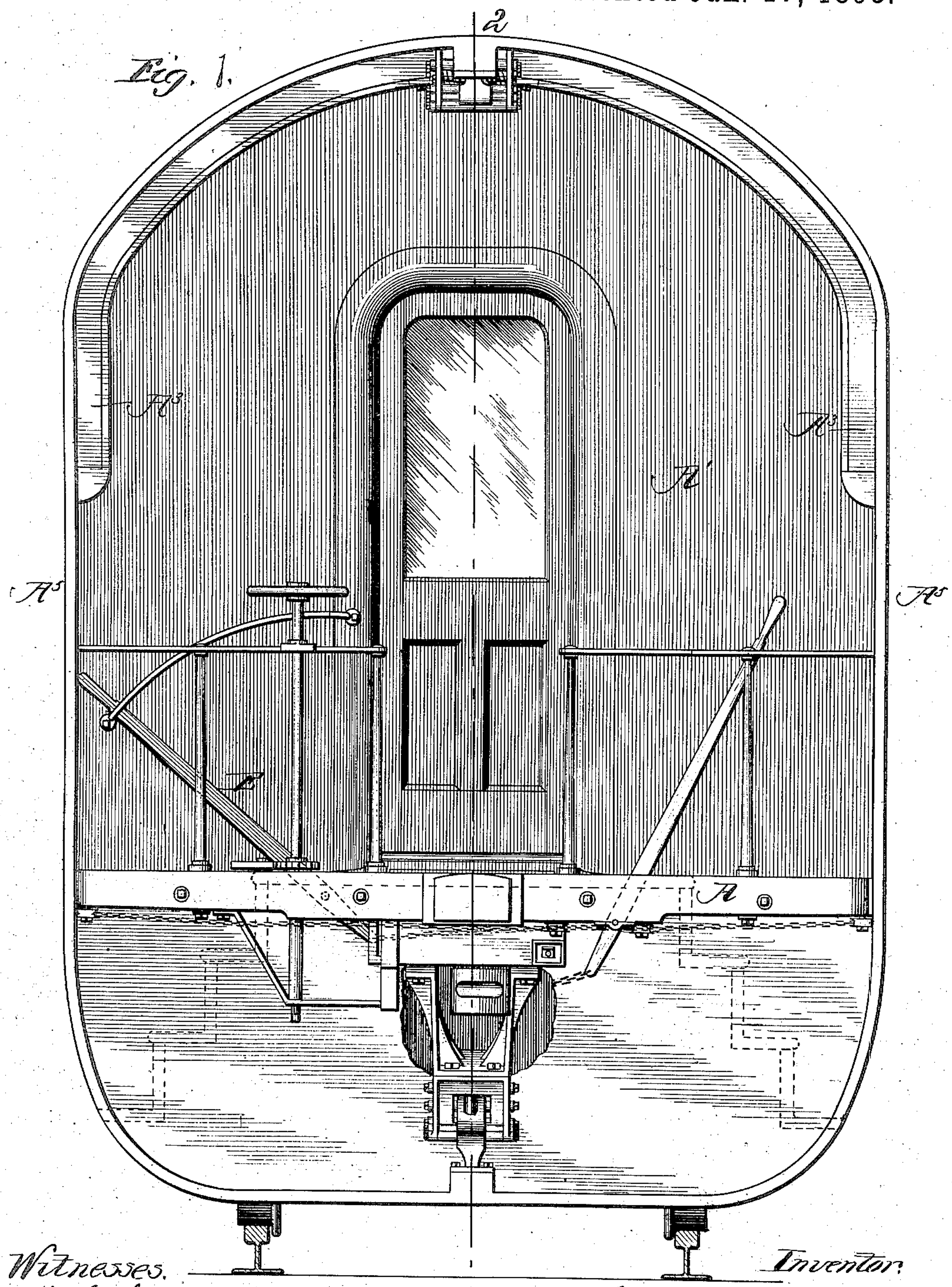
7 Sheets—Sheet 1.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.



Witnesses.
W. C. Corlies
Fredk. H. Mile

Inventor:
Frederick U. Adams.
By Dayton Poole & Brown,
Attys.

