May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 1

FIG. 1

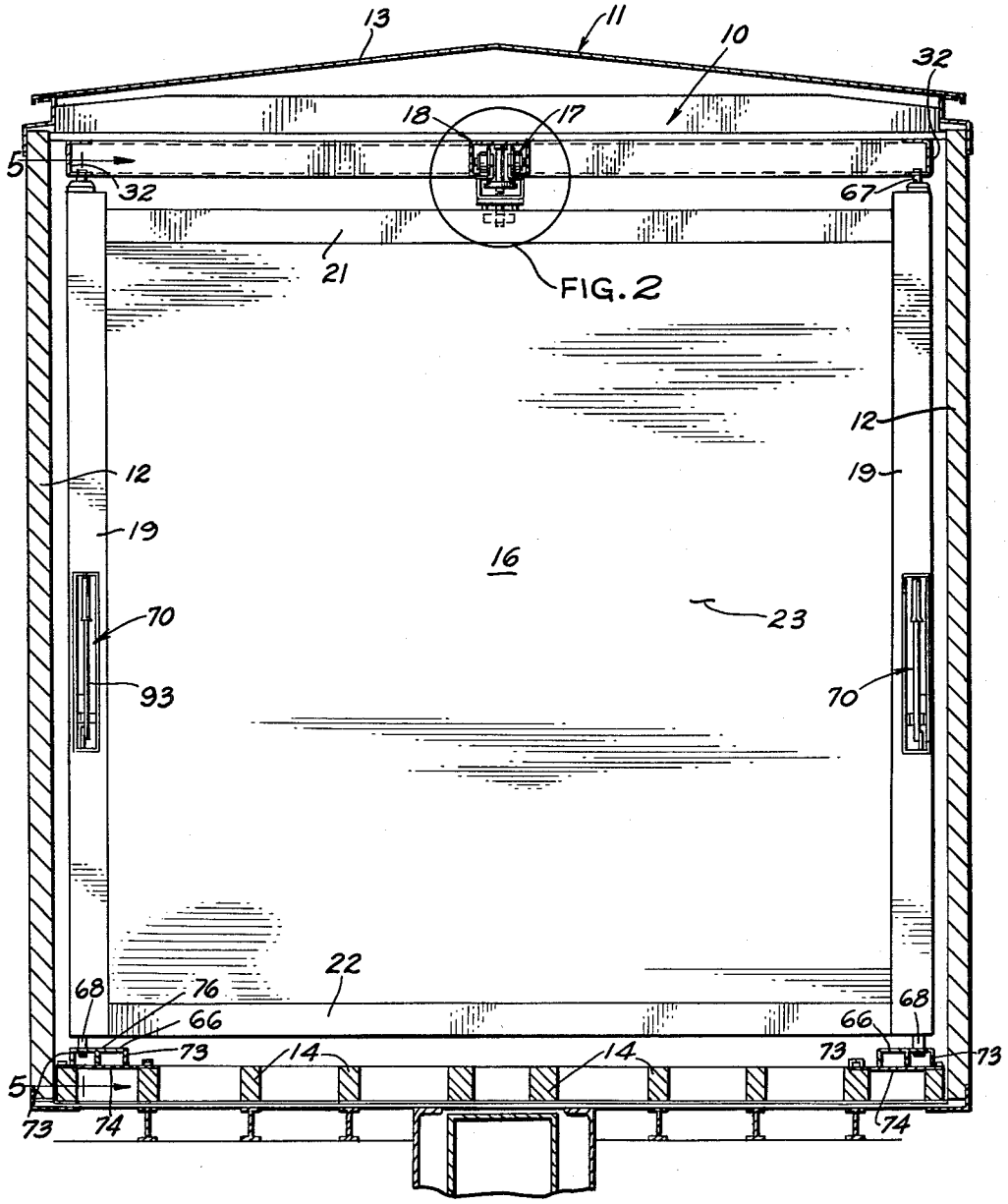


FIG. 2

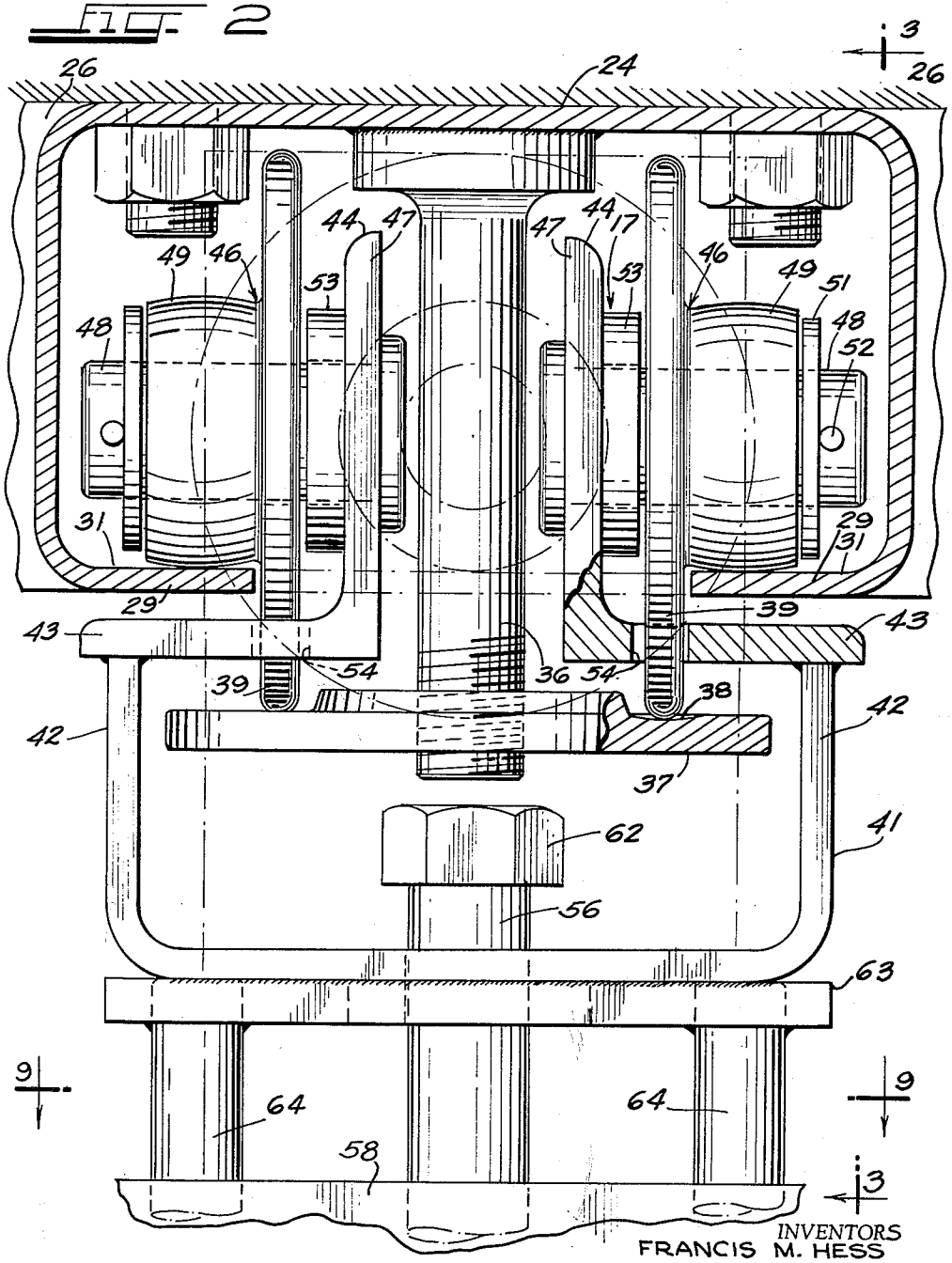
INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER
BY Wayne Morris Russell.
ATTY.

