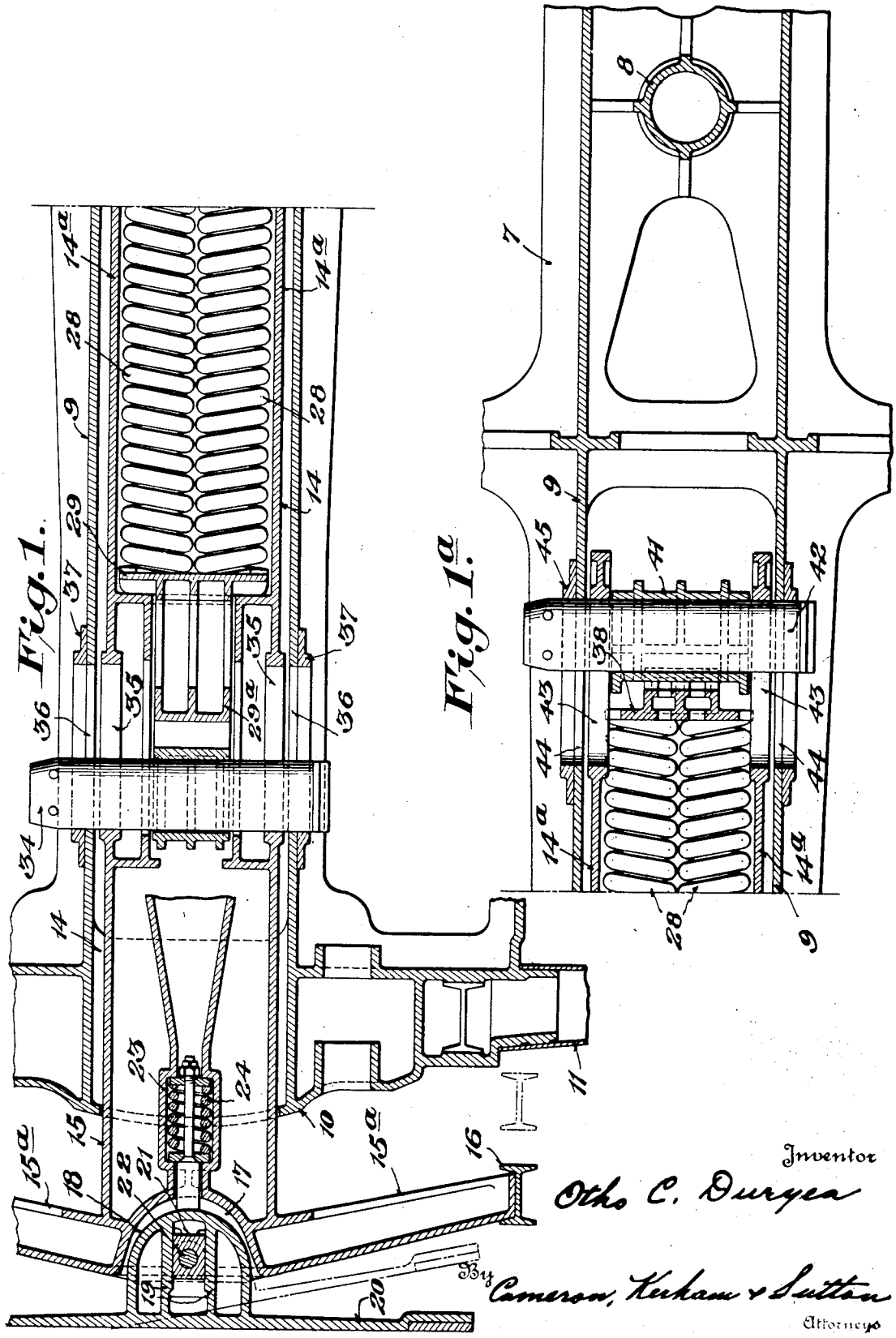
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CAR CONSTRUCTION

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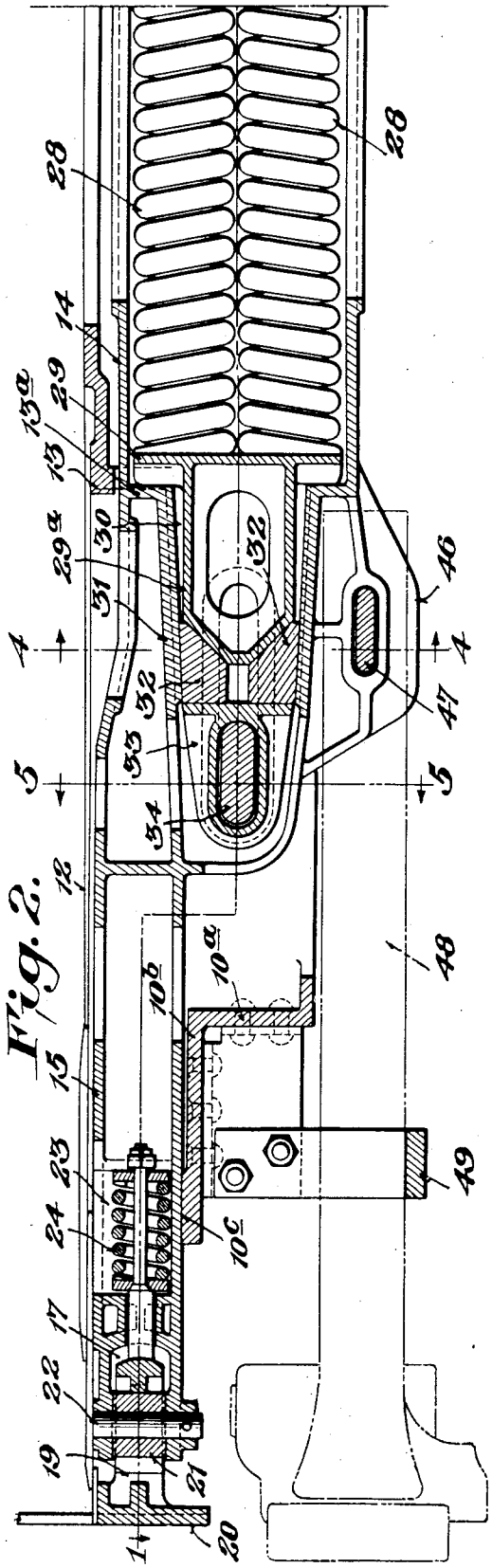


Fig. 2.

