UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

DRAW-GEAR AND BUFFING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 887,468, dated November 28, 1901.

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To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Draw-Gear and Buffing Apparatus, of which improvement the following is a specification.

My present invention relates to and is an improvement in draw-gear and buffing apparatus for railroad-vehicles of the general class or type known as "friction draft-gear," in which strains of draft and buffing are opposed and absorbed by frictional resistance elements acting either in conjunction with prelimentary spring resistance elements or exerting in and of themselves the requisite resistance, an instance of late design of such class or type being exemplified in Letters Patent of the United States No. 639,945, granted and issued to me under date of August 1, 1899.

My present invention more particularly relates to friction draft-gear in which a preliminary spring resistance element is not employed, although it is not necessarily limited thereto; and its object is to provide a frictional draft and buffing appliance in which the structure and combined operative relation of the detailed members shall be such as to enable a substantial reduction in the number of parts to be made and the expense and delay of machining parts to be materially reduced.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a plan or top view of a draft and buffing apparatus illustrating an application of my invention; Fig. 2, a longitudinal section taken in a plane adjoining one of the side flanges of the supporting-plate; Fig. 3, a transverse section at the line x x of Fig. 2, and Fig. 4 a side view in elevation of the draw-bar and carrier detached.

In the practice of my invention a draw-bar 1, provided with a suitable coupling-head 1a, which is preferably of the vertical-plane automatic-coupler type, is fitted to traverse longitudinally below or between the center sills 5 of the frame of a car or other railroad-vehicle, at each end thereof or, if preferred, between draft-timbers or draw-gear supports of any suitable and preferred construction, the outer end of the draw-bar and the connected coupling-head projecting, as usual, beyond the end sill 6. Tractive force and strains of draft and buffing applied to the draw-bar 1 are transmitted therefrom to the car-frame through a frictional resistance mechanism, presently to be described, which is held in operative relation to the draw-bar and the car-frame by a supporting-plate 6, secured by bolts 4 to the center sills 5. A central longitudinal opening is formed in the supporting-plate 6 for the major portion of its length to admit of the traverse of the inner end of the draw-bar and of a carrier 34, which is pivotally connected to jaws 11 thereon by a vertical pivot-bolt 33, and an upwardly-extending flange 35, which abuts against the outside of the end sill 6, is formed on the adjacent end of the supporting-plate. Strains of draft are imparted to the supporting-plate and thence to the car-frame through front draw-bar stops 36, which are located on opposite sides of the central opening of the supporting-plate and are preferably made integral with said plate, and buffing strains are taken by the car-frame through similar back draw-bar stops 38, located at a proper distance from the rear of the supporting-plate. Downwardly-projecting strengthening-flanges 32 are formed upon the side of the supporting-plate, extending from one draw-bar stop to the other and in position to cover and protect the frictional members of the appliance from the access of dirt and grit. The outer end of the draw-bar is supported by a strap or carry-iron 38, bolted to the supporting-plate 3 and end sill 6.

The frictional resistance members by which strains of draft and buffing are opposed and counteracted comprise two friction-blocks 8, which are formed integral with or secured to the sides of the carrier 34, two friction-blocks 18, abutting against the friction-blocks 8, and springs 11, by which the friction-blocks 8 and 18 are held in contact with such force as will induce the proper and desired degree of frictional resistance to their relative movement. The abutting faces of the friction-blocks 8 and 18 are in the form of a plurality of inclined, extended in alternately-reversed directions, as clearly shown in Figs. 2 and 4, so as to present wedge faces substantially throughout the
entire length of the carrier on each of its sides and enable the spring resistance to be distribute ized and exerted at different points in the length of the friction-blocks and to render the friction-blocks operative in either direction of movement of the draw-bar and carrier. The friction-blocks 8, fixed to the carrier 34, are adapted to be moved longitudinally by and with the draw-bar between the front and rear bearing-faces to abut against corresponding faces on the wedge-block. This con struction I therefore specify as the mechanical equivalent of a wedge-block interposed between end draw-bar stops. It will also be seen that, if desired, the spring-bolts 11 may perform the function of draw-bar stops as well as that of connecting the abutting wedge-blocks and supporting the seats of the springs 11.

