

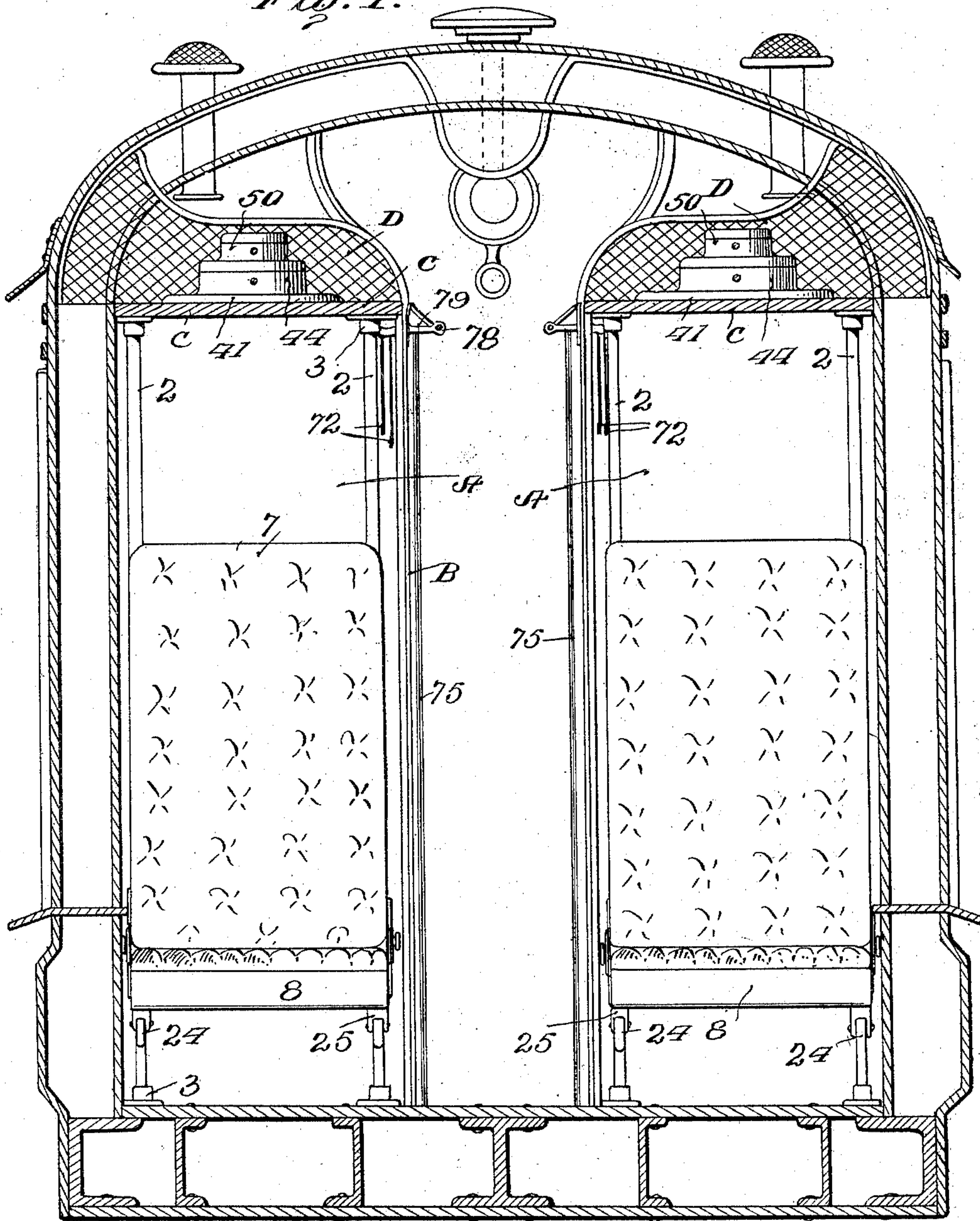
F. J. LEIGH.
SLEEPING CAR BERTH AND CHAIR.
APPLICATION FILED NOV. 17, 1909.

967,137.

Patented Aug. 9, 1910.

6 SHEETS—SHEET 1.

Fig. 1.