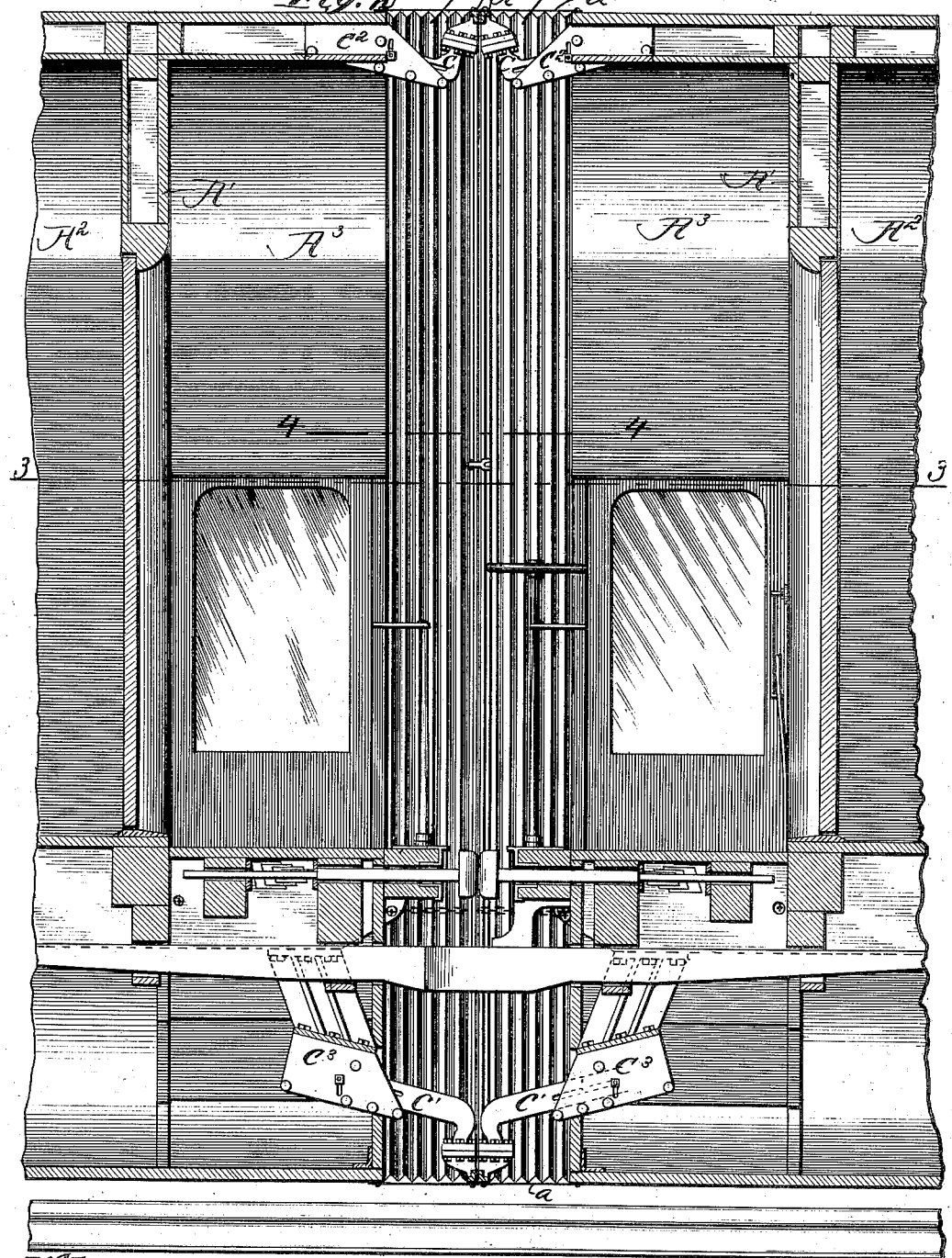
(No Model.) 7 Sheets—Sheet 2.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.

Fig. 2.



Witnesses.
W. C. Coolidge
Fredk. H. Miles.

Inventor.
Frederick U. Adams.
By Dayton, Poole & Brown,
Attys.

(No Model.) 7 Sheets—Sheet 3.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.

