

No. 711,164.

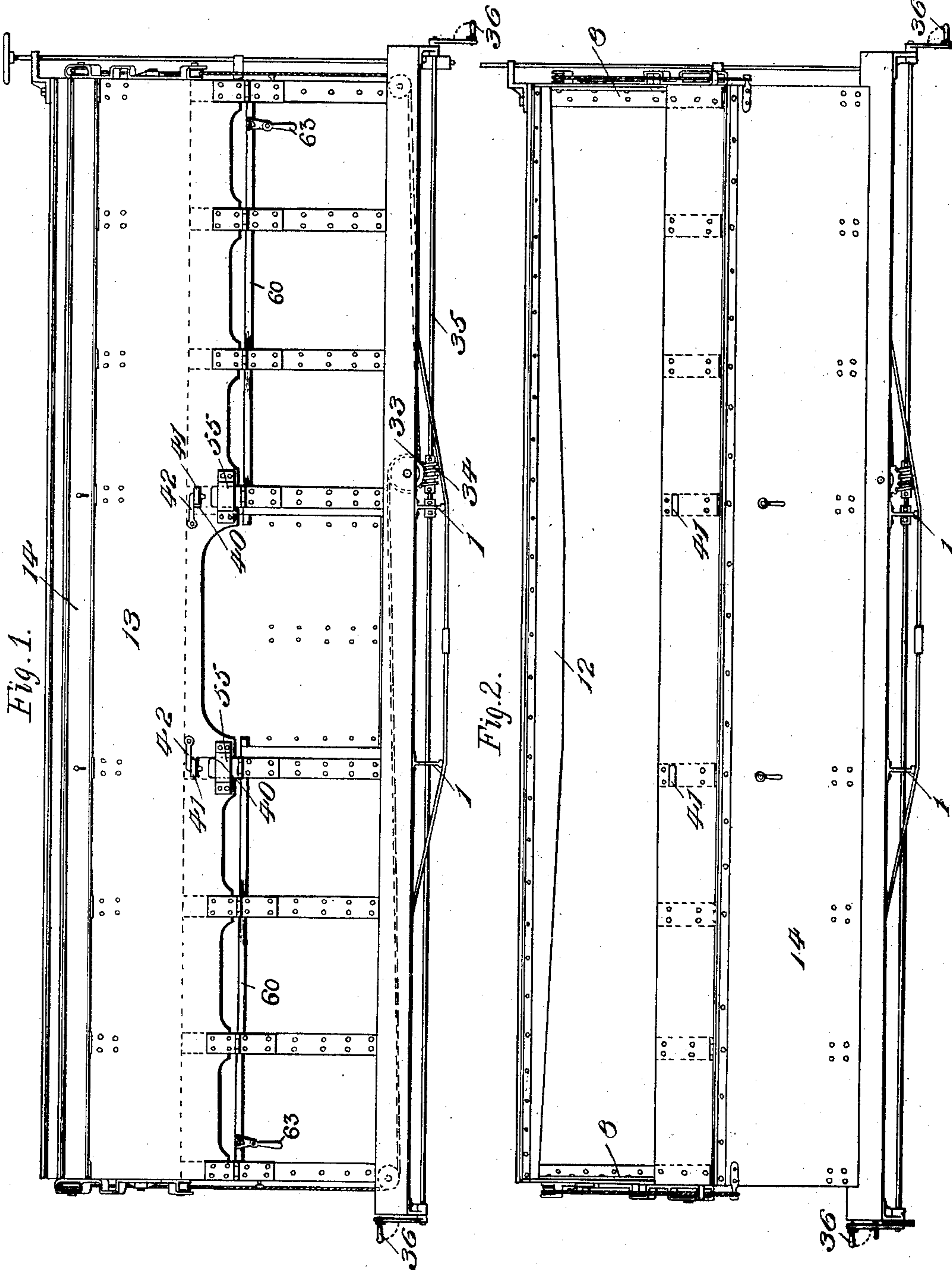
Patented Oct. 14, 1902.

