

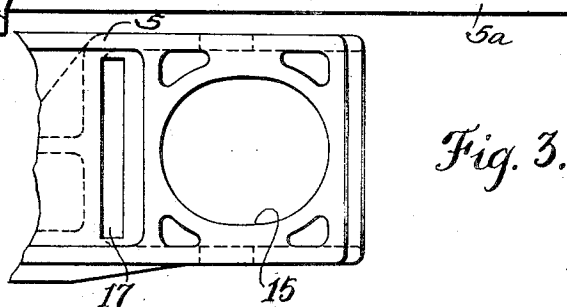
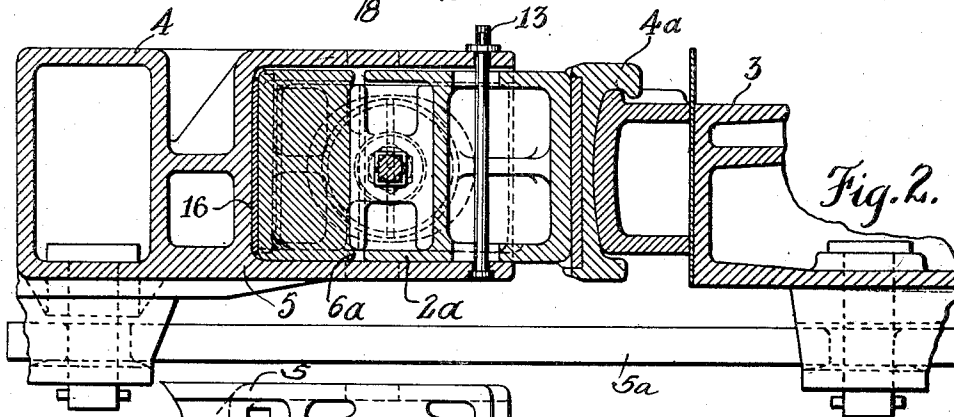
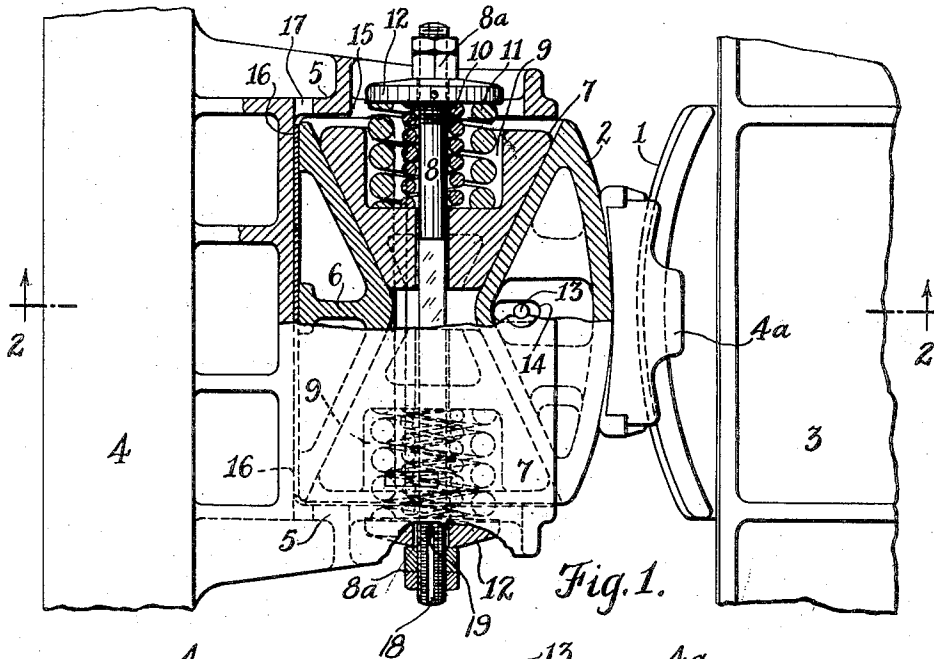
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N. I. EDWARDS

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BUFFER

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INVENTOR
Norman I. Edwards
BY
Symmesworth & Lechner
ATTORNEYS

UNITED STATES PATENT OFFICE

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BUFFER

Norman I. Edwards, Longueuil, Quebec, Canada,
 assignor to Franklin Railway Supply Company,
 New York, N. Y., a corporation of Delaware

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This invention relates to railway draft appliances, particularly to the buffer mechanism used between vehicles, as between locomotive and tender. The buffer device contemplated is of the type which employs springs and wedges to keep the buffer in forward position.