Fig. 3

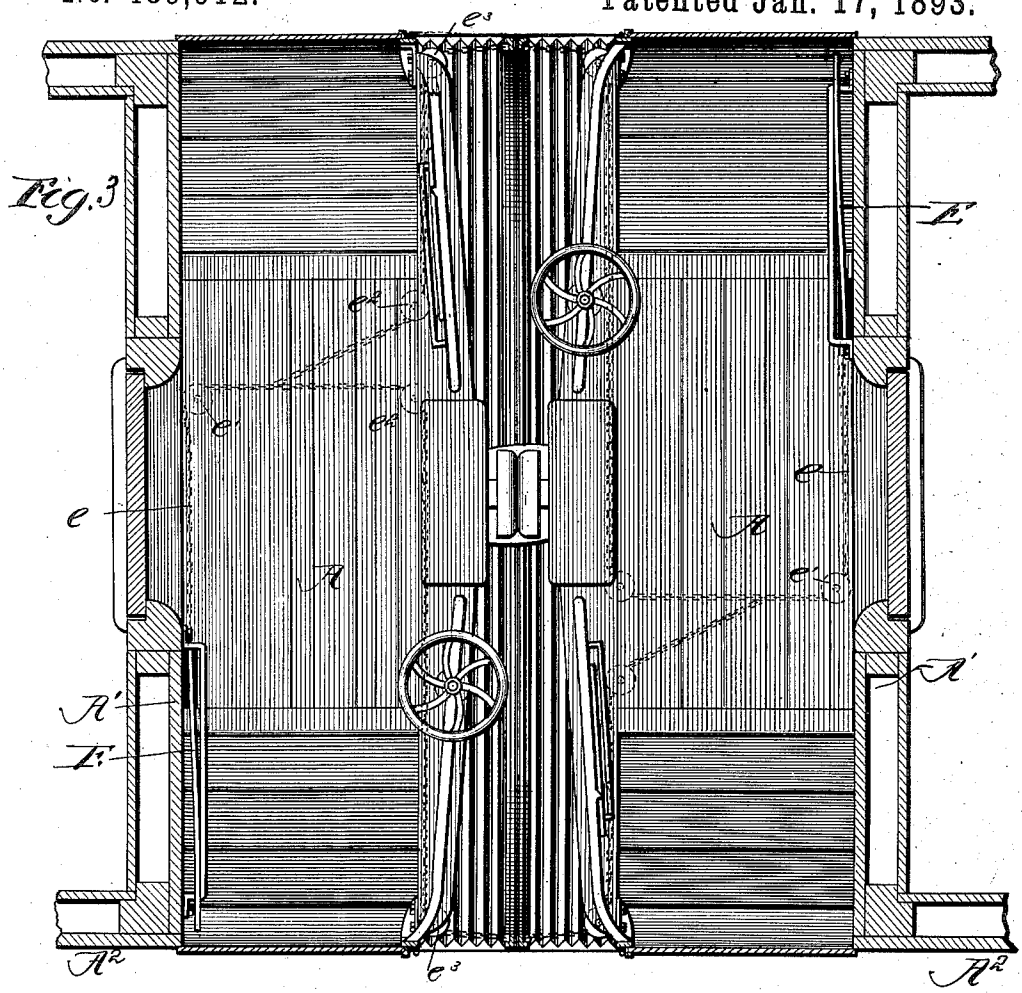


Fig. 4.

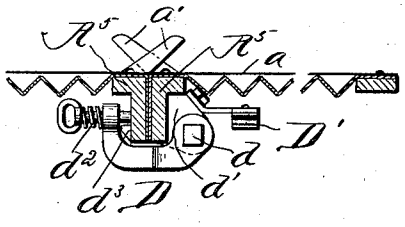
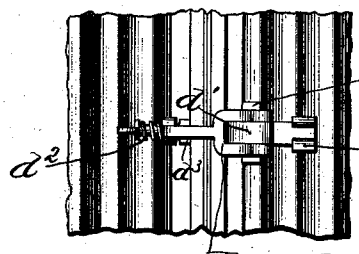


Fig. 5.



Witnesses.
N. C. Corliss
Fredk. A. Mills.

Inventor.
Frederick U. Adams.
By Dayton, Poole & Brown.
Att'ys.

(No Model.) 7 Sheets—Sheet 4.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.

Fig. 6

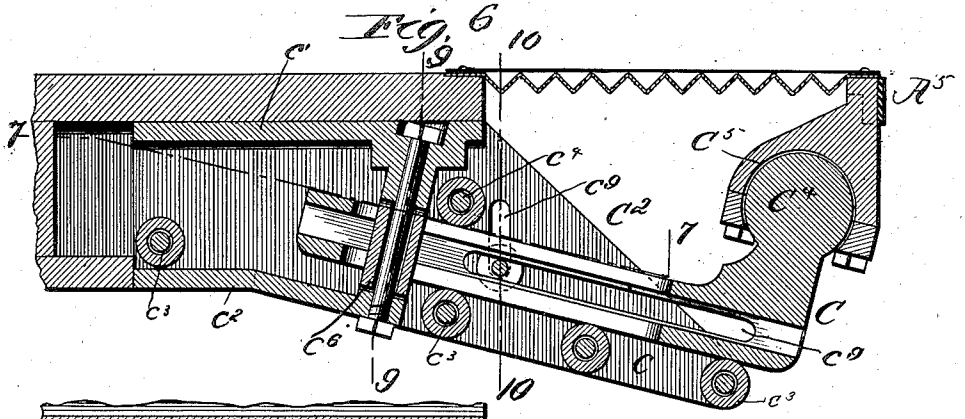


Fig. 7.

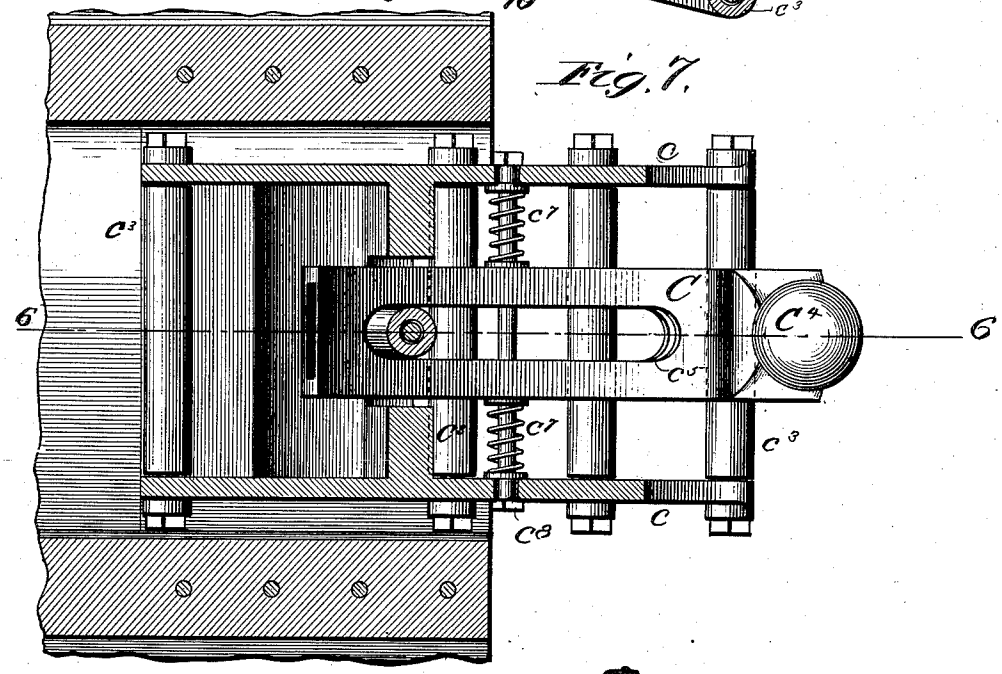
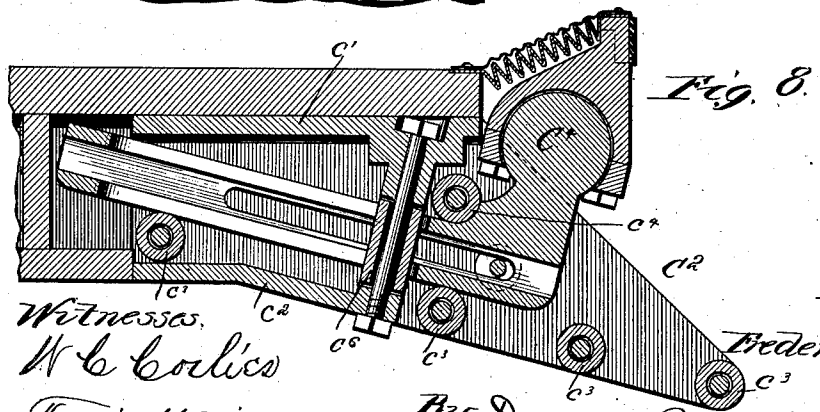


