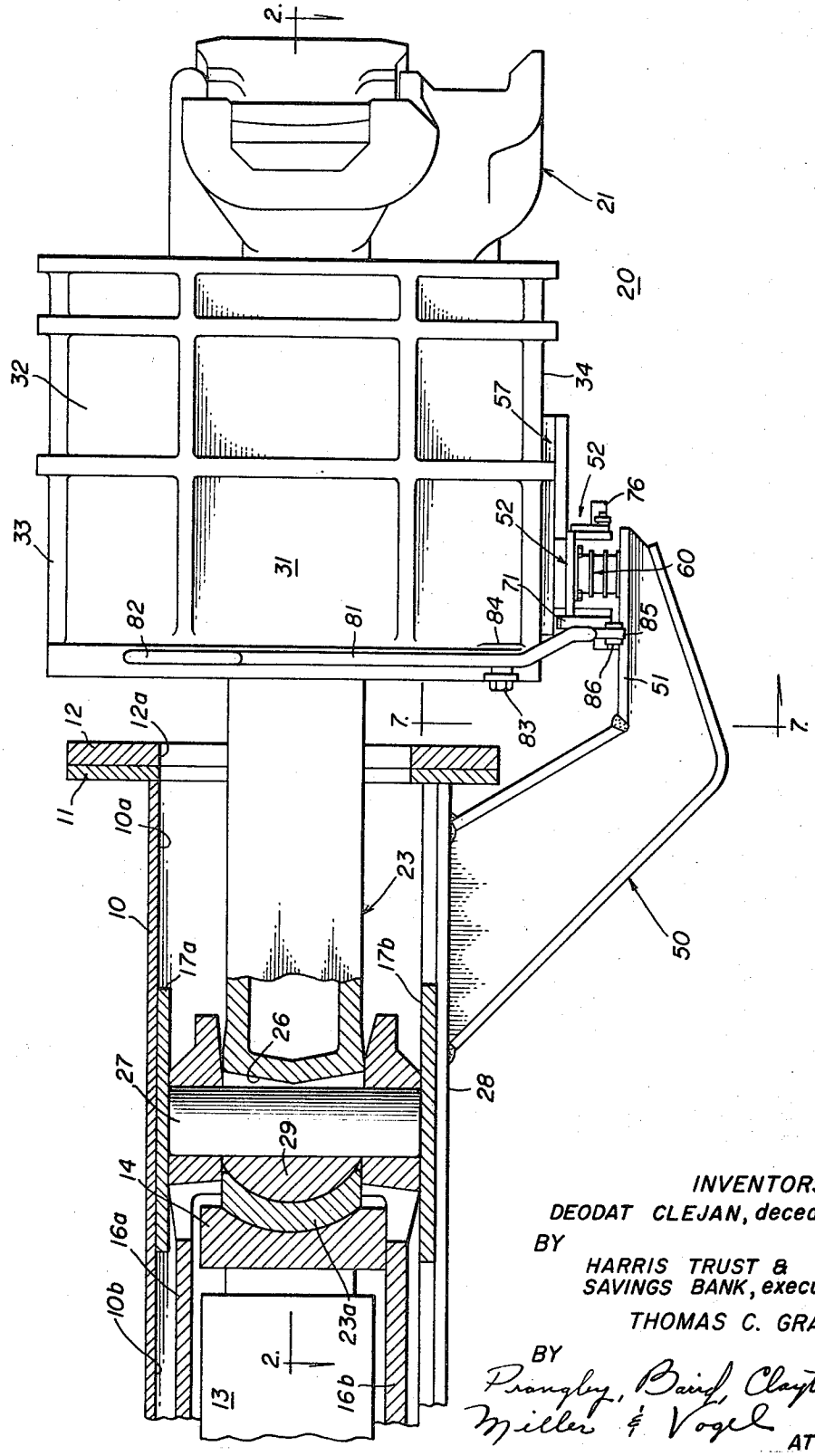
Sept. 24, 1968 D. CLEJAN ET AL 3,402,826

RAILWAY CAR PROVIDED WITH CAR COUPLER AND COMBINATION CARRYING AND CENTERING MECHANISM THEREFOR

Filed Nov. 16, 1966 5 Sheets-Sheet 1

FIG. 1



INVENTORS
DEODAT CLEJAN, deceased,
BY
HARRIS TRUST & SAVINGS BANK, executor,
THOMAS C. GRAY
BY
Pringley, Baird, Clayton, Miller & Vogel
ATTYS.

Sept. 24, 1968 D. CLEJAN ET AL 3,402,826

RAILWAY CAR PROVIDED WITH CAR COUPLER AND COMBINATION CARRYING AND CENTERING MECHANISM THEREFOR

Filed Nov. 16, 1966 5 Sheets-Sheet 2

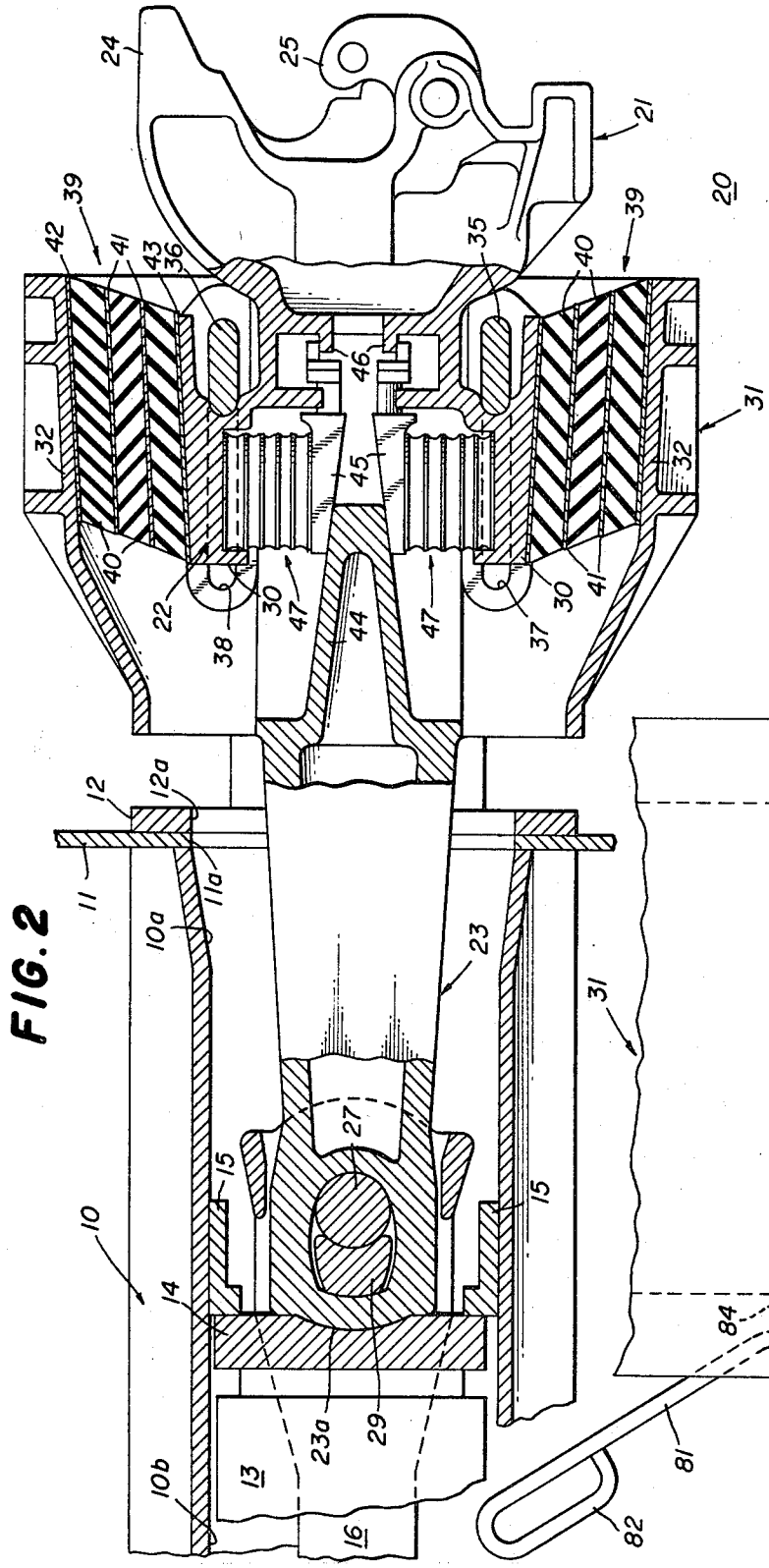


FIG. 2

FIG. 3

Sept. 24, 1968 D. CLEJAN ET AL 3,402,826
RAILWAY CAR PROVIDED WITH CAR COUPLER AND COMBINATION CARRYING AND CENTERING MECHANISM THEREFOR
Filed Nov. 16, 1966 5 Sheets-Sheet 3

