Oct. 31, 1933. G. F. COUCH 1,932,814

DRAFT RIGGING

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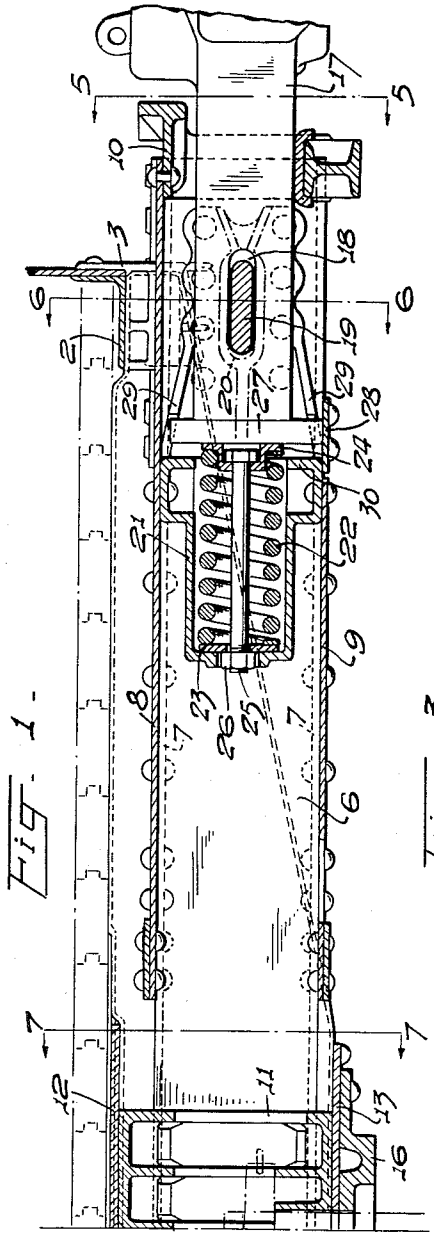

Fig. 1.

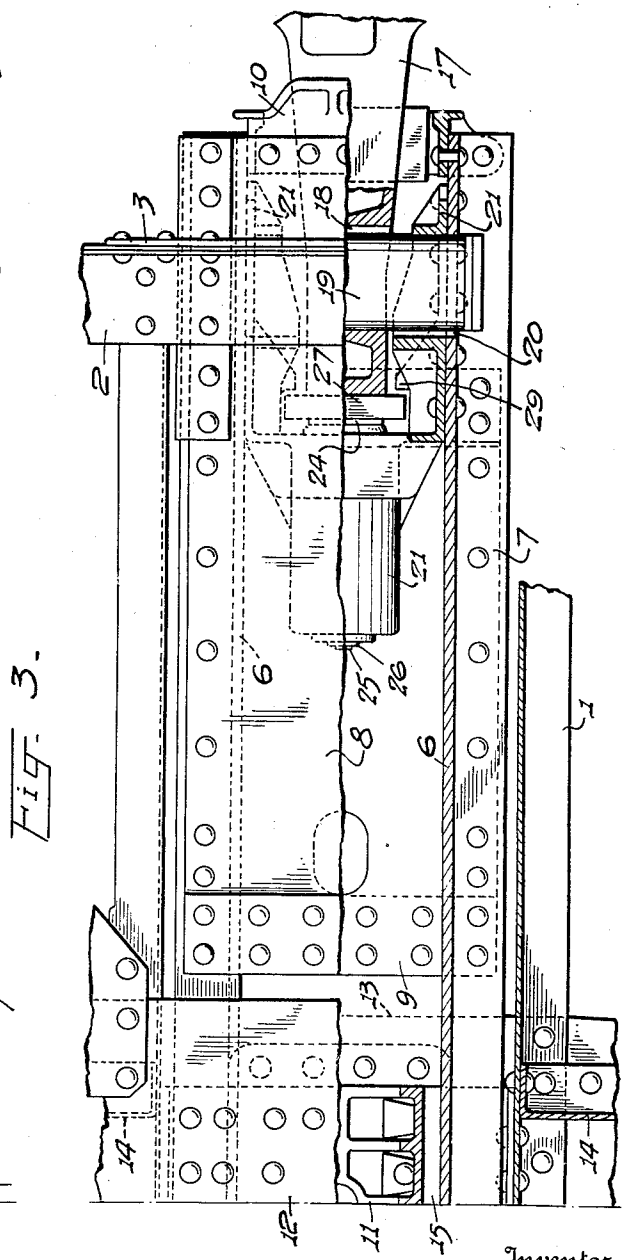

Fig. 3.