Fig. 8.



Witnesses.
W. C. Corliss
Fredk. H. Miller.

Inventor.
Frederick U. Adams
By Dayton, Poole & Brown
Attys

(No Model.) 7 Sheets—Sheet 5.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.

Fig. 9

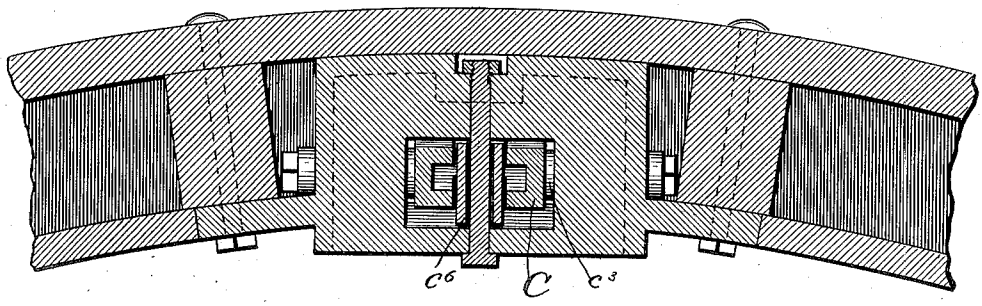


Fig. 10

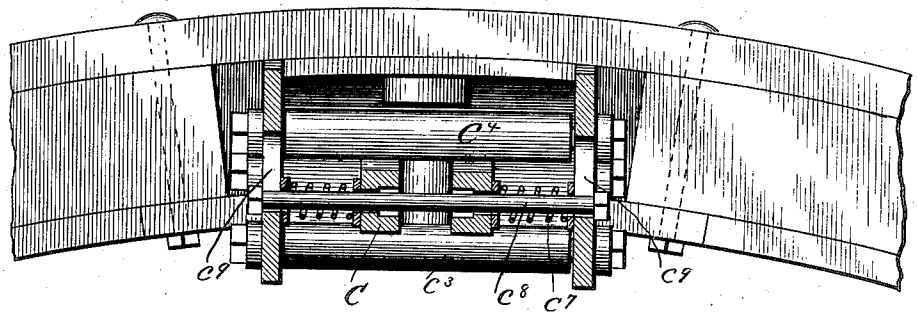


Fig. 11

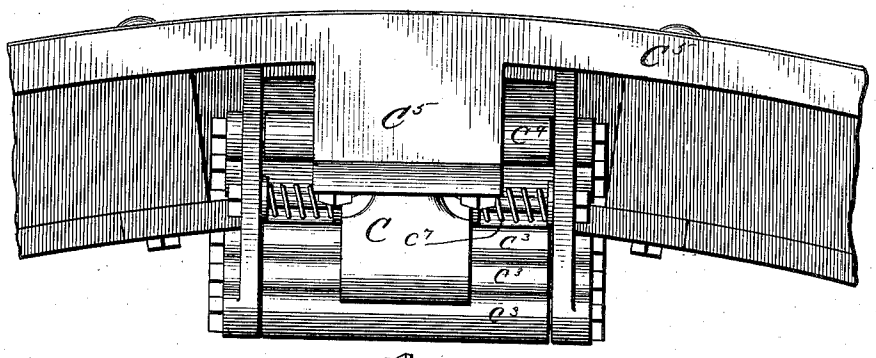
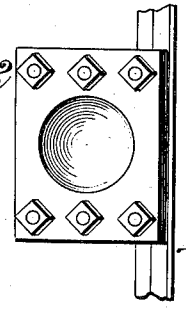


Fig. 12



Witnesses.
W. C. Corlies
Fredk. H. Miles.

Inventor.
Frederick U. Adams.
By Dayton, Poole & Brown.
Attys.

(No Model.)

7 Sheets—Sheet 6.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912. Patented Jan. 17, 1893.

Fig. 13.