FIG. 4

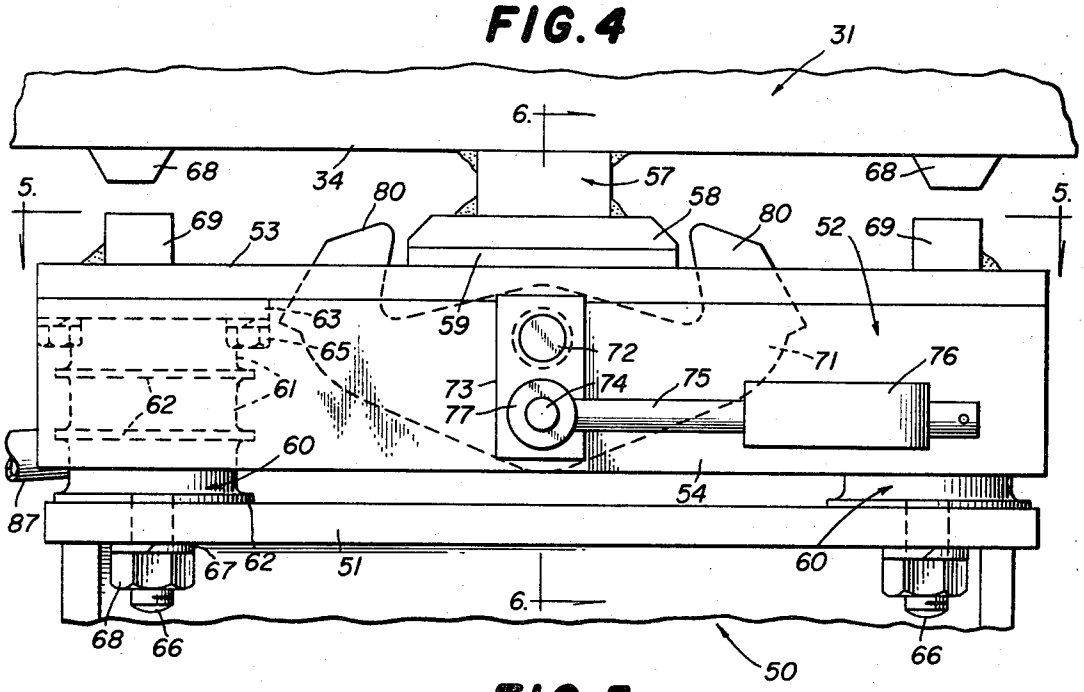


FIG. 5

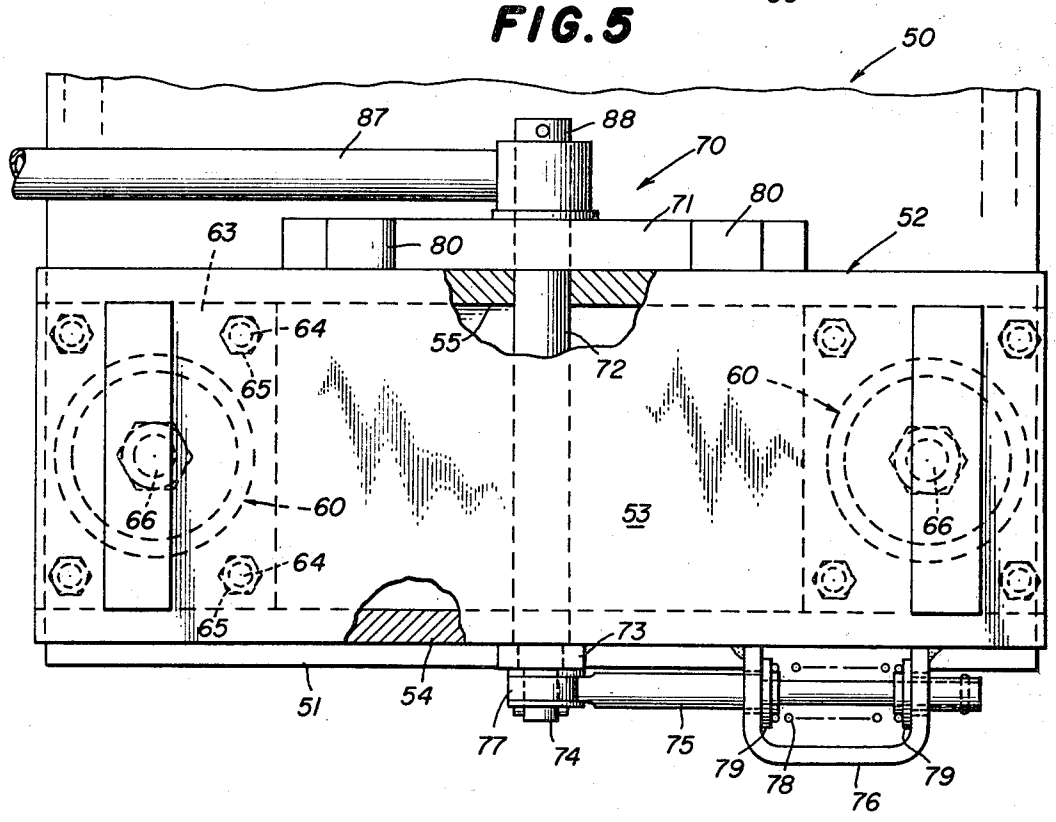


FIG. 6

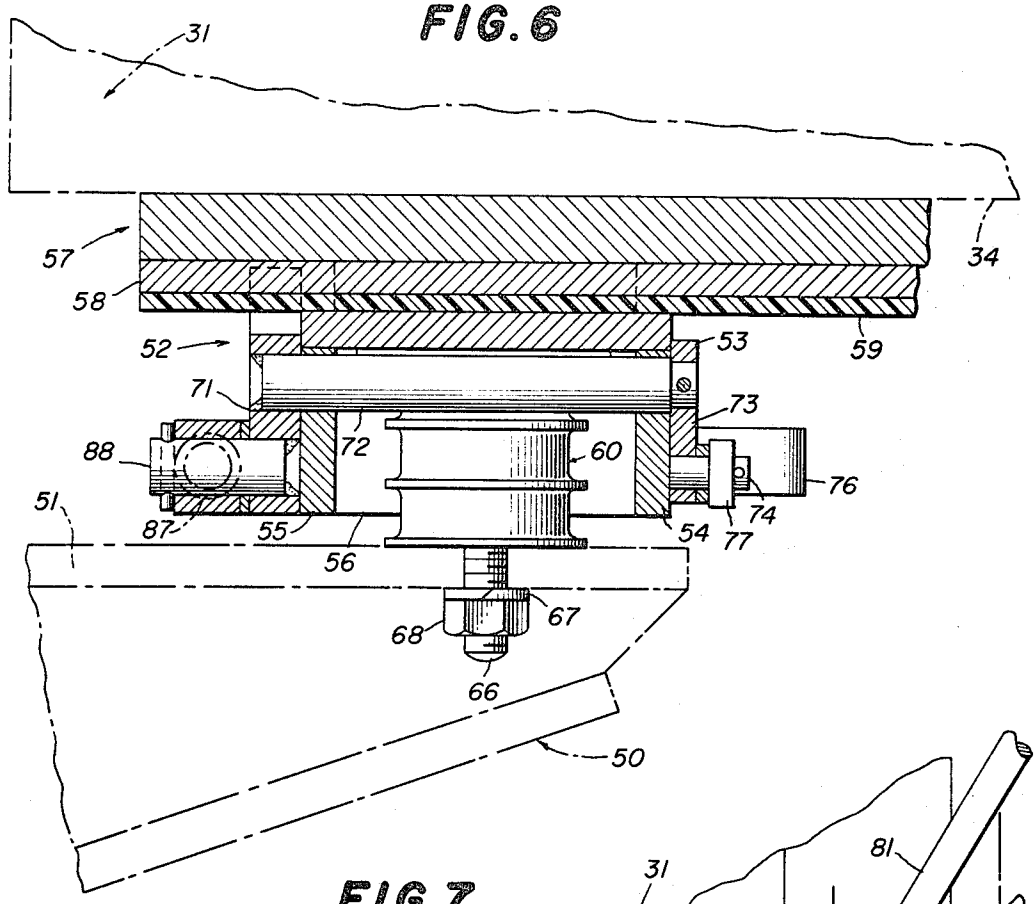
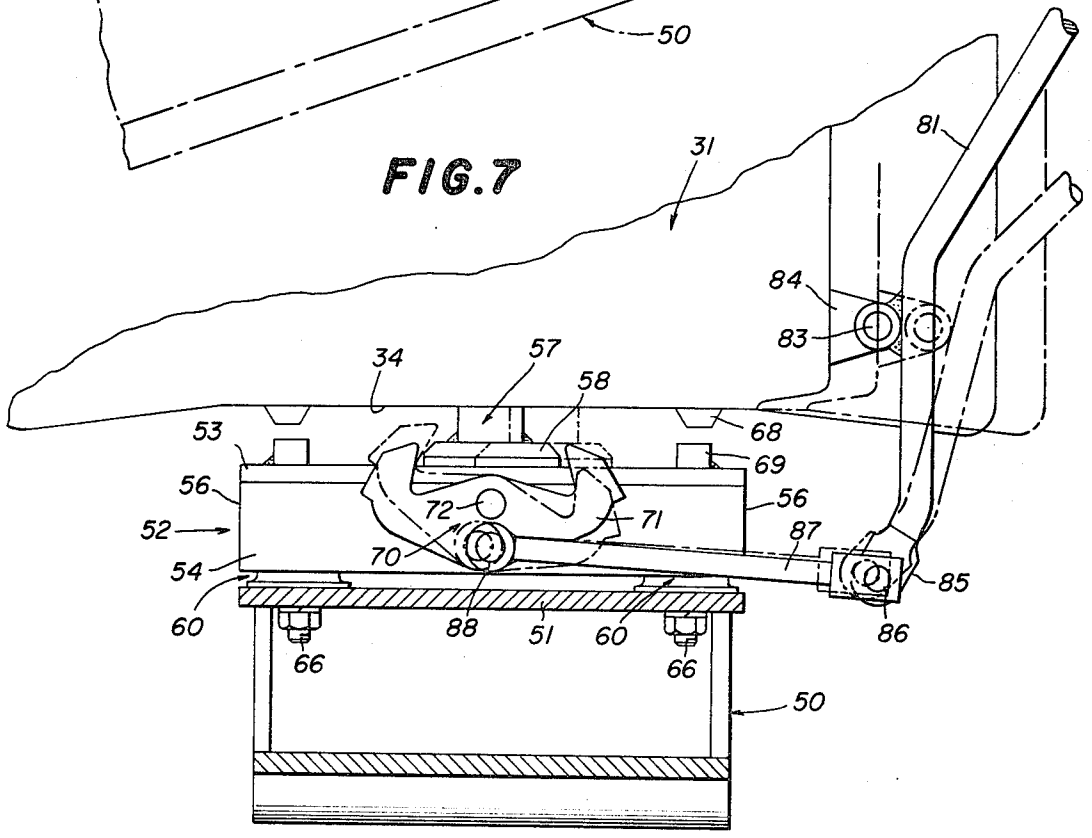