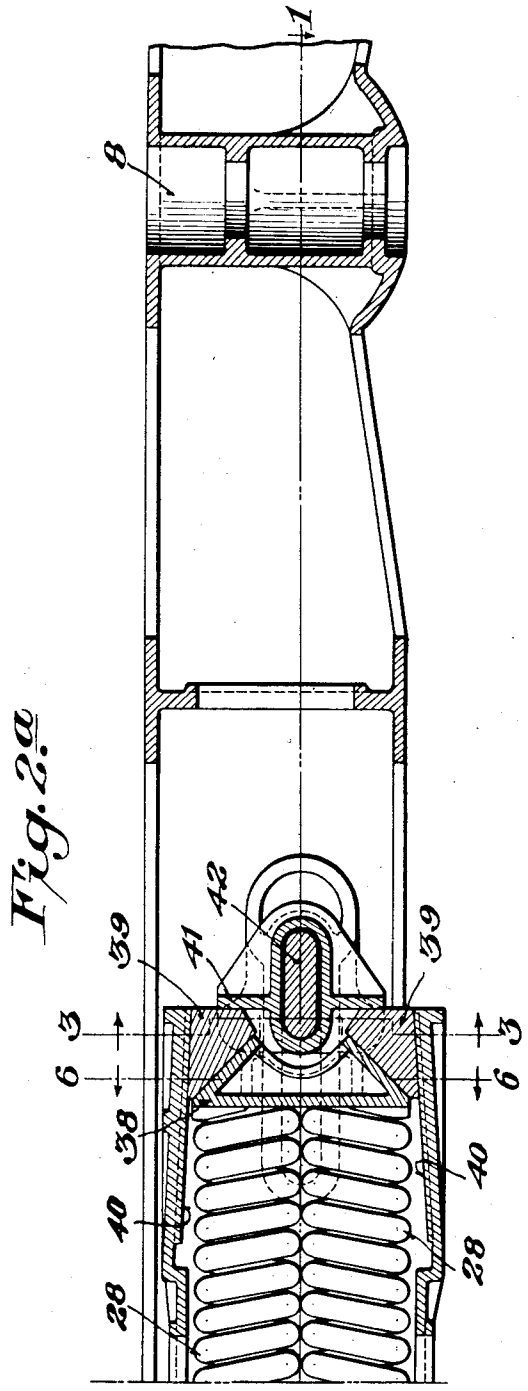


Fig. 2a.

Inventor

Otho C. Duryea

By Cameron, Kerkam & Sutton

Attorneys

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Fig. 3.

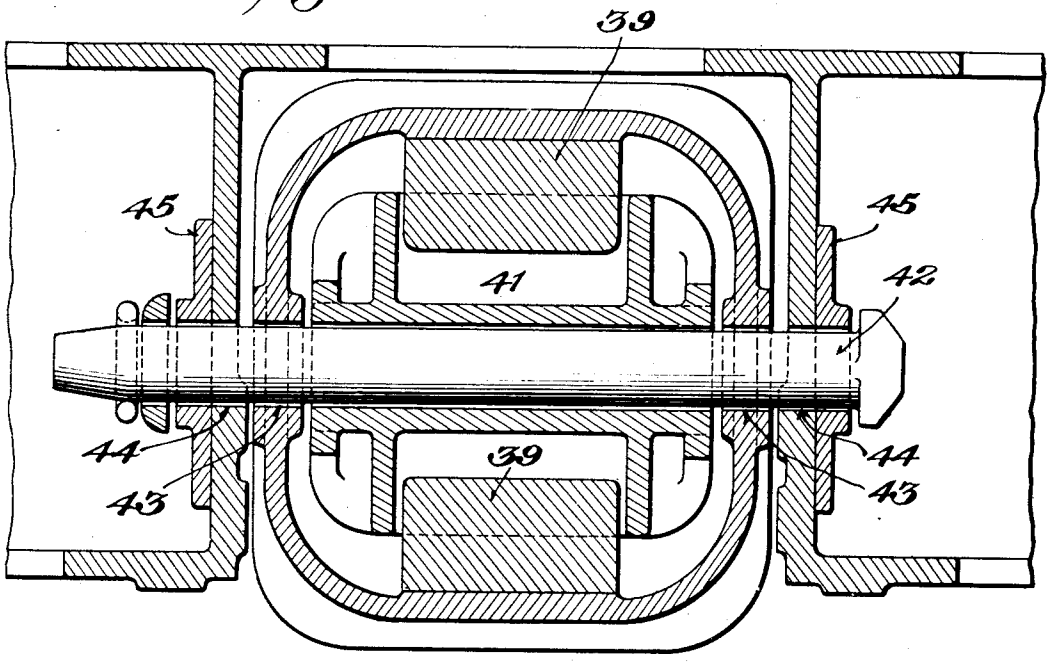
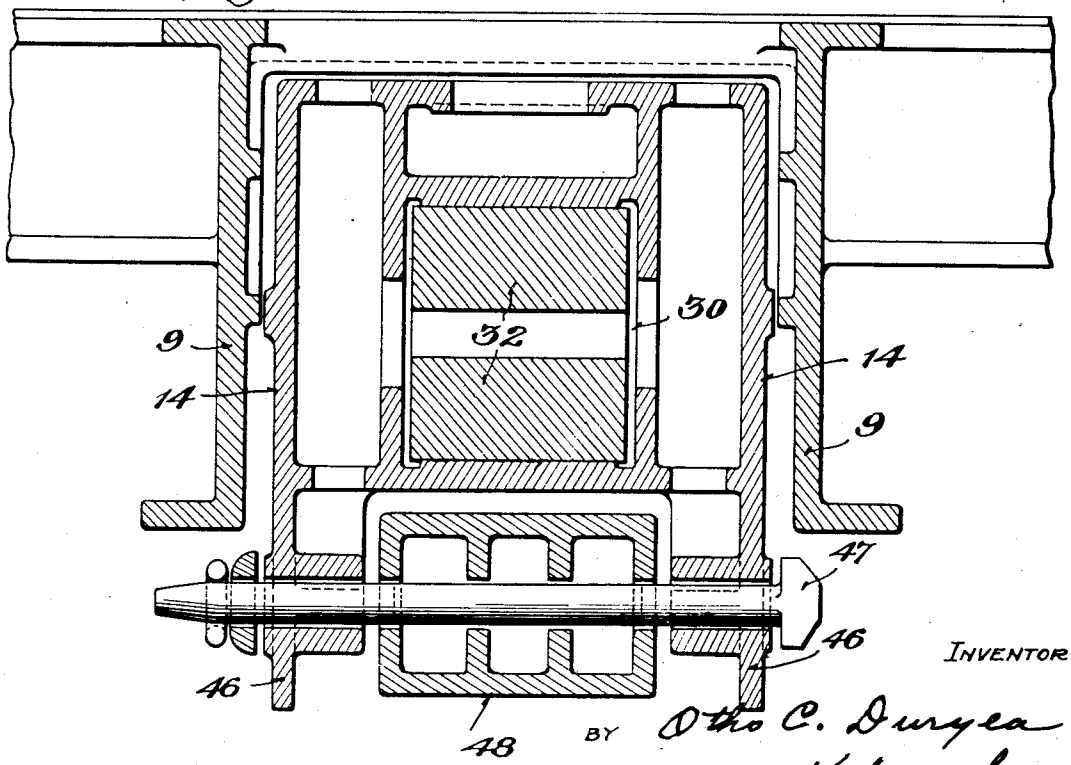


Fig. 4.



