T. L. McKEEN.

FRICTION BUFFER FOR RAILWAY CARS.

APPLICATION FILED MAY 23, 1910.

1,016,703.

Patented Feb. 6, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

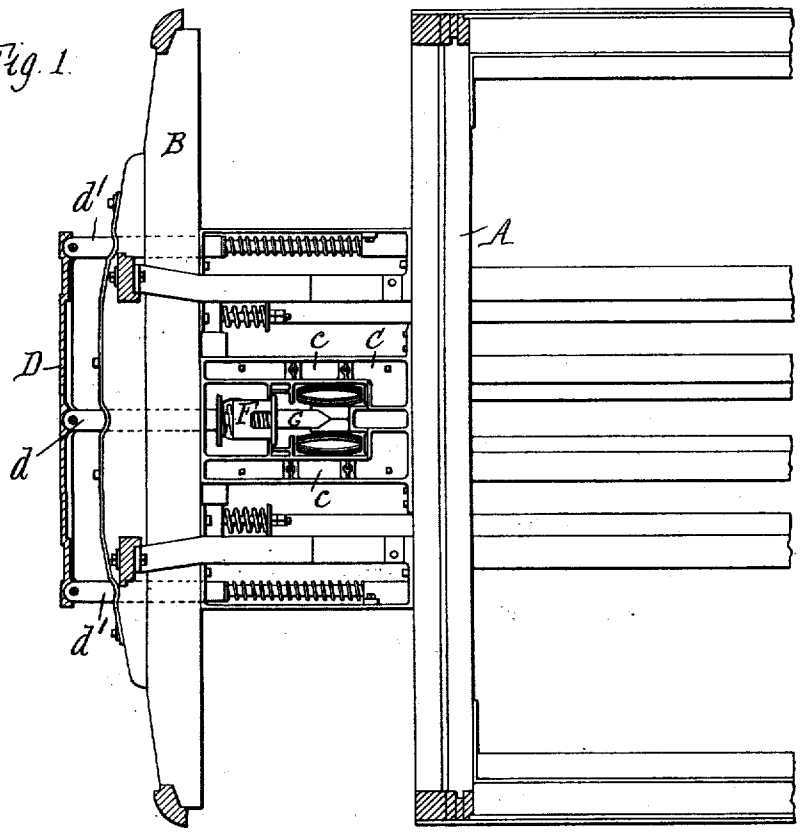
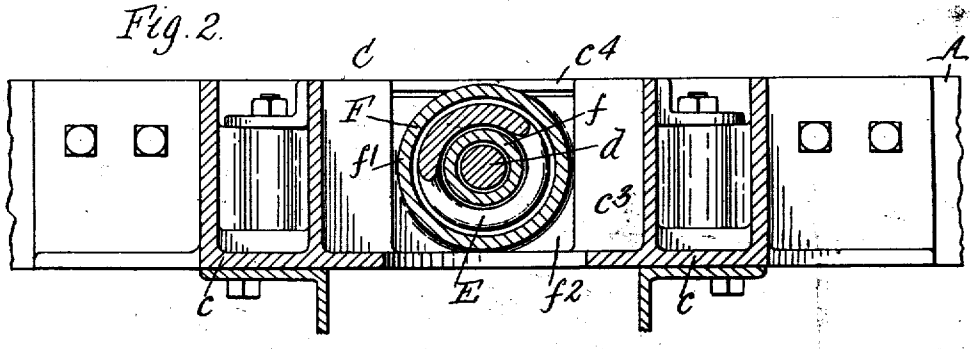


Fig. 2.



Witnesses.

A. G. Dennis.

C. H. Bunn.

Inventor.

Thomas L. McKeen,

By Wetherbee, Parker & Ward.

Attorneys.

T. L. McKEEN.

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2 SHEETS—SHEET 2.

Fig. 3.

