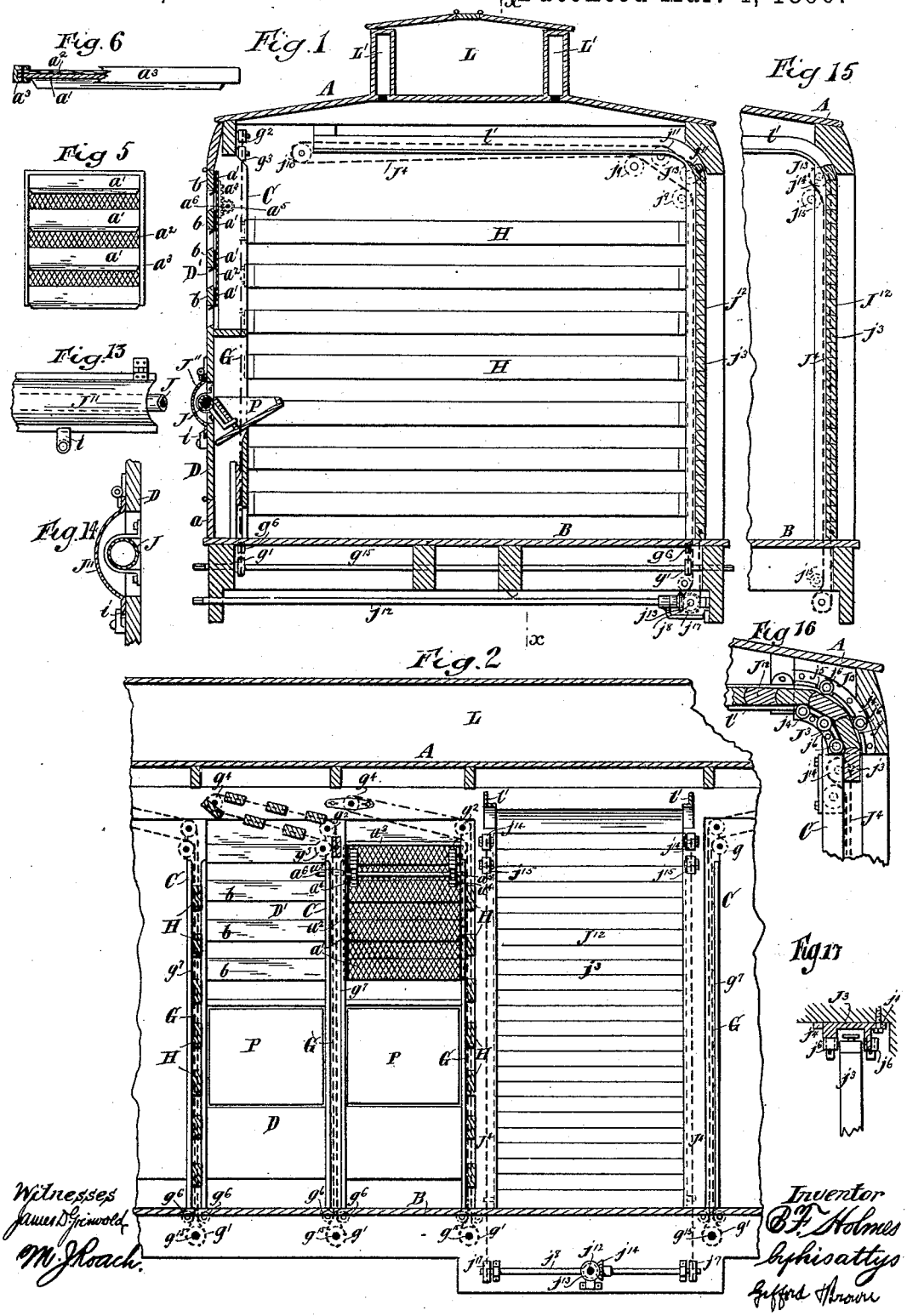
(No Model.) 2 Sheets—Sheet 1.

B. F. HOLMES.

STOCK CAR.

No. 422,413. Patented Mar. 4, 1890.



(No Model.) 2 Sheets—Sheet 2.