INVENTOR

BY Otho C. Duryea

Cameron, Kerkam & Sutton

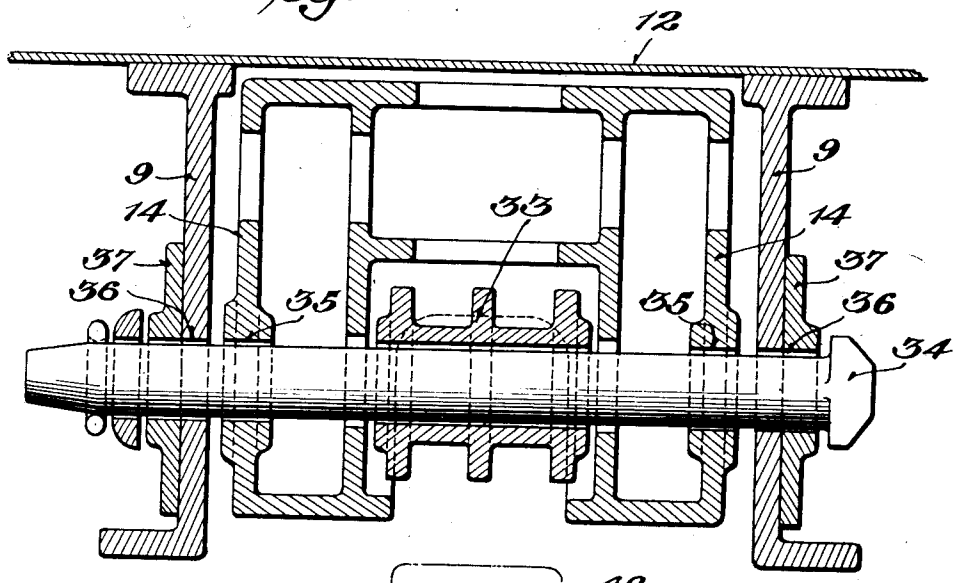
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Fig. 5.



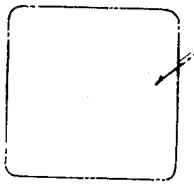
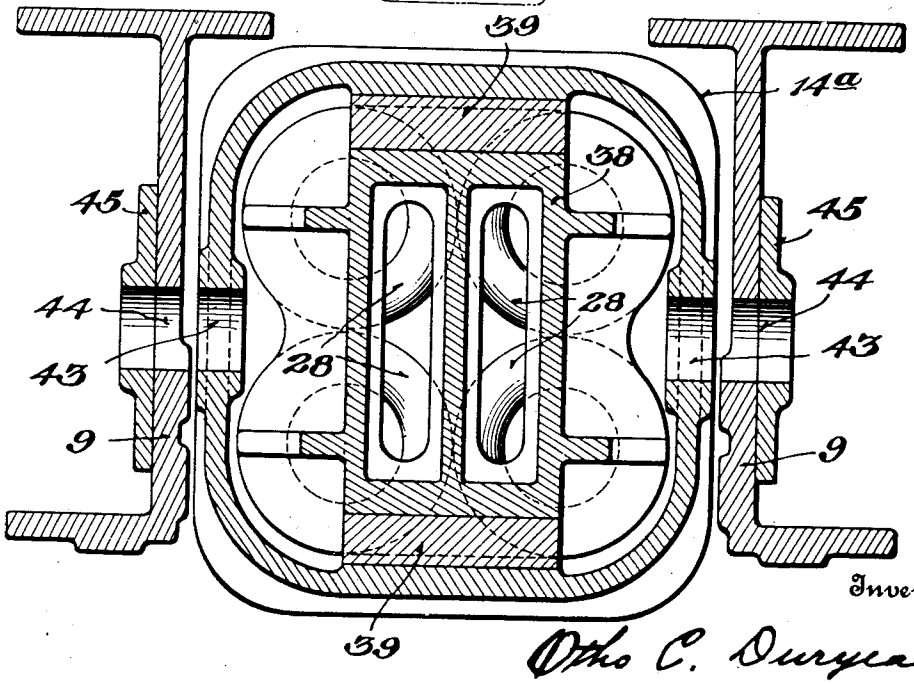


Fig. 6.



Inventor

Otho C. Duryea

By Cameron, Kerkam & Sutton

Attorneys.

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Fig. 7.

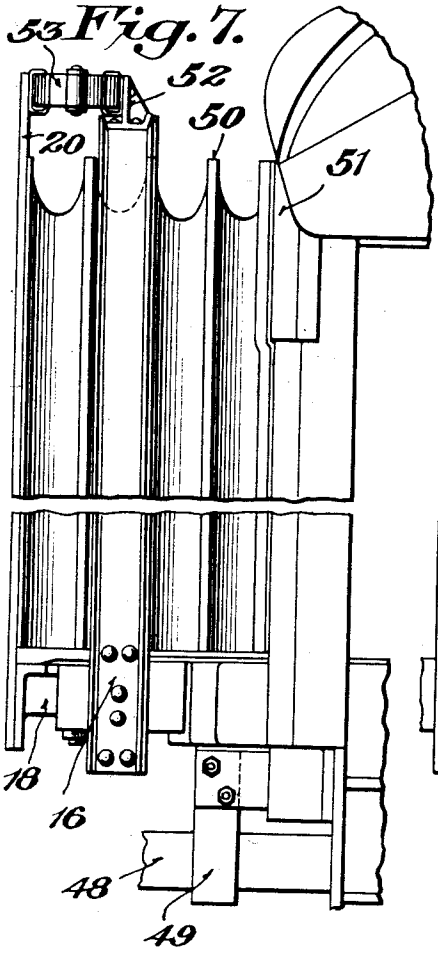


Fig. 8.