H. M. HOOVER.
RAILWAY CAR.

(Application filed Apr. 4, 1902.)

(No Model.)

3 Sheets—Sheet 1.



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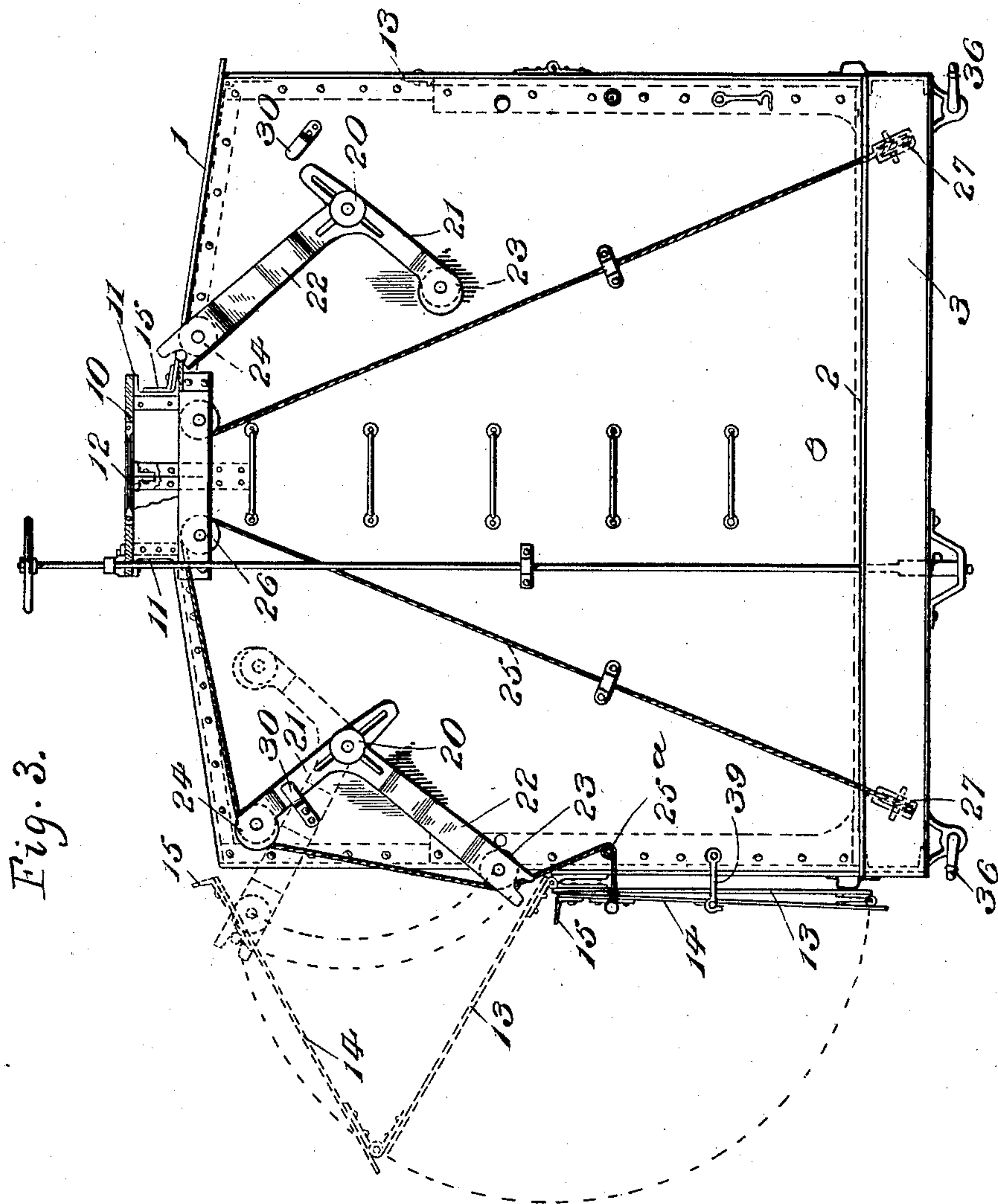