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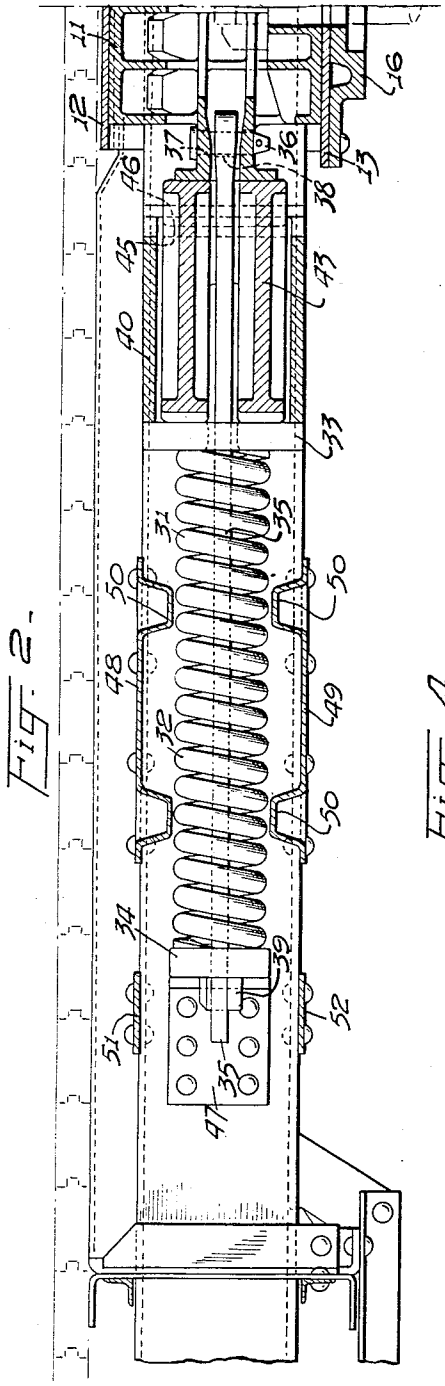

Fig. 2.