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 2

FIG. 2



INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY Wayne Morris Russell.
ATT'L.

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 3

FIG. 3

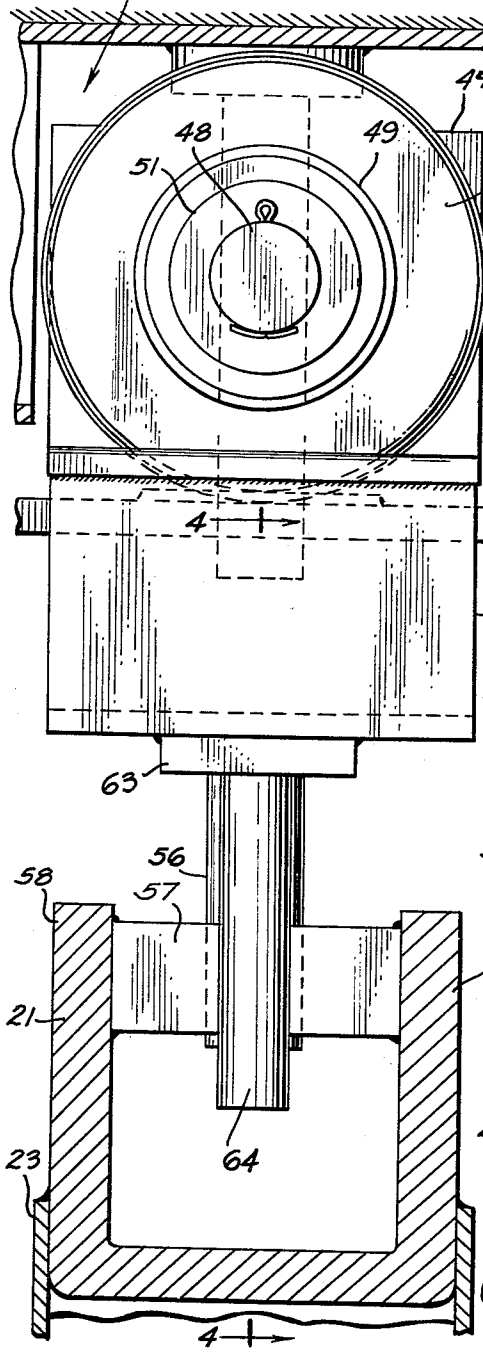
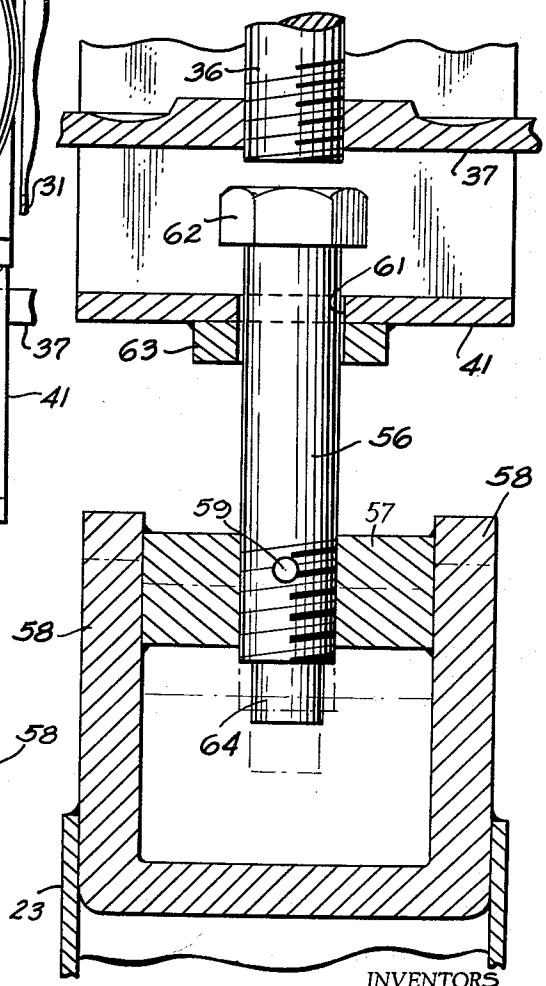