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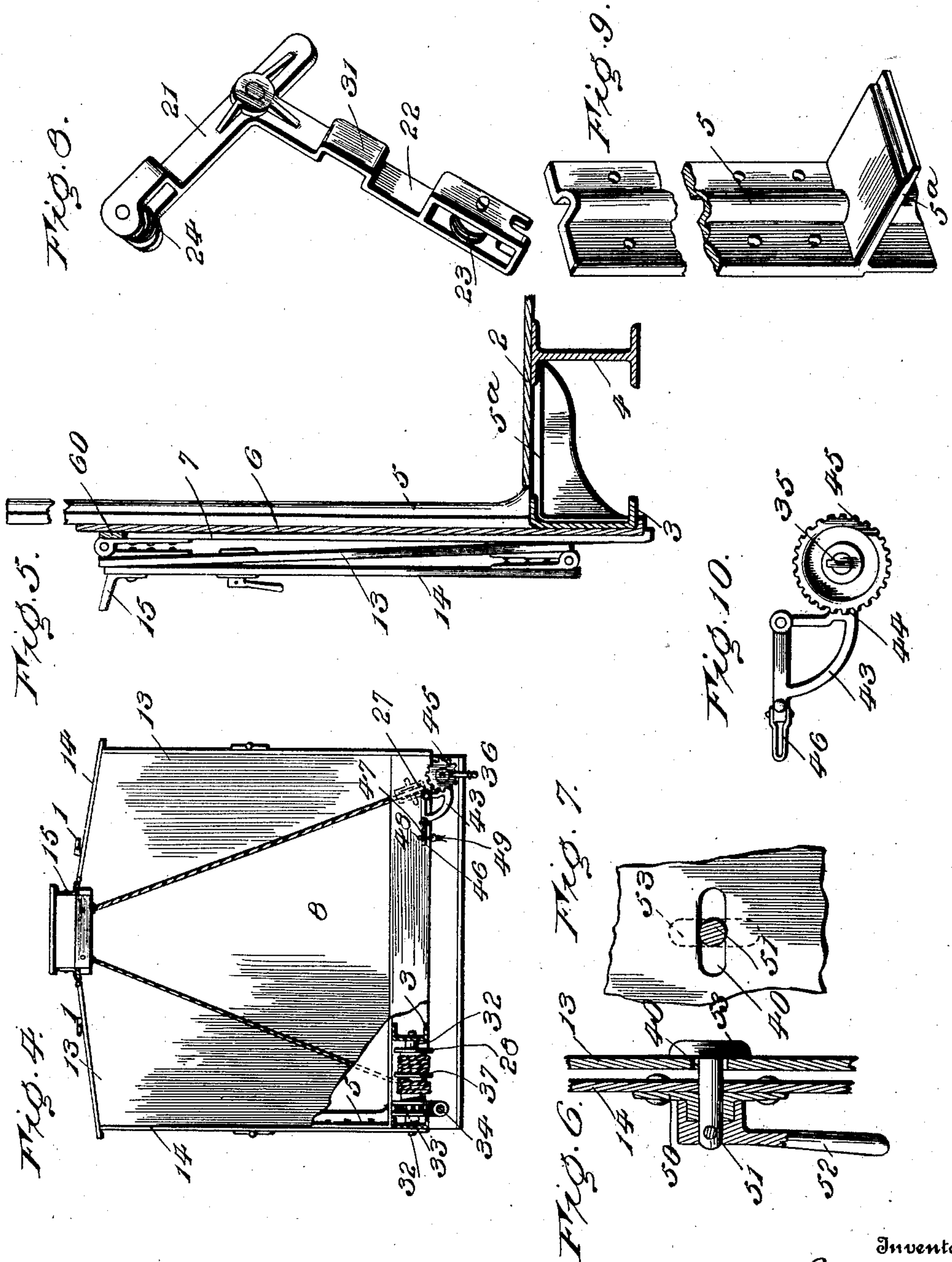
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UNITED STATES PATENT OFFICE.

