwardly of the housing positively limited by engagement of the flange 20 of the head B with the open end of the housing. The wall 19 has a pair of inwardly extending, laterally opposed lugs 21—21, projecting therefrom. The lugs 21—21 are disposed at opposite sides of the central, longitudinal axis of the sleeve 18 of the buffer head and have interned flanges at their outer ends forming ledges 22—22 in back of which the head of the bolt M is engageable.

The friction casing C is arranged within the housing A, and extends into the sleeve 18 of the buffer head B. The casing C is open at its rear end and has a transverse wall 23 at its front end.

The wall 23 is provided with a central opening 24, surrounded by a forwardly or outwardly projecting, tubular boss 25, the opening or bore of which is in alignment with the opening 24. The opening 24 and the bore of the boss 25 form guide means for the bolt M, as hereinafter pointed out. The casing C is of hexagonal, interior and exterior cross section and presents a set of three inwardly converging friction surfaces 26—26—26 at its open rear end, which are of V-shaped, transverse cross section. Rearwardly of the friction surfaces 26—26—26, the open end of the casing C is provided with three laterally inwardly projecting retaining lugs 27—27—27 for limiting rearward movement of the wedge block E with respect to the casing and holding the former assembled with the latter.

The wedge block E is in the form of a solid member, provided with a central bore 28, adapted to accommodate the bolt M. At the rear end of the block E is provided a substantially flat, transverse face 29, which bears on the wall 11 of the housing A. At the forward end, the block E has three V-shaped wedge faces 30—30—30, converging toward the longitudinal axis of the mechanism in forward direction.

The friction shoes D, which are three in number, surround the wedge block E and are provided with V-shaped friction surfaces 31—31—31 on their outer sides, engaging respectively the V-shaped surfaces 26—26—26 of the casing C. On the inner side, each shoe D has a V-shaped wedge face 32, engaging the corresponding V-shaped wedge face 30 of the wedge block E. The wedge block E is anchored to the casing by three radially extending lugs 33—33—33 engaged respectively between adjacent shoes and cooperating with the lugs 27—27—27 of the casing.

The springs F and G, which are in the form of helical coils, are contained within the casing C, being interposed between the shoes D—D—D and the wall 23 of the casing. The spring F surrounds the spring G and both springs have their opposite ends bearing, respectively, on the inner ends of the shoes D—D—D and the inner side of the wall 23 of the casing. These springs are preferably under a predetermined amount of compression and yieldingly oppose inward movement of the friction clutch member formed by the shoes D—D—D and the wedge block E.

The springs H and K, which are also in the form of helical coils, are arranged within the sleeve 18 of the buffing head B, the spring H surrounding the spring K.

The buffer head B is held assembled with the other parts of the mechanism by the retainer bolt M, which has a T-head 34 at its forward end engaged between the lugs 21—21 of the buffer head, in back of the ledges 22—22. The shank of the bolt M extends rearwardly from the head, through the inner coil spring K, the bore of the tubular boss 25 and the opening 24 of the wall 23 of the casing C, the inner coil spring G, the bore 28 of the wedge block E, the opening 16 in the wall 11 of the casing C, and the opening 17 of the sill 10. The shank of the bolt M is of cylindrical, transverse cross section and projects rearwardly beyond the sill 10, said projecting end being threaded, as indicated at 35. A nut 36 is mounted on the threaded end 35 of the bolt M for holding the bolt against removal, the nut 36 bearing on a washer 37, which, in turn, bears on helically coiled outer and inner, relatively short springs 38 and 39 buttressed against the side of the sill 10, a washer 40 being

interposed between the sill and the front ends of said springs.

The springs H and K of the buffer head B are arranged with their rear ends bearing directly on the transverse wall 23 of the casing C, with the inner spring K seated over the tubular boss 25 of said casing. The front end of the outer spring H bears directly on the wall 19 of the buffer head B and the inner spring K bears at its front end on a washer 41 surrounding the shank of the bolt M and seating on the lugs 21—21 of the buffer head.

As will be evident in the completely assembled condition of the mechanism, the bolt M is held against lateral displacement by the casing C of the friction shock absorbing means, being held in centered position by the surrounding tubular boss 25, the casing, in turn, being held against lateral displacement by its telescoped arrangement within the sleeve 18 of the buffer head B.