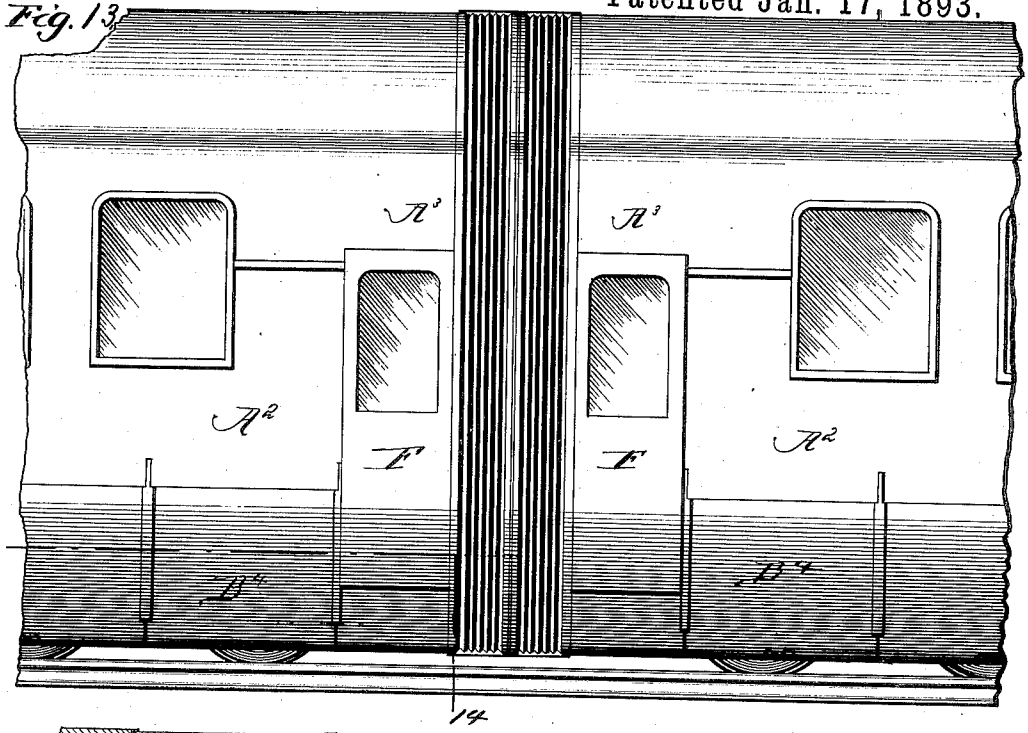


Fig. 14.

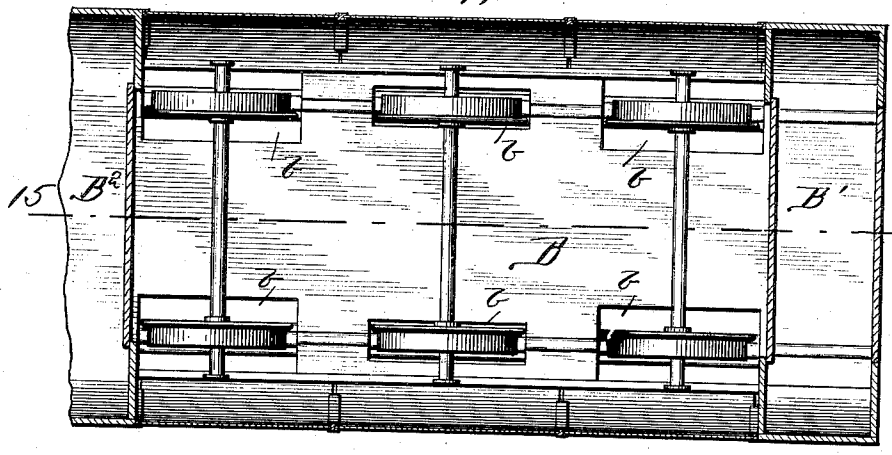
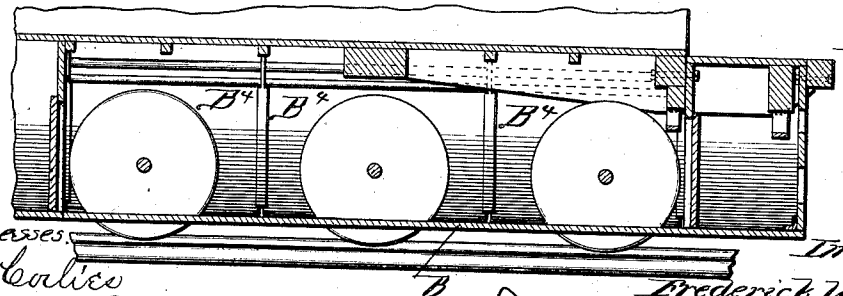


Fig. 15.



Witnesses.
W. C. Collier
Fredk. A. Miller.

Inventor
Frederick U. Adams.
By Dayton, Poole & Brown.
Attys.

(No Model.)