HORACE M. HOOVER, OF PERRYSBURG, OHIO.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 711,164, dated October 14, 1902.

Application filed April 4, 1902. Serial No. 101,406. (No model.)

To all whom it may concern:

Be it known that I, HORACE M. HOOVER, a citizen of the United States of America, and a resident of Perrysburg, in the county of Wood and State of Ohio, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

This invention relates to railway-cars of that class shown in my application Serial No. 74,320 and filed on the 4th day of September, 1901, the object being to provide a simple convertible car which may be readily changed from an ordinary box-car into an open or gondola car, or vice versa; and the invention consists in the peculiar construction, arrangement, and combinations of parts hereinafter more particularly described and then definitely claimed at the end hereof.

In the accompanying drawings, which represent my improved car, Figure 1 is a side elevation of the body of a car constructed according to my improvement. Fig. 2 is a similar view with one of the sides open. Fig. 3 is an end elevation showing the left-hand side thrown open in full lines, shown partially closed in dotted lines, and the right-hand side entirely closed. Fig. 4 is an end elevation with both sides closed and with parts broken away. Fig. 5 is an enlarged detail of one of the sides thrown open. Figs. 6 and 7 are details of a device for locking the sides. Fig. 8 is a perspective detail of a swinging lifting-bar. Fig. 9 is a perspective detail of one of the standards of the sides. Fig. 10 is a detail of the device for locking the sides in a closed position.

Referring now to the details of the drawings by numerals, 1 indicates the usual or any form of cross-girders, and 2 the bottom of the car, between which are located a series of longitudinal beams 3, formed, preferably, of channel-iron, as shown best in Fig. 4, or of channel-iron 3 and I-beams 4, as seen in Fig. 5. These channel-irons or longitudinal beams 3 support the flooring of the car, and to said channel-irons uprights or standards 5 (see Figs. 5 and 9) are secured, which support the plates 6, forming the sides of the car. These standards and side plates extend up as far as shown in dotted lines in Figs. 2 and 3. These standards, as seen in Fig. 9, comprise the upright part (numbered

5) and an extended portion 5^a, forming a rigid bracket, which extends under the flooring 2 and also under part of the I-beam 4 and assists materially in strengthening the car.

Firmly connecting the sides 6 at opposite ends of the car are ends 8, (see particularly Fig. 3,) which instead of folding, as in my aforesaid application, extend to the full height of the car, and the running-board instead of being connected to the movable sides of the car is rigidly connected to these ends and supported thereby. The running-board 10 is therefore a permanent fixture suspended from end to end of the car and comprises a longitudinal channel-iron 11 on each side thereof (see Fig. 3) and is supported at the center by a web 12. (Shown in side elevation under the running-board in Fig. 2.) Instead of this web I may use one or two trussed rods, which I regard as the equivalent of the web.

To the permanent sides 6 are secured reinforcing-strips 7, to which are hinged the movable sides 13, and the top section or roof 14 is hinged to the movable side section 13, all as very clearly shown in Figs. 3 and 5. To the free end of the roof-section 14 and running from end to end thereof is an angle-iron strip 15, (see Fig. 5,) which when the car is used entirely closed, as shown in Fig. 4, fits within the channel of the longitudinal channel-iron 11, as seen in Fig. 3, resting on the foot of said iron 11. This construction of course makes a tight closure at this position, as any water dripping off of the running-board will drop onto the roof-section and the angle-iron 15 will prevent it from entering the car.