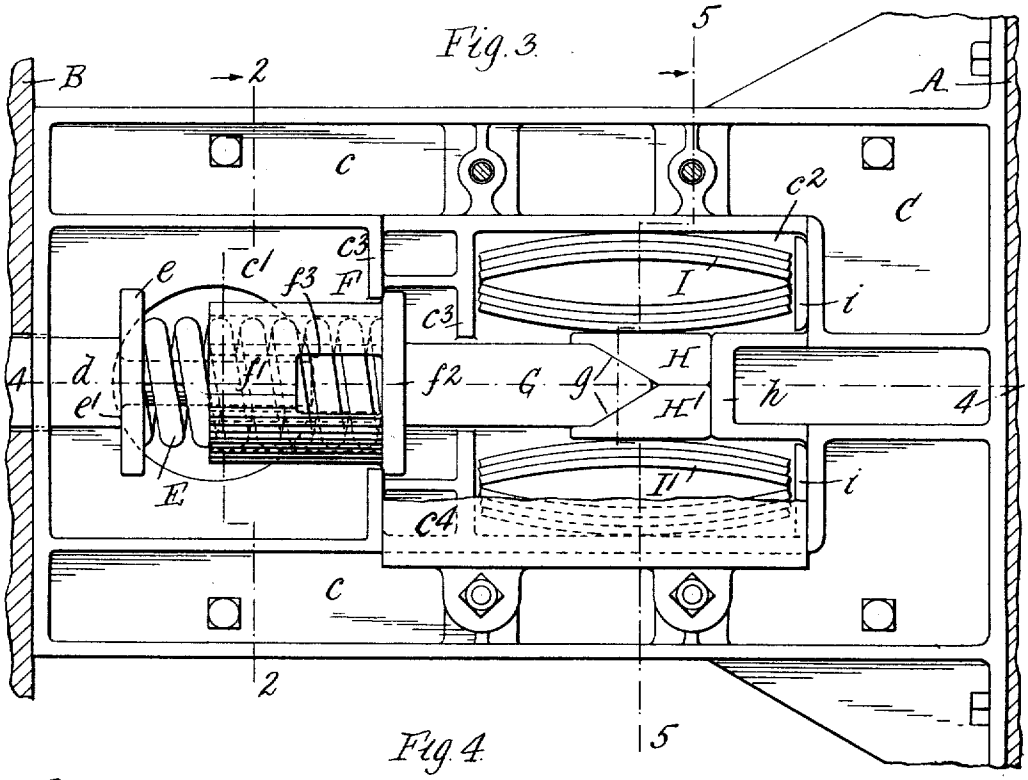


Fig. 4.

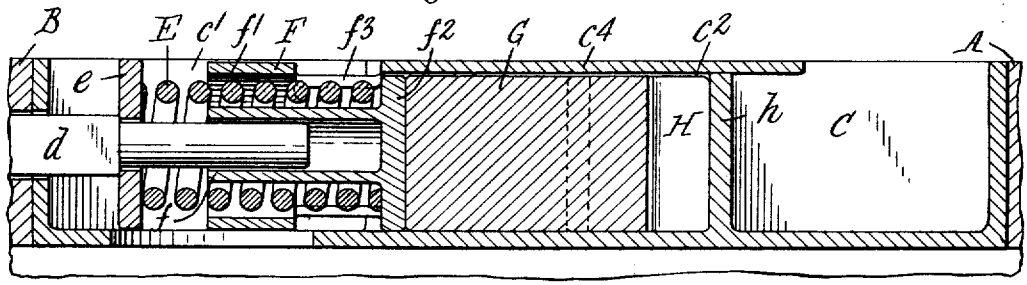
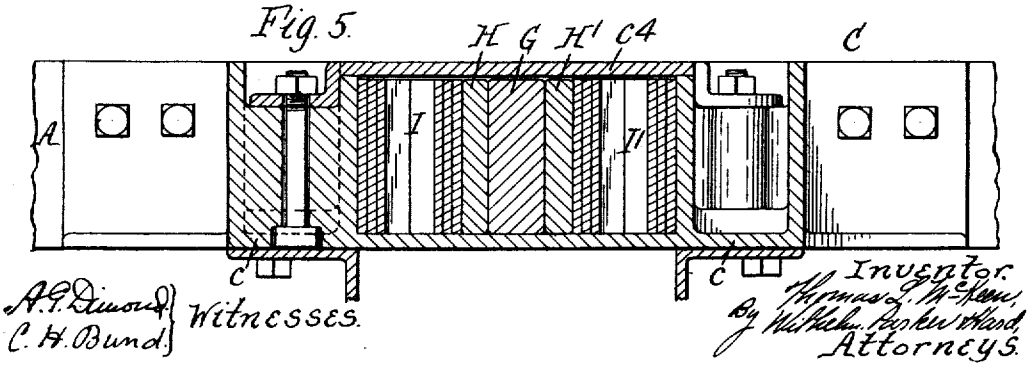


Fig. 5.