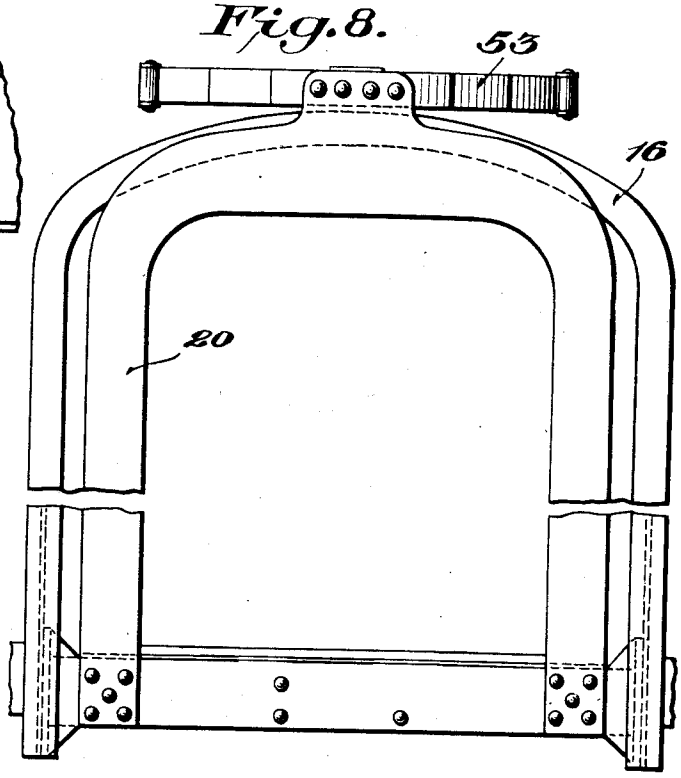
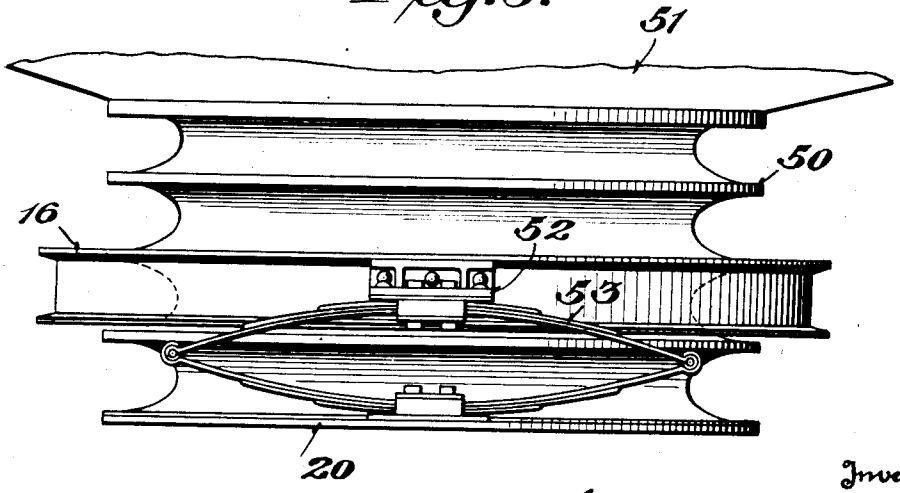


Fig. 9.



Inventor

Otho C. Duryea

By Cameron, Kerkam & Sutton.

Attorneys.

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UNITED STATES PATENT OFFICE

1,938,743

CAR CONSTRUCTION

Otho C. Duryea, Waterbury, Conn., assignor to O. C. Duryea Corporation, Wilmington, Del., a corporation of Delaware

Application April 13, 1928. Serial No. 269,811

24 Claims. (Cl. 213—9)

This invention relates to railway cars and more particularly to cars of the type embodying vestibules, such as passenger coaches.

An object of the present invention is to provide novel draft and buffing means adapted to be installed in passenger train cars now in use, whereby cars of this type may have their riding qualities improved at a relatively small cost.

Another object of the invention is to provide novel means for insuring that the vestibule face plates of the car will be moved relative to the car body in accordance with the movement of the draw bars relative to said body.

Another object is to provide novel draft and buffing mechanism embodying snubbing means, the mechanism being so constructed that the draft and buffing forces are absorbed by resilient elements, the snubbing means being provided to prevent excessive recoil of said resilient elements.

A further object of the invention is to provide novel draft and buffing means which may be readily and inexpensively installed in passenger cars now in use without extensive changes in the underframe structures of said cars and this, regardless of the fact that the draft and buffing mechanism to be replaced is much smaller in size and capacity than that of the present invention.

Another object is to provide a novel vestibule structure.

The above and other objects will appear more fully hereinafter in the detailed description of the invention.

One embodiment of the present invention is illustrated in the accompanying drawings wherein like reference characters refer to like parts throughout the several views. It is to be expressly understood, however, that the drawings are for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings,—

Figs. 1 and 1*a* constitute a top plan sectional view of as much of the end structure of a car as is necessary to a complete understanding of the invention, the figures being made in the form shown to enable large scale drawings to be employed;

Figs. 2 and 2*a* constitute a longitudinal sectional view illustrating the mechanism shown in Figs. 1 and 1*a*;

Figs. 3 to 6 inclusive, are sectional detail views, taken on the respective section lines shown in Figs. 2 and 2*a*;

Fig. 7 is a side view, with parts broken away, of an end portion of a passenger coach embodying the present invention; and

Figs. 8 and 9 are end and top plan views respectively, of that portion of car structure shown in Fig. 7.

The structure of the present invention comprises a double body bolster 7 having an opening 8 therein to receive the usual center pin, not shown. In order to employ a large scale for the drawings, a portion only of the double body bolster is shown, and in the form illustrated, said bolster is constituted by a casting having integrally attached thereto members 9 forming the center sills.

Secured to the outer ends of the center sills and formed integrally therewith is a buffer beam 10 provided with the usual end extensions 11.

Cast underframe structures of this type are extensively employed in passenger coaches and said underframes are provided closely adjacent the buffer beam with a small pocket in which is mounted the buffing mechanism. In order to adapt these old underframes to the present invention, a portion of the walls of the pocket must be cut away.

Referring more particularly to Fig. 2, it will be noted that the lower portion of the buffer beam embodies a transversely extending member 10*a* which, in section, is substantially Z-shaped. In cars now in use this portion 10*a* is provided at the left hand end thereof with an upwardly extending web having an opening therein through which the center stem slidably extends. The pocket for the usual buffing mechanism is constituted by the space intermediate the upper surface 10*b* of portion 10*a* and a platform cover-plate 12. The inner end of this old buffing mechanism terminates at a point closely adjacent the outer face of a member 13 which is an integral part of the center sill structure and is located adjacent the vertical plane of the body end sill. As constituted in cars now in use, this member 13 is provided with a downwardly extending portion to form the rear wall of the pocket for the buffing mechanism. In order to adapt the cast underframe structure to receive the buffing mechanism of the present invention, the downwardly extending portion of member 13 is cut away along the line 13*a* and the upwardly extending portion of member 10*a* is cut away along the line 10*c*. In addition, it

is necessary to cut away a horizontally disposed member (not shown) which extends from member 10a to the downwardly projecting portion of member 13.