In order to provide means for raising and lowering the movable side 13 and roof-section 14, I employ mechanism to be now described. On each side of each end of the car I pivot a swinging lifting-bar 20, (see Figs. 3 and 8,) which is composed of two arms 21 and 22, each of which carries pulleys, as shown at 23 and 24. When the car is used as a "gondola," the arm 21 rests in a cleat 30, and the arm 22 is formed with a recess 31, (see Fig. 8,) permitting the swinging lifting-bar 20 to swing past or over the aforesaid cleat 30. A chain or cable 25 has one of its ends connected to the roof-section 14, and the chain after passing over the pulleys 23 24 passes over a pulley 26 on the end 8 of the car and

then passes downward and around a pulley 27 and thence to a drum 28. (Shown best in Fig. 4.) This drum is supported by a short shaft 32, (see Fig. 4,) and keyed to said shaft is a worm-wheel 33, which meshes with a worm 34, fixed to a shaft 35, running lengthwise of the car, to the ends of which shaft are connected cranks 36, so that by turning said cranks the drums 28 may be rotated to wind the cord or chain 25. In the construction shown in my drawings (see particularly Figs. 1 and 4) one cord or chain 25 from each end of the car passes around the drum 28, so that both cords may be wound on the one drum 28 by the movement of the single shaft 35, and when a single drum 28 is employed I use a dividing-collar 37, which prevents the chains from running together. It is manifest, however, that it is within the scope of my invention to use separate drums for this purpose. In order to overcome any possible objection that the handles 36 project too far, I hinge the handle 36 to its crank-arm, so that it may be turned to the position shown in dotted lines, when it is entirely out of the way. (See dotted lines in Fig. 1.)

In order to get a proper understanding of the operation of opening and closing the car, I would direct attention to Fig. 3 and state that, as shown at the left-hand side of said figure, the parts are shown in their open position and with their chain or cord looped around a stud or pin 25^a, projecting from the end of the car. This is for the purpose of holding the parts in the position shown to prevent unnecessary vibration of the parts, which is accomplished by winding the cord or chain 25 as tight as possible. In this same figure a hook 39 is employed to assist the chain or cord in holding the parts in their open position. To close the car, it is first necessary to throw said hook away from its pin and to loosen said cord or chain 25 sufficiently to permit the operator to throw the looped portion off of its pin or stud, and the handle 36 of the shaft 35 may now be turned to wind the chains or cords 25 on their drum 28. Winding the cord first shows its effect by drawing inward the pulley 24 on the arm 21, and this action of course rocks the whole swinging lifting-bar 20 on its pivot, thus shifting the pulley 23 far enough outward to overcome the dead-center. The further winding of the cord or chain now draws on the roof-section 14, swinging it and at the same time moving the lifting-bar and movable side section 13 gradually until they are swung into position and the car is closed. The open and closed positions are shown in full lines in Fig. 3 and the parts are shown in the act of closing in dotted lines in the same figure.

The movable sides 13 have openings 40, and as said sides close they move, so as to permit lugs 41 to project through said openings, and I pivot latches 42 to the sides of the car, which coact with said lugs, and thus lock the sides in position.

To provide a further means of locking the car closed, I employ a swinging quadrant 43, (see Figs. 4 and 10,) one end of which is toothed, as seen at 44, to engage with a gear 45, fixed to one of the shafts 35. This quadrant is swung into position after the car is closed, so that its teeth mesh with the teeth of said gear-wheel, and to prevent the quadrant from being accidentally or maliciously moved I pivot a hasp 46 at its free end, which is arranged to slip over a staple 47 (see Fig. 4) and be locked thereto by a key 48 and the usual seal 49.