Inventor

Frederick Joseph Leigh

Witnesses

W. P. Woodson.

Juana M. Fallin,

By

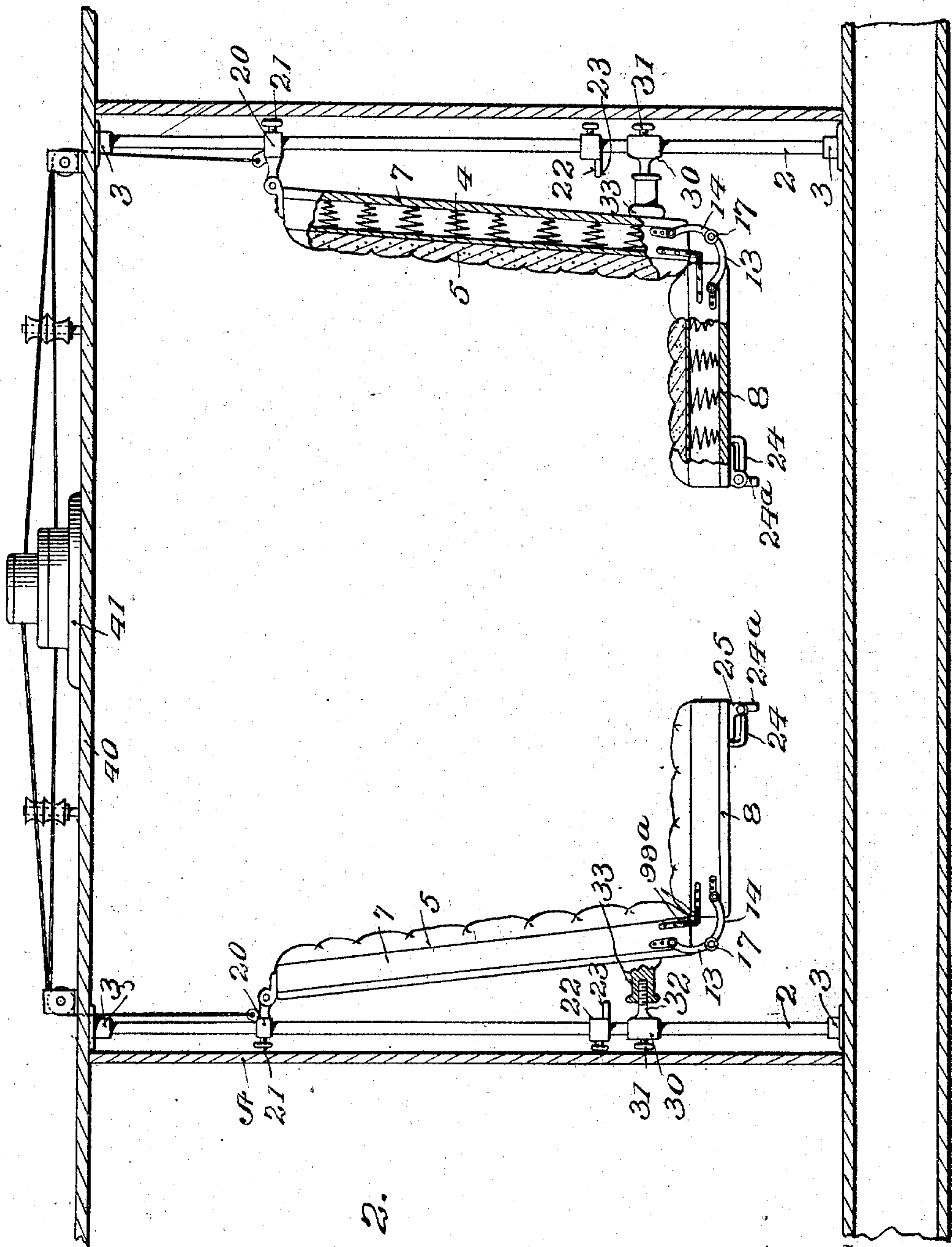
W. A. Racy, Attorney

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5 SHEETS—SHEET 2.



Inventor

Frederick Joseph Leigh

By

A. A. Macey, Attorney

Witnesses
H. H. Woodson
Juana M. Fallin

Fig. 2.

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5 SHEETS—SHEET 4.

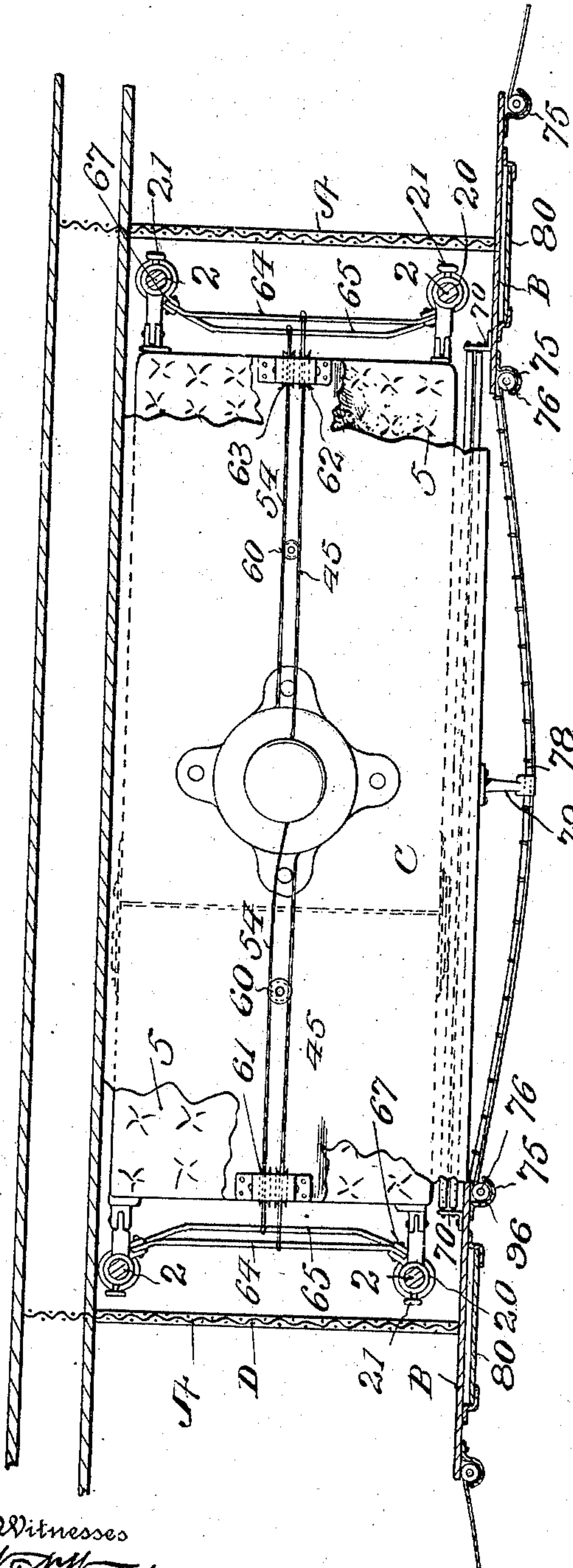


Fig. 4.

