No. 707,820. Patented Aug. 26, 1902.

S. P. BUSH.

FRICTION DRAW GEAR AND BUFFING APPARATUS FOR RAILROAD CARS.

(Application filed Mar. 22, 1902.)

(No Model.) 3 Sheets—Sheet 1.

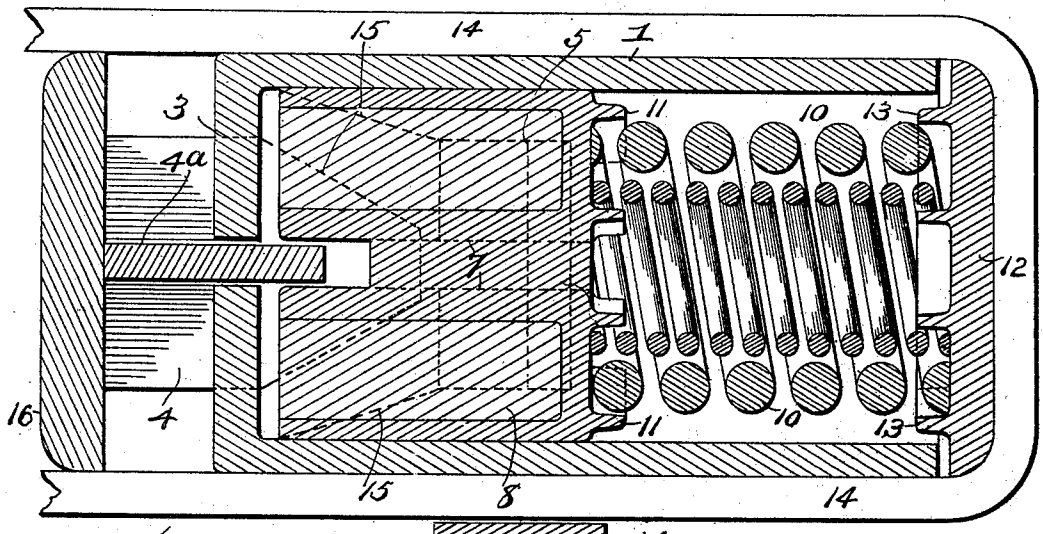


FIG. 1.

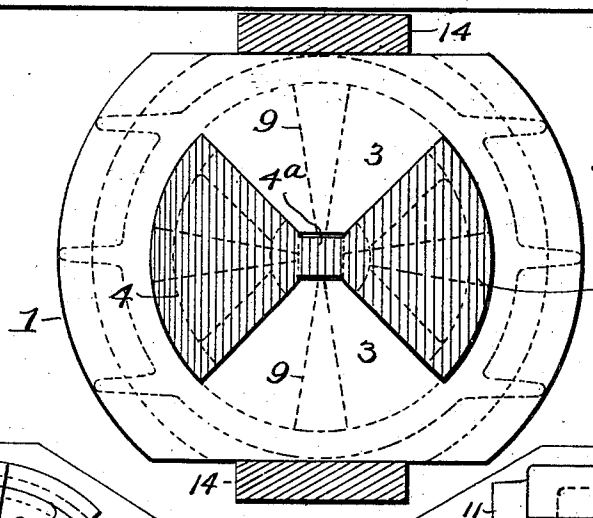


FIG. 2.

FIG. 6a.

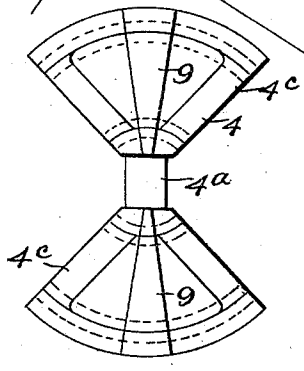


FIG. 6.