I have hereinbefore described the roof-section and the movable side section as being held in their folded open positions by means of a hook 39, as shown in Fig. 3, and to provide a more positive lock I employ the construction shown in Figs. 6 and 7. In these figures, 13 indicates the movable side section, which has been hereinbefore mentioned as having a perforation or opening 40 therein, and 14 indicates the hinged roof-section, which is shown in Fig. 6 as being folded against the movable side section 13. In a bossed plate 50, secured to the roof-section 14, I journal a short pin or rod 51, to which is connected an operating-handle 52 on one end and a lug 53 on the opposite end. In operation the handle 52 is so moved as to bring the lock 53 in line with the opening 40 in the movable side section 13, and after these side sections 13 and roof-sections 14 are brought together, as shown in Figs. 5 and 6, the handle 52 is moved so as to turn the bolt or lock 53 at right angles to the slot 40, and thereby lock one of the movable sections to the other. The handle 52 is so situated that it will pass downwardly when the two sections are locked together, so that its gravity will tend to prevent it from being turned around, and thus unlock the two sections.

In order to prevent any binding of the hinges, which might result from the weight of the material carried by the car causing the permanent side to sag slightly outward or downward, I provide a slip-joint at as many of the hinges as may prove necessary, as seen in Fig. 1. This hinged joint has the upper leaf of the hinge slipped through a fastening-bracket 55, which is firmly riveted to the side of the car, so that the leaf of the hinge may slide slightly therein, and thus prevent any buckling of the swinging sides in the event of the load forcing the car slightly outward or downward at the center.

It sometimes happens that when the car is being loaded particles of coal or other material fall and rest on top of the hinges, and thereby clog the same and prevent the movable side from properly closing. To overcome this difficulty, I form a space behind the hinges. (See Fig. 5.) In some cases I also employ a movable bar, (seen at 60 in Figs. 1 and 5,) which bar is provided with a pivoted handle 63, by which it may be moved longitudinally, and any coal or other article which

may become lodged between the sections or leaves of the hinges will be cleared from behind said hinges by the longitudinal movement of this rod.

5 I believe the invention disclosed in the accompanying drawings needs no description of the operation further than that which has already been given in describing the car, and in the description of the parts I have described what I now consider the preferable
10 form of my invention, but do not limit all my claims to the exact construction shown, as various changes and modifications may be made without departing from the spirit of my
15 invention.

What I claim as new is—

1. In a car, a stationary side, an upper moving side hinged thereto, and a roof-section hinged to said moving side, in combination
20 with a swinging lifting-bar pivoted to the end of the car and coacting with said hinged parts, and means for moving said swinging lifting-bar, the said means acting on part of said swinging lifting-bar to swing another portion
25 of said bar away from the dead-center, substantially as described.

2. In a car, a stationary side, an upper moving side hinged thereto, and a roof-section hinged to said upper moving side, in combination with a swinging lifting-bar pivoted to
30 the end of the car and coacting with said hinged parts, and means for moving said swinging lifting-bar and thereby moving the hinged section in place, said swinging lifting-bar having two arms projecting therefrom,
35 and the said moving means acting first on one of said arms to throw the other arm away from the dead-center, substantially as described.

3. The combination with a car and with the moving parts thereof, of a swinging lifting-bar pivoted to the car and provided with two arms having pulleys therein, substantially as
40 described.

4. The combination with a car and with the movable parts thereof, of a swinging lifting-bar pivoted to said car and comprising two arms, a support for one of said arms and the other having a loop or swelled portion arranged
45 to pass over said support, substantially as described.

5. In a car having folding sides and roof-sections, the combination of a chain or cable for drawing the same from an open to a closed
55 position, and means around which said cord may be looped to hold said movable parts in position, substantially as described.

6. In a car and in combination with the folding sections thereof, a chain or cable for drawing said folding sections from an open
60 to a closed position, a drum for winding said chain, a shaft on the car running longitudinally thereof, gearing between said shaft and said drum, and means for turning said shaft, substantially as described.