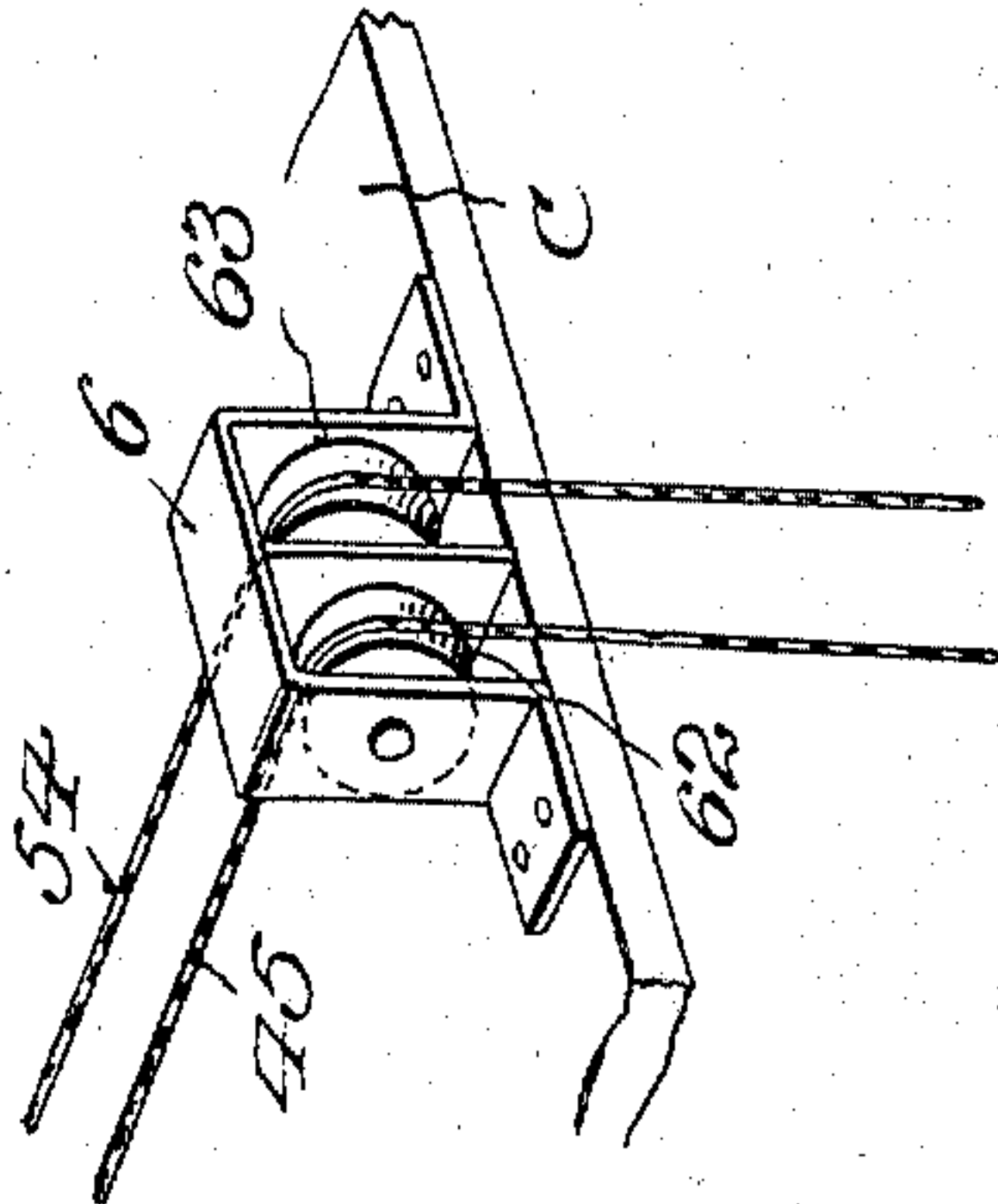
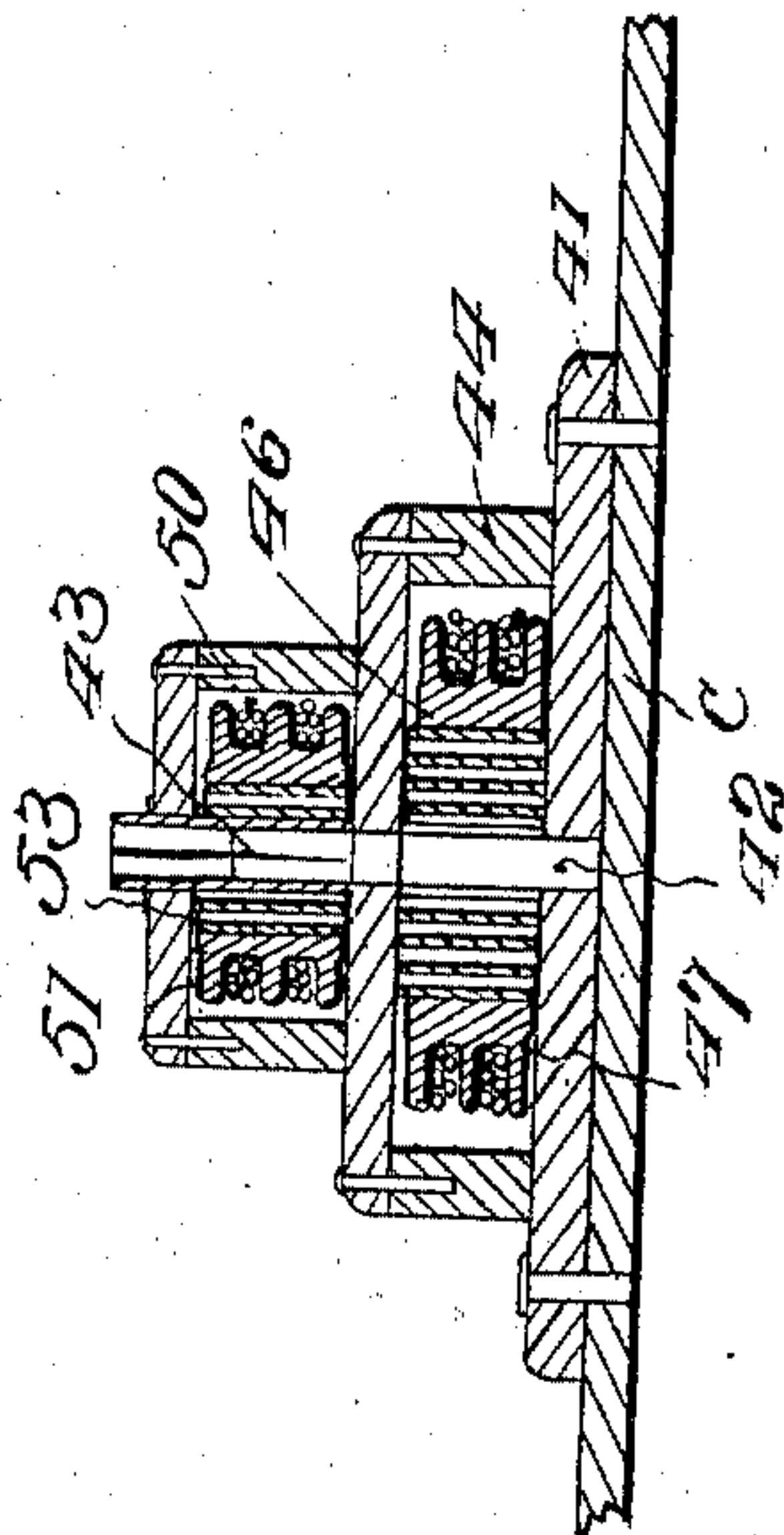