31
57
58
34
52
53
59
71
73
88
72
60
76
51
87
55
56
54
74
77
68
67
66
50

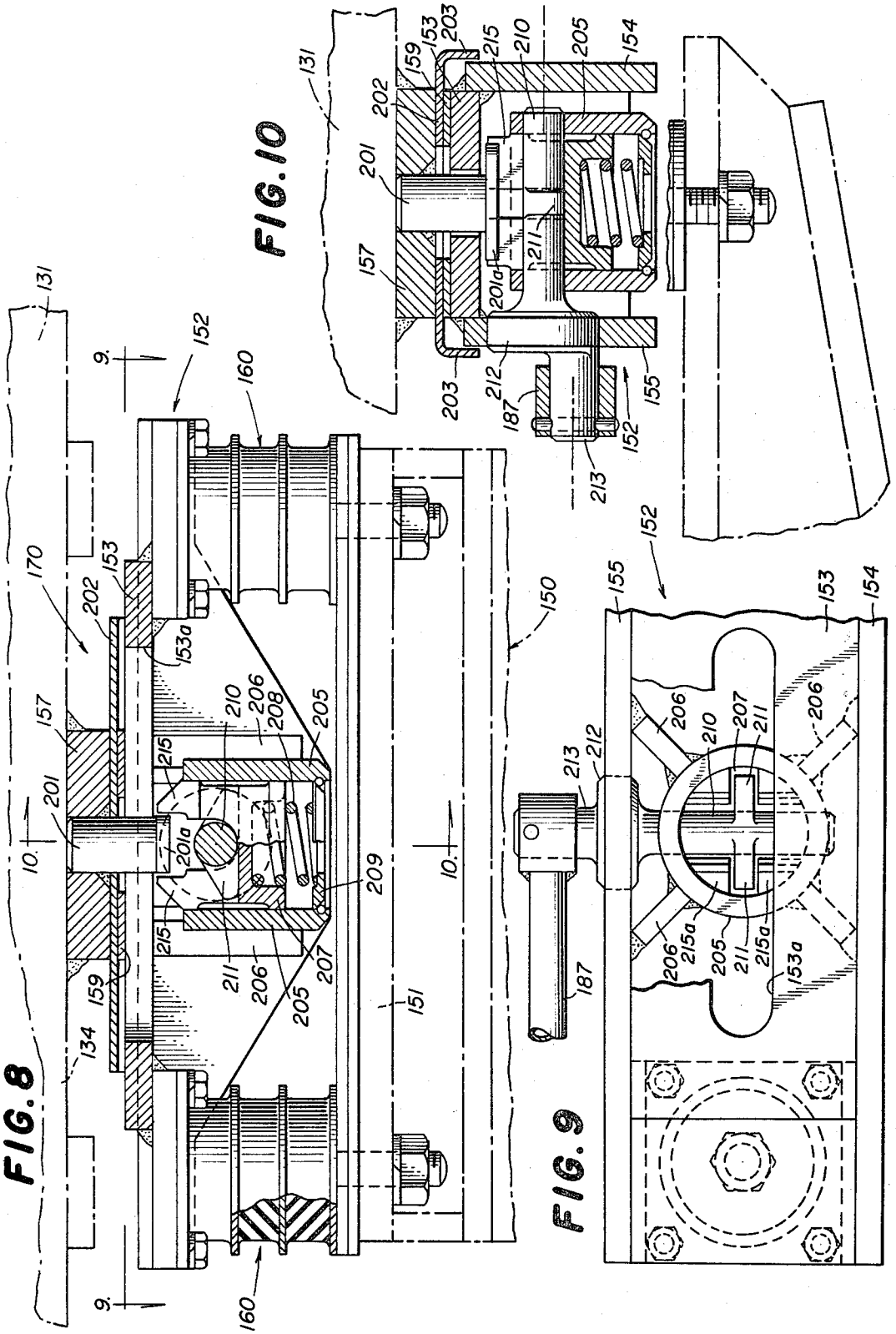
FIG. 7


81
31
84
83
34
57
58
68
53
69
56
72
71
56
52
70
87
54
85
60
88
51
60
86
66
66
50

Sept. 24, 1968 D. CLEJAN ET AL 3,402,826

RAILWAY CAR PROVIDED WITH CAR COUPLER AND COMBINATION CARRYING AND CENTERING MECHANISM THEREFOR

Filed Nov. 16, 1966 5 Sheets-Sheet 5



United States Patent Office 3,402,826 Patented Sept. 24, 1968

3,402,826

RAILWAY CAR PROVIDED WITH CAR COUPLER AND COMBINATION CARRYING AND CENTERING MECHANISM THEREFOR

Deodat Clejan, deceased, late of Chicago, Ill., by Harris Trust and Savings Bank, Executor, Chicago, Ill., and Thomas C. Gray, Kern City, Calif., assignors to Cushion Coupler Corporation, Chicago, Ill., a corporation of Delaware

Filed Nov. 16, 1966, Ser. No. 596,390
12 Claims. (Cl. 213—21)

ABSTRACT OF THE DISCLOSURE

There is disclosed a railway car having a car coupler incorporating therein a combination carrying and centering mechanism, so as to retain the coupling head of the car coupler in proper vertical elevation for the coupling purpose, and notwithstanding substantial forward projection of the coupling head with respect to the striker carried by the adjacent end of the underframe of the railway car, and so selectively to restrain the coupling head in a normal centered position disposed substantially along the longitudinal centerline of the center sill of the car underframe, and so as to accommodate lateral pivotal movements of the shank of the car coupler to either side of the longitudinal centerline of the center sill, with the consequent selective movements of the coupling head and the two corresponding laterally offset operated positions respectively disposed on opposite sides of the longitudinal centerline of the center sill.

The present invention relates to railway cars provided with draft riggings, and more particularly to a railway car provided with a car coupler and a combination carrying and centering mechanism for the car coupler.

It is a general object of the invention to provide a railway car having a car coupler and incorporating an improved combination carrying and centering mechanism for the car coupler, so as to retain the coupling head of the car coupler in proper vertical elevation for the coupling purpose, and notwithstanding substantial forward projection of the coupling head with respect to the striker carried by the adjacent end of the underframe of the railway car, and so as selectively to restrain the coupling head in a normal centered position disposed substantially along the longitudinal center line of the center sill of the car underframe, and so as to accommodate lateral pivotal movements of the shank of the car coupler to either side of the longitudinal center line of the center sill, with the consequent selective movements of the coupling head into two corresponding laterally offset operative positions respectively disposed on opposite sides of the longitudinal center line of the center sill.

Another object of the invention is to provide in a railway car, an improved combination carrying and centering mechanism for the car coupler of the character described, that incorporates improved locking mechanism for selectively restraining the car coupler in its normal centered position, and that is selectively operative to release the car coupler for lateral movement into either one of its laterally offset operative positions.

A further object of the invention is to provide in a railway car, an improved combination carrying and centering mechanism of the character described, wherein the locking mechanism is provided with a manually operable handle for the purpose of selectively operating the same into its normal locked position and into its two unlocked positions, wherein the same manually operable handle is employed for the purpose of selectively moving the car coupler into either one of its laterally offset positions following operation of the locking mechanism into its corresponding unlocked position.

Yet another object of the invention is to provide in railway car, an improved combination carrying and centering mechanism for the car coupler, that is of improved and simplified construction and arrangement, so as to accommodate ready coupling by the coupling head of the car coupler regardless of whether such coupling is to take place upon a tangential or straight track section, or upon a right-hand curved track section, or upon a left-hand curved track section.

A still further object of the invention is to provide in a railway car, an improved combination centering and carrying mechanism for a car coupler that accommodates cushioning in the shank thereof of initial buff forces transmitted to the coupling head thereof, with the result that only residual buff forces are transmitted to the cooperative draft gear arranged in the draft gear pocket provided in the adjacent end of the center sill of the underframe of the railway car.

Further features of the invention pertain to the particular arrangement of the elements of the railway car underframe and the combination carrying and centering mechanism for the car coupler thereof, whereby the above outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view, partly broken away, of the outer end of the center sill of the underframe of a railway car and the adjacent combination carrying and centering mechanism for the car coupler thereof, and embodying the present invention;

FIG. 2 is a horizontal sectional view of the outer end of the center sill of the railway car and the car coupler, as shown in FIG. 1;

FIG. 3 is a fragmentary front elevational view of the car coupler and the combination mechanism that is carried by the adjacent front end of the center sill of the railway car;

FIG. 4 is an enlarged fragmentary front elevational view of the combination mechanism carried by the front end of the center sill, as shown in FIG. 3;

FIG. 5 is a greatly enlarged fragmentary plan view of the combination mechanism, this view being taken in the direction of the arrows along the line **5—5** in FIG. 4;

FIG. 6 is a greatly enlarged fragmentary longitudinal sectional view of the combination mechanism, this view being taken in the direction of the arrows along the line **6—6** in FIG. 4;

FIG. 7 is an enlarged fragmentary lateral sectional view of the combination mechanism, this view being taken in the direction of the arrows along the line **7—7** in FIG. 1;

FIG. 8 is an enlarged fragmentary front elevational view, partly in section, similar to FIG. 4, of a modified form of the combination mechanism;

FIG. 9 is an enlarged fragmentary plan view of the combination mechanism, this view being taken in the direction of the arrows along the line **9—9** in FIG. 8; and

FIG. 10 is an enlarged longitudinal sectional view of the combination mechanism, this view being taken in the direction of the arrows along the line **10—10** in FIG. 8.