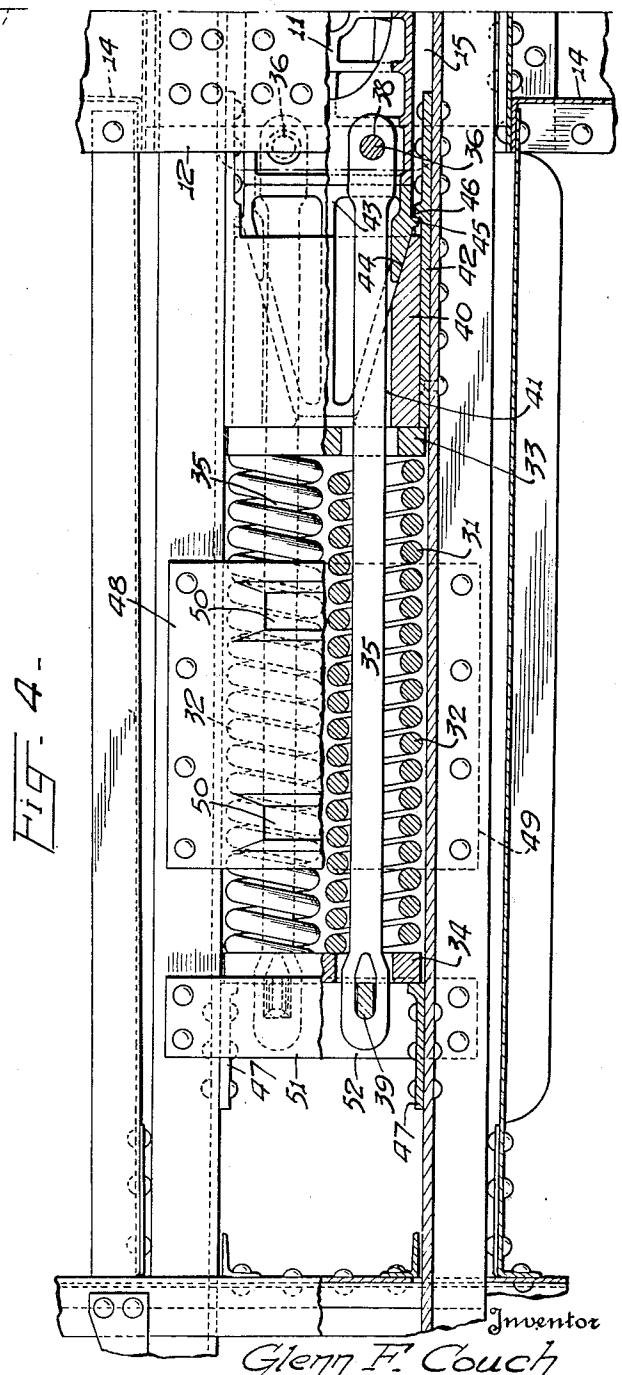

Fig. 4.

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Fig. 5.

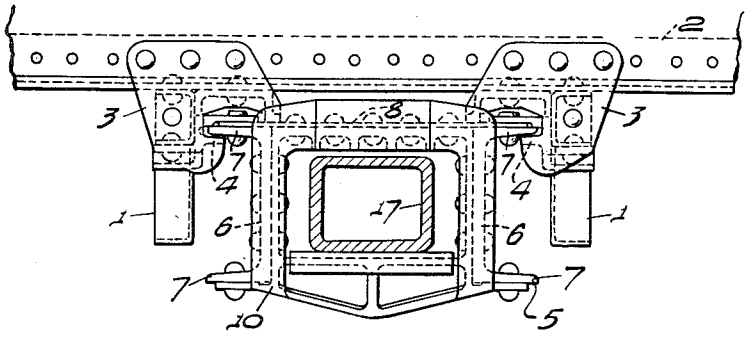


Fig. 6.

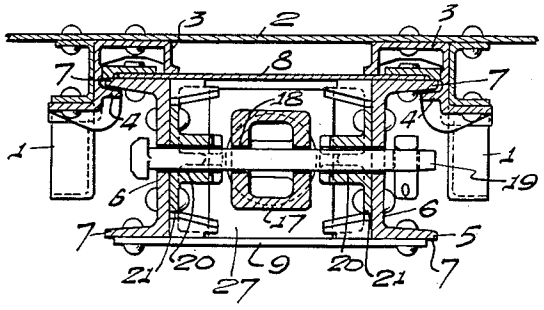
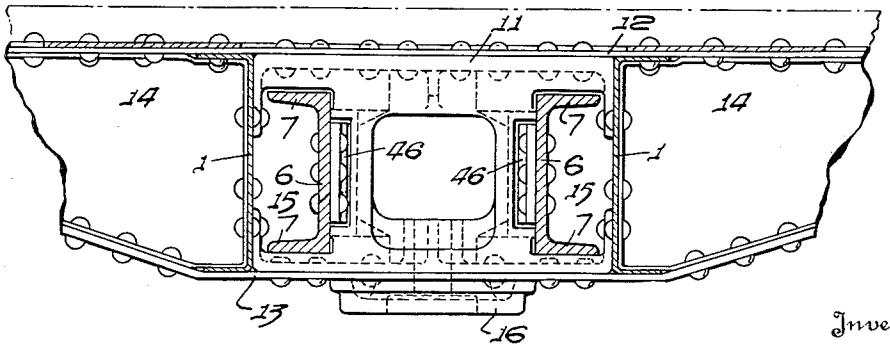


Fig. 7.



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UNITED STATES PATENT OFFICE

1,932,814

DRAFT RIGGING

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Application November 3, 1930. Serial No. 493,207

2 Claims. (Cl. 213—8)

This invention relates to railway draft rigging and, more particularly, to such in which the draft sills are slidably mounted with respect to the remainder of the underframe.