FIG. 4



INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY Wayne Morris Russell.

ATTY.

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 4

FIG. 5A

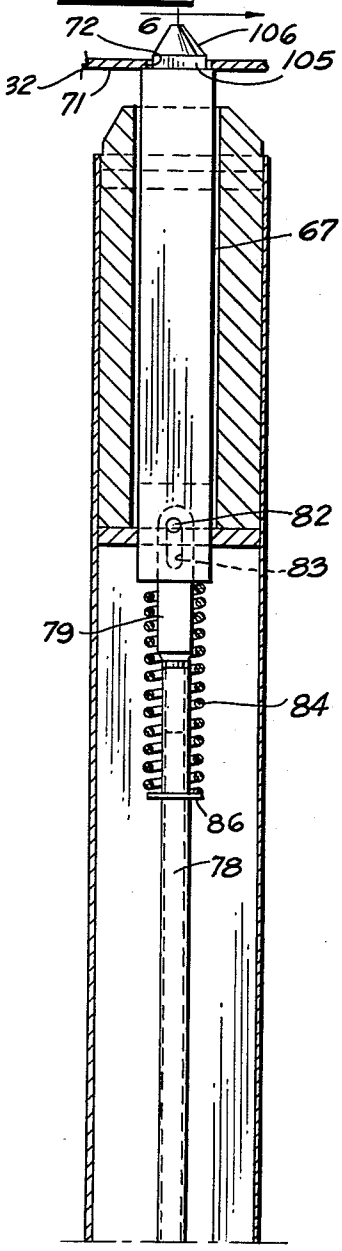


FIG. 5B

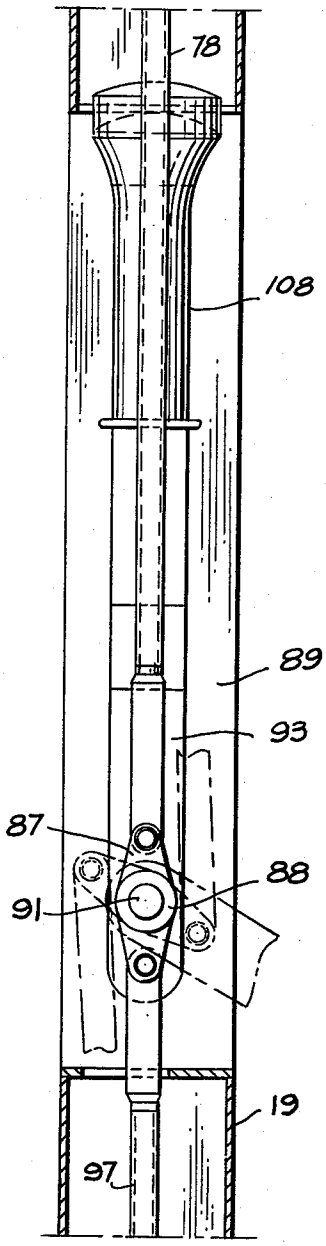
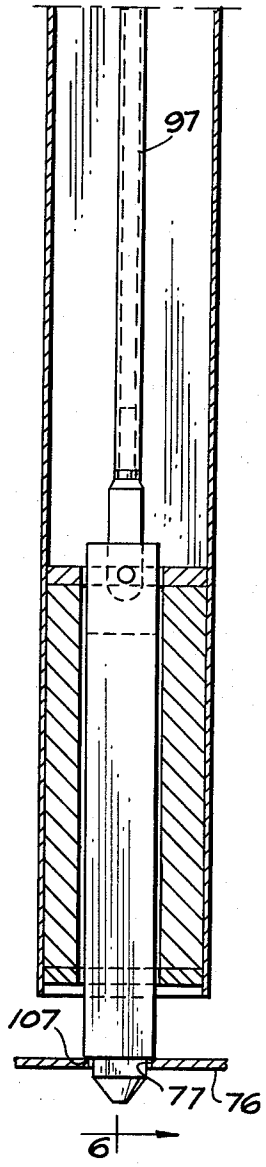


FIG. 5C



INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY. Wayne Morris Russell.