Referring now to FIGS. 1 and 2, there is diagrammatically illustrated one end of a conventional railway car that includes an underframe that incorporates a longitudinally extending center sill **10** and a laterally extend-

ing end sill **11**. The outer end of the center sill **10** is open, as indicated at **10***a*, and an aligned opening is formed in the end sill **11**, as indicated at **11***a*. A striker **12** is rigidly secured to the end sill **11** at the end of the center sill **10** and provided with an opening **12***a* therethrough arranged in alignment with the openings **10***a* and **11***a*. The outer end portion of the center sill **10** disposed immediately inwardly of the striker **12** is hollow and has a draft gear pocket **10***b* formed therein; and a draft gear **13** is arranged in the pocket **10***b*; which draft gear **13** comprises a portion of the draft rigging; and which draft gear **13** may be of the conventional friction type. The front end of the draft gear **13** cooperates in the usual manner with a front follower **14**, and the rear end of the draft gear **13** cooperates in the usual manner with a rear follower, not shown. In turn, the front follower **14** cooperates in the usual manner with front draft lugs **15** rigidly secured to the adjacent interior portion of the center sill **10**, and the rear follower cooperates in the usual manner with rear draft lugs, not shown, rigidly secured to the adjacent interior portion of the center sill **10**. The draft gear **13** and the cooperating front and rear followers are embraced by the usual yoke **16** of substantially U-shaped configuration and including upper and lower arms **16***a* and **16***b* respectively positioned above and below the draft gear **13** and projecting forwardly in the hollow center sill **10** toward the outer open end **10***a* thereof.

Further, the draft rigging comprises a car coupler **20** of any suitable type, but that is preferably of the cushion coupler type and of the character disclosed in U.S. Patent No. 3,246,771, granted on Apr. 19, 1966 to Thomas C. Gray. As illustrated, the car coupler **20** is of the particular construction and arrangement of that disclosed and claimed in the copending application of Deodat Clejan and Thomas C. Gray, Ser. No. 540,897 filed Apr. 7, 1966. Specifically, the car coupler **20** comprises a coupling head **21**, a primary shank **22** and a secondary shank **23**. The coupling head **21** is of any suitable type, a conventional A.A.R. Type E being illustrated, by way of example; which coupling head **21** includes a guard arm **24**, a pivotally mounted knuckle **25**, a knuckle thrower, not shown, a lock, not shown, a lock-lift assembly, not shown, and the other usual appurtenances; which organization of elements is not described in further detail in the interest of brevity.

The secondary shank **23** is arranged in the outer open end **10***a* of the center sill **10** and projects through the opening **12***a* provided in the striker **12**; and more particularly, the rear end of the secondary shank **23** is operatively connected to the yoke **16** and cooperates with the front follower **14**, all in the usual manner. Specifically, an upstanding opening **26** is formed in the rear end of the secondary shank **23** that receives an upstanding connecting pin **27**. The opposite ends of the connecting pin **27** are arranged in two aligned openings respectively formed in the outer ends of the upper and lower arms **16***a* and **16***b* of the yoke **16**; and the extreme outer ends of the connecting pin **63** respectively engage in sliding relation upper and lower wear plates **17***a* and **17***b*. The upper wear plate **17***a* is carried by the adjacent top wall structure of the outer end of the center sill **10**; and the lower wear plate **17***b* is carried by an adjacent lower yoke support **28** that is carried by the adjacent outer end of the center sill **10**. The outer surface of the extreme rear end or strap portion **23***a* of the secondary shank **23** is of generally semi-spherical configuration and is received in a corresponding cavity formed in the adjacent front surface of the front follower **14**, in the usual manner; and moreover, a bearing block **29** is arranged in the opening **26** at the rear side of the upstanding connecting pin **27** and in interposed relation with respect to the rear side of the connecting pin **27** and the adjacent front side of the strap portion **23***a* of the extreme rear end of the secondary shank **23**. The

rear side of the bearing block **29** and the front side of the strap portion **23***a* of the extreme rear end of the secondary shank **23** that are disposed in contact with each other are provided with the usual substantially semi-spherical surfaces so as to accommodate articulation of the secondary shank **23** in the horizontal direction about the pivot pin **27** and with respect to the front follower **14**, all in a conventional manner.

As best shown in FIGS. 1 and 2, the primary shank **22** is formed integral with the coupling head **31** and projects rearwardly longitudinally therefrom; and further, the primary shank **22** is hollow having an open rear end, and provided with a pair of laterally spaced-apart plates **30**. Similarly, the front end of the secondary shank **23** carries a bell-shaped or box-like member **31** having an open front end and formed integrally with the secondary shank **23** and arranged in surrounding relation with the primary shank **22**. The bell **31** is also provided with a pair of substantially parallel side walls **32** and substantially parallel top and bottom walls **33** and **34**, respectively. The primary shank **22** is mounted within the bell **31** for longitudinal sliding movements by two pairs of lugs, not shown, respectively carried by the plates **30** and two pairs of longitudinally extending rails, not shown, respectively carried by the top and bottom walls **33** and **34** of the bell **31**. Specifically, each plate **30** carries a pair of the lugs at the opposite ends thereof; and each of the top and bottom walls **33** and **34** carries a pair of the rails arranged in laterally spaced-apart relation; and each one of the lugs cooperates with the adjacent one of the rails. Arranged between each lug and the adjacent rail are a resilient pad and a wear strip, both not shown, the pad being directly secured to the lug, and the rear strip being directly secured to the pad and slidably engaging the rail.

The primary shank **22** and the bell **31** are interconnected by lost-motion mechanism including a pair of pins or keys **35** and **36**. The key **35** is provided with a vertically extending shank that projects through a pair of aligned longitudinally extending slots **37**, respectively formed in the top and bottom walls **33** and **34** and also through an aligned opening formed in the adjacent plate **30**. Similarly, the key **36** is provided with a vertically extending shank that projects through a pair of aligned longitudinally extending slots **38** respectively formed in the top and bottom walls **33** and **34** and also through an aligned opening formed in the adjacent plate **30**. The keys **35** and **36** have enlarged heads, not shown, so as to accommodate exact location thereof in the respective slots **37** and **38**, since the keys **35** and **36** are removably secured in place. Also, the shanks of the keys **35** and **36** are ribbon-like in cross-section, so as to prevent rotation of the keys **35** and **36** in the respective slots **37** and **38**. Thus, the longitudinal movement of the primary shank **22** with respect to the bell **31** is further guided by the cooperation between the keys **35** and **36** and the respective slots **37** and **38** that are formed in the top and bottom walls **33** and **34**, respectively, of the bell **31**. Moreover, this lost-motion connection between the primary shank **22** and the bell **31** establishes front and rear limit positions for the primary shank **22**; which limited longitudinal travel of the primary shank **22** thus accommodated by this lost-motion connection is employed for a purpose more fully explained hereinafter. At this point it is noted that when the primary shank **41** occupies its front limit position, as shown in FIGS. **1** and **2**, the coupling head **21** is disposed well forwardly longitudinally of the open front of the bell **31**. On the other hand, when the primary shank **22** occupies its rear limit position, not shown, the coupling head **21** is disposed principally within the bell **31**, having moved rearwardly through the open front into the bell **31**, as permitted by the rearward longitudinal guided movement of the primary shank **22** within the bell **31**.

Arranged within the front portion of the bell **31** and respectively positioned on opposite sides of the plates **30** of the primary shank **22** are two pairs of cushion members **39**, each essentially comprising a stack of a plurality of individual resilient pads **40**. As illustrated, the individual pads **40** are separated by intervening metal plates **41**; and the outer and inner sides of the stack are respectively provided with corresponding outer and inner plates **42** and **43**. The outer plate **42** is rigidly secured to the adjacent inner surface of the side wall **32** of the bell **61**; the inner plate **43** is rigidly secured to the adjacent outer surface of the plate **30** of the primary shank **22**; and opposite sides of each of the intervening plates **41**, are respectively secured to the adjacent surfaces of two of the pads **40**. Specifically, each of the pads **40** may be formed of live rubber; whereby the opposite sides of the pads **40** are vulcanized to the adjacent two of the plates **41**, **42** and **43**. In the arrangement, the members **39** are initially strained in shear, as best illustrated in FIG. 2; whereby the shear stresses in the members **39** resiliently bias the primary shank **22** forwardly longitudinally and into its front limit position, as illustrated in FIG. 2, so that the coupling head **21** is thrust forwardly longitudinally with respect to the open front end of the bell **31**.

As the primary shank **22** is moved out of its front limit position, which is its normal position, rearwardly longitudinally toward its rear limit position, the members **39** are further strained, so that the resulting shear stresses therein are substantially increased, with the result that the members **39** resiliently oppose such rearward longitudinal movement of the primary shank **22**. Of course, in the event an unusually great rearwardly directed longitudinal force is exerted upon the coupling head **21**, the same moves rearwardly longitudinally into the open front end of the bell **31** causing the primary shank **22** to move from its front limit position rearwardly longitudinally into its rear limit position; which rear movement of the primary shank **22** is resiliently opposed by the members **39**; whereby the rearwardly directed longitudinal force upon the coupling head **21** is thus transmitted, in part, via the primary shank **22** and the resilient members **39** to the bell **31** and consequently to the secondary shank **23** and ultimately through the draft gear **13** to the center sill **10** of the railway car. Any further rearwardly directed longitudinal force exerted upon the coupling head **21** is simply transmitted directly from the primary shank **22** to the bell **31** and thus directly to the secondary shank **23** with the primary shank **22** in its rear limit position; which force is transmitted via the keys **36** and **37** from the primary shank **22** to the bell **31** and independently of the resilient members **39**. After the rearwardly directed longitudinal force upon the coupling head **21** subsides, the members **39** react to return the primary shank **22** forwardly longitudinally and back into its front limit position, as shown in FIG. 2; whereby the coupling head **21** is returned back into its normal position thrust well forwardly longitudinally and out of the open front end of the bell **31**.