Fig. 6.

Fig. 5.



Witnesses
W. H. Woodson,
Juana M. Fallin,

Inventor
Frederick Joseph Leigh.

By
A. H. Macy, Attorneys.

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5 SHEETS--SHEET 5.

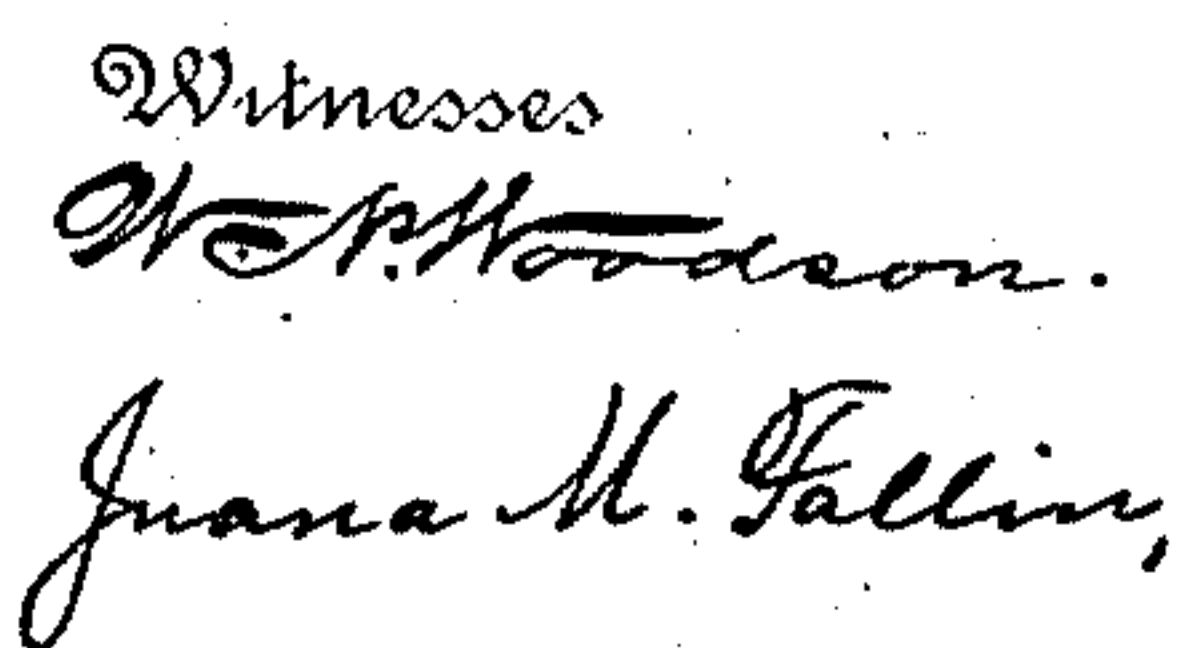


Fig. 7.

Frederick Joseph Leigh.

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Thammy, Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK J. LEIGH, OF SEATTLE, WASHINGTON, ASSIGNOR TO IMPERIAL CAR SHIP-BUILDING AND DRY DOCK CORPORATION, OF SEATTLE, WASHINGTON.

SLEEPING-CAR BERTH AND CHAIR.

967,137.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed November 17, 1909. Serial No. 528,497.

To all whom it may concern:

Be it known that I, FREDERICK J. LEIGH, citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Sleeping-Car Berths and Chairs, of which the following is a specification.

My invention relates to sleeping cars, and particularly to berths for said cars or for the staterooms of steam ships, the main object being to provide a berth which may during the day form seats for the passengers, and which at night may be unfolded and placed in proper position for sleeping.

A further object is to provide a berth structure of such character that when the berth is used as a chair or settee during the day, the angle of the seat and back with relation to the floor of the car may be adjusted at pleasure.

Still another object is to provide a seat which is supported free from the floor and from the adjacent berth so that the space beneath the combined seat may be cleaned, and in connection therewith to provide an arm for the seat which is also free from the floor and which may be easily removed for cleaning.