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Fig. 4

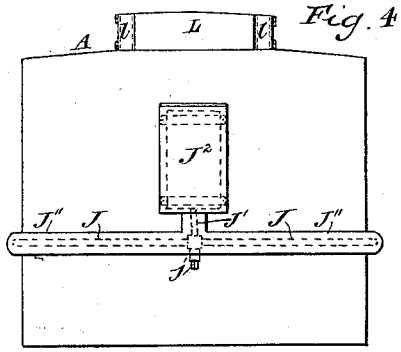


Fig. 3

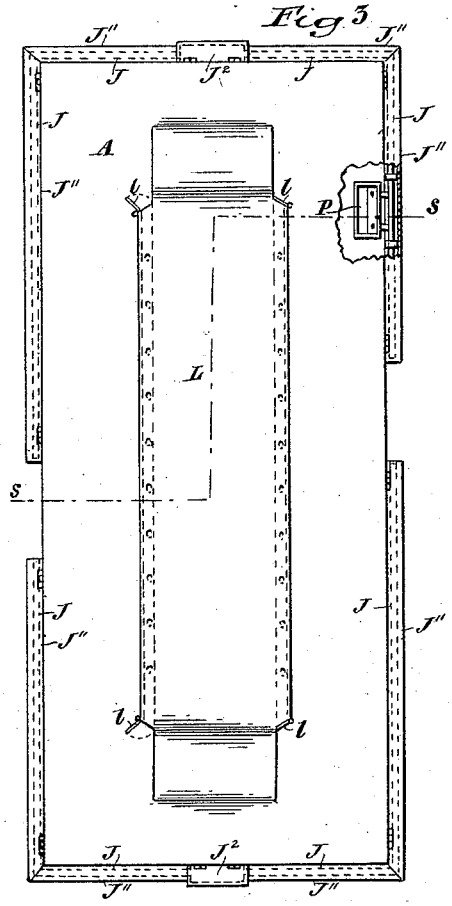


Fig. 9

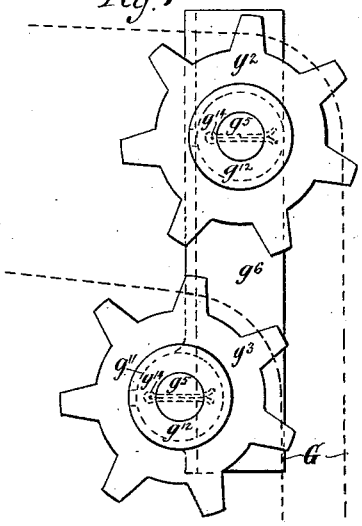


Fig. 10

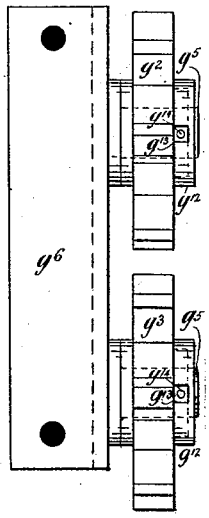


Fig. 11

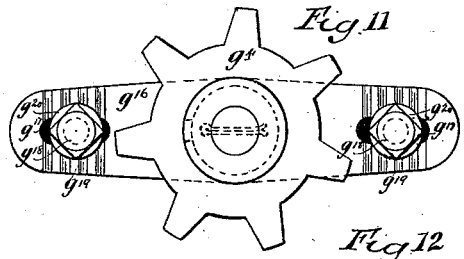


Fig. 12

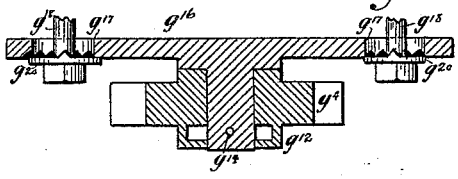


Fig. 8

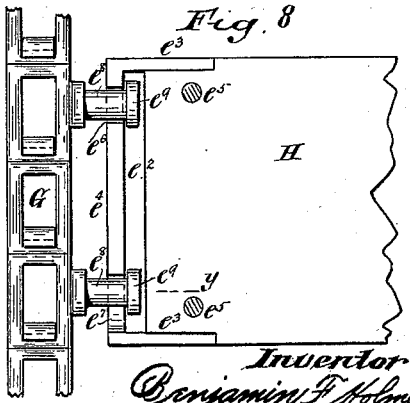
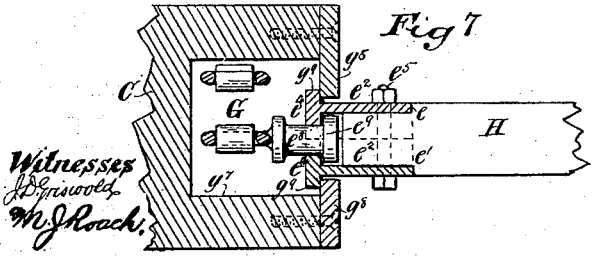


Fig. 7



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Inventor
Benjamin F. Holmes
by his attorneys
Gifford & Brown

UNITED STATES PATENT OFFICE.

BENJAMIN F. HOLMES, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN LIVE STOCK EXPRESS COMPANY, OF SAME PLACE.

STOCK-CAR.

SPECIFICATION forming part of Letters Patent No. 422,413, dated March 4, 1890.

Application filed June 23, 1887. Serial No. 242,225. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. HOLMES, of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Stock-Cars, of which the following is a specification.

I will describe a stock-car embodying my improvement in detail, and then point out the novel features in claims.

I have only illustrated in the accompanying drawings such portions of a stock-car as are conducive to a clear understanding of my improvement.

Figure 1 is a transverse vertical section of a stock-car embodying my improvement, taken in the plane of the dotted line *s s*, Fig. 3. Fig. 2 is a longitudinal section thereof, taken on the plane of the dotted line *x x*, Fig. 1. Fig. 3 is a plan or top view of the car, a certain portion being broken away to disclose a part which would otherwise have been concealed. Fig. 4 is an end view of the car. Fig. 5 is an outside view of one of a number of shutters employed in the car. Fig. 6 is a view of the same looking from the top and partly in section. Fig. 7 is a transverse section of a portion of one of the stanchions of a car and of one of certain sprocket-chains, showing means for securing the sprocket-chains to slats comprised in movable partitions employed in the car. Fig. 