7. In a car, and in combination with the movable sections thereof, means for drawing

said sections in position comprising a shaft having a toothed part as the wheel 45, and means for locking said toothed part, substantially as described. 70

8. In a car, and in combination with the movable sections thereof, means for drawing said sections in position comprising a shaft having a toothed part as the wheel 45, and means for locking said toothed part, said
75 means comprising a quadrant provided with teeth coacting with said toothed part, substantially as described.

9. In a car, and in combination with a movable side section and a second part arranged to swing against the same, one of said parts having an opening therein, and a bolt or lock connected with the other of said parts and arranged to project through said opening,
80 substantially as described. 85

10. In a car and in combination with two movable parts thereof, arranged to fold against each other, an opening in one of said parts, a lock or bolt on the other of said parts arranged to coact with the opening and a handle projecting downward when locked and arranged to control the movement of said bolt or lock, substantially as described.

11. In a car, end sections, channel-irons connecting said end sections, and a running-board supported on said channel-irons, substantially as described. 95

12. In a car, movable side sections, end sections connecting the same, a running-board connected with said end sections, and a suspending device as the web 12 for trussing said running-board in position, substantially as described. 100

13. In a car, end sections, a running-board connected with said end sections, and a web located under said running-board and trussing the same in position, substantially as described. 105

14. In a car, end sections, having channel-irons connecting them, and movable roof-sections having their ends swinging within the channels of said irons, substantially as described. 110

15. In a car, end sections, channel-iron portions connecting said end portions, and movable roof-sections having angle-iron ends arranged to fit within the channels of said channel portions, substantially as described. 115

16. In a car, end sections connected by channel-irons, and movable roof-sections having angular extensions arranged to project and fit within said channel-irons, substantially as described. 120

17. In a car, end sections connected by channel-irons, movable side sections and roof-sections arranged to fold together, and having angular extensions arranged to fold within the channel-iron connecting said ends when the said movable sections are folded to close the car, substantially as described. 125 130

18. In a car, end sections connected by channel-irons, a running-board connected with said channel-irons, movable sides and

roof-sections connected with the car and arranged to be folded into open position or to close the car, the said movable sections having angular extensions fitting within the channels of said irons, and means for swinging said movable sections in position, substantially as described.

19. In a car, end sections connected by channel-irons, a running-board connected with said channel-irons, movable sides and roof-sections connected with the car and arranged to be folded into open position or to close the car, the said movable sections having angular extensions fitting within the channels of said irons, and means for swinging said movable sections in position, said means comprising swinging lifting-bars and chains or cables for swinging the same in position, substantially as described.

20. In a car, a movable side, a hinged joint therefor, a space behind said hinged joint, and a bar arranged in said space, substantially as described.

21. In a car, a movable side, a hinged joint therefor, a space behind said hinged joint, a bar arranged in said space, and means for moving said bar behind said hinged joint, substantially as described.

22. In a car, a movable side, a hinged joint therefor, a space behind said hinged joint, a bar arranged in said space, and a pivoted

handle for moving said bar longitudinally, substantially as described.

23. In a car, an upright forming a connection between the sides and floor, comprising an upright portion and a member as the bracket 5^a extending laterally and in a horizontal plane and adapted to have the floor of the car rest thereon; substantially as described.

24. In a car and in combination with the sides and the floor-beams, an upright for connecting said sides and floor-beams, said upright comprising an upright portion secured to the sides of the car, and a member as the bracket 5^a extending laterally in a horizontal plane and having the floor supported thereon, substantially as described.

25. In a car and in combination with the sides and a beam supporting the floor, an upright for connecting said sides and beam, said upright comprising an upright member secured to the sides of the car and a member as the bracket 5^a extending laterally in a horizontal plane and having said beam resting thereon, substantially as described.

Signed by me this 11th day of March, 1902.

HORACE M. HOOVER.

Witnesses:

BESSIE LECKLIDER,
FRANK MURPHY.