The principal object of my invention, generally considered, is the provision of a railway vehicle underframe and associated draft rigging in which cushioning mechanism is supported by sills movable with respect to the remainder of the underframe, the vehicle body, and associated running gear or trucks, and connected to the relatively fixed portion of the underframe for actuation upon movement of said sills, said cushioning mechanism involving spring and friction elements, the spring elements of which are actuated upon movement of the sills in both directions, and the friction elements of which are operative upon movement of the sills in only one direction, drawbars being connected to the ends of the movable sills, and separate cushioning mechanism, if desired, being provided for cushioning movement of the drawbars with respect to said sills under the action of buffing forces.

Another object of my invention is the provision of a railway vehicle underframe in which draft sills extend from one end to the other and are mounted for limited movement with respect thereto, cushioning mechanism being supported between said sills and intermediate the ends thereof, said mechanism comprising longitudinally extending springs and wedge blocks associated therewith, and a wedge block normally abutting the relatively fixed portion of the underframe and frictionally engaging said wedge blocks upon movement of the sills in one direction, said springs being compressed upon movement of the sills in either direction.

A further object of my invention is the provision of a railway vehicle underframe involving sills slidably mounted with respect to the remainder of the underframe, a pair of cushioning mechanisms mounted between said sills, each mechanism comprising longitudinally extending springs and friction wedges associated therewith, the wedges of each mechanism being preferably disposed toward the adjacent end of the vehicle, one wedge in each mechanism being engaged by the relatively fixed part of the underframe, and the springs and remaining wedges being moved by stops on the relatively movable sills, whereby all the springs are actuated upon movement of the sills in either direction, and the friction elements of one mechanism are operative upon movement of the sills in one direction, while the friction elements of the other mechanism are operative upon movement of the sills in the other direction.

Other objects and advantages of the invention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims:—

Figure 1 is a fragmentary, vertical, longitudinal, sectional view of a railway vehicle underframe illustrating one embodiment of my invention, the associated drawbar or coupler being shown in side elevation.

Fig. 2 is a fragmentary, vertical, longitudinal, sectional view of a portion of the railway vehicle underframe supplemental to that shown in Fig. 1, illustrating that portion immediately adjacent and rearward of the part shown in Fig. 1.

Fig. 3 is a fragmentary plan of the underframe and mechanism shown in Fig. 1, with parts in horizontal section.

Fig. 4 is a fragmentary plan of that part of the underframe and mechanism shown in Fig. 2, with parts in horizontal section.

Fig. 5 is a fragmentary end elevation of the underframe with the drawbar shown in section on the line 5—5 of Fig. 1, looking in the direction of the arrows.

Figs. 6 and 7 are transverse sectional views on the lines 6—6 and 7—7, respectively, of Fig. 1, looking in the direction of the arrows.

Referring to the drawings in detail, like parts being designated by like reference characters, there is illustrated, as one embodiment of my invention, a portion of a railway vehicle involving longitudinal framing or relatively fixed sills 1 connected by end sills 2, only one of which is illustrated. The sills 1 and 2 preferably have connected adjacent the intersections thereof bracket castings 3 with inwardly extending flange or ledge portions 4, upon which are movably or slidably mounted the movable draft or center sill assembly 5 involving longitudinal draft sills 6.

In the present embodiment, the sills 6 are formed as channels with outwardly extending flanges 7, the upper of which rest directly on the flange or ledge portions 4 of the bracket castings 3, whereby relative movement therebetween develops friction at the engaging surfaces. The sills 6 are preferably connected by top cover plates 8 and bottom cover plates 9, only one of each of which is shown. The ends of the sills preferably have applied thereto combined striking castings and sill tie members 10.

Connecting the sills 1 intermediate the ends thereof are bolster center filler castings 11 disposed between bolster cover plates 12 and 13 and the bolster transoms 14 which extend outwardly from the framing sills 1. The center filler castings are apertured or notched, as indicated at 15, for the passage of the movable draft sills 6, the lower flanges of which desirably rest on those portions of the castings which define the bottoms of the openings 15, so that friction is developed upon relative movement between the sills 6 and the castings 11.

A center plate 16 may be connected to each bottom bolster cover plate 13 beneath the center filler casting 11 in accordance with the usual practice, whereby the body and relatively fixed portion of the underframe are fixed to and movable with the trucks or running gear of the vehicle.