8 is a side elevation of a portion of a sprocket-chain and further illustrating the means for securing the same to the said slats. Fig. 9 is a face view of certain sprocket-wheels over which said sprocket-chains pass and a plate to which they are attached. Fig. 10 is an edge view of said sprocket-wheels and a side view of the plate. Fig. 11 is a face view of one of a number of other sprocket-wheels and plates around which said sprocket-chains pass. Fig. 12 is a section of the same, taken on the plane of the dotted line *y y*, Fig. 11. Figs. 7 and 12 are drawn to an enlarged scale. Fig. 13 is a face view of a portion of a certain pipe-protector employed in the car. Fig. 14 is a vertical section of the same. Fig. 15 is a vertical section of a portion of the side of a car, showing a modified form of means for raising and lowering a door employed in the car. Fig. 16 is a view on an enlarged scale and partly in section illustrating a portion of a car and the means employed to cause the door when being raised or lowered to pass around a curve. Fig. 17 is a detail showing part of the said means.

A designates the roof of the car, and B the floor.

C designates stanchions extending from the floor to the roof and acting as supports for the latter.

The portions D of the sides of the car are, as shown, continuous for a distance above the floor, and are provided at their lower edges with hinged doors *a*, which may be opened for the purpose of cleaning the floor of the car.

The portions D′ of the side of the car are composed of slats *b*, extending lengthwise of the car and so arranged that spaces will be left between the slats. Preferably the upper edges of the slats will incline outwardly and downwardly. I have shown them so constructed in Fig. 1. When the spaces between the slats are uncovered, air may circulate freely through the same. It is often desirable, however, to cover the spaces between the slats in case of storms or for other reason, and I employ sliding shutters for this purpose. These shutters are illustrated particularly in Figs. 1, 2, and 5.