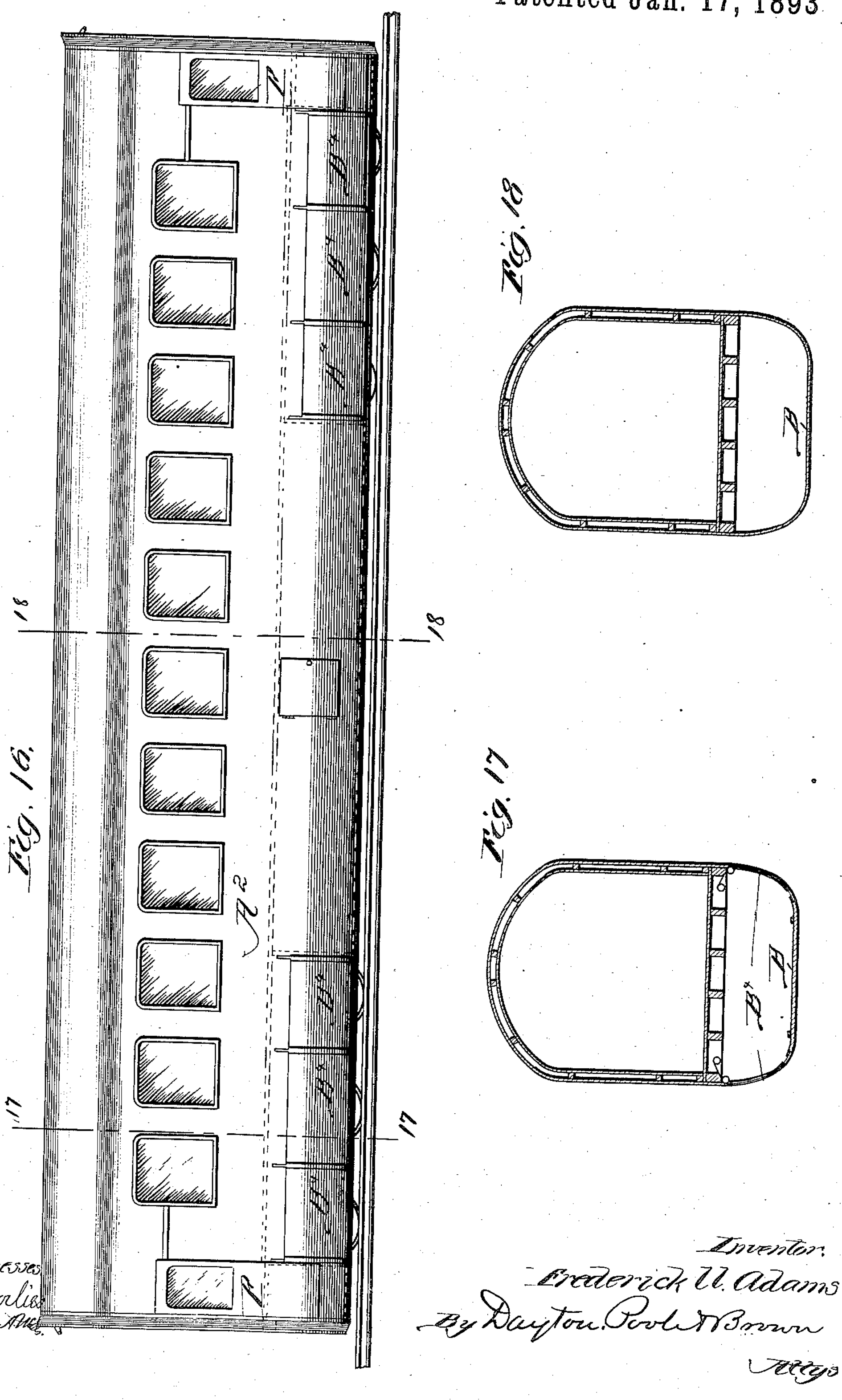
7 Sheets—Sheet 7.

F. U. ADAMS.

RAILWAY CAR.

No. 489,912.

Patented Jan. 17, 1893.



Witnesses
W. C. Corlies
Fredk. A. Mc...

Inventor:
Frederick U. Adams
By Dayton, Poole & Brown
Attys

UNITED STATES PATENT OFFICE.

FREDERICK U. ADAMS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO ROBERT S. McCORMICK, OF SAME PLACE.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 489,912, dated January 17, 1893.

Application filed December 5, 1891. Renewed November 9, 1892. Serial No. 451,431. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK U. ADAMS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has reference primarily to hoods applied to the ends of railway cars for the purpose of inclosing the space or a part of the space between them, and the platforms, if present. This feature of the invention is applicable to the ordinary forms of vestibules for cars, but it is herein shown in a form adapted to make the inclosures equal in extent in all directions with the transverse dimensions of the car so that when cars provided with the hoods, as herein described, are brought together the hoods will join in the planes of the various lateral and other longitudinal surfaces of the cars.

The invention is even shown with the hood extended below the platform as well as above it to form a prolongation of an inclosure for the running gear of the train, as proposed in a previous application, Serial No. 410,141.

The invention herein described also includes some features of construction in inclosures for the space beneath the cars as improvements upon those shown in my aforesaid prior application.