After the cast underframe has been altered in the manner just described, and before the platform cover-plate 12 is placed in position, there is introduced between the center sills 9, a housing 14 which, in the illustrated embodiment of the invention, is formed as a casting. The outer end of housing 14 is of reduced thickness to constitute a center stem 15 provided on the outer end thereof with transversely extending arms 15a, which support, at their extremities, an inverted U-shaped I-beam 16 constituting a vestibule face plate frame.

The outer end of the center stem is provided centrally with a substantially semicircular recess 17 into which extends a similarly shaped lug 18 provided with parallel strengthening ribs 19, said lug and ribs being integrally formed with a vestibule face plate 20.

Means are provided for pivotally connecting the vestibule face place with the outer end of the center stem. For this purpose there is positioned intermediate ribs 19, and in sliding engagement therewith, a block 21 having a central opening through which extends, with a loose fit, a vertically disposed pivot pin 22 supported at its opposite ends in the upper and lower portions of the center stem. By this arrangement the vestibule face place is adapted for pivotal movement, about a vertical axis, relative to the center stem whereby it may be maintained in engagement with the face plate of an adjacent coach when the coaches are being operated around curves.

Means are provided for yieldingly holding the face plate 20 in an extended position relative to the buffer beam 15. For this purpose the buffer beam is provided with a pocket 23 in which is positioned a coil spring 24. Preferably, spring 24 is placed in the pocket under an initial compression, and to facilitate the assembly of the parts said spring is engaged at its opposite ends by retaining washers 25 through which slidably extends a retaining bolt 26. The outer retaining washer 25 has engagement on its outer face with a slidably mounted pin 27, which abuts against the inner face of the lug 18 provided on the vestibule face plate. Spring 24 normally acts through washer 25 and pin 26 to maintain the face plate in extended position relative to the buffer beam 15, block 21 having sliding movement between ribs 19 for this purpose.

The inner part of housing 14 is constituted by a substantially square portion having side walls 14a which extend between the center sills to a point closely adjacent the double body bolster, and intermediate said walls and the center stem the housing is enlarged and provided with a pocket for a purpose to be described more fully hereafter.

Means for absorbing draft and buffing forces are positioned in the square portion of the housing 14. In the form shown, said means are constituted by a plurality of coil springs 28, for example four, the outer end of each of said springs having abutting engagement with a follower 29 formed integrally with a wedge 29a that extends outwardly into a pocket 30 referred to above.

In frictional engagement with the tapered end of wedge 29a and with the surfaces of the upper and lower walls 31 of the pocket 30 are a pair of friction shoes 32 which have abutting engagement at their outer ends with a follower 33 mounted on a key 34. As shown more clearly in Fig. 1, the key 34 extends through elongated openings 35 in the opposite walls of the housing and also through openings 36 provided in center sills 9. Preferably, the center sills are strengthened adjacent the openings 36 by means of reinforcements 37 which may be welded or otherwise suitably attached to the outer faces of said center sills.

Since springs 28 are preferably placed in housing 14 under an initial compression, key 34 is normally maintained in engagement with the outer walls of openings 35 and 36, the opposite ends of said springs being held by means of a wedge 38 which engages a pair of friction shoes 39. The outer surfaces of the two shoes have frictional engagement with the inner surfaces of upper and lower walls 40 of the square portion of the housing. The inner faces of the two shoes 39 have abutting engagement with a follower 41 mounted on a key 42 which extends through elongated openings 43 in the inner ends of walls 14a. The key 42 also projects outwardly through openings 44 formed in the center sills 9 and preferably the latter are strengthened adjacent openings 44 by means of suitable reinforcements 45.

As shown more clearly in Figs. 1a and 2a, the inner face of wedge 38 is cut away in such a manner that said wedge can never move into engagement with the follower 41.

Immediately below the pocket 30, housing 14 is provided with a pair of downwardly extending apertured lugs 46 (Figs. 2 and 4) which carry a key 47 for the inner end of a draw bar shank 48. The outer end of the coupler shank is slidingly supported by a carrier iron 49 extending downwardly from and suitably attached to the member 10a of the underframe structure.

If draft force is applied to coupler 48 this force is transmitted through key 47 to move the housing 14 to the left, as viewed in Figs. 1 and 2. The movement of the housing acts through key 42 and follower 41 to force shoes 39, wedge 38 and springs 27 to the left with the housing 14. No resistance is offered to this movement by shoes 39 and wedge 38, due to the fact that the shoes and wedge move as a unit with the housing.

As housing 14 moves outwardly, the other pair of shoes 32 have movement relative to the outwardly diverging walls 31 of the pocket 30, but are held against longitudinal movement by follower 33, and key 34, the latter being held against movement by its engagement with the outer end walls of openings 36. A slight longitudinal movement of wedge 29 to the left is permitted, however, due to the fact that shoes 32 are forced outwardly. The frictional resistance offered by said shoes is very small, due to the divergence of walls 31. The draft force is thus yieldingly resisted and absorbed by the springs 28 without objectionable shocks being imparted to the car body.

The relative movement of housing 14 to the left is positively stopped by engagement of key 34 with the inner end walls of openings 35 and by engagement of key 42 with the outer end walls of openings 44.

The recoil resulting from the application of the draft force acts to return housing 14 to and beyond its normal position with respect to the center sills and double body bolster, the housing

now moving to the right, as viewed in Figs. 1 and 2, due to the expansion of springs 28. As these springs expand, relative movement occurs between wedge 29a, shoes 32 and the walls 31 of pocket 30. The divergence of walls 31 is such that the shoes are forced inwardly against the inclined faces of wedge 29a and this inward movement of the shoes results in a relative longitudinal movement between the same and the wedge, whereby friction is generated to absorb the force of recoil. The capacity of the friction elements is sufficient to effectively dampen the recoil and prevent objectionable recoil shocks on the car body.

It will be noted that in the illustrated embodiment of the invention the draft force is absorbed by the springs 28 and accordingly very little wear of the friction surfaces results from relative movement of housing 14, thereby greatly increasing the life of the mechanism.

Springs 28 are effective to normally maintain the housing 14 in the position shown in Fig. 1. If the car or coach is uncoupled, the vestibule face plate 20 is held by spring 24 in a position such that the outer surface of said plate extends approximately one inch outwardly beyond the pulling face of the coupler head. When coupling, the face plate of the adjacent car forces face plate 20 inwardly against the tension of spring 24 and permits the coupler pulling faces to properly engage, but this movement of the face plate is independent of any movement of the housing and hence no load is at this time placed on springs 28.