I construct the shutters as follows: I take sheet-metal slats a', preferably galvanized iron, which slats shall about equal in width the width of the spaces between the slats *b* of the car. Against these slats I place wire-netting a^2, preferably made of galvanized iron wire. Having so arranged the slats *a* that the spaces between them about equal the spaces between the slats *b*, I secure the whole together by means of a metal strip a^3, extending about the sides and one end of the shutter and pinched over the same. Preferably I rivet the strip a^3 to the slats and the netting, as shown more clearly in Fig. 6. These shutters slide up and down in vertical grooves in the sides of the stanchions C. These grooves are shown more clearly in dotted outline in Fig. 2. I have shown convenient means for raising and lowering them, consisting in rack-bars a^4, secured to the shutters near the tops and sides of the latter. They may be so secured by rivets or otherwise. Adapted to engage with these rack-

bars are pinions a^5, which pinions are keyed on a shaft a^6, extending lengthwise of the car and journaled in suitable bearings in the stanchions C. By rotating the shaft the shutters may be raised or lowered, as desired. It is to be understood that all the shutters will be raised and lowered simultaneously. I have shown the shutters so arranged that when elevated the slats a thereof will be opposite the slats b of the car, and the spaces between the slats a b will be open, save for the wire-netting which covers them. When lowered, the slats a will cover the spaces between the slats b. The use of wire-netting is advantageous, because it tends to exclude dust and dirt which might otherwise enter. The lower edges of the slats a, I have shown as inclined outwardly and downwardly, whereby when the said slats are lowered the said inclined portions will act as rain-sheds.

In stock-cars constructed according to my improvement partitions are employed for separating the stock. These partitions are composed of slats H, suitably united together so as to leave spaces between them and allow of flexibility of the partitions in a direction transverse to the lengths of the slats. These partitions are to be elevated and lowered as occasion requires. I have shown means for elevating and lowering them, consisting in endless chains G. The chains G are sprocket-chains, and I have illustrated more clearly in Figs. 7 and 8 the means I employ for securing the slats to the sprocket-chains. The ends of each of the slats are provided with metallic caps composed of two sections e e'. These sections embrace the ends of the slats, one upon each side. They are composed of side portions e^2, top and bottom flanges e^3, and end flanges e^4. The end portions of the slats are preferably cut away, so that when the sections e e' are in place their side and top and bottom surfaces will be flush with the corresponding surfaces of the slats. The sections e e' having been placed about the end portions of the slats, they are secured thereon by means of bolts e^5, extending transversely through the sections and the slats. When thus secured in place, the edges of the flanges e^3 e^4 will preferably meet, except as hereinafter stated. When in place on the slats, the sections e e' will preferably extend for some distance beyond the ends of the slats, whereby spaces will be formed between the ends of the slats and the end flanges e^4 of the sections e e' of the caps. Each of the end flanges e^4 has formed in its edge a semicircular recess e^6, which when the portions e e' are secured on the slats forms a circular aperture through the end of the cap. As shown, this aperture is near the top of the caps. Each of these end flanges has formed in its edge also, as shown, near its lower end, a longitudinal recess e^7, which recess extends for some distance in the direction of the flange and quite to the lower end thereof. When the sections e e' are in place on the slats, the recesses e^7 will be opposite each other and form a longitudinal slot in the end of the cap. The sprocket-chains are provided at intervals in their lengths with projections or lugs e^8. These projections are, as shown, cylindrical and may be formed with the links of the chains. The outer ends of the projections are provided with flanged heads e^9. Previous to securing the sections e e' of the caps on the slats the projections e^8 are brought into such position that when said sections are secured on the slats one of them will extend through the circular aperture formed by the semicircular recesses e^6, and the other will extend through the slot formed by the recesses e^7. The heads e^9 on the projections e^8 will then be within the space between the ends of the slats and the end flanges e^4 of the sections e e' and the outward movement of the projections will be prevented. By this means the chains will be secured to the slats. By providing the ends of the caps with longitudinal slots, as described, opportunity is afforded for movement of the projections e^8 toward and from each other, which movement will occur to a greater or less extent as the partitions are moved around curves, in manner to be now described.