In assembling the mechanism, the assembled friction shock absorber comprising the casing C, shoes D—D—D, springs G and F, and wedge E is first placed within the housing A, which is stood on end, that is, in upright position with its wall 11 resting on a horizontal support, having an opening therethrough in alignment with the opening 16 of said wall. The springs H and K are then placed in position on the casing C and the washer 41 placed on top of the spring K. The buffer head B, with the bolt M attached hereto, is then telescoped within the housing A, the shank of the bolt being passed through the washer 41, spring K, boss 25 of the casing C, wedge E, and opening 16 of the wall 11 of the housing A. In attaching the bolt M to the buffer head, the T-headed end of the bolt is passed through the open end of the sleeve 18 of the buffer head, with the head 34 of the bolt disposed to one side or the other of the lugs 21—21, that is, either to the right or left of the same, as seen in Figure 2. In order to provide sufficient clearance for thus placing the T-head 34 of the bolt, one of the longitudinal side edges of said head is rounded off, as indicated at 42, in Figure 6, to conform to the contour of the curved inner surface of the side wall of the sleeve 18. With the bolt thus placed, the same is displaced laterally to centered position, thereby engaging the T-head 34 of the same in back of the ledges 22—22 of the lugs 21—21, thereby anchoring the bolt to the buffer head. As will be evident, when the buffer head has been assembled with the other parts of the mechanism in the manner hereinbefore described, the bolt will be positively held in centered position by the shank thereof being engaged within the tubular boss 25 of the casing C of the friction shock absorber, the casing C being held against lateral displacement in its telescoped arrangement within the sleeve 18 of the buffer head. After the parts have been assembled, the springs 38 and 39 are assembled with the bolt M and the nut 36 is screwed onto the bolt, thus completing the assembling of the device for handling, shipping, or storage. When mounted on a car, as shown in Figure 1 of the drawings, the bolt M of the buffer mechanism is engaged through the end sill 10, as hereinbefore described, and the springs 38 and 39 are clamped against the inner side of the end sill by the nut 36 of said bolt.

The operation of my improved buffer mechanism is as follows: Upon inward movement of the head B, through pressure exerted thereon by any

object, such as a buffer head of an adjacent car, the head B is forced inwardly of the housing A, compressing the springs H and K against the casing C of the friction shock absorber, thus absorbing the lighter shocks to which the mechanism is subjected. As the head B moves further inwardly of the housing A, the washer 41, which is seated on the lugs 21—21 of the buffer head B, engages the outer end of the boss 25 of the friction casing C, the buffer head B thereby compressing the friction shock absorber against the rear wall of the housing A thereby taking care of the heavier shocks. Upon the actuating force being reduced, the expansive action of the springs F and G of the friction shock absorber restores all of the parts thereof to the full release position shown in Figure 1, rearward movement of the wedge E, with respect to the casing C, being limited by shouldered engagement of the lugs 33—33—33 thereof with the lugs 27—27—27 of the casing C, and the expansive action of the springs H and K restores the buffer head to the full release position shown in Figure 1, outward or forward movement of the buffer head with respect to the housing A being limited by the bolt M cushioned by the springs 38 and 39.

I claim:

1. In a buffer for railway cars, the combination with a housing secured to the end of a car, said housing being open at its front end and closed at its rear end; of a friction shock absorber within said housing, said shock absorber including a casing having a transverse wall at its front end provided with a centrally disposed, tubular guide boss projecting forwardly from said wall of the casing; a buffer head having a rearwardly extending sleeve portion slidably telescoped within said housing and over the front end of said casing; laterally spaced bolt anchoring retaining lugs on the inner side of the buffer head, said lugs having inturned flanges thereon; a retaining bolt for said buffer head having a head engaged in back of said flanges, said bolt extending through the tubular guide boss of said

casing and held in centered position by said engagement with said casing; and spring means reacting between said buffer head and casing, yieldingly opposing inward movement of said head.

2. In a buffer for railway cars, the combination with a housing secured to the end of a car, said housing being open at its front end and closed at its rear end; of a friction shock absorber within said housing, said shock absorber including a casing having a transverse wall at its front end provided with a centrally disposed, tubular guide boss projecting forwardly from said wall of the casing; a buffer head having a rearwardly extending sleeve portion slidably telescoped within said housing and over the front end of said casing; laterally spaced bolt anchoring retaining lugs on the inner side of the buffer head, said lugs having inturned flanges thereon; a retaining bolt for said buffer head having a head engaged in back of said flanges, said bolt extending through the tubular guide boss of said casing and held in centered position by said engagement with said casing; and spring means surrounding said boss and held centered thereby, said spring means reacting between said buffer head and casing, yieldingly opposing inward movement of said head.

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