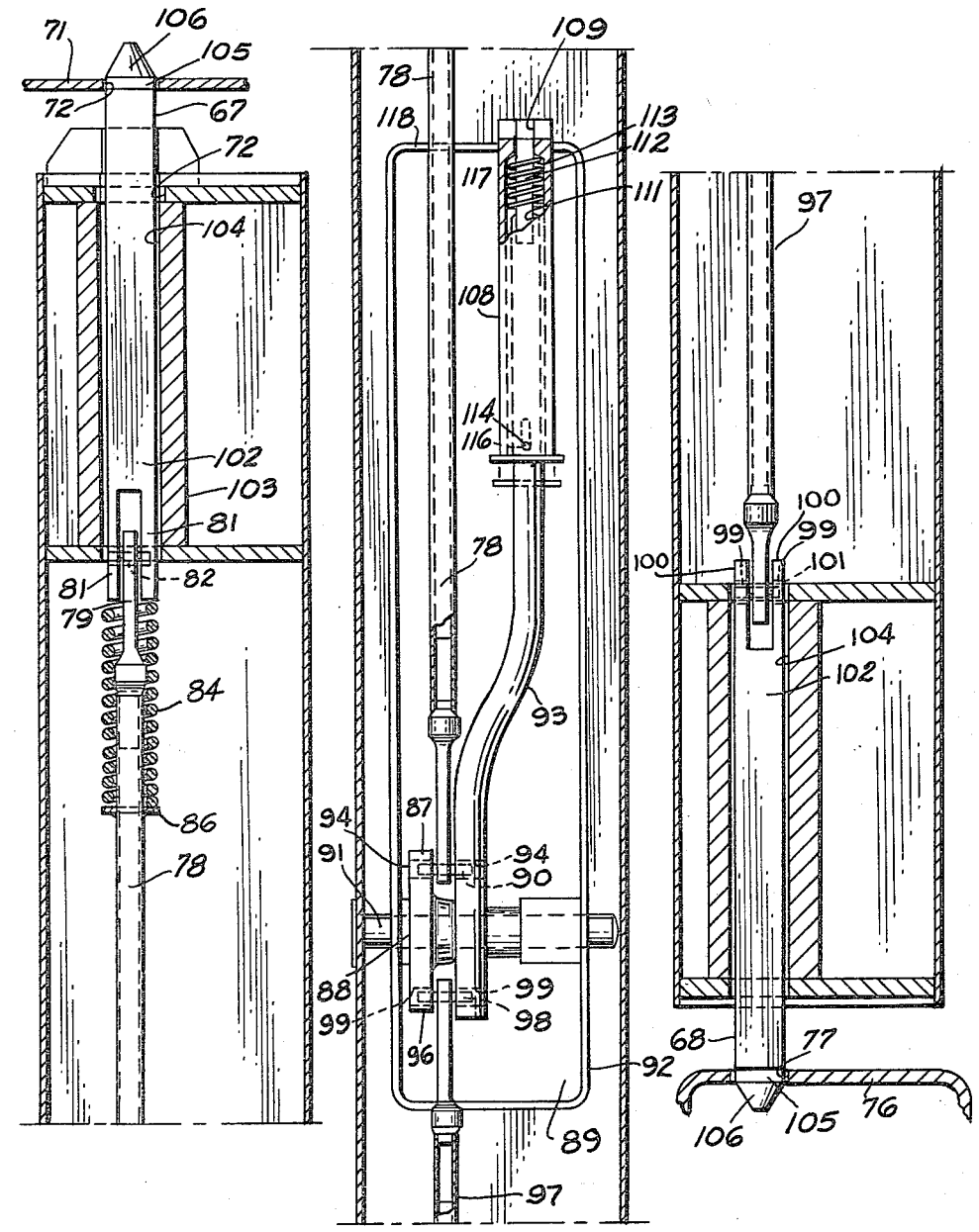
ATTY.

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 5

FIG. 6A FIG. 6B FIG. 6C



INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY Wayne Morris Parsell
ATT'Y