If a buffing force is imparted to a coach provided with the mechanism constituting the subject matter of the present invention this force acts through face plate 20 and the coupler to move housing 14 to the right relative to the remainder of the car structure, as viewed in Figs. 1 and 2, the force exerted on the face plate being positively transmitted to the center stem 15 by engagement of lug 18 with the walls of pocket 17 and the portion of the force exerted on the coupler being transmitted to the housing 14 through key 47. Key 34 is free to move to the right in openings 36 but key 42 is held against movement by its engagement with the center sills, and hence the inner ends of springs 28 are held against movement. Key 34 therefore acts through follower 33, shoes 32, wedge 29a and follower 29 to compress the springs 28, whereby the buffing force is yieldingly absorbed without shock or injury to the car body. No relative movement occurs at this time between the wedge 29a, shoes 32 and housing 14. However, since shoes 39 and wedge 38 are held against movement by key 42 and follower 41, relative movement occurs between these elements and the housing but very little resistance is offered to the movement of the housing by the engagement of said shoes with walls 40, due to the fact that the walls incline outwardly in the direction of relative movement of the shoes and wedge.

The recoil which results from the application of the buffing force, i.e., the subsequent expansion of springs 28 which are compressed in a manner pointed out above, is frictionally resisted by the relative movement and hence the frictional engagement of shoes 39 with the diverging walls 40, said shoes being forced inwardly relative to wedge 38 as the housing moves to the left toward normal position. An excessive recoil is thus prevented by these friction elements and injury to the passengers and the car body is prevented.

The wedge 29 and shoes 32 are effective to absorb recoil forces after draft, while wedge 38 and shoes 39 are effective to absorb recoil forces after buffing. The wear on these friction elements is thus reduced to a minimum and the life of the parts is greatly increased.

It will be understood that the passenger coach is provided with the novel draft and buffing gear adjacent each end thereof and that only one of said gears has been shown in the drawings in order to employ a large scale for the same. Since the wedge 29 and shoes 32 are effective to absorb recoil forces after draft, these elements will be referred to hereafter as the draft shoes and wedge, and for a similar reason the wedge 38 and shoes 39 will be referred to as the buffing wedge and shoes.

The housing 14 is supported on the center sills by keys 34 and 42, thereby insuring rectilinear movement of the housing and effective guiding of the housing and the parts associated therewith in both directions of movement. These keys also transfer over-solid blows to the center sills and act simultaneously in this respect.

While the face plate has limited relative movement with respect to the center stem, which is preferably an integral part of the housing, said plate is positively moved in both directions, due to its engagement with said housing and the face plates of adjacent cars are thus maintained at all times in engagement regardless of the extent of movement of the draw bar and housing relative to the car body.

If desired, the mechanism illustrated and described in my co-pending application Serial No. 165,185, filed February 1, 1927, Patent No. 1,719,105, July 2, 1929, may be employed to insure that the upper ends of the face plates of adjacent coaches will also be maintained in engagement, but preferably the upper ends of the face plates are maintained in the desired position by the means illustrated in Figs 7 to 9, inclusive.

In the form shown, the I-beam 16 is bent into the shape of a U and the opposite ends of said beam are rigidly attached in any suitable manner, as by means of rivets, to the outer ends of arms 15a (Fig. 1) of the center stem to form a vestibule face plate frame which extends upwardly over the vestibule diaphragm 50. The inner end of the diaphragm 50 is secured in any suitable manner to the car body indicated at 51, and the outer end of the diaphragm is attached to the inner surface of the face plate 20. Attached to the upper end of the frame 16 is a bracket 52 which is bolted or otherwise suitably secured to the inner half of a full elliptical spring 53, the outer half of this spring being secured to the inner surface of the face plate 20 closely adjacent the top of the latter. It will be understood that the form of the resilient means interposed between the upper ends of the face plate and the frame may be varied, the drawings illustrating merely one form of spring which will give satisfactory results.

The parts are so combined that when the car is uncoupled, spring 53 maintains face plate 20 in an inclined position with the upper end of said plate projecting outwardly from the car body a greater distance than the lower end of said plate so that when the car is coupled the spring 53 will be slightly compressed and the plate will assume a substantially vertical posi-

tion. Such an arrangement serves to maintain the face plates of coupled cars in engagement regardless of inequalities or vertical curves in the track. Any force on the draw bar moving it relative to the car body acts through housing 14 to correspondingly move the frame 16, and hence through spring 53, the upper end of the face plate, the lower end of said plate being moved by the pivotal means described above. Accordingly, the face plates between coupled cars will always be maintained in engagement regardless of the travel of the draft gear under draft and buffing forces, and passengers can always safely pass from one coach to another.

It has always been customary to provide means of very limited travel, for example two and one-half inches, for absorbing draft and buffing shocks imparted to railway cars. All efforts to improve such means have been directed to details of construction and rearrangement of friction elements and springs. No practical attempt has been made to increase the capacity of the draft and buffing means by increasing the travel thereof because it was considered impossible to increase this travel without increasing train slack. Increase in train slack is highly objectionable for many reasons. For example, excessive train slack greatly increases the difficulty of handling trains, and is the direct cause of pulling the trains apart, and also of derailment of cars.

Railroad operating costs can be reduced by increasing the length of the train and hence the amount of freight transported per train. When operating long trains, however, the slack is so great that an emergency application of the brakes may result in the derailment of one or more cars, or the pulling apart of the train.

If the air line is disrupted in any way there is a sudden application of the brakes, or a defective triple valve will prevent proper functioning of the braking mechanism, and either of these things may result in serious damage if they occur in the operation of a long train. This is directly due to the train slack. It has been the practice of one railroad to change all air hoses and triple valves every thirty days in order to secure safer operation of excessively long trains. Such a practice is highly objectionable since it does not remove the cause of the trouble and is expensive.

A further difficulty is encountered in providing passenger train cars with long travel draft and buffing mechanism since cars of this type are provided with vestibule face plates which must be maintained in engagement at all times with the face plates of adjacent cars in order to permit passengers to safely pass from one car to another.

In order to overcome the above difficulties, there is disclosed in my co-pending application Serial No. 26,267, filed April 27, 1925, Patent No. 1,693,194, November 27, 1928, and also in my co-pending application Serial No. 165,185 referred to above, a car structure embodying a longitudinal draft and buffing member extending substantially the length of the car and movable relative to the car body. Long travel yielding means are provided for resisting said relative movement of the longitudinal member, and couplers of limited travel are operatively connected to the opposite ends of said member. The parts are so arranged that the relative movement of the center member with respect to the car body is materially greater than the movement of the couplers with respect to the center member. By this arrangement, draft and buffing shocks may be effectively absorbed without damage to the car body or lading and yet the train slack is so limited as to avoid the pulling apart of trains and the derailment of cars. As a matter of fact the train slack may be made ideal for the particular operating conditions.