A. F. Dimond
C. H. Bund
Witnesses.

Inventor.
Thomas L. McKeen,
By Wickes, Briesen & Ward,
Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS L. McKEEN, OF EASTON, PENNSYLVANIA.

FRICTION-BUFFER FOR RAILWAY-CARS.

1,016,703. Specification of Letters Patent. Patented Feb. 6, 1912.

Application filed May 23, 1910. Serial No. 562,957.

To all whom it may concern:

Be it known that I, THOMAS L. McKEEN, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Friction-Buffers for Railway-Cars, of which the following is a specification.

This invention relates more particularly to improvements in friction platform buffers for railway passenger cars, and has for its object the production of an efficient buffer, preferably adapted for platform cars, which is of simple, strong and durable construction and is composed of the minimum number of parts arranged so as to afford a long travel of the buffer head, give a high resistance and protect all of the buffer springs from injury when the buffer is subjected to severe or unusual shocks.

In the accompanying drawings, consisting of two sheets: Figure 1 is a plan view, partly in section, of one end of a car and platform frame provided with a buffer embodying the invention. Fig. 2 is a transverse section of the buffer, on an enlarged scale, on line 2—2, Fig. 3. Fig. 3 is a plan view thereof showing part of the cover removed. Fig. 4 is a longitudinal sectional elevation thereof on line 4—4, Fig. 3. Fig. 5 is a transverse section thereof on line 5—5, Fig. 3.

Like reference characters refer to like parts in the several figures.

The improvements are shown in the drawings as applied to a platform-buffer of the "Gould" type, but the invention is also applicable to other kinds of railway car buffers.

A represents the car end sill, B the platform end sill, and C a metal casing or support in which the springs and other parts of the buffer mechanism are contained and which is secured between the car end sill and the platform end sill.

D represents the buffer head or plate, which, as usual, is pivoted to the outer ends of a center supporting stem d and side stems d', which project rearwardly through holes in the platform end sill. The side stems are provided with the usual coil springs, which yieldingly hold the buffer head parallel with the platform end sill.

The casing C shown in the drawings is bolted or otherwise secured at its front and rear ends to the platform and car end sills, respectively, and is provided with side portions c which are bolted or otherwise secured to the longitudinal sills of the car. The casing is divided by a transverse wall or web c^3 into two compartments or chambers c' and c^2, of which the rear chamber c^2 contains the friction resistance devices. A plate or cover c^4 is removably secured over the top of the rear chamber c^2 which serves to hold the parts in place and also renders them easily accessible for repairs or inspection.

E represents a coil spring located in the front chamber c' of the casing around a reduced portion of the center stem d of the buffer. The front end of the spring E bears against the usual plate or follower e which engages with a shoulder e' formed on the center stem, while the rear end of the spring bears against a follower or part F which is movable forwardly and rearwardly in the front chamber c' of the casing C. This follower F preferably consists of two concentric cylindrical portions f and f', and a substantially rectangular end portion or plate f^2 integral with the cylindrical portions. The rear end of the spring E is located between the inner and outer cylindrical portions f and f' and bears against the plate f^2. The reduced portion of the center stem d is telescopically arranged within the inner hollow cylinder f and thus holds the follower F in place and guides it during its movements. The cylindrical parts of the follower F are made of such length that when the coil spring has been compressed to the desired maximum, the plate or follower e will strike the front ends of these cylindrical parts and thus prevent further compression of the spring. The outer cylindrical portion is cut away or reduced in height at f^3 to permit the movement of this part of the follower underneath the cover plate c^4 of the casing, as may be seen in Fig. 4.