In the present embodiment, the coupler or drawbar 17 at each end of the railway vehicle is slotted, as indicated at 18, to receive a horizontal draft key 19, the ends of which are received in corresponding slots 20 in the draft sills 6 and associated combined cushioning mechanism housing and cheek plate member 21, whereby draft forces applied to the coupler are directly transmitted through key 19 to the sills 6.

The housing 21 desirably encloses cushioning means which, in the present embodiment, takes the form of a coil or helical spring 22, preferably held under initial stress by spring retainer plates or followers 23 and 24 through which pass a retaining bolt 25 threadably engaged by a nut 26. The end of the housing 21 is preferably apertured to receive the nut 26, and the front follower or retainer plate 24 is preferably inwardly embossed to receive the head of the bolt 25, as shown most clearly in Fig. 1, whereby the follower 27 may directly abut the spring retainer plate or follower 24 and be disposed between the butt or rearmost end of the drawbar or coupler 17 and said retainer plate. The follower 27 is desirably supported on a carry iron 28 connected to the lower flanges of the sills 6, and is limited in its forward movement by shoulders 29 on the casting 21, and in its rearward movement by the front flanges 30 of the housing portion of said casting.

From a consideration of Figures 1 and 3 particularly, it will be seen that the butt of the drawbar 17 normally engages the front face of the follower 27, and the slots 18 and 20, or one of them, are so elongated that rearward movement of said drawbar under the action of buffing forces for compressing the spring or cushioning means 22 is permitted, while forward movement thereof results in a corresponding bodily movement of the sills 6. In this way, I provide cushioning mechanism for assisting the central or intermediate cushioning mechanisms, hereinafter described, under the action of buffing forces, while under the action of draft forces the central cushioning mechanisms only are affected.

In order to provide for cushioning relative movement of the sills 6 with respect to the fixed sills 1 and relatively fixed portions of the underframe, additional or intermediate cushioning mechanism 31 is provided. In the present embodiment, I have shown only one cushioning mechanism 31, although it is preferred that this cushioning mechanism be duplicated at the other end of the car, or rearwardly of the bolster at the other end of the car, except that it be reversed in position, that is, with its friction elements adjacent the other bolster, and its spring elements adjacent the cushioning mechanism 31 illustrated.

Inasmuch as only one end or half of the railway vehicle sills is illustrated, and the construction disclosed is desirably duplicated at the other end, I will only describe the mechanism at the end of the car which is illustrated.

The cushioning mechanism, generally represented by the reference character 31, comprises, in the present embodiment, a pair of relatively long helical springs 32, which springs have associated therewith front and rear followers 33 and 34, and with said followers are mounted on supporting or tension rods 35, the outer or front ends of which are desirably connected to the adjacent bolster center filler casting 11, as by means of vertical pins 36 passing through registering apertures 37 in the casting 11, and 38 in the rods 35. The other or rear ends of the rods 35 are connected to the rear follower 34 by means of vertical keys, or other connecting means 39.

Associated with the front follower 33 is a pair of relatively movable wedge blocks 40 slotted for the passage of the rods 35, as indicated at 41, and frictionally engaging wear plates 42 connected to the movable sills 6.

In order to urge the wedge blocks 40 into frictional engagement with the wear plates 42 for generating frictional resistance, I provide a wedge block 43 formed with rearwardly converging friction surfaces 44 on each side, which block fits between the wedge blocks 40 with the corresponding inclined or converging surfaces in engagement. The butt of the wedge block 43 is normally engaged by the bolster center filler casting 11, so that the preferably pre-compressed springs 32 normally hold the parts in contact, as shown most clearly in Figure 4. The wedge 43 has outwardly extending lugs 45 normally engaged by lugs 46 on the wear plates 42, so that upon relative rearward movement of the sills 6, the wedge 43, wedges 40, and follower 33 are moved rearwardly to compress the springs 32, the rearward ends of which are held in place by the rods 35 connected to the center filler casting 11. The sills 6 are provided with stop lugs 47 normally lying in engagement with the rear follower 34, so that upon forward movement of the sills 6, said stop lugs move the rear follower 34 forwardly and compress the springs 32 against the front follower 33, which, in turn, forces the wedges 40 between the sides of the wedge 43 and the wear plates 42, creating additional frictional resistance for cushioning forward movement of the sills 6, or movement to the right, as viewed in Figure 4. It will, therefore, be seen that relative rearward movement of the sills under the action of buffing forces is cushioned by the springs 32 of the cushioning mechanism illustrated and the corresponding springs of the cushioning mechanism at the other end of the car, if used in accordance with the preferred embodiment, together with the frictional effect due to relative movement of the corresponding wear plate 42 along the engaging face of the wedge 40, as well as the wedging movement between the inclined faces of the wedges 40 and 43.