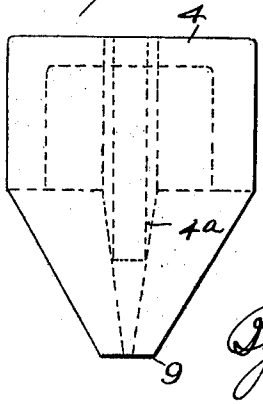
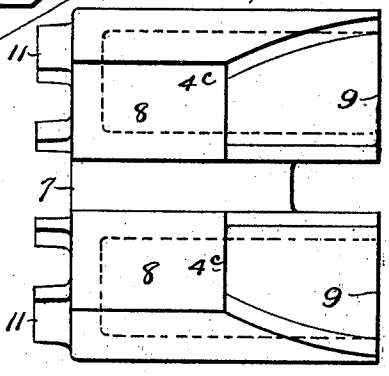


FIG. 6b.



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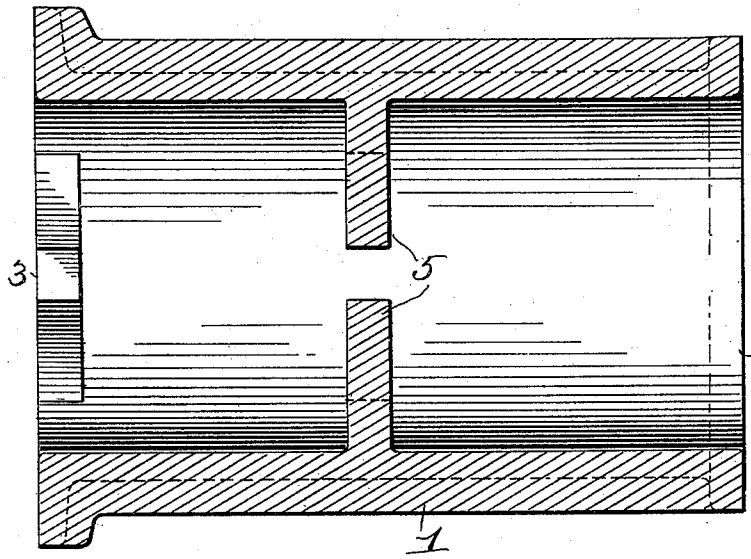


FIG. 3.

FIG. 4.

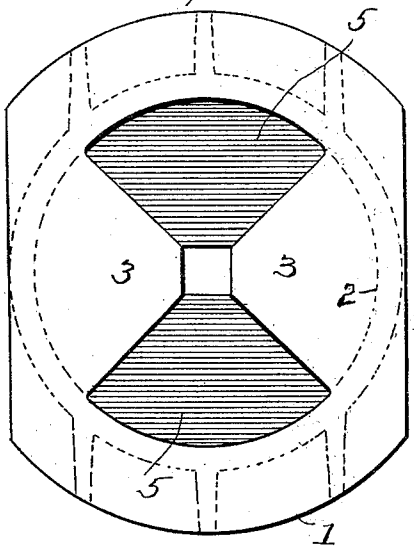
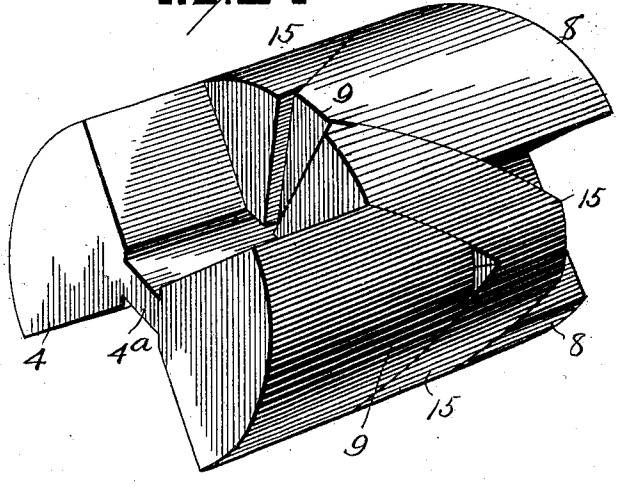


FIG. 5.



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FIG. 7.