The springs 11 bear on the outer faces of the friction-blocks 18 and at their opposite ends on spring seats or plates 13, which are held, as by nuts 12, on the outer ends of the spring-bolts 11. The bolts 11 fit freely in the friction-blocks 18, so as to permit the latter to traverse in the direction of the axes of the bolts, and pass through longitudinally-slotted openings in the friction-blocks 8, as indicated by dotted lines in Figs. 1, 2, and 4, in order to admit of the longitudinal traverse of the blocks 8 with the draw-bar. The heads of the bolts 11 bear on the top of the supporting-plate 3, and the bolts are held against rotation by stops 3 on said plate. After the exertion of frictional resistance in either direction of movement of the draw-bar the interlocked friction-blocks 8 and 18 will be released and returned to normal position with promptness and certainty by the movement of the draw-bar in the opposite direction. It will be seen that the longitudinal traverse of the draw-bar is effected under all conditions without interfering with the normal relation of the abutting members of the frictional mechanism, as the pivot connection of the draw-bar and carrier permits the requisite degree of lateral movement of the coupler-head in passing around curves.

It will be obvious to those skilled in the art that the relative positions of the friction-blocks 8 and 18 may, if desired, be reversed without departure from the spirit or operative principle of my invention—that is to say, the inclined or wedge faces of the friction blocks 8 of the carrier may be turned upwardly and the friction-blocks 11 be located above them. It will also be apparent that the friction-blocks may abut vertically instead of horizontally, if preferred, as the same structural and operative relation of the several members would in such ease be preserved and the traverse of the friction-blocks 18 would be effected in a horizontal instead of in vertical planes. Again, if desired, the extent of surfaces of frictional contact may be further increased by forming inclined faces upon the upper sides of the friction-blocks 8 and corresponding faces on the abutting portions of the supporting-plate 3. Similarly the area of the frictional contact-surfaces of the friction-blocks 8 and 18 may be increased by forming interlocking inclines on their abutting faces.

In a separate application filed by me August 18, 1900, Serial No. 27,252, in which the several detailed structural modifications referred to in the last preceding paragraph are illustrated, I have set forth a draft and buffing apparatus in which a frictional resistance mechanism substantially similar to that herein described and shown is combined with preliminary spring resistance members, for the reception of which the central portion of the carrier 34 is made of tubular form. The applicant of said application is also provided with followers fitting in a draft-strap rigidly connected to the inner end of the draw-bar and is made sufficiently shorter than the distance between the followers to permit the preliminary spring members to be fully compressed by the movement of the draw-bar before the friction-blocks are acted upon there by. It will be apparent that, if desired, the carrier of my present invention may be similarly provided with preliminary spring resistance members, the operation of which in combination with a frictional resistance mechanism pivotally connected to the draw-bar, as herein set forth, would not involve any modification of or departure from the essential features and operative principle of my present invention.

My invention attains in practice the substantial advantage of enabling any desired degree of frictional resistance to be exerted in opposition to draw-bar strains under a construction which is readily and conveniently applicable in connection with ear-frames of any of the ordinary designs now in service, which is simple, strong, and compact and in which a material economy is effected by a considerable reduction in the number of parts employed, as compared with prior appliances and of the machine-work required in fitting up the apparatus.

I claim as my invention and desire to secure by Letters Patent:

1. In a draw-gear or buffing apparatus, the
combination of a draw-bar, a carrier pivotally connected thereto and movable by traverse thereof, a friction-block having a longitudinal inclined or wedging face and fixed laterally to the carrier, a friction-block having a corresponding wedging face abutting against the wedging face of the carrier friction-block, means for permitting movement of one of said friction-blocks at right angles to the other, and means for maintaining said friction-blocks in contact to impart frictional resistance to the movement of the draw-bar and carrier.

2. In a draw-gear or buffing apparatus, the combination of a draw-bar, a carrier pivotally connected thereto and movable by traverse thereof, a friction-block having a longitudinal inclined or wedging face and fixed laterally to the carrier, a second friction-block having a wedging face corresponding with and abutting against the wedging face of the carrier friction-block, and fitted to traverse at right angles thereto, a fixed stop or abutment constituting an end bearing for said second friction-block, and a spring maintaining said friction-blocks in contact to impart frictional resistance to the movement of the draw-bar and carrier.

3. In a draw-gear or buffing apparatus, the combination of a draw-bar, a carrier pivotally connected thereto and movable by traverse thereof, longitudinal friction-blocks fixed to opposite sides of the carrier and each having an inclined or wedging face, pairs of stops fixed to the frame on which the draw-bar is supported, friction-blocks, each having an inclined or wedging face corresponding with and abutting against the wedging face of one of the carrier friction-blocks, and fitted to traverse between the members of a pair of frame-stops, at right angles to the traverse of the draw-bar and carrier, and springs bearing on, and maintaining contact between, the members of each pair of friction-blocks.

Witnesses:

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