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 6

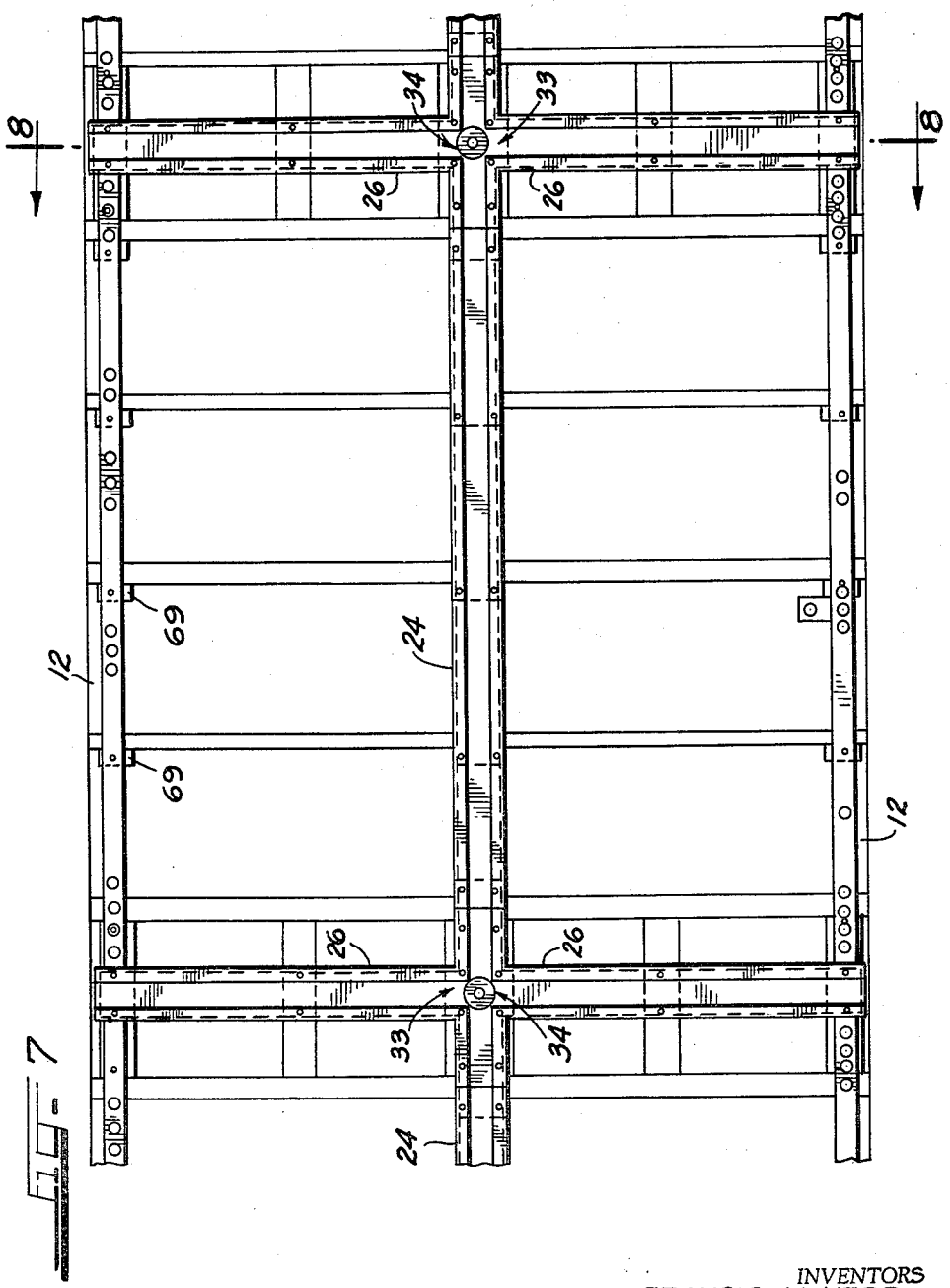


FIG. 7

INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY
Wayne Morris Russell
ATTY.

May 25, 1965 F. M. HESS ETAL 3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Filed April 18, 1963 7 Sheets-Sheet 7

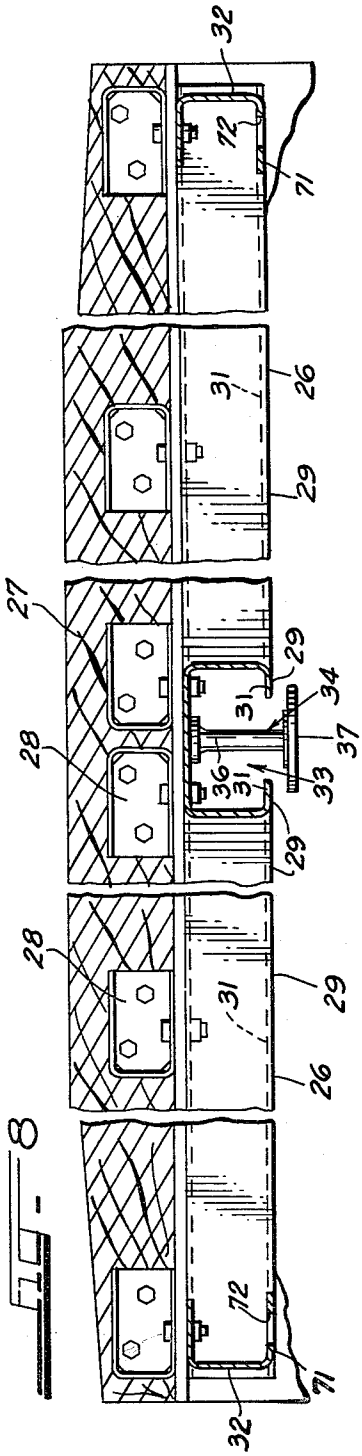


FIG. 8

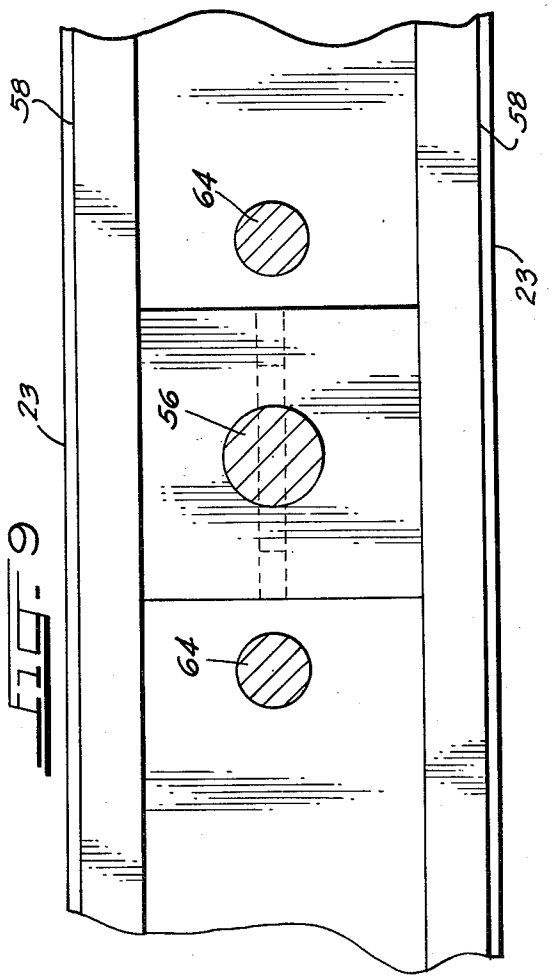


FIG. 9

INVENTORS
FRANCIS M. HESS
CORNELIUS ARENTZE
WILLIAM R. SHAVER

BY Wayne Morris Russell.
ATT'Y.