Heretofore, in employing this type of mechanism, certain difficulties have arisen. For example, some difficulty has been encountered in applying buffers of this general type to locomotives having narrow vestibule cabs, because the overall width of the mechanism is too great.

Moreover, it has been found that, in spring-held buffers of this type, sudden and abnormal shocks impose great lateral strain on the mechanism, with possibility of rupture, because the springs may become solid under such abnormal impact and transmit shock to the mechanism instead of absorbing it in themselves.

The invention aims to overcome these difficulties, and has for an object the provision of compact and rugged mechanism, of less width than devices formerly employed, and at the same time, more flexible and efficient in action. A further object is the provision of means allowing compensation to be made for wear on the contact faces.

A still further object consists in the provision of means to prevent the buffer supporting mechanism from receiving the full force of shocks greater than it can withstand. Finally, the present invention contemplates the provision of a simple and convenient form of reaction adjusting mechanism for the buffer supporting springs, as well as the provision of a device associated with the adjusting mechanism and operable as a safeguard to prevent adjustment of the spring force in such manner as to reduce the spring play or reaction beyond that necessary to absorb normal buffing shocks.

How these and other objects and advantages which will appear to those skilled in the art are obtained will be clear from the following description of a preferred embodiment of my invention, together with inspection of the accompanying drawing, in which:

Figure 1 is a plan view of a buffer embodying my invention mounted between tender and locomotive frames, certain of the parts being shown in section and others broken away;

Figure 2 is a vertical mid section, taken on the line 2—2 of Figure 1; and

Figure 3 is a side view of a portion of the tender buffer pocket.

Referring now to Figure 1, it will be seen that a radial buffer is illustrated, having opposed con-

vex buffing members 1 and 2, carried by the locomotive frame 3 and tender frame 4, respectively. A floating chafing block, 4a, is mounted between the buffer members 2 and 1, being carried by the latter. The locomotive buffer 1, and chafing block 4a may be of any suitable construction.

The buffer member 2 is suitably mounted on the tender frame, as in a pocket 5, with relative freedom of movement. This member 2, is wedge shaped, and a wedge shaped member 6 is mounted behind it, the points of the wedges being adjacent and opposed. Other wedges 7, 7 are placed between the members 2 and 6, the points of these latter wedges being likewise opposed, so that the four wedges have their points adjacent and the inclined faces of each in contact with an inclined face of each of its neighbors.

Holes, extending from base to apex are provided in the wedges 7, and a transverse link member, 8, passes through them. Helical compression springs 10, 11, one within the other, are carried by this bolt and fit into recesses 9 in the bases of the wedges 7. Abutment discs 12 held on the member 8 by nuts 8a, retain these springs under a suitable and adjustable compression, so that they tend to force the wedges 7 inward towards each other. The effect of this is to force the buffer proper, or wedge member 2, forward, since the rear wedge 6 is in fixed relation to the tender frame 4.

The forward movement of the buffer 2, is limited by the coupling 5a of locomotive and tender, ordinarily, but should these be uncoupled, a pin 13, through slot 14, in the member 2 keeps it from falling out of the pocket 5.

Apertures 15 are provided in the side walls of the pocket 5, through which the bolt 8, springs 10 and 11 and abutment discs 12 project.

In practice, the various parts of the mechanism are assembled loosely, the springs 10 and 11 being extended, and the locomotive and tender are coupled. Then the nuts on bolt 8 are tightened, which forces wedges 7, 7 together, drives the buffer member 2 forward against the chafing block 4a and thus puts the desired tension on the draw bar 5a between the vehicles.