In order to assist the rods 35 in holding the springs in proper alignment, cover plates 48 and 49 are desirably provided above and below said springs with their ends connected to the sills 6 and preferably formed with inwardly embossed portions 50 which lie above and below the springs

in close relation thereto. Tie members 51 and 52 are also desirably provided for connecting the sills 6 above and below the stop members 47.

From the foregoing disclosure, it will be seen that I have devised a railway vehicle underframe and associated cushioning mechanism and draft rigging so arranged that under the action of both draft and buffing forces movement of the sills 6, with respect to the remainder of the underframe, is cushioned by the pair of spring and friction draft gears, the drawbars or couplers being connected to the respective ends of the movable sills for directly transmitting draft forces thereto without any cushioning section, cushioning means being desirably provided, however, for absorbing buffing shocks between the drawbars and movable sills, thereby augmenting the cushioning capacity of the central or intermediate draft gears for that purpose.

Although the mechanism at one end of the vehicle only is illustrated, it will be understood that each coupler desirably has a corresponding spring or cushioning device associated therewith for absorbing buffing forces, and the intermediate spring and friction draft gear for cushioning relative movement of the sills 6 is desirably duplicated adjacent the other bolster of the vehicle with the friction elements disposed toward said bolster or headed in the opposite direction from those in the draft gear shown. Because of this arrangement, relative movement of the sills 6 in either direction is cushioned by the springs 32 of both gears, while relative movement in one direction is cushioned by the friction wedges 40 and 43 of one gear, and relative movement in the other direction by the corresponding wedges of the other gear.

By key connecting the couplers or drawbars to the draft sills without any provision for cushioning relative movement therebetween under the action of draft forces, the train slack may be kept at a minimum, while at the same time the vehicle lading is amply protected by having the necessary cushioning effect, both spring and friction, provided for absorbing both draft and buffing forces upon relative movement of the movable sills, buffing forces, as previously explained, being additionally cushioned by the spring mechanism disposed adjacent the rear ends of the drawbars for absorbing buffing shocks between said drawbar and movable sills.

It will be understood that although I have shown the drawbar or coupler key-connected to the draft sills with provision for cushioning relative movement on buffing only, I may, if desired, connect said drawbar to said sills with provision for no relative movement therebetween, or, as a further alternative, the drawbar may be connected to the sills with provision for cushioning relative movement thereof in either direction.

Although a preferred embodiment of my invention is illustrated, it will be understood that modifications may be made within the spirit and scope of the appended claims.

I claim:—

1. In a railway vehicle, in combination with a bolster, draft sills received in and relatively movable with respect to said bolster, and mechanism for cushioning relative movement of said draft sills comprising a pair of longitudinally extending coil springs, followers at the ends of said springs, tie means connecting the follower disposed away from said bolster to said bolster, a pair of friction wedges engaged by the other follower, and normally disposed in engagement with friction surfaces on the draft sills, other friction means normally abutting the bolster and disposed between said first-mentioned wedges for holding them apart and into engagement with the friction surfaces on the draft sills, and draft lugs connected to the draft sills and respectively engaging the first-mentioned follower and the last-mentioned friction means.

2. In a railway vehicle having an underframe, draft sills movably mounted with respect to said underframe and mechanism for cushioning movement of said draft sills with respect to said underframe, said mechanism comprising coil springs, followers at the ends of said mechanism, means connecting the follower disposed away from a portion of said underframe thereto, friction wedges engaged by the other follower and normally disposed in engagement with friction surfaces on said sills, other friction means normally abutting the underframe and disposed between said first-mentioned wedges for urging them into engagement with the friction surfaces on the draft sills, and lugs connected to said sills and respectively engaging the first-mentioned follower and the last-mentioned friction means.

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