G represents a wedge which is arranged to move longitudinally of the car in the chamber c^2 of the casing C. The front end of the wedge bears against the rear end of the follower F so that it is moved rearwardly by the rearward movement of this follower. The inclined faces g g of the wedge co-act with correspondingly inclined faces on two friction blocks H H′ which are located at opposite sides of the wedge with their rear ends bearing against a rigid abutment or part h of the casing which extends

into the middle portion of the chamber c^2 and holds the friction blocks from rearward movement. The rearward movement of the wedge spreads or forces the friction blocks apart transversely of the car against the action of a pair of leaf springs I I′ which are located in the chamber c^2 between the friction blocks and the opposite side walls of the chamber. These springs are held from longitudinal movement between the end walls of the chamber. Each of these springs preferably consists of two sets of bowed spring plates or leaves arranged with their concave faces toward each other so that the convex outer faces of each spring bear against one of the friction blocks and against one side wall of the chamber c^2 of the casing C. By this arrangement of the spring leaves a long travel of the buffer head is permitted, and the co-acting faces of the wedge and the friction blocks can be made with a high pitch such that when the rearward pressure is removed from the wedge, the wedge will return to its normal position without requiring a release spring. Wear plates *i i* are preferably arranged between the rear ends of the springs I I′ and the rear wall of the casing C to relieve this wall from wear which would otherwise be caused by the rubbing of the ends of the springs against the wall.

In the operation of the buffer, the coil spring E being weaker than the leaf springs is first compressed, the compression of this spring alone permitting an initial rearward movement of the buffer head sufficient to enable the coupling of two cars. This compression serves to maintain the buffer head in contact with the opposing buffer head on the adjoining car and this spring will be normally under some compression when the cars are coupled. In buffing, the spring E is first compressed till the follower *e* comes into contact with the front end of the follower F, after which these followers, the spring E, and the wedge G will be moved rearwardly, thereby forcing the friction blocks sidewise, against the action of the springs I I′. When the follower *e* contacts with the cylindrical portions of the follower F, further compression of the coil spring E is prevented and the pressure on the buffer head is transmitted directly to the wedge independently of the coil spring E through the followers *e* and F. The cylindrical portions of the follower F are made of such length that the coil spring cannot be compressed beyond a safe limit and is therefore saved from injury by an excessive or unusual buffing shock. The rearward movement of the wedge is limited by the engagement of the rear end of the follower F with the cross wall c^3 of the casing C so that the compression of the leaf springs beyond a safe limit is also prevented. Thus the follower F performs the several functions of containing the coil spring E and limiting the compression thereof, of limiting the compression of the leaf springs and of transmitting the shock or pressure on the buffer head directly to the friction resistance devices after the coil spring has been strained to the desired maximum. The follower F formed as described is strong and not liable to be broken in use and it relieves the reduced inner end of the central buffer stem *d* from all strain. When the rearward pressure is withdrawn from the wedge, the leaf springs I I′ force the wedge back to its normal position, which is made possible by the high pitch of the co-acting inclined faces of the wedge and the friction blocks. The usual release spring, to bring the wedge and friction blocks back to their normal positions, is thus dispensed with.

This buffer has the advantage that it is composed of very few parts and the arrangement of the parts in the casing is such as to make the buffer very compact. The parts are of such size and shape that they will withstand severe shocks and strains without injury. None of them require machining and they can be easily cast or formed. The buffer thus combines with the advantages before stated, those of being reliable in its action, rugged and durable in construction and inexpensive to manufacture.

I claim as my invention:

1. The combination of a buffer head provided with a stem, a coil spring surrounding said stem and acting to resist the inward movement of said buffer head, a wedge which is movable longitudinally of the car, friction blocks adapted to be moved laterally by said wedge, leaf springs which are held from longitudinal movement and resist the movement of said friction blocks, and a movable follower located between said wedge and said coil spring which transmits the pressure from said buffer head to said wedge independently of said coil spring after an initial movement of the buffer head and which limits the compression of both said coil and said leaf springs, substantially as set forth.

2. The combination of a buffer head provided with a stem, a support, a coil spring surrounding said stem and acting to resist the inward movement of said buffer head, a wedge which is movable longitudinally of the car, friction blocks located at opposite sides of said wedge and adapted to be moved laterally by the wedge, leaf springs which are arranged between said friction blocks and the side walls of said support and resist the lateral movement of the friction blocks, and a movable follower located between said wedge and coil spring which transmits pressure from said buffer head to said wedge independently of said coil spring after an

initial movement of said buffer head, said follower having a part which is engaged by a part carried by said stem for limiting the compression of said coil spring, and a stop on said support which said follower strikes to limit the compression of said leaf springs, substantially as set forth.

Witness my hand, this 20th day of May, 1910.

THOMAS L. McKEEN.

Witnesses:
F. E. PROCHNOW,
C. B. HORNBECK.