In buffers of this type heretofore employed, it has happened that the supporting means have been stressed under abnormal impact to a point at which the springs became solid, under which conditions severe shock was imposed on the supporting means, damaging or rupturing the same. To ensure that such situations will not occur, I provide means, such as the flanges 2a and 6a on the members 2 and 6 respectively, having their

opposed edges normally spaced apart. Under abnormal shock, these edges come together, preventing further inward movement of the member 2 and, consequently, further spreading of the wedges 7, and transmitting the unabsorbed shock directly to the vehicle frame. It will be understood that this stop means is arranged to come into operation only under abnormal shocks, but always, nevertheless, before the mechanism for absorbing normal shocks has reached the limit of its reaction.

Furthermore, to prevent maladjustment of the spring abutment discs 12, I provide stop means of any suitable character positively limiting the degree to which the adjusting means may be drawn up. Such means may take the form of a collar on bolt 8, or a fixed pin projecting through it diametrically, or abutment means on the pocket 5 cooperating with disc 12. Any of these devices may be arranged as spring adjustment stops, or, as shown in the drawing, this result may be obtained by the use of a pin 19 fixed in disc 12 and sliding in a slot 18 formed in bolt 8. With this arrangement the disc 12 cannot be drawn up beyond the point at which pin 19 reaches the end of slot 18.

In this connection, it is to be noted that the stop means for the spring adjustment is so arranged that the cooperating flanges 2a and 6a come into action before the compression limit of the springs is reached, even when the nuts 8a are drawn up as far as said stop means will permit.

After wear has occurred in service, either in the draw bar mechanism or in the buffer parts, the nuts 8a are loosened on the bolt 8, relieving pressure on springs 10 and 11, and then shims 16 may be inserted behind the member 6, through vertical slots 17 in the rear corners of the pocket 5. To keep the shims from falling out through the slots 17, I propose to terminate these slots a short distance above the level of the bottom of the pocket 5, as clearly shown in Figure 3. The inserted shims will drop down to the bottom of the pocket, and thus be retained in place.

Obviously, variations in some respects may be employed, as, for example, substitution of any suitable link member for the bolt 8, or the use of different retaining means in place of the abutment discs 12 and lock nuts 8a.

It will be seen that by the use of the double-face wedges and inset springs, I am enabled to reduce the width of the device materially, thereby avoiding various objections to buffers of this type heretofore in use. Moreover, since the side wedges and the spring mechanism which holds them are full-floating, shims can be inserted through the slots 17 behind the member 6 without disturbing the functioning of these parts. This makes for longer life of the apparatus.

At the same time, this buffer with its double-face wedges, is more flexible and efficient in action

than buffers now commonly used, because a better distribution of forces is obtained. That is, the double-face wedges yield and recover more readily than other mechanisms, since they need travel only a relatively short distance to provide a given cushioning effect, and the double, oppositely inclined faces co-operate to divide the force. For the same reason, there is less risk of damage due to sudden and violent shocks in service, even though the springs which hold the wedges may be tightly drawn up.

It will be understood that other arrangements may be proposed embodying this principle of the double-face lateral wedge—as for example, the employment of a single lateral wedge having oppositely inclined faces,—without departing from the spirit of this invention.

I claim:

1. In a buffer mechanism of the character described, a buffing element, a wedge interposed between said element and a normally fixed part of the vehicle, said part and said wedge having complementary inclined or wedge surfaces, a spring acting on said wedge to advance the buffing element away from the vehicle, an adjustable abutment or reaction part between which and said wedge the spring is interposed and acts under compression, abutment means associated with said element and a fixed part of the vehicle to limit movement of the element toward the vehicle, and a positive stop limiting adjustment of said reaction part in a direction to increase the spring pressure, the positive stop being constructed to provide against adjustment of said reaction part to a point at which the spring would be completely compressed within the limits of movement of said buffing element as defined by said abutment means.

2. A railway vehicle buffer construction of the character described including a supporting pocket structure mounted at one end of the vehicle and having an opening at its outer side, a buffing device adapted to work or move in said opening, a member bearing against the base of the pocket structure and having a wedge surface presented toward said device, a wedge interposed between said device and said surface, spring means acting on said wedge and tending to advance said device, and means for removing the pressure or tension of said spring from said wedge, the pocket structure being provided with a lateral aperture at one side thereof adjacent to its base to provide for insertion of shims behind said member, whereby adjustments to compensate for wear or the like may be made by removing the spring tension or pressure from said wedge and inserting a shim through said aperture behind said member.

NORMAN I. EDWARDS.