Another object is to provide a combined seat and berth for a car section or stateroom, affording a maximum of bed room and permitting the use of a large and commodious baggage shelf above the berth or in the upper portion of the compartment or section containing the berth.

Still another object is to provide, in connection with the section or compartment, independent curtains for the upper and lower berths, and a set of outer fireproof curtains mounted on rollers normally inclosed within casing members, and to provide, in connection with these curtains, a spreading attachment whereby the curtains when closed are held away from the front of the berths to give more room in dressing and undressing.

Other objects will appear more fully in the accompanying specification.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a transverse section of a car having my improved berth structure; Fig. 2 is a view of one of the compartments or sections of the car looking from the aisle, the berths having been lowered to position to form seats; Fig. 3 is a like view to Fig. 2, but with the berths raised; Fig. 4 is a top plan view of one of the compartment sections looking down upon the baggage shelf, with the pilaster shown in section; Fig. 5 is a vertical section through the winding drums and casing therefor; Fig. 6 is a detail perspective view of the guide rollers at the end of the baggage shelf; Fig. 7 is a fragmentary detail perspective view of one end of the berth structure, showing its pivot connected to the supporting standards; Fig. 8 is a perspective detail, enlarged, of the collars and the pivotal connection for supporting a berth thereon; Fig. 9 is a perspective view, disassembled, of a collar and a hook connection, whereby the end of the berth is detachably connected to the collar; Fig. 10 is a fragmentary side elevation of the berth structure, showing the hinged connection and the quadrant bars; Fig. 11 is a longitudinal section through one of the sides of the berth structure, showing the quadrant bars in section; Fig. 12 is a perspective view of the means for securing angular adjustment of the seat backs; and, Fig. 13 is a fragmentary section through the forward edge of the baggage shelf and showing a bracket for supporting the upper curtain rod and the curtain rollers for the upper and lower berths.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to these figures, it will be seen that the interior of the car is divided into a series of compartments or sections by par-

partitions A which extend inward from the wall of the car to the aisle thereof, each of these partitions, at its end, being provided with a longitudinally extending pilaster plate B.

5 It is to be understood that these partitions A and the pilaster plate are permanent, the car as a whole preferably being constructed in accordance with the details set forth in my pending application, Serial No. 530,551, filed on the 30th day of November, 1909.

10 Located at the upper end of said partitions A is the continuous baggage shelf C which runs the entire length of the car, this baggage shelf being divided into sections corresponding to the compartments below by means of the dividing grids D of any suitable construction.

As a means of supporting the combined upper and lower berths and chairs or seats,

20 I provide in each corner of the section the vertically extending tubular standards or posts 2. These posts are secured at their upper and lower ends to the bottom of the car and to the baggage shelf by means of the sockets 3.

25 It is to be understood that both of the combined berths and seats are constructed in precisely the same manner, and hence a description of one of the berths will apply to the other.

30 Each berth consists of a rectangular frame of any suitable construction, inclosing the springs 4 and the cushions 5 superposed upon the springs. These springs are

35 relatively numerous and relatively long so as to provide for great resiliency in the back and seat portion of the berth or chair. The berth is unequally divided into two sections, one section designated by the numeral 7

40 forming a back, while the other section designated by the numeral 8 forms the seat when the berth is moved down into its day position. These sections are closed against each other so as to form one continuous

45 mattress when the berth is moved into a horizontal or night position as shown in Fig. 3. The frames of the two sections are joined to each other at their upper corners by means of the hinge plates 9 and 9^a, said

50 hinge plates being slotted and provided with an adjusting screw 10 which passes through the slotted ends of the plates and which at its extremity has a disk 11 which is located in a recess in the inside face of the plate 9.

55 Engaging the screw 10 is the screw-threaded clamping head 12, which, when screwed down, forces the hinge plates into engagement with each other. Attached to the side frames of the sections 7 and 8 are the opposed quadrant arms 13 and 14, both of

60 these arms being of the same character and both of them having a slot 14^a extending in the arc of a circle. The slots of both plates of course aline with each other. Passing

65 through the slots in the two plates is the

adjusting screw 15 whose inner extremity is provided with the disk 16 carried in a recess on the inner quadrant plate, the outer end of the screw being formed with a knurled head or nut 17 whereby the quadrant sections or plates may be clamped

70 against each other in any adjusted position. It will be seen that the means thus described provides for an angular adjustment of the seat section 8 with relation to the back section 7, and that the sections may be clamped

75 in any adjusted position so that the angle of the back to the seat may be varied as desired, and so that both sections may be moved into alinement with each other to

80 form a mattress when the berth is to be made up.

The upper end of each section 7 is pivoted to opposed collars 20, these collars being mounted on the adjacent transversely opposed posts or standards 2 and shiftable longitudinally thereon. Each of the collars is provided with a set screw 21 whereby it may be adjusted along the standard 2 to any

85 desired position. These collars are connected to a raising or lowering cable actuated as will be later described.

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The free end of the frame of the mattress or berth is adapted to be connected in any suitable manner to opposed collars 22 which

95 have the same construction as the collars 20, except that they are provided with a projecting eye 23 with which a pivoted hook 24 hinged to the frame of the berth is adapted to engage when the hook is turned up into

100 operative position. There are of course two of these hooks 24 to engage with the two collars 22 on the opposed posts 2 adjacent to the free end of the berth. In detail, the hook 24 has an angularly projecting portion

105 24^a which forms a stop when the hook is turned into a horizontal position projecting out from the foot of the berth. This hook is pivoted to a base plate 25 which is attached to the under side of the berth frame at the

110 forward end thereof. This construction permits the hook to be turned up underneath the berth when the berth is lowered to form a seat, or to be turned outwardly to engage the eye 23 when the berth is arranged

115 in its night position. The collar 22 is connected by a cable to the elevating mechanism, as will be later described.