A wedge **44** is formed integrally with the extreme front end of the secondary shank **23** and entirely within the rear end of the surrounding bell **31** and projects forwardly longitudinally from the front end of the secondary shank **23** into the open rear end of the primary shank **22** and between the plates **30** thereof. Arranged within the open rear end of the primary shank **22** and on opposite sides of the wedge **44** are two pairs of friction shoes **45** that are respectively pivotally mounted at the front ends thereof upon structures **46** carried by the primary shank **22** adjacent to the front end thereof at the junction of the primary shank **22** and the rear end of the coupling head **21**. The individual friction shoes **45** are respectively urged or biased inwardly into resilient frictional engagements with the forwardly tapered surfaces of the wedge **44** by respectively associated resilient members **47**. Each of the members **47** is of composite structure including a plurality of resilient pads and a plurality of intervening metal plates. The individual resilient pads may be formed of live rubber; whereby the members **47** are of the fundamental construction of the members **39**. The resilient members **47** are secured at the outer ends thereof to the respectively adjacent ones of the plates **30** and secured at the inner ends thereof to the respectively adjacent ones of the friction shoes **45**; whereby each resilient member **47** is subject to some initial compression.

As the primary shank **42** is moved out of its front limit position rearwardly longitudinally toward its rear limit position, the friction shoes **45** slide upwardly along the opposite forwardly tapered surfaces of the wedge **44** effecting further compression of the respective resilient members **47**; whereby the frictional drag of the friction shoes **45** upon the adjacent surfaces of the wedge **44** is substantially increased, with the result that the friction shoes **45** frictionally oppose such rearward longitudinal movement of the primary shank **42**. Moreover, this frictional drag is progressively increased as the resilient members **47** are progressively compressed in response to progressive rearward longitudinal movement of the primary shank **22** out of its front limit position. Accordingly, a rearwardly directed longitudinal force upon the coupling head **21** is thus transmitted, in part, via the primary shank **22** and the plates **30** and the resilient members **47** and the friction shoes **45** to the wedge **44** and consequently to the secondary shank **23** and ultimately through the draft gear **13** to the center sill **10** of the railway car. Of course, in the event, the primary shank **41** is moved rearwardly entirely into its rear limit position, no further force is transmitted between the friction shoes **45** and the wedge **44**, since the keys **35** and **36** then act directly to transmit any further force between the primary shank **22** and the bell **31** and consequently to the secondary shank **23** and independently of the friction shoes **45** and the wedge **44**.

In view of the above description of the modes of operations of the cushioning mechanism, including the resilient members **39**, and the friction mechanism, including the friction shoes **45**, it will be appreciated that the cushioning mechanism and the friction mechanism act in parallel relation to transmit rearwardly directed longitudinal forces acting upon the primary shank **22** to the secondary shank **23**, and independently of the lost-motion mechanism, including the keys **35** and **36**, during travel of the primary shank **22** between its front limit position and its rear limit position. On the other hand, when the primary shank **22** occupies its rear limit position, any further rearwardly directed longitudinal forces are transmitted from the primary shank **22** to the secondary shank **23** by the lost-motion mechanism, and independently of both the cushioning mechanism and the friction mechanism. Also, it is noted that the friction mechanism absorbs energy in the frictional sliding of the shoes **45** over the adjacent surfaces of the wedge **44**; whereby the friction mechanism prevents oscillation of the primary shank **22** relative to the secondary shank **23** and between its front limit position and its rear limit position.

In view of the foregoing, it will be appreciated that in the train operation of the cushion coupler **20**, there is no substantial forward longitudinal movement of the primary shank **22** relative to the secondary shank **23** due to the action of the lost-motion mechanism, with the result that there is no forward movement of the coupling head **21** relative to the bell **31** when a draft force is exerted upon the coupling head **21**. On the other hand, when a buff force is exerted upon the coupling head **21**, the same moves rearwardly within the open front of the bell **31** causing relative rearward longitudinal movement of the primary shank **22** with respect to the secondary shank **23**; whereby the buff forces thus involved are transmitted from the primary shank **22** to the secondary shank **23** by the cushion mechanism and the friction mechanism acting

in parallel relation and independently of the lost-motion mechanism.

Continuing the reference to FIGS. 1 and 2, the draft rigging there illustrated and embodying the features of the present invention, further comprises an elongated longitudinally extending support **50** arranged below the outer end of the center sill **10** and projecting forwardly with respect thereto, the rear end of the support **50** being rigidly secured, as by welding, to lower yoke support **28** and thus to the adjacent outer end of the center sill **10**, and the front end of the support **50** terminating below the rear part of the bottom wall **34** of the bell **31**. The support **50** is of strong and rigid structure, as clearly shown in FIGS. 1 and 3; and, as best shown in FIGS. 4 to 7, inclusive, the top of the support **50** carries at the front end thereof, a substantially horizontal plate **51**. Arranged on the top of the plate **51**, at the front end thereof, is a box-like structure **52** that includes a top plate member **53** provided with a depending skirt including front and rear wall **54** and **55** and a pair of side walls **56**; which structure **52** is also of strong and rigid structure. A foot member **57** is rigidly secured to the front central portion of the bottom wall **34** of the bell **31**, as by welding; which foot member **57** is positioned above the central portion of the plate member **53**; and which foot member **57** has rigidly secured thereto, as by welding, an upper plate **58** that is disposed in substantially horizontal position and located immediately above the central portion of the plate member **53**. A friction control pad **59** is fixedly secured to the bottom of the top plate **58** and disposed in direct engagement with the top of the plate member **53**; which pad **59** preferably comprises a layer of polytetrafluoroethylene, or similar wear-resistant synthetic organic resin. In the arrangement, the bell **31** is thus partially supported by the front end of the support **50** through the elements **57**, **58**, **59** and **53**.

In order to accommodate limited vertical movement of the structure **52** with respect to the front end of the support **50**, two laterally spaced-apart cushion elements **60** are carried by the front of the plate **51** adjacent to the opposite sides thereof and are housed in the structure **52**. The cushion elements **60** are identical; and each such cushion element **60** essentially comprises a plurality of live rubber layers **61** intimately vulcanized to a plurality of metal washer-like parts **62** and a metal cap plate **63**. The cap plate **63** is securely fastened to a number of depending studs **64** rigidly carried by the bottom of the plate **53** utilizing a number of nuts **65**. The cushion element **60** is retained in position by a depending central stud **66** rigidly secured to the bottom of the plate **53** and projecting through the parts **63**, **61** and **62**. Also, the lower end of the central stud **66** projects through a cooperating hole formed in the plate **51** and carries on the extreme lower end thereof a lock washer **67** and a fastening nut **68**, both disposed below the plate **51**. This arrangement, including the cushion elements **60**, effects resilient mounting of the plate member **53** upon the rigid plate **51**, so as correspondingly resiliently to mount the bell **31** upon the plate **51**, whereby the coupler **20** is thus resiliently mounted upon the front end of the support **50**.

As previously explained, the connecting pin **27** accommodates limited lateral pivotal movements of the secondary shank **23** with respect to the draft gear **13** and the adjacent outer end of the center sill **10**; and this connecting pin **27** also accommodates limited vertical movements of the secondary shank **23** with respect to the draft gear **13** and the adjacent outer end of the center sill **10**. In the arrangement, the limited vertical movements of the secondary shank **23**, and thus the coupler **20**, are cushioned by the cushion elements **60**, since the bell **31** is at least partially supported by the plate **53** through the elements **57**, **58** and **59**, and the plate **53** is resiliently supported by the plate **51** through the cushion elements **60**. Accordingly, the support **50** carries or maintains the coupling head **21** in proper vertical position with respect to the rail heads supporting the railway car, so as to accommodate proper and effective coupling and uncoupling with respect to a cooperating car coupler, all in a well known manner.

In order to limit the movement of the foot member **57** downwardly towards the plate member **53**, so as to protect the friction pad **59** against undue crushing forces exerted between the plates **58** and **53**, a pair of laterally spaced-apart stops **68** are rigidly carried by the bottom wall **34** of the bell **31** and disposed in cooperating relation with a pair of laterally spaced-apart stops **69** rigidly carried by the plate **53**. Thus, after limited downward movement of the bell **31** toward the outer end of the support **50**, the stops **68** carried by the bottom wall **34** of the bell **31** respectively engage the stops **69** carried by the plate **53**, whereby there is no further relative downward movement of the foot member **57** with respect to the plate member **53**, so as to prevent crushing of the friction pad **59**.