United States Patent Office

3,185,111
Patented May 25, 1965

3,185,111

LOAD-GATE POSITIONING ARRANGEMENT

Francis M. Hess, Pinellas Park, Fla., Cornelius Arentze, Chicago, Ill., and William R. Shaver, Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill., a corporation of Delaware

Filed Apr. 18, 1963, Ser. No. 274,038
6 Claims. (Cl. 105—376)

The present invention relates to load dividing means for vehicles and more particularly to load dividing arrangement including a gate movable to selected positions lengthwise of the car and to a stored position adjacent the side wall of the car.

The principal object of the present invention is to provide a load dividing arrangement including a gate movably suspended from a trackway extending lengthwise of the car for moving the gate into a selected position and wherein there is also included a trackway extending transversely of the car and intersecting the lengthwise extending trackway so that the gate may be moved to a stored position adjacent the side wall of the car.

It is a further object taken in conjunction with the immediately foregoing object to provide a transfer arrangement at the intersection of the lengthwise and transversely extending trackways to facilitate the transfer of the gate between the lengthwise and transverse extending trackways.

Further objects and features will hereinafter appear.

In the drawings:

FIG. 1 is a diagrammatic view in elevation of a railroad car embodying the load dividing arrangement of the present invention.

FIG. 2 is an enlarged fragmentary view of the encircled portion of figure showing in particular the gate suspension means and the transfer arrangement of the trackway.

FIG. 3 is a sectional view taken generally along the lines 3—3 of FIG. 2.

FIG. 4 is a sectional view taken generally along the lines 4—4 of FIG. 3.

FIGS. 5A, 5B and 5C taken together are a sectional view taken substantially along the lines 5—5 of FIG. 1.

FIGS. 6A, 6B and 6C taken together are a sectional view taken substantially along the lines 6—6 of FIGS. 5A, 5B and 5C.

FIG. 7 is a fragmentary plan view of the underside of the roof of the car showing in particular the trackway arrangement.

FIG. 8 is a section view taken substantially along the lines 8—8 of FIG. 7.

FIG. 9 is a sectional view taken generally along the lines 9—9 of FIG. 2.

Referring now to the figures, the load dividing arrangement 10 of the present invention is shown embodied in a railway car 11 of more or less conventional structure including side walls 12, roof 13 and a floor 14. In the form shown, the load dividing arrangement 10 includes generally, a gate 16 suspended by means of a carriage 17 for movement on a trackway system 18 fixed adjacent to the roof of the car 11.

The gate 16 is preferably formed as a rigid structure including side channels 19, a top channel 21 and a bottom channel 22. Fixed to the channels 19, 21, and 22 along the edges thereof are face plates 23. As shown, the gate 16 is arranged to extend the full width of the car 11, but it is to be understood that a pair of gates equivalent to the full width gate may also be employed. However, when two gates are employed separate trackway arrangements are provided for each.

The trackway system 18 shown in particular in FIGS. 7 and 8 includes a trackway 24 extending the full length of the car and transversely extending trackways 26 connected at their inner ends to the longitudinally extending trackway 24 and terminating adjacent the sides 12 of the car 11. The trackways 24 and 26—26 may each be formed from channel members of substantially C-sections and are suitably fastened to the ceiling of the car 11 along the upper ceiling braces 27 as by brackets 28. The channels are secured such that the open ends thereof face downwardly and the inwardly projecting flanges 29 are disposed horizontally and provide a track surface 31.

The transversely extending trackways 26—26 on the opposite sides of the lengthwise extending trackway are in lateral alignment and fixed at their inner ends about a cut-out in the lengthwise extending trackway so that the trackway surfaces 31 on each are in substantial horizontal alignment. In this manner the transverse trackways 26—26 are each in communication with the lengthwise extending trackway 24 so as to facilitate the movement of the gate to a stored position adjacent either one of the side walls 12 as more fully to be explained hereinafter. As shown, there are two sets of transversely extending trackways 26—26, the sets being spaced lengthwise of each other a distance at least greater than one-half the width of the gate so that two gates may be stored adjacent the same side wall in side-by-side relationship. Preferably, the transversely extending trackways 26—26 are located on either side of the doorways of the car so that when the gate is in its stored position the door opening is not restricted. The trackways 26—26 at their outer ends are each secured as by welding to upper keeps 32—32 extending lengthwise of the car adjacent the side walls 12. The upper keepers 32—32 form part of a latching arrangement for maintaining the gate 16 selectively positioned as more fully to be explained hereinafter.

Fixed at each of the intersections 33 of the longitudinally and transversely extending trackways 24 and 26—26 is a gate transfer means 34 which serves to permit transfer of the gate 16 between the trackways 26 and 24—24. As shown in FIGS. 2, 8 and 9 the transfer means 34 each include a vertical post of which the upper end is fixed to the underside of the horizontal web midway of the intersection. Fixed to the lower end as by threading is a circular transfer table 37 having a groove 38 formed on the upper face. The transfer table 37 is disposed below the trackway flanges and arranged so that the transfer wheels 39 of the gate carriage 17 are received and supported with the groove 38.

The carriage 17 includes a U-shaped bracket having upstanding legs 42—42 to ends of which there is fixed as by welding the horizontal flanges 43—43 of angle irons 44—44 which support the carriage and transfer wheel assemblies 46—46. The vertical flanges 47—47 of the angle irons 44—44 are spaced from each other to permit the transfer post to pass therebetween.