It will be seen that during the day the berth is lowered to form a seat with an

120 upwardly extending back, the seat being entirely free from the floor, and the back only supported at its upper end upon the posts 2. In addition to the support at the upper end of the back of the seat or larger mattress

125 section 7, I provide upon each post the freely shiftable collars 30, these collars being provided with set screws 31 whereby they may be adjusted up or down upon the posts or standards 2, and also provided with the out-

130

wardly projecting screw-threaded shank 32 which engages with a screw-threaded sleeve 33 whose end is expanded into a head with which the back section 7 engages. It will be seen that by rotating the sleeve 33 in one direction, it will be moved outward, while rotating it in the other direction will force it inward. Thus the angle of the back section of the berth may be altered at will by screwing out or screwing in the sleeve 33, and the same result may be accomplished by raising or lowering the collar 30 upon the standard 2 and thus bringing the collar 30 nearer to or further from the fulcrum point of the section 7. The berth, when it is formed into a seat by day, is supported by the collars 21, and held outwardly in proper position so as to give it the proper inclination by means of the collars 30 and the adjustable sleeves 33. It will also be seen that the back of the berth is entirely free from the partition A so that the partition may be thoroughly cleaned, and the bottom of the seat never resting upon the floor, the floor may be entirely cleaned. It will be of course seen that there are two berths, an upper and a lower, which when turned down form two opposed chairs or seats located at opposite sides of the compartment section.

In order to permit the upper and lower seat or berth sections to be moved vertically into proper day and night position, I connect the supporting collars or slides 20 and 22 to cables which pass upward to the upper portion of the supporting structure and are there connected to spring winding or counterbalancing drums having sufficient tension to support the berths in any position to which they may be moved.

In detail, it will be seen that I provide above the compartment containing the berths, a longitudinally extending baggage shelf C to which the upper ends of the rods 2 are connected. This baggage shelf is also supported upon the transversely extending partitions A. Mounted at the middle of the baggage shelf for each compartment, is a base plate 41 from the center of which projects the fixed axles 42 and 43, the upper one smaller than the lower. Mounted upon the base plate 41 and concentric to the fixed axle 42, is the drum casing 44 having an opening at opposite sides for the passage of the opposed cables 45, these cables being for the support of the opposite ends of the lower berth. Mounted within the casing 44 is the rotatable drum 46 divided into two parts by the radially extending annular plate 47. One of the cables 45 enters the casing 44 and is wound upon the drum 46 above the partition 47, while the other cable enters the casing 44 and surrounds the lower portion of the drum 46 below the partition 47. It will be seen that a rotation of the drum 46 in one

direction will wind up both of the cables, and in the other direction, will let out both of the cables simultaneously. Surrounding the fixed axle 42 is the drum casing 50 containing the rotatable drum 51 likewise divided into two parts by the partition 52 and actuated by the spring 53 which is attached at its outer end to the drum and at its inner to the fixed axle 43. The cables 54 extend out from opposite sides of the drum in the same manner as the cables 45. In order to keep the cables apart and from fouling each other, guiding pulleys 60 are mounted upon the upper face of the baggage shelf 40, and at the outer ends of the baggage shelf, nearly in alinement with the standards 2 are located the pulley frames 61 supporting the double pulleys 62 and 63 over which the cables 45 and 54 pass downward to the collars 20 and 22. The end of each of the cables is connected to berth suspension links 64 and 65 which, as shown in Fig. 4, have the opposed outwardly extending arms which are connected to the collars 20 and 22, as will be hereafter described. The cable 45 is connected to the link 65 whose extremities are inwardly turned, as at 66, so as to afford room for the passage of the cable 54 behind the cable 45. The cable 54 is connected to the links 64 which are straight. Each of the collars 20 and 22 is provided with the inwardly projecting socket 67 in which the extremities of the links 64 or 65 are engaged, as by rivets or bolts.

With the construction above described, it will be obvious that when it is desired to move the berths from their day position into their night position, it is only necessary to connect the free end of the berth by the hooks 24 to the collars 22. The berths will then be suspended by the cables 45 and 54 and in position to be easily moved up or down to the point required. The movement of the berths into the horizontal position will of course close the sections 7 and 8, and the sections are locked in their closed position by setting up upon the jam nut or head 12. When the berths are to be moved down into their day position, the set screws 21 are released, the lower berth is moved upward to the proper position, and the collars 20 are then locked upon the standards 7. The free edge of the berth is then unhooked from connection with the collars 22, the lock heads 12 are released, and the berth moved down until it occupies its day position, after which the back and seat may be set to the desired angle with each other and with the floor. The same operation is carried out with the upper berth. The bed clothes are removed and stowed in any suitable compartment or closet, such as a floor compartment shown in my pending applications, Serial No. 528,198, filed on the 15th day of November, 1909.

The main advantages of my invention reside in the fact that the berths are not connected to the wall of the car or to the floor. Therefore, the compartment can be kept in a thoroughly sanitary condition. Furthermore, there is free circulation of air around the berths, and the upper berth is not closed up into the roof of the car as it is today, thereby being closed out from ventilation of air. Furthermore, my construction permits the seats into which the berths are transformed to be stowed at any desired angle with the floor and wall. The construction permits the easy making up of the berths and the easy transformation of the berths into seats when necessary.