Pullman cars and passenger coaches provided with short travel, low capacity draft and buffing devices, represent such a large investment that it is impracticable to scrap all of them and replace the same with cars constructed in accordance with the invention disclosed in my applications above referred to. Entire scrapping of these cars may be avoided by providing the body structures thereof with the long travel center member mechanism referred to above, in which event the operation of the cars is greatly improved.

On the other hand, passenger trains, for the most part, are made up of a small number of coaches, and increased train slack in a short train of this type, though objectionable, would not render the operation of the train dangerous. Accordingly, the novel draft and buffing means of the present invention may be so constituted as to provide for long travel even though this will increase the train slack.

While it is highly desirable to keep down or even to decrease train slack, and this is of increasing importance as the length of the train increases, it is possible to obtain, in a train composed of a relatively small number of cars, some of the benefits (long travel and low forces) of the inventions disclosed in my applications referred to above by so constructing the novel draft and buffing mechanism of the present invention as to provide for long travel.

There is thus provided a passenger car structure embodying novel means for yieldingly resisting draft and buffing forces imparted to said structure. If it is desired to construct the novel means so as to provide for long travel, the housing 14 is lengthened, the length of springs 28 is increased, openings 35, 36, 43, 44 are lengthened, the diverging friction surfaces for the friction shoes are lengthened, etc.

The train slack is necessarily increased by these changes and this is objectionable. On the other hand, where the train is constituted by a very small number of coaches as is general practice in the operation of passenger trains, the advantages to be obtained by providing long travel means for absorbing the draft and buffing forces, in combination with snubbing means, in certain cases, outweigh the objections resulting from increased train slack since the forces are always maintained very low.

In order to prevent damage to, or uncoupling of the hose connections between cars when the novel gears are adapted for long travel, recourse may be had to the novel hose means disclosed and claimed in my co-pending application Serial No. 28,243, filed May 5, 1925.

The mechanism of the present invention is so constituted as to be readily installed in coaches now in use and where the expense of altering said coaches in accordance with the disclosures in my application Serial No. 26,267, referred to above, are considered excessive, the present invention constitutes a valuable alternative.

While only one embodiment of the invention has been illustrated in the accompanying drawings, it is to be expressly understood that the in-

vention is not limited thereto, since various changes in the details of construction will now readily suggest themselves to those skilled in the art. For example, various types of resilient elements may be employed to cushion the draft and buffing forces, and various yielding means may be used to operatively control the upper end of each face plate. If desired the relative positions of the wedges and shoes may be reversed so that the friction shoes will have engagement with the springs 28. Reference will therefore be had to the appended claims for a definition of the limits of the invention.

What is claimed is:—

1. In a passenger car provided with body bolsters and center sills rigidly connected thereto, a housing bodily movable rectilinearly on said sills, draft and buffing means mounted in said housing, a coupler connected to said housing, means operatively connecting said draft and buffing means with said center sills whereby draft and buffing forces are resisted and a vestibule face plate pivotally connected to said housing, said face plate being movable in accordance with the movements of said coupler.

2. In a passenger car of the type having a body bolster, a buffer beam, and longitudinally extending members rigidly connecting said bolster and buffer beam, an integral housing longitudinally slidable on said longitudinal members and having a portion projecting beyond the outer face of said buffer beam and supported by said beam, means for positively limiting movement of said housing relative to said members, a vestibule face plate pivotally mounted on said projecting portion, draft and buffing means positioned in said housing, and a draw bar fixedly attached to said housing.

3. In a passenger car of the type provided with a body bolster, a buffer beam and center sills rigidly attached to said buffer beam and bolster, a housing movably mounted on the center sills, a plurality of members for positively limiting movement of said housing relative to said sills, long travel draft and buffing means mounted in said housing, a center stem rigidly attached to said housing and projecting outwardly beyond said buffer beam, a vestibule face plate carried by said center stem, and a draw bar secured to the housing and movable with said center stem.

4. In a passenger car having a portion of the end sill and a portion of the buffer beam cut away, a housing between said cut-away portions and mounted for movement longitudinally of the car, stop means for the housing, the inner end of said housing projecting inwardly from the end sill toward the car body bolster, the outer end of said housing projecting outwardly beyond said buffer beam portion, draft and buffer mechanism carried by said housing, and a draw bar secured to said housing.

5. A draft and buffing gear comprising a housing having longitudinally spaced pairs of surfaces, each pair of surfaces diverging toward the other pair of surfaces, a plurality of resilient elements in said housing, friction shoes engaging said diverging surfaces, wedges interposed between said shoes and said resilient members, and means for moving said housing relative to one of said wedges, the other of said wedges being adapted for movement in unison with said housing.

6. A draft and buffing gear comprising a housing having a squared portion and having pairs of friction surfaces at the opposite ends of said squared portion each pair of surfaces diverging toward the central portion of said housing, friction shoes and wedges for said diverging surfaces, coil springs intermediate said wedges, keys operatively connected to said housing adjacent the opposite ends of said squared portion, followers operatively connected to said keys and having engagement with the adjacent friction shoes, said keys and followers being adapted to prevent longitudinal movement of said friction shoes at that end of the housing toward which the latter is moved, the friction of said shoes and surfaces being less on compression of said springs than on recoil of said springs.

7. In a passenger car having a body bolster and center sills rigidly connected thereto, a housing, a pair of keys for movably supporting said housing on said center sills, a draw bar secured to said housing, resilient means in said housing, and two sets of friction elements carried by the housing adjacent the opposite ends of said resilient means, each of said keys being adapted to hold one set of said friction elements against longitudinal movement in one direction only, said housing having friction surfaces associated with each set of friction elements and said surfaces of each set converging in the direction in which its friction elements are held against movement.

8. In a passenger car provided with center sills having elongated openings therein, a housing extending outwardly of said sills and having a face plate at its outer end, a pair of keys supporting said housing on said center sills, said keys extending through said openings, draft and buffing means in said housing, said pair of keys being adapted to take over-solid draft and buffing blows imparted to the housing, and a draw bar keyed to said housing and located in a plane below said draft and buffing means.

9. In a passenger car having center sills and a buffer beam, an integral housing mounted for longitudinal movement on said center sills and extending outwardly of and supported by said buffer beam, draft and buffing means in said housing, a vestibule face plate pivotally connected to said housing, yielding means including a pin slidably mounted in said housing for maintaining said face plate in extended position relative to said housing, and a draw bar secured to said housing.

10. In a passenger car, draft and buffing mechanism including a housing mounted for longitudinal movement relative to the car body, a vestibule face plate pivotally mounted on said housing, a face plate frame rigidly secured to said housing, and yielding means interposed between the upper ends of the face plate and said frame.