The sprocket-chains G extend over and around sprocket-wheels g' g^2 g^3 g^4. The sprocket-wheels g' are located beneath the floor of the car and are mounted upon shafts g^{15}, extending transversely to the length of the car and journaled in the frame thereof. The sprocket-wheels g^2 g^3 are located near the roof of the car and nearly above the sprocket-wheel g'. They are mounted upon studs g^5, formed upon metal plates g^6, which metal plates are secured to the stanchions C. The sprocket-wheels g^4 are located nearer the roof of the car than the wheels g^2 g^3 and at a considerable distance therefrom, so that the sprocket-chains will pass upwardly at an angle from the wheels g^2 g^3 to the wheels g^4, as shown more clearly in Fig. 2. The wheels g^4 are mounted upon suitable studs extending from plates g^{16}, secured to the frame of the car. It is very desirable that the sprocket-chains when moving up and down in a vertical plane should travel as closely together as possible in order that as little space may be taken up by the partitions and their appurtenances as possible. For this reason I secure to the under side of the floor of the car anti-friction rollers g^6. These anti-friction rollers are above but in proximity to the sprocket-wheels g'. The two portions of the sprocket-chains pass upon the inside of the anti-friction rollers, which latter are in such near proximity to each other as to cause the two portions of the sprocket-chains to be brought close together, as shown more clearly in Fig. 2. The two portions of the sprocket-chains extend through longitudinal grooves g^7, formed in the faces of the stanchions C, as shown more clearly in Fig. 7. Metal plates g^8 are secured by screws or otherwise to the

front edges of the portions of the stanchions forming the side walls of the grooves. These plates extend for a distance over the front of the grooves, but do not meet. The caps on the ends of the slats H extend into the grooves g^7 and through the spaces between the metal plates g^8. Outwardly-extending flanges g^9, with which the caps are provided, extend over the plates g^8 inside the grooves, and thus prevent outward movement of the slats H. The plates g^8 act as guides for the partitions in their up and down movements. In order to maintain the vertical portions of the sprocket-chains in their relative nearness of juxtaposition, I arrange the sprocket-wheels g^2 g^3 as nearly in vertical line with each other as possible and still maintain the separation of the vertical portions of the sprocket-chains. I have found it expedient to secure the wheels g^2 g^3 upon metal plates g^6. These plates are L-shaped in the cross-section and are fitted upon corners of the stanchions C. I prefer to secure them to the stanchions by screws or bolts passing through suitable apertures in that portion of the plates which extends at the sides of the stanchions. I have shown bolt-holes for this purpose in Fig. 10. The studs g^5 may be cast with the plates g^8, and one of said studs is shown as extending from a projecting portion g^{11}, formed on the plates.

The construction of the sprocket-wheels g^2 g^3 and their mode of attachment to the studs g^5 are more clearly illustrated in Fig. 12, which illustrates the sprocket-wheel g^4, the construction being alike in both cases. Each of the sprocket-wheels is provided with a hollow hub g^{12}, which hub has upon one side an opening g^{13}. (Shown more clearly in Fig. 10.) Near the ends of the studs are transversely-extending apertures adapted to receive cotter-pins g^{14}. The wheels g^2 g^3 g^4 having been placed on the studs, the cotter-pins g^{14} are passed through the opening g^{13} and the apertures in the ends of the studs, whereby the wheels are secured on the studs.

The plates g^{16}, upon which the sprocket-wheels g^4 are mounted, are so constructed as to be adjusted into different positions in order to vary the tension upon the sprocket-chains G as desired. I have shown this construction in Figs. 11 and 12. The plates are provided near their ends with longitudinally-extending slots g^{17}, through which extend bolts g^{18}, by which the plates are secured to the car. Extending at approximately right angles to the slots g^{17} and across the same are a number of parallel grooves g^{19}, forming between them parallel ribs. Washers g^{20} are employed, which washers have formed upon their inner faces ribs corresponding to the grooves on the faces of the plates. By loosening the bolts the plates may be moved longitudinally into any desired position, and then by tightening the bolts may be secured in such position.

In order to elevate and lower the partitions, the shafts g^{15} are rotated. This may be done by applying a crank to squared ends of the shafts.