The wheel assemblies 46—46 each includes a stub shaft 48 mounted at one end to the vertical web 47 of the angle iron 44. Turnably supported on each of the stub shafts 48 is a carriage wheel 49 ridable on the opposite track surfaces 31 of the trackways 24 and 26—26. Disposed inwardly of each of the carriage wheels 49—49 and turnable about the respective shafts 48 is the transfer wheel 39 which is of larger diameter than the carriage wheel and which is ridable and engageable with the transfer table. The transfer wheels 39 are spaced so as to be disposed within and clear of the inner edges of the trackway flanges 29. As shown the transfer wheels 39—39 and carriage wheels 49—49 are formed integral with each other, but it is to be understood that they may be separate units. The transfer wheels 39—39 and carriage wheels

49—49 are retained on the shaft by means of a washer 51 and cotter pin 52. A spacer 53 is disposed between the transfer wheels 39—39 and the transfer wheel 39 to maintain the latter located on the shaft 48. The transfer wheels 39 extend through slots 54 formed in the horizontal flanges 43 of the angle members 44 so that the rims thereof are ridable within the grooves 38 of the transfer table 37.

Suspending the gate 16 from the carriage 17 for movement on the trackway arrangement 18 is a hanger bolt 56 of which the lower end is threaded into a hanger block 57 fixed between the upright flanges 58 of the top channel 21 of the gate 16. To prevent relative turning of the hanger bolt 56 in the hanger block 57 there is inserted a pin 59. At its upper end the bolt is slidably supported for limited vertical movement in an opening 61 in the U-shaped bracket 41 so that during movement of the gate 16 the head 62 of the hanger bolt 56 engages the top face of the bracket 41 so that the gate 16 is suspended therefrom and when the gate is latched in a selected position the head 62 is spaced above and out of engagement with the bracket 41 as more fully to be explained hereinafter.

Fixed to the underside of the bracket 41 is a plate 63 from the ends of which there are fixed a pair of downwardly depending stop rods 64—64 which project into the channel 21. The stop rods 64—64 in this manner permit limited turning of the hanger bolt 56 and thereby the gate 16 fixed thereto relative to the carriage 17.

Extending along the ceiling and floor of the car adjacent the side walls are keepers 32—32 and 66—66 which are arranged to co-act with latching spuds 67—67 and 68—68 disposed along the sides of the gate 16 adjacent the top and bottom thereof. The upper keeper bars 32—32 may each be formed in sections divided by the transversely extending trackways to which the ends of the sections may be fixed as by welding. Further supporting the keeper on the ceiling are a plurality of lengthwise spaced brackets 69. The keepers 32—32 may each be formed from a channel of C-section as shown and the lower flanges 71 are provided with a plurality of lengthwise spaced openings 72 adapted to receive the upper locking or latching spuds 67.

The lower keepers 66—66 as shown may each be formed of a channel of C-section having the legs 73 thereof fixed as by welding to a horizontal plate 74 suitably attached by bolts to the floor. The horizontal web 76 is formed with longitudinally spaced openings 77 for receiving the lower spuds 68 of the gate latching mechanism 70. The openings 77 in the lower keepers 66 are arranged to be aligned with respective ones of the openings 72 of the upper keepers 32 so that the gate 16 is maintained in a substantially vertical plane when locked.

The latching mechanisms 70 along each side of the door are each of similar construction such that it is only necessary to describe one herein. As shown in FIGS. 5A, B and C and 6A, B and C, the latching mechanism 70 includes the upper and lower spuds 67 and 68 respectively. Associated with the upper spud 67 is an actuating rod 78 having a slotted upper end 83 which is disposed between the clevis arms 81 of the upper spud 67. Fastening the rod 78 to the spud 67 is a pin 82 fixed to the clevis arms and extending through the slot 83 so that the rod 78 and spud 67 are movable lengthwise relatively to each other a limited distance. A biasing spring 84 is disposed between a stop disc 86 fixed to the rod and the lower end of the spud 67 to normally urge the upper spud 67 upwardly relative to the rod 78.

At its lower end the actuating rod 78 is turnably connected to a crank arm 87 of a crank lever member 88 located in an actuating handle recess 89 formed in the side channel 19. The crank lever member 88 is journaled on a pin 91 extending horizontally through the recess 89 and fixed at one end to the web of the side channel and at its other end to the outer wall of the member 92 defining the recess 89. Also turnably supported on

the pin 91 is a handle 93. The lower end of the upper actuating rod 78 is connected to the crank arm 87 by means of a pin 90 fixed to the lower end of rod 78 and projecting into journal openings 94–94*a* formed in the crank arm 87 and handle 93.

The other crank arm 96 is connected to the upper end of a lower spud actuating rod 97 by means of a pin fixed thereto and extending through openings 99–99*a* formed in the crank arm 96 and handle 93. The lower end of the actuating rod 97 is disposed between the clevis arms 100 formed on the upper end of the lower spud 68 and fastened thereto by a pin 101.

The upper and lower locking spuds 67 and 68 may each be formed with a portion of the length 102 thereof formed of rectangular section which is disposed within a guiding arrangement 103 defining a complementary rectangular opening 104 disposed along the top and bottom of the gate. In this manner the spuds are freely guided for vertical movement within the guide arrangements and at the same time prevent relative turning or twisting between the gate and the spuds. The ends of the spuds 67 and 68 are each formed of circular section 105 sized so as to be snugly received within the keeper openings 72 and 77. To facilitate the entry of the spuds in the openings the ends 106 may be tapered.

In the latched or locked position of the latching means 70, the components thereof are in the position shown in FIGS. 5A, B and C and FIGS. 6A, B and C. In this position the handle 93 is in a substantially upright position such that pins 90 and 98 connecting the handle 93 to crank arms 87 and 96 and to the upper and lower spud actuating rods 78 and 97 are also disposed in a substantially vertical plane. In this position the upper and lower locking spuds 67 and 68 are projected outwardly of the guiding arrangement 103 and the heads 105 are received within the respective upper and lower keeper openings 72 and 77 as shown. In this position the shoulders 107 of the upper and lower spuds 67 and 68 abut the respective horizontal webs 71 and 76 of the keepers. The length of the lower spud actuating rod 78 is selected such that the gate 16 is elevated when the lower spud shoulder 107 abuts the keeper. In this manner the lower spud 68 and the actuating rod connected to the crank arm and pin are operative to elevate the gate 16 so that the latter is not supported by the suspension stud in the locked position.