11. In a passenger car, draft and buffing mechanism including a housing movable relative to the car body, a draw bar secured to said housing, a vestibule face plate mounted on the outer end of said housing, a face plate frame mounted on the housing adjacent said face plate, and yielding means secured to the upper ends of said plate and frame.

12. In a passenger car having an end sill, a draft-gear housing movably mounted on said end sill, a draw bar keyed to said housing, a vestibule face plate pivoted at its lower end to said housing, a face plate frame secured to said housing, and yielding means operatively connected to the upper ends of said frame and plate

for normally maintaining the plate in a predetermined position relative to said frame.

13. In a passenger car, a vestibule platform structure embodying center sills and a buffer beam carried thereby, an integral housing longitudinally slidable on said sills and supported by said beam, draft and buffing mechanism carried by said housing and operatively connected to said structure, a vestibule face plate pivotally mounted on said housing, and a draw bar keyed to said housing.

14. In a passenger car provided with body bolsters and center sills rigidly connected thereto and a buffer beam carried by said center sills, an integral housing mounted for longitudinal movement on said center sills and supported by said buffer beam, draft and buffing means mounted in said housing, a vestibule face plate carried by said housing, and a coupler keyed to said housing in a plane below said plate.

15. In a passenger car embodying a bolster and center sills rigidly secured thereto, a longitudinally movable housing, means for supporting said housing at a plurality of points on said center sills for longitudinal movement thereon, draft and buffing mechanism mounted in said housing, a vestibule face plate pivotally connected to said housing, and a draw bar secured to said housing.

16. A draft gear comprising a housing, means for moving said housing in one direction from normal position on draft and in the other direction from normal position on buff, means including a plurality of coil springs in said housing for resisting movement thereof on draft and buff and for returning said housing to normal position, and means for absorbing the recoil shocks of said springs comprising friction elements operable during movement of said housing in one direction from normal position and during return to normal position, said elements being movable in fixed relation with said housing in the opposite direction from normal position and return to normal position, said housing having surfaces engaged by said elements which surfaces converge in said one direction whereby the friction of said elements is greater on recoil of said springs than on compression of said springs.

17. A draft and buffing gear comprising a housing having surfaces at its opposite ends which converge toward said ends, resilient elements mounted therein, wedges having engagement with the opposite ends of said resilient elements, friction shoes in engagement with each of said wedges and with the diverging surfaces formed in the housing, and means operatively engaging said friction shoes at one end of the housing for moving the latter in fixed relative relation with the housing in one direction from normal position and for holding said friction shoes against longitudinal movement from a normal position in the opposite direction, the friction between said shoes and surfaces being greater during recoil than during compression of said resilient elements.

18. A draft gear comprising a housing having diverging walls, means for transmitting draft and buffing forces to said housing, resilient elements therein, a wedge having engagement with one end of said resilient elements, friction shoes interposed between said wedge and the diverging walls of the housing, means for maintaining said shoes and housing in fixed position relative to one another on movement of said housing in one direction from normal position, and means for preventing longitudinal movement of the wedge and shoes when the housing moves from normal position in the opposite direction and said walls converging in said opposite direction.

19. In a draft gear, a housing having diverging walls, resilient means in said housing for absorbing draft forces, and friction means for absorbing the recoil of said resilient means, said friction means comprising friction shoes having engagement with the diverging walls of the housing, and a wedge engaging said shoes and said resilient means, means for moving said housing including a draw bar, means for maintaining said shoes and housing in fixed position relative to one another during the movement of said housing in one direction from normal position, and means for holding said friction shoes against movement with said housing in one direction only, said walls converging in said one direction toward said shoes, whereby the friction is greater during recoil of said resilient means than during compression of said resilient means.

20. In a draft gear, a housing movable on buff and draft and having divering side walls, resilient means in said housing, a supporting key for the housing, friction means intermediate said key and resilient means, said friction means having engagement with the diverging walls of said housing, said key holding said friction means against movement when said housing moves from normal position in one direction and said walls converging in said one direction, and said key moving said friction means with said housing as the latter moves in the other direction from normal position.

21. In a draft gear, a housing having inclined friction surfaces, resilient means in the housing for resisting buffing forces, friction means including friction elements having engagement with said friction surfaces for absorbing or snubbing the recoil of said resilient means resulting from the application of a buffing force thereto, said housing moving relative to said friction elements on buff, said friction surfaces diverging from the normal position of engagement of said elements therewith whereby the elements are permitted movement away from each other during the movement of the housing under a buffing force and said elements being maintained in frictional engagement with said surfaces during recoil, and means for moving said elements in fixed relative position with the housing when a draft force is applied to said housing, the friction of said elements and surfaces being greater during recoil of said resilient means than during compression thereof.

22. In a draft gear, a housing having inclined friction surfaces, yielding means in said housing for resisting draft and buffing forces, friction means including friction elements having engagement with certain of said inclined surfaces for absorbing or snubbing the recoil of the yielding means resulting from a draft force, and friction elements having engagement with certain of said inclined surfaces for absorbing or snubbing the recoil of the yielding means resulting from a buffing force, said housing moving relative to the draft friction elements on draft and relative to the buffing friction elements on buff and said friction surfaces being so inclined as to cause movement of the draft friction elements toward each other during draft recoil and

to cause movement of the buffing friction elements toward each other during buffing recoil, said draft friction elements and housing being maintained in fixed relative position during buff and said buffing friction elements and housing being maintained in fixed relative position on draft, and means for maintaining said first named friction elements in engagement with said inclined surfaces during recoil of said yielding means following a draft force and for maintaining said second named friction elements in engagement with said inclined surfaces during recoil following a buffing force, whereby the friction between said elements and surfaces is greater during recoil of said yielding means than during compression thereof.

23. In a draft gear, resilient means for yieldingly resisting draft and buffing forces, and friction means positioned at the opposite ends of said resilient means, said friction means at one of said ends being of such a nature that its frictional resistance during recoil of said resilient means following compression caused by a draft force is greater than during such compression, and said friction means at the other of said ends being of such a nature that its frictional resistance during recoil of said resilient means following compresion caused by a buffing force is greater than during such compression.

24. In a draft gear, a housing movable on draft and buff, resilient means therein for resisting movement of said housing due to draft and buffing forces, and friction means in said housing for resisting movement thereof and constructed and arranged so that the frictional resistance to movement of said housing caused by recoil of said resilient means is greater than the frictional resistance to such movement caused by draft and buffing forces, whereby said friction means operate to check substantially the recoil of said resilient means but are relatively ineffective to resist draft and buffing forces.

OTHO C. DURYEA.