It is necessary of course to provide curtains for the berths, and preferably independent curtains for the upper and lower berths. To this end I provide the pilaster plate B with the inwardly projecting curtain brackets 70 which project inward into the compartment beneath the baggage shelf thereof. These brackets 70 carry upon them the two independent spring curtain rollers 71 upon each of which is carried the curtains 72. One of these rollers carries the curtains for the upper berth, and the other roller carries the curtains for the lower berth. In addition to these independent curtains, I provide a fireproof curtain which is movable across the entire front of the compartment and which is held out from the front line of said compartment a sufficient distance to provide for an enlargement of the compartment, thus making it extremely convenient for dressing purposes. As a support for the fireproof curtains, I provide on each of the pilaster plates B the cylindrical casings 75 inclosing the spring curtain rollers 76 upon which the fireproof curtains 77 are wound. Supported upon the front of the baggage shelf and upon the pilaster plates B is the semi-elliptical curtain supporting rod 78 which is supported at its middle from the baggage shelf by means of the projecting bracket 79. The curtains 77 are each provided with hooks which may be engaged over the rod 78 and thus the curtains 77 be held out or in a bowed position, thus adding materially to the size of the compartment and not materially interfering with the passage of persons through the aisle of the car.

Between each of the roller casings 75, against the face of the pilaster plate B, is carried the mirror 80, this mirror being held in place by the lateral frames 81 which are riveted to the pilaster plate. These mirrors reflect the light in the car, add very much to the attractiveness thereof, and tend to light the aisle by reflecting the light from the mirrors and from the lamps suspended in the roof of the car.

In connection with my improved berths and compartments, I have provided pockets or catchalls hinged to the partitions in such position as to form no obstruction during the day, and which may be moved down so as to receive articles during the night. These pockets consist of metallic plates 85 hinged to the partitions at their lower edges and connected to the partitions at their upper edges by means of the chains 86.

It will be seen that by my invention I provide a car having sections or compartments; that I provide safety cushions for each of the berths in the sections, the back cushions, when the berths are formed into seats during the day, being extremely high and set at any angle desired, these cushions acting as safety cushions to protect the passenger in case of accident or sudden impact as often occurs in coupling coaches. It will be seen further that I have connected these seats and back cushions by a quadrant hinge that can be locked at any angle, and which at night can be unlocked so that the cushions may be extended to their full length, and that when so extended, the berths so formed are raised and lowered by coiled springs and cables placed about eight feet above the floor and on top of the steel baggage shelf.

Having thus described the invention, what I claim is:—

1. In a sleeping car, supporting standards, a berth formed in two sections having hinged connection with each other, said berth being shiftably mounted upon the standards for vertical adjustment, means for clamping the berth sections in any desired angular relation, means for disconnecting one end of the berth from said standards, a spring actuating drum mounted above the berth, and cables passing from the drum and connected to the opposite ends of the berth.

2. In a sleeping car, supporting standards, collars mounted upon the standards for vertical movement thereupon, a spring actuated drum mounted upon the berth, flexible connections on the drum connected at their free ends with said collars, a berth detachably supported on the collars, and means for holding the berth set at any desired vertical position on the standards.

3. In a sleeping car, supporting standards, collars shiftably vertically upon said standards, set screws for holding the collars in their adjusted positions, a spring-actuated drum mounted above the berth upon the car structure, opposed cables extending from said drum and connected at their free ends to said collars.

4. In a sleeping car compartment, opposed pairs of supporting standards, collars shiftably mounted upon said standards, means for holding the collars in any vertically

shifted position thereon, a spring-actuated winding drum mounted above said compartment, opposed cables on the winding drum, the free ends of said cables being connected to said collars, and a berth structure detachably connected to the collars.

5. In a sleeping car compartment, opposed pairs of vertical standards, a spring-actuated winding drum mounted above the compartment, opposed cables passing from said drum to the opposite ends of the compartment, berth-supporting devices vertically shiftable upon said standards and connected to the free ends of the cables, and a berth structure pivotally connected at one end to one set of said supporting devices and at its other end detachably connected to the other set of supporting devices, said berth structure being formed in sections hingedly connected to each other.

6. In a sleeping car compartment, opposed pairs of vertical standards, a spring-actuated winding drum mounted above each compartment, opposed cables on the winding drum, a collar on each of said standards shiftable vertically thereon and connected to the free ends of said cable, a berth structure pivotally connected at one end to one set of collars and detachably connected at the other end to the opposed set of collars, said berth structure being formed in hinged sections, means for holding the sections set at any desired angle to each other, and means for supporting said berth structure when turned into an approximately vertical position.

7. In a sleeping car compartment, opposed pairs of vertical standards located at opposite ends of the compartment, a spring-actuated winding drum mounted above the compartment, opposed cables extending from the winding drum, collars mounted on the standards, means connecting the collars at each end of the compartment to which the cable on that side of the compartment is connected, set screws for holding the collars adjusted upon the standards, a berth structure formed of hinged sections, one end of said berth structure being pivotally connected to the collars on the standards at that end of the compartment, the other end of the berth structure having means whereby it may be detachably connected to the collars on the standards at the opposite end of the compartment, a clamping device whereby the sections of the berth structure may be held set at any desired angle to each other to form a seat, and means for supporting the lower end of the back of the seat.

8. In a sleeping car compartment, opposed pairs of vertical standards, collars mounted on the standards and freely shiftable thereon, connections between the collars on each pair of standards, a spring-actuated winding drum mounted above the

compartment, opposed cables on the winding drum, the free ends of which are connected to the sections between the pairs of collars, a berth structure made in two unequal sections, said sections being hinged to each other, means for clamping the sections in any desired angular relation to each other, the longer of said sections being pivotally mounted upon the adjacent pair of collars at one end of the compartment, the other end of the berth structure being provided with pivoted hooks engageable with the collars at the other end of the compartment.