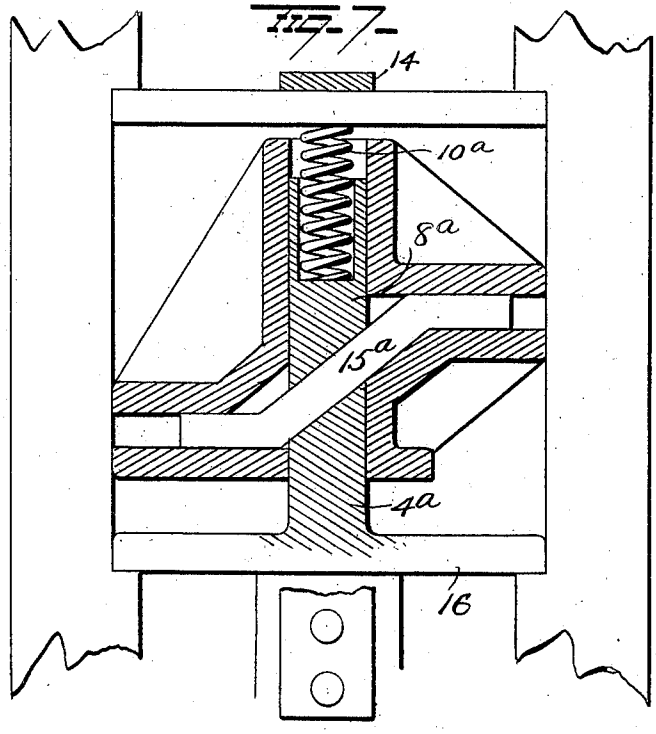
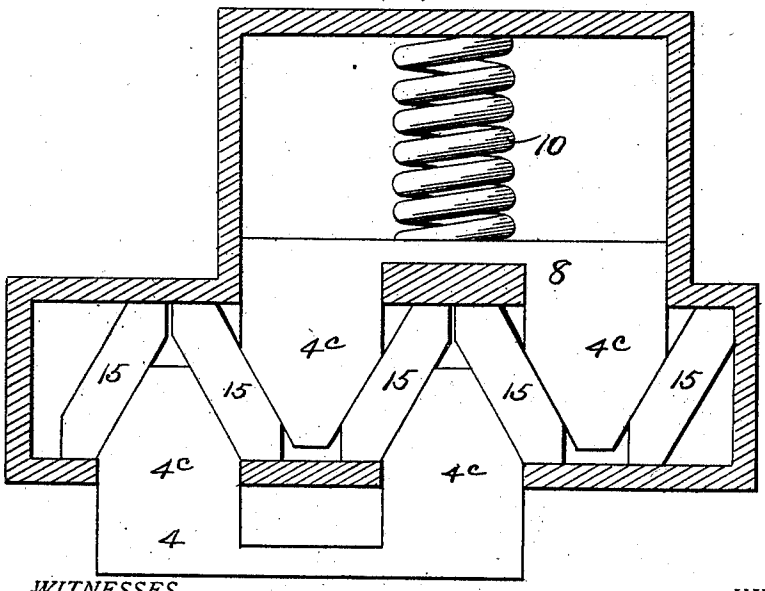


FIG. 8.



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UNITED STATES PATENT OFFICE.

SAMUEL PRESCOTT BUSH, OF COLUMBUS, OHIO, ASSIGNOR TO THE BUCKEYE MALLEABLE IRON AND COUPLER CO., OF COLUMBUS, OHIO.

FRICTION DRAW-GEAR AND BUFFING APPARATUS FOR RAILROAD-CARS.

SPECIFICATION forming part of Letters Patent No. 707,820, dated August 26, 1902.

Application filed March 22, 1902. Serial No. 99,461. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL PRESCOTT BUSH, of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Friction Draw-Gear and Buffing Apparatus for Railroad-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in friction draw-gear and buffing apparatus for railroad-cars and other purposes.

It is well known that in modern railway practice where very powerful and heavy engines and cars are used and where trains are made up of a large number of cars it is important to provide efficient means for absorbing or consuming in a yielding manner the energy exerted at or on the draw-gear in pushing and pulling, whereby violent shocks and strains may be avoided; and the object of my invention is to provide simple and effective means for absorbing such energy.

With this object in view my invention consists in a system of wedges or blocks having inclined surfaces acting against springs through transversely-movable blades separating said wedges, whereby the surfaces of the wedge-blocks are caused to slip against or move in contact with the transverse moving blocks, and thus consume or absorb wholly or partially the primary shock or force and also any reaction that is brought about by the compression of the springs.