J designates pipes for water. As shown more clearly in Fig. 4, these pipes extend to branch pipes J′, which communicate with water-tanks J^2, located at the ends of the car. At the joints between the pipes J J′ are cocks j, which may be operated to supply water to the pipes J when desired. The pipes J extend in opposite directions along the ends of the car, and then parallel with each other along the sides of the car. I have shown two sets of the pipes J, one extending from one end of the car and the other from the opposite end. The pipes of each set only extend as far as the doorways upon each side of the car. These pipes as usually employed are exposed to the external atmosphere on the outside and to the internal atmosphere upon the inside of the car. In other words, the pipes J are supported upon the frame of the car, a longitudinal space being left in the portion D of the sides of the car to receive them in such manner that portions of the pipes extend to the exterior of the car and portions to the inside of the car. In order to prevent the freezing of the pipes, I provide protectors J^{11} to extend over and cover the pipes upon the exterior of the car. These protectors are preferably made of sheet metal, and, as shown, they are longitudinally curved, so that they may be secured both at their top and bottom edges to the sides of the car, and still avoid coming in contact with the pipes J. These protectors are hinged at their upper edges to the sides of the car, so that they may be swung up and away from the pipes when desirable. I have shown turn-buttons i on the sides of the car, which may be turned to secure the protectors at their lower edges when in position about the pipes. It will be perceived that these protectors form air-chambers for the pipes, which, being open to the interior of the car, will permit heat from within the car to enter, and thereby obviate any tendency to freeze.

I will now describe certain means which I employ for ventilating the car other than that previously referred to.

Upon the roof of the car and about midway in its width is a receptacle L for hay or other fodder to be fed to the stock. This receptacle extends for a considerable distance in the direction of the length of the car. It is provided with hinged covers upon its upper sides.

L′ designates air-chambers arranged at and constituting the sides of the receptacle L and extending in the direction of the length of the latter. These chambers are, as shown, narrower than they are deep and have perforations or apertures, as shown, in their bottoms, which afford communication between the interior of the car and the air-chambers. These chambers are closed at the top and are provided at their ends with doors l, which may be opened to afford free passage of air through the chambers from end to end.

In Fig. 3 I have illustrated the doors of one

of the chambers as open and those of the other chamber as closed. Foul air from within the car rises through the said perforations into the air-chamber L′, and when the doors *l* are open a current of air will circulate through the air-chambers, carrying off the foul air therefrom. This action is of course greatly augmented when the car is in motion. I have shown two of such air-chambers; but I may use one or any other desired number, and I may arrange them in different relations to the receptacle L than those shown.

The side doors J^{12} of the car are composed of slats j^3, secured together in the usual or any convenient manner, so that the doors will be flexible in the direction of their lengths, in order to enable them to be moved into a vertical position to close the doorways or into a horizontal position beneath and near the roof of the car in order to leave the doorways open. This is a common form of door; but I employ certain novel guides for facilitating the passage of the doors around the curves near the roof of the car (indicated by the letter J^{13}) when the doors are assuming their different positions. These guides consist of curved pieces of metal J^3, which may be cast or formed in any other suitable manner. As shown more clearly in Fig. 17, they are U-shaped in the cross-section and their outer sides are provided with flanges j^4, which may be bolted or otherwise secured to the wood-work of the car. At intervals in the lengths of the sides of the guides spaces j^5 are formed, in which are arranged anti-friction rollers or bowls j^6. These rollers or bowls are mounted upon studs, which are preferably cast with the guides when the latter are formed by casting. When the doors are being opened or closed, they will come in contact near their side edges with the rollers or bowls j^6, and their passage around the curves J^{13} will thereby be materially facilitated.

In Fig. 1 I have shown means for raising and lowering the doors, consisting in endless chains J^4, passing around pulleys j^{17}, mounted on a shaft j^8 below the car, journaled in suitable bearings on the frame thereof, as shown more clearly in Fig. 2. The chains are arranged beyond the side edges of the doors, and one of their ends is secured to the door near the bottom of the latter and the other of their ends near the top thereof. When the doors are down, the chains pass upwardly from the pulleys j^{17} to and over pulleys j^9, thence horizontally to and around pulleys j^{10}, thence backwardly on themselves to and over pulleys j^{11}, and thence to the tops of the doors. Of course the position of the chains relatively to the pulleys j^{11} will be changed as the doors are raised. The pulleys in Fig. 1 I have shown only in dotted outline. They are mounted upon studs secured in any suitable manner to the frame of the car. When the doors occupy their horizontal position near the roof of the car, they are supported upon metal supports *l*′, here shown as L-shaped in cross-section. These supports are secured to the frame of the car in any suitable manner. Motion is transmitted to the shafts j^8 by shafts j^{12}, of which I have shown but one. The shafts j^{12} extend transversely to the length of the car and beneath the same. They are journaled in suitable bearings thereon. Upon their inner ends are mounted bevel gear-wheels j^{13}, which gear-wheels engage other bevel gear-wheels j^{14} on the shaft j^8. When the shafts j^{12} are rotated, rotary motion is transmitted to the shafts j^8, whereby the doors may be raised or lowered. The shafts j^{12} may be rotated by means of a hand-crank engaging squared heads on the outer ends of the shafts.