In the accompanying drawings: Figure 1 is an end view of a car provided with my improved hood or platform inclosure. Fig. 2 is a central vertical section in the line 2—2 of Fig. 1, of the hoods of two connected cars. Fig. 3 is a horizontal section in the plane of line 3—3 of Fig. 2. Fig. 4 is an enlarged detail in horizontal section in the line 4—4 of Fig. 2, looking downward, the figure especially showing a holding mechanism for retaining the marginal frames of hoods of connected cars together. Fig. 5 is a fragment in side elevation illustrating the clamp shown in top view in Fig. 4. Figs. 6 to 12 inclusive illustrate a practical form of means by which the gravity of the flexible portion of a hood or its gravity and resistance to movement in a vertical direction, tend to hold the hood extended; all these figures illustrating certain details on a uniform scale larger than that of the preceding Figs. 1, 2 and 3. Fig. 6 is a central vertical section in the line 6—6 of Fig. 7 of the upper suspending device for the flexible and extensible portion of the hood. Fig. 7 is partly a top view and partly a transverse section in the line 7—7 of Fig. 6. Fig. 8 is a vertical section corresponding with Fig. 6 but showing the hood support retracted and proportionately elevated. Fig. 9 is a nearly vertical transverse section in the line 9—9 of Fig. 6. Fig. 10 is a vertical transverse section in the line 10—10 of Fig. 6. Fig. 11 is a front view of the matters shown in Figs. 6, 7 and 8, the parts being in the positions shown in Figs. 6 and 7. Fig. 12 is an under side view of the socket piece of the ball and socket joint shown in Figs. 6, 7 and 8. Fig. 13 is a an external side view of two connected passenger cars having the running gear inclosed and provided with hoods corresponding in transverse dimensions with the car bodies thus extended to inclose the running gear. Fig. 14 is a horizontal section in the line 14—14 of Fig. 13. Fig. 15 is a vertical section in the line 15—15 of Fig. 14. Fig. 16 illustrates one entire car in side elevation having the body extended to embrace the running gear and the extensible portion of the hoods retracted. Fig. 17 is a vertical transverse section in the line 17—17 of Fig. 16. Fig. 18 is a vertical transverse section in the line 18—18 of Fig. 16. Figs. 13 to 18 inclusive are intended to especially illustrate certain improvements in the inclosures for the running gear and general space beneath the car as improvements in the construction set forth in my previous application Serial No. 410,141.

In the accompanying drawings cars are shown having end platforms and hoods composed of both rigid and flexible and extensible portions, but the flexible portions only may be employed on cars having side entrances and wanting the usual platforms.

A represents the platform of a railway passenger car, A′ the end of a car body adjacent

to the platform, and A^2 A^2 the sides of the car body. The inclosures for the platforms of two connected cars are formed of two hoods, one on each car and each consisting of a rigid portion containing the door or doors by which passengers reach the platform, and an extensible and collapsible portion in prolongation of said rigid part by which the hoods of adjacent cars maintain contact with each other and allow flexure of the train. As illustrated in the present case the rigid portion of the hood is a prolongation of the sides and top, or sides, top and bottom of the car body, in keeping with the purpose set forth in my said prior application for patent, but, in so far as the novel features connected with the extensible portion of the hood are concerned, they may be employed with fixed parts of the car or with vestibules such as have heretofore been used in vestibuled cars and without reference to the feature of flush connections between cars with which they are associated.

A^3 A^3 represent the rigid prolongations of the car body forming the rigid portion of the hood, and A^4 the extensible portion of the hood. The last mentioned or extensible portion A^4 of the hood is illustrated as being of the foliated or accordion type of extension having attachment at its inner edge to the margin of the fixed portion of the hood and being provided at its outer margin with a substantially rigid, open frame A^5. This frame A^5, as shown, extends from near the top of the car to a line within a few inches of the plane of the bottoms of the truck wheels, to within a few inches of the track, so as to conform with an inclosure for the running gear. In connection with the hood when made flush with the exterior of the car, as shown (for the purpose of lessening atmospheric resistance, as set forth in my aforesaid prior application) an outer and suitably elastic covering *a* may advantageously be stretched over the folding body of the hood, as seen in Figs. 3, 6 and 8, for the purpose of presenting a smoother surface to the atmosphere or wind. In this case the character of the folding base body may be considerably modified since it will not be relied on as the closing wall. The tendency of the elastic covering *a* to retract the hood in opposition to the force of gravity tending to project it may be overbalanced by the latter or separately counterbalanced by any suitable means.

The marginal frame A^5, attached to the extensible section A^4 of the hood, is upheld by suitable connections with the car body, here shown as consisting of one or more brackets C C′ arranged (if two are employed) one at the top and the other at the bottom of the hood and in the median line thereof. These brackets are pivotally connected with the hood frame A^5 and desirably by universal joints, as shown more distinctly in the enlarged detail Figs. 6, 7, 8 and 12. The brackets have also a backward and forward movement in supports C^2 C^3 and are adapted to move laterally in said supports. In their backward and forward movements they also respectively rise and fall so that, as the hood frame A^5 is retracted toward the car in a collapsing movement of the extensible portion A^4 of said hood, said hood frame will be lifted, and, in an opposite or outward movement it will fall. Gravity of the flexible hood therefore tends to project it and to hold it projected. Referring to Figs. 6 to 12 in explanation of these supporting devices for the flexible portion of the hood and its marginal frame, it will be noticed that the support C^2 consists of a frame embracing two parallel side pieces *c c* united by horizontal cross pieces *c′* c^2. Between the two parallel side pieces *c c* are mounted cross-bars c^3 c^3 in a line with each other and a cross-bar c^4 in a higher position. These cross-bars are preferably provided with, or consist of, rollers, as shown, and between the lower series c^3 and the upper bar c^4 is placed the shank of the bracket C which may therefore slide freely backwardly and forwardly lengthwise and in the inclined direction determined by the position of the said cross-bars. The cross-bars c^3 are shown as being four in number, one of which is about midway between the extreme cross-bars and the fourth of which is between the middle cross-bar and the outer one. The cross-bar c^4 is substantially over the middle cross-bar c^3 but in position to allow the bracket C to rise and fall at its outer end and tilt upon the middle cross-bar c^3 when said bracket is extended, as shown in Figs. 6 and 7. The bracket C has also a central longitudinal slot c^5 embracing a pin or roller-pin c^6 extending from the upper cross-plate *c′* to the lower one c^2 midway between the sides *c c* of the frame. The space between the sides *c c* of the bracket support is considerably greater than the width of the bracket C, as illustrated in Fig. 7, so that said bracket may vibrate laterally on the pin c^6 as occasion may require. It is however normally held in a central position parallel with the side bars *c c* either by the tendency of the extensible portion of the hood to maintain its direct projection, or, if necessary, by other or additional means. Additional devices for this purpose are shown consisting of springs c^7 arranged one at each side of the bracket C and between it and the side bars *c c*. As a convenient means for supporting these springs in place a rod c^8 extends from one side bar *c* to the other through a slot c^9 in the bracket, said rod passing through the coiled form of spring c^7 and carrying collars placed between said springs and the bracket. The ends of the bar c^8 rest in vertical slots c^9 which permit said rod to rise and fall in a vertical vibration of the bracket. At the outer end of the bracket the latter is provided with a ball C^4 fitted to a socket C^5 attached to the hood frame A^5. In any lateral movement of the frame, therefore, the bracket C will vibrate on its pivotal connection through the ball and socket joint with the frame A^5 and on its piv-