As the secondary shank **23** is pivoted in the lateral direction about the connecting pin **27**, the bell **31**, the primary shank **22** and the coupling head **21** move therewith; and these elements are moved laterally in the generally horizontal plane by virtue of the sliding engagement of the friction control pad **59** with the substantially horizontal top surface of the plate member **53**. Of course, the foot member **57** is supported by the friction control pad **59** through the plate **58**; and the foot member **57** supports the bell **31**, and consequently the coupling head **21**, so that the coupling head **21** is movable laterally in a generally horizontal plane to effect its coupling functions. More particularly, the coupling head **21** has a normal position, wherein it is disposed substantially along the longitudinal center line of the center sill, and wherein the foot member **57** is supported in a substantially central position upon the plate member **53**, as shown in FIG. 4. The coupling head **21** has a first operated position, wherein it is disposed in a laterally offset position to the left of the longitudinal center line of the center sill **10**, as viewed from above; and wherein the foot member **57** occupies a corresponding laterally offset position towards the right, as viewed from the front in FIG. 4, upon the plate member **53**. Also, the coupling head **21** has a second operated position, wherein it is disposed in a laterally offset position to the right of the center line of the center sill **10**, as viewed from above; and wherein the foot member **57** occupies a corresponding laterally offset position towards the left, as viewed from the front in FIG. 4, upon the plate member. Of course, it will be understood that when the coupling head **21** occupies its normal position it is in proper relation to couple a cooperating coupling head with the railway cars supported upon a straight or tangential track section. On the other hand, when the coupling head **21** occupies its first operated position, it is in proper relation to couple a cooperating coupling head with the railway cars supported upon a curved to-the-left track section; and, when the coupling head **21** occupies its second operated position, it is in proper relation to couple a cooperating coupling head with the railway cars supported upon a curved to-the-right track sections. These operated positions of the coupling head **21** are very useful in the present construction of the coupler **20** by virtue of the substantial forward projection of the coupling head **21** with respect to the striker **12** carried by the end sill **11** of the underframe of the railway car, as shown in FIGS. 1 and 2. Of course, these operated positions of the coupling head **21** greatly minimize the derailing forces that are encountered by the coupling head **21**, when the coupling functions are effected thereby with the railway car supported upon a curved track section.

For the purpose of controlling the position of the bell **31**, and consequently the coupling head **21**, with respect to the normal and operated positions thereof, locking mechanism **70** is provided that includes a rocking element

71 carried by the structure 52 immediately rearwardly of the rear wall 55. More particularly, a longitudinally extending shaft 72 is mounted in a pair of aligned holes formed in the walls 54 and 55, and the rocking element 71 is rigidly secured to the rear end of the shaft 72. The front end of the shaft 72 has an arm 73 rigidly secured thereto that carries a longitudinally extending and forwardly projecting crank pin 74. A laterally extending rod 75 is slidably mounted in a substantially U-shaped bracket 76 rigidly affixed to the front wall 54; which rod 75 is pivotally connected at the inner end thereof by a strap 77 to the crank pin 74. A coil spring 78 is arranged in surrounding relation with the outer end of the rod 75 and between the arms of the bracket 76; and the ends of the coil spring 78 are disposed in engagement with a pair of disk-like parts 79 slidably carried by the rod 75 respectively adjacent to the opposite arms of the bracket 76. In the arrangement, the spring 78 cooperates with the disks 79 to bias the rod 75 into a normal position, as illustrated in FIG. 4; whereby the rod 75 acting through the elements 77, 74, 73 and 72 biases the rocking element 71 into a normal position, as illustrated in FIG. 4; which normal position of the rocking lever 71 constitutes a locking position thereof. More particularly, the opposite ends of the rocking lever 71 respectively carry two lock lugs 80 that respectively cooperate with two abutments provided by the opposite sides of the plate 58; whereby the rocking lever 71 in its lock position, as illustrated in FIG. 4, projects the lock lugs 80 into lock positions with the respectively adjacent sides of the plate 58, so as to lock the foot member 57 in its normal central position, as shown in FIG. 4.

When it is desired to move the coupling head 21 out of its normal or central position, it is necessary first to actuate the rocking lever 71 into the proper one of its two unlock positions, so as to permit the required lateral sliding movement of the foot member 57 upon the plate member 53. Now assume that it is desired to move the coupler 20 so that the bell 31 is to be moved toward the right in FIG. 4, the rocking lever 71 is first rotated in the clockwise direction, as viewed in FIG. 4, so that the right-hand lock lug 80 is depressed below the plane of the plate member 53 and into unlocking relation with the adjacent side of the plate 58, whereby the bell 31 may be moved toward the right causing the friction control pad 59 to slide toward the right over the top surface of the plate member 53. Subsequently, when the bell 31 is moved back toward the left, moving the foot member 57 back into its normal position, the right-hand lock lug 80 is again projected, by the action of the coil spring 78, into its locking position with the adjacent side of the plate 58; whereby the foot member 57 is again locked in its normal central position on the plate member 53, as shown in FIG. 4. Now assume that it is desired to move the coupler 20 so that the bell 31 is moved toward the right in FIG. 4, the rocking lever 71 is first rotated in the counterclockwise direction, as viewed in FIG. 4, so that the left-hand lock lug 80 is depressed below the plane of the top of the plate member 53 and into unlocking relation with the adjacent side of the plate 58, whereby the bell 31 may be moved toward the left causing the friction control pad 59 to slide toward the left over the top surface of the plate member 53. Subsequently, when the bell 31 is moved back toward the right, moving the foot member 57 back into its normal position, the left-hand lock lug 80 is again projecting, by the action of the coil spring 78, into its locking position with the adjacent side of the plate 58; whereby the foot member 57 is again locked in its normal or central position on the plate member 53, as shown in FIG. 4.

For the purpose of selectively operating the locking mechanism 70 from its lock position into its two individual unlock positions and for the purpose of selectively moving the bell 31 out of its normal position into either one of its lateral offset positions, all as described above, there is provided an arrangement including a manually operable lever 81 that terminates in a hand-grasp 82, as best shown in FIGS. 1 and 3. More particularly the lever 81 is arranged on one side 32 of the bell 31 and pivotally mounted adjacent to the intermediate portion thereof to the lower rear portion of the side 32 by a pivot pin 83 mounted in a cooperating lug 84 that is rigidly carried adjacent to the lower rear portion of the side 32, as best shown in FIGS. 1, 3 and 7. As best shown in FIGS. 3 and 7, the extreme lower end of the lever 81 terminates in a fixture 85 that is pivotally connected by a pivot pin 86 to the extreme outer end of a laterally extending rod 87; and the extreme inner end of the rod 87 is pivotally connected by a crank pin 88 to the intermediate portion of the rocking lever 71 at a position located below the adjacent rear end of the shaft 72. Accordingly, the manually operable lever 81 is pivotally connected both to the bell 31 of the coupler 20 and to the rocking lever 71 of the locking mechanism 70 so that it effects both selective lateral movements of the bell 31 and selective operation of the locking mechanism 70 incident to corresponding lateral movements of the manual lever 31 by the appropriate action of a brakeman holding the hand-grasp 82.

More particularly, referring to FIG. 7, when the brakeman pulls outwardly on the hand-grasp 82, to the right as viewed in FIG. 7, the lever 81 is pivoted in the clockwise direction about the pivot pin 83 so that an inward thrust is exerted upon the rod 87 causing the rocking lever 71 to be rotated in the clockwise direction, as viewed in FIG. 7, with the shaft 72; whereby the rocking lever 71 is thus moved from its normal lock position, as shown in full lines in FIG. 7, into its unlock position, as shown in dotted lines in FIG. 7. A continued outward pull by the brakeman upon the hand-grasp 82 causes the bell 31 to be moved outwardly, or to the right as viewed in FIG. 7; whereby the foot member 57 slides toward the right upon the plate member 53, with the result that the bell 31, and consequently the coupling head 21, is moved out of its normal position into its corresponding offset operated position. Recapitulating, the initial outward movement of the hand grasp 82 by the brakeman first selectively operates the locking mechanism 70 into its unlock position to accommodate corresponding outward movement of the bell 31, and continued outward movement of the hand-grasp 82 effects corresponding outward movement of the bell 31, following the operation of the locking mechanism 70 into its unlock position to permit such outward movement, so that the coupler 20 is then physically moved from its normal position into its corresponding lateral offset operated position. Subsequently, when the brakeman urges or pushes the hand-grasp 82 back inwardly, toward the left as viewed in FIG. 7, the bell 31 is first moved back into its normal position; whereupon the brakeman may release the hand-grasp 82, with the result that the locking lever 71 is automatically moved back into its lock position with respect to the plate 58, by the action of the coil spring 78, so as again to lock the foot member 57 in its normal position upon the plate member 53, in the manner previously explained.

More particularly, referring to FIG. 7, when the brakeman pushes inwardly on the hand-grasp 82, to the left as viewed in FIG. 7, the lever 81 is pivoted in the counterclockwise direction about the pivot pin 83 so that an outward pull exerted upon the rod 87 causing the rocking lever 71 to be rotated in the counter-clockwise direction, as viewed in FIG. 7, with the shaft 72; whereby the rocking lever 71 is thus moved from its normal lock position, as shown in full lines in FIG. 7, into its unlock position, not shown. A continued inward push by the brakeman upon the hand-grasp 82 causes the bell 31 to be moved inwardly, or to the left as viewed in FIG. 7; whereby the foot member 57 slides toward the left upon the plate member 53, with the result that the bell 31, and consequently the coupling head 21, is moved out of its normal

position into its corresponding offset operated position. Recapitulating: the initial inward movement of the hand-grasp **82** by the brakeman first selectively operates the locking mechanism **70** into its unlock position to accommodate corresponding inward movement of the bell **31**, and continued inward movement of the hand-grasp **82** effects corresponding inward movement of the bell **31**, following the operation of the rocking mechanism **70** into its unlock position to permit such inward movement, so that the coupler **20** is then physically moved from its normal position into its corresponding lateral offset operated position. Subsequently, when the brakeman pulls the hand-grasp **82** outwardly, toward the right as viewed in FIG. 7, the bell **31** is first moved back into its normal position; whereupon the brakeman may release the hand-grasp **82**, with the result that the locking lever **71** is automatically moved back into its lock position with respect to the plate **58**, by the action of the coil spring **78**, so as again to lock the foot member **57** in its normal position upon the plate member **53**, in the manner previously explained.

In connection with the lateral movements of the foot member **57** out of its normal or central position upon the plate member **53**, as best shown in FIG. 4, it will be appreciated that the plate **58** carried by the bottom of the foot member **57** cooperates with the respective abutments or stops **69** so as to limit lateral movements of the foot member **57** upon the plate member **53** and so as positively to establish the two natural offset positions of the foot member **57** upon the plate member **53** in order correspondingly to establish the two lateral offset operated positions of the coupling head **21** for the purpose previously explained.