In Figs. 2, 15, and 16 I have illustrated a different mode of arranging the chains for elevating and lowering the doors and of the pulleys over which the chains pass, also a different mode of attaching the chains to the door. In this example of my improvement the chains are secured to the lower ends of the doors only. Only two pulleys are shown for each chain, the pulleys j^{17} and pulleys j^{14}, arranged near the top of the car. I have also shown idler rollers or bowls j^{15}, for causing the standing parts of the chains to travel in close proximity to each other.

P designates a trough for feed and water, of which I may use any desired number. They may be mounted on the pipes J or in any other suitable manner.

I do not claim, broadly, herein a movable partition composed of slats and spacing-links hinged at each end thereof, as said feature is claimed by me in another application numbered 181,985.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a stock-car, the combination, with movable partitions composed of slats, of caps on said slats provided with apertures in their ends, the said caps extending beyond the ends of the slats to form spaces between the ends of the caps and the slats, sprocket-chains, and projections on said chains extending through said apertures and engaging the caps, substantially as specified.

2. In a stock-car, the combination, with movable partitions composed of slats, of caps on said slats provided with apertures in their ends and extended beyond the ends of the slats to form spaces between the ends of the caps and the slats, projections on said chains extending through said apertures and engaging the caps, stanchions provided with longitudinal grooves, through which said chains extend, plates secured to the fronts of the stanchions and extending over said grooves, and flanges in said caps contacting with said plates, substantially as specified.

3. In a stock-car, the combination, with movable partitions composed of slats, of chains for elevating and lowering the partitions, stanchions for the car provided with longitudinal

grooves, through which said chains extend, plates secured to the stanchions above said grooves, two studs on each of said plates, and pulleys mounted on said studs, over which said chains pass, substantially as specified.

4. In a stock-car, the combination, with movable partitions composed of slats, of chains for elevating and lowering the partitions, stanchions for the car provided with longitudinal grooves, through which said chains extend, plates secured to the stanchions above said grooves, two studs on each of said plates provided with transverse apertures near their ends, pulleys mounted on said studs provided with hollow hubs having openings in their sides, and cotter-pins within the hollow hubs and extending through the said apertures in the studs, substantially as specified.

5. In a stock-car, the combination, with water-supply pipes exposed to both the inside and the outside of the car, of protectors for said pipes, arranged on the outside of the car and inclosing the same, substantially as specified.

6. In a stock-car, the combination, with water-supply pipes exposed to both the inside and outside of the car, of protectors for said pipes hinged to the outside of the car and normally inclosing the pipes, substantially as specified.

7. The combination, with a receptacle for feed arranged upon the top of the car and having hinged covers, of an air-chamber at the side of said receptacle closed at its top, perforations in the roof of the car opening into said air-chamber, and doors at each end of the air-chamber, substantially as specified.

8. In a stock-car, the combination, with a receptacle for feed arranged upon the roof of the car, provided with hinged covers, of an air-chamber upon each side of said receptacle and forming the side walls thereof, each of said air-chambers being closed at the top and provided with openings communicating with the interior of the car, and doors at the ends of the air-chambers, substantially as specified.

9. In a stock-car, the combination, with movable partitions, of chains for raising and lowering said partitions, pulleys over which said chains pass, and rollers or bowls adjacent to said pulleys forcing the standing parts of said chains into close proximity to each other, substantially as specified.

BENJAMIN F. HOLMES.

Witnesses:
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