In the accompanying drawings, Figure 1 is a view in section of a combined friction draw-gear and buffing apparatus. Fig. 2 is an end view of same. Fig. 3 is a view in section of the casing. Fig. 4 is an end view of same. Fig. 5 is a perspective view of the wedges and sliding blocks, showing them in their proper relative positions. Figs. 6, 6^a, and 6^b are views of the wedge-blocks. Fig. 7 is a view in section of a simple form of apparatus embodying my invention, and Fig. 8 is a diagrammatic view of the wedges and blocks developed on a plane instead of within a circular casing.

1 represents a casing preferably cylindrical in form and designed to be slidingly mounted on the framework of a car. This casing is preferably ribbed longitudinally and flanged at its ends for adding strength and is open at one end, as at 2, and provided at its opposite end with two inwardly-projecting shoulders 3, each of which is in the form of a triangle and of sufficient thickness to withstand the stress to which they are subjected. The inner or adjacent ends of these triangular shoulders are squared off or cut away at the ends for the passage of the web 4^a of the primary wedge-blocks 4. The casing 1 is also provided internally at or near its center with shoulders 5, corresponding in shape to the shoulders 3, but located in line with the triangular spaces between shoulders 3, and are similarly squared off or cut away at their inner ends 6 for the passage of the web 7, connecting the secondary wedge-blocks 8.

Located within the casing 1, between the shoulders 3 and 5, are the transverse blocks 15. These blocks 15 are arranged in pairs, as shown in Fig. 5, each pair being arranged in the form of a V, with their ends squared off, so as to rest solidly on the shoulders 3 and 5. The forward ends of one transverse block 15 of each pair rest against each shoulder 3, while the two ends of the blocks constituting a pair rest against the front face of shoulders 5, thus bringing one pair of transverse blocks directly in line with the spaces between the shoulders 3, while the adjacent blocks of both pairs are in line with the spaces between the shoulders 5. These blocks 15 are shaped externally to conform to the contour of the casing 1, and their front and rear faces form inclined planes, which are engaged, respectively, by the primary and secondary wedge-blocks 4 and 8. These blocks 4 and 8 are shaped to conform to the contour of the casing, so that there will be no lateral play therein, and each block is in effect two blocks 4^c, connected, respectively, by the webs 4^a and 7. Each block 4^c is provided with a wedge-shaped end 9, the wedge-shaped ends 9 of the primary blocks 4 each resting within the V-shaped recess formed by the two transverse blocks 15 constituting one pair, while the wedge-shaped ends 9 of the secondary blocks 8 each rest within the V-shaped recess formed by

the adjacent members of both pairs of transverse blocks 15. There are two pairs of transverse blocks 15, and they are of such size as compared with the casing that space is left between them for a limited sliding movement on the shoulders 3 and 5.

The blocks 4 and 8 are preferably hollow and filled with wood or some suitable composition; but, if desired, they may be made wholly of metal.

With the construction thus far described it will be seen that the blocks or members 4^c of the primary block 4 each rest within the recess formed by a pair of transverse blocks 15, while the wedge-shaped members of the secondary block 8 rest within the recesses between the adjacent members of the two pairs of transverse blocks. Hence when the primary block 4 is forced rearwardly it operates to separate the members of both pairs of transverse blocks 15, and the inclined surfaces of the latter acting against the wedges of the secondary block 8 force the latter rearwardly against the action of the springs 10. The rear face of the secondary block or wedge is provided with lugs or flanges 11 for holding the springs in place, and the rear follower 12 is provided on its inner face with lugs or projections 13, which support the rear ends of the springs 10. The follower 12 rests a short distance in rear of the casing 1, so as to allow of some movement before coming in contact one with the other, and is held in place by the yoke 14, which embraces the casing 1 and is secured at its free ends to the draw-bar.