In an illustrative example of the cushion coupler **20**, when the coupling head **21** occupies its normal front limit position, the longitudinal distance between the pulling face of the coupling head **21** and the extreme front end of the bell **31** may be 9$\frac{9}{16}$"; the longitudinal distance between the extreme front end and the extreme rear end of the bell **31** may be 19¾"; the overall longitudinal distance between the pulling face of the coupling head **21** and the extreme rear end of the secondary shank **23** may be 50$\frac{13}{16}$"; the vertical distance between the top and bottom walls **33** and **34** of the bell **31** may be 25"; and the lateral width between the the opposite side walls **32** of the bell **31** may be 30". The overall travel of the coupling head **21** with respect to the bell **31** may be 7⅜", causing the primary shank **22** to travel between its front limit position and its rear limit position. Also, the draft gear **13** may accommodate 2⅝" of movement in either longitudinal direction from its normal position. Thus, the rigging accommodates a maximum of 2⅝" forward longitudinal movement in draft of the coupling head **21** relative to the center sill **10** and accommodates a maximum of 10" rearward longitudinal movement in buff of the coupling head **21** relative to the center sill **10**.

Referring now to FIGS. 8 to 10, inclusive, there is illustrated a modified form of the locking mechanism **170** that is incorporated in the rigging and disposed between the foot member carried by the bell of the cushion coupler and the plate member carried by the extreme front end of the support provided on the adjacent outer end of the center sill of the railway car. In this case, the foot member **157** essentially comprises a ring that is rigidly secured to the central portion of the adjacent bottom wall **134** of the bell **131** of the cushion coupler there depicted; the plate member **153** of the structure **152** is arranged directly below the foot member **157** for the support purpose; and the structure **152** is resiliently supported by the cushion elements **160** upon the plate **151** carried on the top of the extreme front end of the support **150** there depicted. In this arrangement, an elongated laterally extended slot **153***a* is formed in the central portion of the plate member **153**; and a lock bolt **201** is rigidly secured in a centrally disposed opening provided in the foot member **157** and depends downwardly therefrom and projecting through the slot **153***a* into the central interior of the support **152**. Also, the foot member **157** carries a substantially channel-shaped guide **202** provided with laterally extending depending flanges **203** embracing the adjacent front and rear walls **154** and **155** of the structure **152**; and a friction control pad **159** is arranged between the adjacent surfaces of the elements **153** and **202**. In this case, the friction control pad **159** may take the form of a brass washer-like member.

In the arrangement described the foot member **157** is supported through the elements **202** and **159** upon the plate member **153** and with the lock bolt **201** projecting through the laterally extending slot **153***a* formed in the plate member **153**; whereby the foot member **157** is capable of lateral sliding movements upon the plate member **153** from its normal or central position, as illustrated in FIG. 8, into either one of two laterally oppositely disposed operated positions, as respectively established by the cooperation between the lock bolt **201** and the opposite ends of the laterally extending slot **153***a* formed in the plate member **153**.

Further the locking mechanism **170** comprises, in addition to the lock bolt **201**, a cup-like member **205** arranged in the central portion of the hollow structure **152** and rigidly supported from the front and rear walls **154** and **155** by a plurality of arms **206**, one pair of the arms **206** extending between the cup-like member **205** and the front wall **154**, and another pair of the arms **206** extending between the cup-like member **205** and the rear wall **155**. Arranged within the cup-like member **205** is a piston-like core **207**; which piston-like core **207** is biased upwardly toward the plate member **153** by a coil spring **208** arranged in the lower end of the cup-like member **205** and disposed between the piston-like core **207** and a plate **209** closing the bottom end of the cup-like member **205**. A longitudinally extending operating shaft **210** is rotatably mounted in two oppositely disposed and aligned holes provided in the upper portion of the cup-like member **205**; which operating shaft **210** carries a pair of oppositely laterally extending cams **211** engaging the top of the piston-like core **207**. Specifically the piston-like core **207** is mounted for vertical sliding movements within the cup-like member **205** between the plate **208** and the operating shaft **210**, the piston-like core **207** being normally biased upwardly by the coil spring **208** into contact with the cams **211** carried by the operating shaft **210**. Further the operating shaft **210** carries an enlarged bearing **212** rotatably mounted in the rear wall **155** of the structure **152**; and the rear surface of the bearing **212** carries a crank arm **213** that is radially offset with respect to the center line of the bearing **212** and the operating shaft **210**. Further, it is noted that the crank arm **213** is operatively pivotally connected to a rod **187** that is employed for the purpose of selectively rotating the operating shaft **210** through the crank arm **213** and the bearing **212**. The upper portion of the piston-like core **207** carries four upstanding and circumferentially spaced apart projections or fingers **215** that embrace a head **201***a* provided on the extreme lower end of the lock bolt **201**, when the foot member **157** occupies its normal or central position.

In view of the foregoing description it will be understood that when the foot member **157** occupies its normal or central position it is locked in place by the lock mechanism **170**; and specifically, at this time, the coil spring **208** biases the piston-like core **207** upwardly so that the fingers **215** embrace the head **201***a* of the lock bolt **201** so as securely to restrain the lock bolt **201**, and consequently the foot member **157**, in its normal or central position.

When it is desired to move the bell **131** of the cushion coupler out of its normal or central position, it is first necessary to operate the locking mechanism **170** to its unlock position; which unlocking may be effected by simply rotating the operating shaft **210** in either direction with respect to its normal position, as depicted in FIG. 8.

More specifically, rotation of the operating shaft **210** in either direction causes the corresponding one of the cams **211** to depress the adjacent top surface of the piston-like core **207** causing the same to move downwardly against the bias of the coil spring **208**, whereby the fingers **215** are moved downwardly below the head **201***a* of the lock bolt **201**, thereby to unlock the lock bolt **201** for lateral movement in either direction in the laterally extending slot **153***a* formed in the plate member **153**. Of course the force applied to the rod **187** by the associated manually operable lever, not shown, is then effective to bring about the movement of the bell **131** in the desired lateral direction; all in the manner as previously explained.

Subsequently, when the bell **131** is moved laterally so as to cause the foot member **157** to be returned back into its normal or central position, the head **201***a* of the lock bolt **201** rides over the outer downwardly tapered surfaces **215***a* of the adjacent pair of the fingers **215** so as to force the piston-like core **207** downwardly against the bias of the coil spring **208**. After the head **201***a* of the lock bolt **201** rides over the extreme upper ends of the pair of fingers **215**, the spring **208** forces the core-like piston **207** upwardly so as to cause the fingers **215** again to embrace the head **201***a* of the lock bolt **201**, thereby again to lock the foot member **157** back into its normal or central position upon the plate member **153**.

In view of the foregoing it will be understood that the basic modes of operation of the lock mechanisms **70** and **170** are the same in that each of these lock mechanisms locks the associated foot member in in normal or central position and is selectively operative into an unlock position or positions to accommodate movement of the associated foot member out of its normal or central position. Also, in each case the same manually operable lever is selectively operable both to operate the associated locking mechanism out of its lock position and selectively to move the associated bell of the cushion coupler in the desired lateral direction.

In view of the foregoing, it is apparent that there has been provided in a railway car having a car coupler, an improved combination carrying and centering mechanism for the car coupler, so as to retain the coupling head of the car coupler in proper vertical elevation for the coupling purpose, and notwithstanding substantial forward projection of the coupling head with respect to the striker carried by the adjacent end of the underframe of the railway car, and so as selectively to restrain the coupling head in a normal centered position disposed substantially along the longitudinal center line of the center sill of the car underframe, and so as to accommodate lateral pivotal movements of the shank of the car coupler to either side of the longitudinal center line of the center sill, with the consequent selective movements of the coupling head into two corresponding laterally offset operated positions respectively disposed on opposite sides of the longitudinal center line of the center sill.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to the outer end of said shank, said coupling head being adapted to receive the usual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a foot member carried on the lower part of said shank adjacent to the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizonal position in any angular position thereof and to accommodate the lateral pivotal movements of said shank in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by one of said members and cooperating with the other of said members, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, and means for selectively operating said locking mechanism into its three positions named.

2. The railway car combination set forth in claim **1**, and further comprising a friction control pad carried by one of said members and positioned between the adjacent cooperating faying surfaces of said members in order to govern the sliding friction therebetween as said foot member is slid on said plate member.

3. The railway car combination set forth in claim **2**, wherein said friction control pad consists essentially of polytetrafluoroethylene resin.

4. The railway car combination set forth in claim **1**, and further comprising a first stop carried by said plate member and cooperating with said foot member positively to establish the location of the first operated position of said foot member on said plate member, and a second stop carried by said plate member and cooperating with said foot member positively to establish the location of the second operated position of said foot member on said plate member.

5. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer

portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to the outer end of said shank, said coupling head being adapted to receive the usual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill and also accommodating limited vertical pivotal movements of said shank with respect to the generally horizontal plane, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a resilient mounting arranged between said support and said plate member and accommodating limited vertical movements of said plate member with respect to said support, a foot member carried on the lower part of said shank adjacent to the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizontal position in any angular position thereof, so as to accommodate the lateral pivotal movements of said shank in the generally horizontal plane and also to accommodate the vertical pivotal movements of said shank with respect to said support, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by one of said members and cooperating with the other of said members, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, and means for selectively operating said locking mechanism into its three positions named.

6. The railway car combination set forth in claim 5, wherein said resilient mounting arranged between said support and said plate member consists essentially of a live rubber block.

7. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to the outer end of said shank, said coupling head being adapted to receive the unusual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, as support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a foot member carried on the lower part of said shank adjacent to the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizontal position in any angular position thereof and to accommodate the lateral pivotal movements of said shank in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by one of said members and cooperating with the other of said members, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, and means including a manually operable element for selectively operating said locking mechanism into its three positions named and for selectively moving said shank in order to effect selective movements of said foot member into its three positions named.

8. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to

the outer end of said shank, said coupling head being adapted to receive the usual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a foot member carried on the lower part of said shank adjacent to the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizontal position in any angular position thereof and to accommodate the lateral pivotal movements of said shank in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by said plate member and cooperating with said foot member, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, means biasing said locking mechanism into its lock position, and a manually operable lever pivotally connected both to said shank and to said locking mechanism, wherein movement of said lever in one direction operates said locking mechanism against said biasing means into its first unlock position and effects movement of said shank in the corresponding one direction and movement of said lever in the other direction operates said locking mechanism against said biasing means into its second unlock position and effects movement of said shank in the corresponding other direction.

9. In a railway car including a longitudinally extending center sill having a open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a coupling head adapted to receive the usual draft buff forces, a primary shank formed integrally at the front end thereof with said coupling head and extending rearwardly therefrom, a bell having an open front end and arranged in surrounding relation with the rear end of said primary shank, a secondary shank formed integrally at the front end thereof with said bell and extending rearwardly therefrom, the rear portion of said secondary shank projecting rearwardly through the opening provided in said striker and into the outer open end of said center sill, said coupling head and said primary shank and said bell and said secondary shank being arranged in substantial longitudinal alignment with each other. means mounting said primary shank for guided longitudinal sliding movements within said bell, lost-motion mechanism interconnecting said primary shank and said bell and limiting the longitudinal sliding movements of said primary shank within said bell and establishing both a front limit position and a rear limit position for said primary shank with respect to said bell, cushion mechanism housed within said bell and interconnecting said primary shank and said bell and biasing said primary shank into its front limit position and resiliently opposing rearward longitudinal movement of said primary shank out of its front limit position and toward its rear limit position, whereby a draft force applied to said coupling head is transmitted via said primary shank to said bell by said lost-motion mechanism and thence to said secondary shank, whereby a buff force applied to said coupling head is transmitted via said primary shank to said bell by said cushion mechanism and thence to said secondary shank, an operative connection between the rear end of said secondary shank and said draft gear and arranged to transmit both draft and buff forces from said secondary shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting forwardly with respect thereto, the rear end of said support being rigidly secured to the adjacent outer end of said center sill, the front end of said support projecting forwardly below said bell, said operative connection between the rear end of said secondary shank and said draft gear accommodating limited lateral pivotal movements of said secondary shank in a generally horizontal plane to either side of the longitudinal center line of said center sill, whereby said bell and said primary shank and said coupling head partake of the lateral pivotal movements of said secondary shank, a plate member carried on the upper part of said support adjacent to the front end thereof and positioned below said bell, a foot member carried on the lower part of said bell and positioned above said plate member, said foot member slidably engaging said plate member to support said bell in a generally horizontal position thereof and to accommodate the lateral pivotal movements of said bell in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by one of said members and cooperating with the other of said members, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, and means for selectively operating said locking mechanism into its three positions named.

10. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill

and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a coupling head adapted to receive the usual draft and buff forces, a primary shank formed integrally at the front end thereof with said coupling head and extending rearwardly therefrom, a bell having an open front end and arranged in surrounding relation with the rear end of said primary shank, a secondary shank formed integrally at the front end thereof with said bell and extending rearwardly therefrom, the rear portion of said secondary shank projecting rearwardly through the opening provided in said striker and into the outer open end of said center sill, said coupling head and said primary shank and said bell and said secondary shank being arranged in substantial longitudinal alignment with each other, means mounting said primary shank for guided longitudinal sliding movements within said bell, lost-motion mechanism interconnecting said primary shank and said bell and limiting the longitudinal sliding movements of said primary shank within said bell and establishing both a front limit position and a rear limit position for said primary shank with respect to said bell, cushion mechanism housed within said bell and interconnecting said primary shank and said bell and biasing said primary shank into its front limit position and resiliently opposing rearward longitudinal movement of said primary shank out of its front limit position and toward its rear limit position, whereby a draft force applied to said coupling head is transmitted via said primary shank to said bell by said lost-motion mechanism and thence to said secondary shank, whereby a buff force applied to said coupling head is transmitted via said primary shank to said bell by said cushion mechanism and thence to said secondary shank, an operative connection between the rear end of said secondary shank and said draft gear and arranged to transmit both draft and buff forces from said secondary shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting forwardly with respect thereto, the rear end of said support being rigidly secured to the adjacent outer end of said center sill, the front end of said support projecting forwardly below said bell, said operative connection between the rear end of said secondary shank and said draft gear accommodating limited lateral pivotal movements of said secondary shank in a generally horizontal plane to either side of the longitudinal center line of said center sill and also accommodating limited vertical pivotal movements of said secondary shank with respect to the generally horziontal plane, whereby said bell and said primary shank and said coupling head partake of the lateral pivotal movements and of the vertical pivotal movements of said secondary shank, a plate member carried on the upper part of said support adjacent to the front end thereof and positioned below said bell, a resilient mounting arranged between said support and said plate member and accommodating limited vertical movements of said plate member with respect to said support, a foot member carried on the lower part of said bell and positioned above said plate member, said foot member slidably engaging said plate member to support said bell in a generally horizontal position in any angular position thereof, so as to accommodate the lateral pivotal movements of said bell in the generally horizontal plane and also to accommodate the vertical pivotal movements of said bell with respect to said support, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by one of said members and cooperating with the other of said members, said locking mechanism having a lock position and a first unlock position and a second unlock position, said locking mechanism in its lock position restraining said foot member in its normal position, said locking mechanism in its first unlock position releasing said foot member for sliding movement from its normal position into its first operated position, said locking mechanism in its second unlock position releasing said foot member for sliding movement from its normal position into its second operated position, and means for selectively operating said locking mechanism into its three positions named.

11. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to the outer end of said shank, said coupling head being adapted to receive the usual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a foot member carried on the lower part of said shank adjacent to the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizontal position in any angular position thereof and to accommodate the lateral pivotal movements of said shank in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, a rocking lever pivotally mounted adjacent to the intermediate portion thereof on said plate member, a pair of locking elements respectively carried by the opposite ends of said rocking lever, a pair of locking abutments carried by said foot member and arranged in laterally spaced-apart relation and respectively cooperating with said locking elements, said rocking lever having a normal position and a first operated position and

a second operated position, said rocking lever in its normal position moving said locking elements into locking relation with the respective ones of said locking abutments when said foot member is in its normal position, said rocking lever in its first operated position moving a first of said locking elements into unlocking relation with a corresponding first of said locking abutments, said rocking lever in its second operated position moving a second of said locking elements into unlocking relation with a corresponding second of said locking abutments, and means for selectively operating said rocking lever into its three positions named.

12. In a railway car including a longitudinally extending center sill having an open outer end, a striker rigidly carried by the extreme outer end of said center sill and having an opening therethrough communicating with the adjacent open outer end of said center sill, the outer portion of said center sill disposed immediately inwardly of said striker being hollow and having a draft gear pocket formed therein, and a draft gear disposed in said draft gear pocket and operatively connected to said center sill; the combination comprising a shank arranged in the outer open end of said center sill and projecting outwardly through the opening provided in said striker, a coupling head disposed well outwardly of said striker and rigidly connected to the outer end of said shank, said coupling head being adapted to receive the usual draft and buff forces and to transmit the same to said shank, an operative connection between the inner end of said shank and said draft gear arranged to transmit both draft and buff forces from said shank to said center sill through said draft gear, a support arranged below the outer end of said center sill and projecting outwardly with respect thereto, the inner end of said support being rigidly secured to the adjacent outer end of said center sill, the outer end of said support projecting forwardly below the intermediate portion of said shank, said operative connection between the inner end of said shank and said draft gear accommodating limited lateral pivotal movements of said shank in a generally horizontal plane and to either side of the longitudinal center line of said center sill, a plate member carried on the upper part of said support adjacent to the outer end thereof and positioned below the intermediate portion of said shank, a foot member carried on the lower part of said shank adjacent to

the intermediate portion thereof and positioned above said plate member, said foot member slidably engaging said plate member to support said shank in a generally horizontal position in any angular position thereof and to accommodate the lateral pivotal movements of said shank in the generally horizontal plane, said foot member having a normal position on said plate member wherein said coupling head is disposed in a corresponding central position arranged in substantial alignment with the longitudinal center line of said center sill, said foot member having a first operated position on said plate member wherein said coupling head is disposed in a corresponding first offset position located laterally on one side of the longitudinal center line of said center sill, said foot member having a second operated position on said plate member wherein said coupling head is disposed in a corresponding second offset position located laterally on the other side of the longitudinal center line of said center sill, locking mechanism carried by said plate member, a locking bolt carried by said foot member and projecting downwardly into cooperating relation with said locking mechanism, said locking mechanism having a lock position and a first unlock position and a second unlock position, movement of said foot member into its normal position moving said locking bolt into a normal position, movement of said locking bolt into its normal position operating said locking mechanism into its lock position, said locking mechanism in its first unlock position releasing said locking bolt for movement in a first lateral direction with said foot member, said locking mechanism in its second unlock position releasing said locking bolt for movement in a second lateral direction with said foot member, and manually operable means for selectively operating said locking mechanism into its first unlock position and its second unlock position.

References Cited

UNITED STATES PATENTS

1,154,040	9/1915	Milliken	213—16
1,231,619	7/1917	Krakau	213—16 X
3,108,697	10/1963	Metzger	213—21
3,258,131	6/1966	Manyek	213—19

DRAYTON E. HOFFMAN, *Primary Examiner.*