9. In a sleeping car compartment, opposed pairs of vertical standards, collars slidably mounted on said standards, set screws for holding said collars in their adjusted position, connecting bars between the collars at each end of the compartment, a spring-actuated winding drum mounted above the compartment, opposed cables extending from the winding drum and attached at their free ends to the connecting bars of the collars, a berth structure pivoted at one end to one pair of collars and having means for detachably connecting it to the other pair of collars, said berth structure being formed in two unequal sections, the larger of said sections adapted to form a back, and the smaller of said sections to form a seat when the berth structure is released from engagement with said last named pair of collars, slotted quadrant bars mounted one on each of the sections of the berth structure and overlapping each other, a nut for holding said quadrant bars set in any adjusted position, and means mounted on the standards against which the back section of the berth structure will rest when moved into an approximately vertical position.

10. In a sleeping car compartment, opposed pairs of vertical standards, collars slidably mounted on said standards, set screws for holding said collars in their adjusted position, connecting bars between the collars at each end of the compartment, a spring-actuated winding drum mounted above the compartment, opposed cables extending from the winding drum and attached at their free ends to the connecting bars of the collars, a berth structure pivoted at one end to one pair of collars and having means for detachably connecting it to the other pair of collars, said berth structure being formed in two unequal sections, the larger of said sections adapted to form a back, and the smaller of said sections adapted to form a seat when the berth structure is released from engagement with said last named pair of collars, slotted quadrant bars mounted one on each of the sections of the berth structure and overlapping each other, a nut for holding said quadrant bars set in

any adjusted position, and means mounted on the standards against which the back section of the berth structure will rest when moved into an approximately vertical position, said means being outwardly adjustable to vary the angle of said back section.

11. In a sleeping car compartment, a vertically movable berth structure, one end of which is pivotally supported, and the other end detachably supported when the berth structure is in a horizontal position, said berth structure being formed in two sections, one of said sections forming a back and the other a seat when the structure is released from its detachable engagement with the support and turned downward on its pivotal support, and means for holding the seat section in any desired angular relation to the back section.

12. In a sleeping car compartment, a berth structure pivotally supported at one end, the other end of the berth structure having detachable connection with a support adapted to hold the berth structure in a horizontal position, said berth structure being made in two sections, one of said sections forming a seat back and the other a seat when the berth structure is lowered, hinges connecting the two sections of the structure, means for holding the two sections in any desired angular relation to each other, and a stop against which the back section bears when lowered into an approximately vertical position, said stop comprising a fixed screw-threaded shank, and a head screw-threaded upon said shank and adapted to be moved outward thereon.

13. In a sleeping car compartment, a pair of standards, a supporting structure pivotally connected at its upper end to said standards, said supporting structure being formed in hinged sections, one of said sections forming a seat back and the other the seat therefor, and means for adjusting the angle of the back consisting of members having screw-threaded engagement with each other, one of said members being fixed and the other bearing against the back of the seat below the pivotal point thereof.

14. In a sleeping car compartment or section, a baggage shelf extending entirely across the section and forming a ceiling thereto, vertically movable upper and lower berths mounted in said section or compartment, independent spring-actuated drums mounted upon the baggage shelf above the compartment, and opposed cables passing from each of the drums and connected to opposite ends of each of the berths.

15. In a sleeping car, a compartment having therein upper and lower berths, said berths being vertically movable, a baggage shelf extending entirely across the compartment and forming a ceiling thereto, upper and lower independent spring-actuated

drums mounted upon the baggage shelf, and opposed cables passing from each of said drums, the cables from one drum being connected to opposite ends of one of said berths and from the other drum to opposite ends of the other of said berths.

16. In a sleeping car compartment, a baggage shelf extending entirely across the compartment and forming a ceiling therefor, upper and lower berths vertically movable within said compartment, independent spring-actuated drums mounted upon the baggage shelf, opposed cables oppositely wound upon each of said drums, the cables of each drum being connected to opposite ends of one of the berths, and a fixed casing surrounding the drums and having openings through which the cables pass.

17. In a sleeping compartment, upper and lower vertically movable berths, a baggage shelf extending across the top of the compartment and forming a ceiling therefor, independent spring-actuated drums mounted on the baggage shelf, guide pulleys mounted on the baggage shelf adjacent to the ends thereof, and opposed cables oppositely wound on each drum, said cables passing over the guide pulleys at opposite ends of the compartment and being connected to opposite ends of each berth.

18. A sleeping car having transverse partition walls dividing it into compartments, a continuous baggage shelf supported upon said partition walls and forming the ceiling of said compartment, upper and lower berths mounted in each of said compartments, horizontal curtain rollers supported beneath the baggage shelf at the forward edge thereof, curtains mounted thereon for each of the berths, a bracket projecting from the front of said baggage shelf and carrying a curved rod extending across said compartment, and a curtain adapted to be supported upon said curved rod.

19. In a sleeping car compartment, a baggage shelf forming the ceiling of the compartment, a semi-elliptical curtain rod extending across the front of the compartment, and opposed vertical rollers mounted at each end of the curtain rod and extending down to the floor of the car, and curtains mounted on said roller and adapted to be connected to the curtain rod.

20. In a railway car, a seat having a back pivotally supported at its upper end and a stop against which the lower end of the back bears, said stop being composed of two members having screw threaded adjustment upon each other, whereby the back may be angularly adjusted.

21. In a railway car, a seat having a back hinged thereto, said back being pivotally supported at its upper end, means for holding the seat and back in any desired angular adjustment, and a stop against which the

lower end of the back bears, said stop being composed of two members having a screw threaded engagement with each other.

22. In a railway car, a seat having a back
5 pivotally supported at its upper end, said
seat and back having means whereby they
may be held in any desired angular adjust-
ment relative to each other, means for ver-
tically moving the seat and back, and a stop
10 for supporting the lower end of the back,

said stop being composed of two members having screw threaded adjustment upon each other.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK J. LEIGH. [L. s.]

Witnesses:

JOHN J. LOUGHRAN,
ROBERT A. ORGAN.