The transverse blocks 15 are, as before stated, located between and supported by the shoulders 3 and 5. The primary wedge-block 4 is introduced between shoulders 3, with their rear ends in contact with the forwardly-diverging inclines of the transverse blocks 15, while the secondary block 8 is introduced from the rear between shoulders 5, with its wedges in contact with the rearwardly-diverging inclines of the transverse blocks. The draw-bar of the draft apparatus abuts either directly or indirectly against the follower 16, which, as clearly shown in Fig. 1, rests against the front or outer end of primary block 4. In moving inwardly, as in buffing, the wedge-block 4 acts against the two pairs of blocks 15, which force the blocks 15 of each pair apart and against the wedge-shaped ends of block 8, thus forcing the latter in a plane parallel with the movement of the block 4, which movements are clearly illustrated by the diagrammatic view, Fig. 8. The motion of the block 8 is resisted by the springs 10, which are thereby compressed, and the friction between the inclined surfaces, together with the yielding action of the spring, gradually consumes or absorbs the original shock or force. In pulling the power would be transmitted through yoke and follower to the casing 1 and blocks 15 against primary block 4, and thence by the movement of blocks 15, as before, to block 8, and finally to the spring, it of course being understood that the followers 12 and 16 are limited in their rearward and forward movements, respectively, by stops such as are ordinarily used.

Fig. 7 illustrates a simple form embodying the principle involved. In this construction a single transverse sliding block or plate 15^a is engaged on one inclined face by the primary wedge-block 4^a and on its rear inclined face by the secondary wedge-block 8^a, the latter being held in contact with the block or plate 15^a by the spring 10^a.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to limit myself to the exact construction of parts herein shown and described; but,

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

1. In a draw-gear and buffing apparatus, the combination with opposing wedges mounted to move simultaneously in the same direction, a resisting-spring behind one of said wedges and a transversely-movable device interposed between said wedges.

2. In a draw-gear and buffing apparatus, the combination with opposing wedges in line with each other in a plane coincident with that of the draft devices, said wedges mounted to move together in the same direction, a resisting-spring behind one of said wedges and a transversely-movable device interposed between said wedges.

3. In a draw-gear and buffing apparatus, the combination with opposing wedges arranged in line with each other and mounted to move simultaneously in the same direction, and a resisting-spring behind one of said wedges, of a transversely-movable part interposed between said opposing wedges, and means for preventing longitudinal movement of said transversely-disposed device, in a direction parallel with the movement of the wedges.

4. In a draw-gear and buffing apparatus, the combination with a casing having shoulders or abutments separated from each other, of opposing wedges movable in unison in the same direction in said casing, intermediate transversely-movable devices separating said wedges and located within the casing between said shoulders or abutments, and a spring bearing against one of said wedges.

5. In a draw-gear and buffing apparatus, the combination of opposite wedges movable together in the same direction, a transversely-movable part intermediate of and separating said wedges, a resisting-spring, and a case to hold the parts.

6. In a draw-gear and buffing apparatus, the combination of opposing wedges movable together in the same direction, an intermediate transversely-movable part disposed between and separating said wedges and against which

the wedges bear, a spring in line with the wedges, a case to hold the parts, and a follower-plate against which the spring bears.

7. In a draw-gear and buffing apparatus, the combination of a follower-plate having a wedge-shape projection, an opposite wedge in line with the first wedge, an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides, and a resisting-spring in line with the wedges.

8. In a draw-gear and buffing apparatus, the combination of a wedge in positive contact with the draw-bar, an opposite wedge in the same line and having a seat to receive one end of a spring, and an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides.

9. In a draw-gear and buffing apparatus, the combination of opposite wedges that move together in the same direction, and an intermediate transversely-movable part that is forced laterally positively in one direction as the wedges move forward and laterally in the opposite direction as the wedges are moved back.

10. In a draw-gear and buffing apparatus, the combination of opposite wedges in line with the draw-bar, an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides, a spring in line with the wedges and holding the latter in contact with the transversely-movable part, and a case to hold the parts.

11. In a draw-gear and buffing apparatus, the combination of opposite wedges that move together in the same direction, an intermediate transversely-movable part separating said wedges, a follower-plate, a spring, one end of which bears against a wedge and the other against the follower-plate, and a case to hold the parts.

12. In a draw-gear and buffing apparatus the combination with two followers restrained against outward movement, of a sliding casing intermediate the followers, opposite wedges that move in unison in the same direction in buffing, an intermediate transversely-movable part separating said wedges, and a spring.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAMUEL PRESCOTT BUSH.

Witnesses:
EDWARD KAEMMERER,
ARNO EBERLEIN.