To release the gate from its locked position the handles 93 are turned clockwise as shown in FIG. 5B. In this connection it is to be noted that the handle 93 may include a safety latch for retaining it in the locked position shown. The safety latch includes a sleeve 108 disposed over the end of the handle 93. The sleeve 108 may be contoured to provide a convenient grip. Axially aligned openings 109 and 111 in the top of the sleeve grip and the top of the handle bar, receive a guide pin 112 about which there is disposed a biasing spring 113 which urges the sleeve grip 108 outwardly of the end of handle 93. Limiting the outward movement is a pin 114 fixed to the grip sleeve 108 and extending through an elongated opening 116 in the handle 93. In the locked position the sleeve grip 108 is biased upwardly and the upper end thereof is disposed within an opening 117 formed in the web 118 of the handle recess defining member 92. Thus, in order to turn the handle 93 clockwise, the sleeve grip 108 must first be depressed downwardly on the handle 93 against the force of the biasing spring 113 to the phantom line position shown in FIG. 6B and thereby to be freely movable outwardly of the recess 117.

As the handle 93 is moved clockwise or outwardly the spuds 67 and 68 are retracted out of seating engagement with the respective keeper openings 72 and 77. At the same time the gate 16 is lowered from its elevated position such that the head 62 of the suspension bolt 56 fixed thereto engages the U-bracket 41 of the carriage assembly 17 so that the gate 16 is suspended therefrom.

The gate 16 thus suspended may then be positioned lengthwise of the car by moving the carriage along the lengthwise extending trackway 24. When the carriage is located at one of the transfer means 34 as shown for example in FIG. 2, the carriage wheels 49 no longer engage the horizontal track flanges 31, but the transfer wheels 39 engage within the track grooves 38 of the transfer table 37 so as to maintain the gate 16 movably suspended on the latter.

Should it be desired to continue movement along the lengthwise extending trackway 24 past the transfer means 34, the gate is merely moved in the same direction until the desired location is reached, whereupon the handle 93 is pushed upwardly and inwardly thereby turning the crank lever 88 therewith such that the pins 90 and 94 connecting the upper and lower spud actuating rods 78 and 97 are operative to seat the spuds 67 and 68 in the keeper openings 72 and 77 and thereby retain the gate 16 latched.

Should, however, it be desired to store the gate 16 adjacent the side wall 12 when the transfer wheels 39 are in engagement with the transfer table 37 the carriage wheels 49 are clear of the trackway flanges so that the carriage is free to be turned. Turning of the carriage is accomplished by turning of the gate 16 about the hanger bolt 56 whereupon after limited turning the downwardly depending stop rods fixed to the carriage bracket 41 are engaged by upstanding flanges of the top gate channel 21 so that the carriage is also turned until the carriage wheels are aligned with the trackway flanges 31 of the transverse extending trackways 26—26 as shown in phantom in FIG. 2. Thereafter the gate 16 is pushed toward the side wall 12 adjacent which it is desired to be stored and the carriage wheels engage the trackway surfaces 31 of the transversely extending trackway 26 so that the carriage is rollable therealong. When the gate is positioned adjacent the side wall the latching means may again be engaged as heretofore described.

What is claimed is:

1. A trackway system and gate suspension arrangement for guiding and suspending a load dividing gate within a railway car, said trackway comprising a longitudinally extending track means, a transversely extending track means intersecting said longitudinally extending track means, a transfer table immovably mounted at said intersection of said longitudinal and transverse track means, said gate suspension means including a carriage

movable along said track means and turnable on said transfer table so that said gate suspension means may be shifted for movement along either said longitudinal or transverse track means.

2. The invention as defined in claim 1 wherein said transfer table is disposed in vertical spaced relationship to said transverse and longitudinal track means, and wherein said carriage means includes first means movable along said transverse and longitudinal track means and second means movable on said transfer table, said first means being disengaged from the transverse and longitudinal track means when said second means are movable on said transfer table.

3. A trackway and gate suspension arrangement for guiding and suspending a load dividing gate within a railway car, said trackway comprising a longitudinally extending track means, transversely extending track means intersecting said longitudinally extending track means, said track means each being formed to provide laterally spaced track flanges, a transfer table immovably mounted at said intersection of said longitudinal and transverse track means and vertically spaced from said track flanges, said gate suspension means including a carriage having wheeled means movable along said track means and turnable on said transfer table so that said suspension means may be shifted for movement along either said longitudinal or transverse track means.

4. The invention as defined in claim 3 wherein said wheeled means on said carriage comprise a first pair of wheels rollable on said track flanges and a second pair of wheels turnable on said transfer table.

5. The invention as defined in claim 4 wherein said pair of wheels rollable on said track flanges is of lesser diameter than said pair of wheels turnable on said transfer table.

6. The invention as defined in claim 5 wherein said transfer table is supported on a post, and said pairs of wheels are mounted on a bracket constructed so that said wheels of each pair pass on diametrically opposite sides of said post when disposed on said transfer table.

References Cited by the Examiner

UNITED STATES PATENTS

558,148	4/96	Borland et al.	104—99
2,360,029	10/44	Wieden	105—376 X

ARTHUR L. LA POINT, *Primary Examiner.*