otal connection through the pin c^6 with the supporting frame C^2. So also when the hood frame A^5 rises and falls the bracket C will vibrate vertically, having movement at the same two points of jointed connection with the frame and bracket support. The hood frame A^5 may also rock on the ball and socket joint as a vertical axis either with or without accompanying vibration of the bracket in either direction. When the hood frame is in its outermost position it may therefore connect with the similar frame of an adjacent car, and the various movements incident to the flexure of the train may take place while the meeting frames of adjacent cars are held substantially from all lateral and vertical movement with respect to each other. The lower bracket C′ will be understood as having essentially the same construction as the bracket C, and the lower bracket support C^3 as the upper bracket support C^2. It is shown in Figs. 1 and 2 as being suspended a suitable distance beneath the platform to bring the bracket into proper position with reference to the downwardly extended hood frame.

Means are shown in Figs. 4 and 5 for guiding the hood plates A^5 into register and for holding them in that position and in contact with each other. The guiding devices may consist of outwardly inclined projections a', one or more on each side or on each side and on top and bottom of each hood plate, as illustrated in Fig. 4, the projections being arranged in such positions as to not interfere with each other when the end plates of two cars are brought together.

D represents a clamp hook pivoted at d to a lug d' projecting inwardly from one of the frame plates A^5 and provided with a spring latch bolt d^2 arranged to bear inwardly against or toward the opposite frame plate behind a flange or lug d^3 upon the latter. D′ is a form of spring catch intended to hold the clamp hook D in its retracted position and out of the way when two cars are to be coupled. Any desired number of such or other suitable hooks may be employed, arranged in a familiar manner to avoid interference with each other when the cars are coupled.

As a suitable means for forcibly retracting the extensible portion A^4 of the hood, E is a lever arranged in any convenient position where it will be accessible by a person standing on the platform, being here shown as pivoted between its ends at the level of the platform and adjacent to the end A′ of the car. To the lower and shorter arm of this lever is attached a chain e trained over a suitable pulley e' and having branches which run over pulleys e^2 e^3 into connection with the sides of the frame plate A^5, as best illustrated by dotted lines in Fig. 3. By operation of the lever E thus or similarly connected with the frame plate the latter may be pulled forcibly back whenever desired, in which movement it is raised by the arrangement of the supporting brackets, as before described. When released, it will tend to project itself and to maintain its extended position by gravity.

The housing for the running gear herein shown is intended to be made rigid with the body of the car and the lateral swaying movements of the car and the vibratory movements of the truck relative to the car body and upon its pivot or king-bolt, are provided for by making the openings b in the bottom of the housing B of sufficient size to permit these various movements. To prevent dust, smoke or cinders admitted through these openings from reaching the space between the cars and thus possibly reaching the interior of the cars, a partition B′ should be placed in position to cut off communication from the interior of the housing to the space between the cars, and desirably a similar partition B^2 will be placed at the opposite end of the truck to leave a central chamber of the housing also free from dust. At the extreme end of the rigid portion of the housing and under or nearly under the outer cross-beam of the platform, another partition B^3 is proposed, reaching from the bottom of the housing to said cross-beam. The object of this will be, in part, to strengthen this projecting portion of the housing and to prevent the space from being surreptitiously entered by tramps. This partition may, if desired, be placed in the lower portion of the hood frame. In any case the partitions B′ B^3, if employed, will be provided with suitable openings, as indicated in Fig. 2, for the passage of the coupling members, air pipes, &c. The portion of the housing opposite the trucks will have its sides constructed substantially as described in the former application referred to and as shown in Figs. 14 and 15, wherein B^4 B^4 are doors arranged one opposite each truck wheel to give access to the latter for inspection and oiling. As shown, these doors are of the self-winding curtain order having their rollers at the top, and catches or fastenings at the bottom. The central portion of the housing may be provided with similar or other form of doors to give access to the space there inclosed for any purpose. The projecting portions of the car sides forming the rigid parts of the hoods at opposite sides of the platform are provided with sliding doors F F, as here shown and as described in my said former application, or of any other desired construction. If the cars be destitute of platforms, as when provided with side entrances, these rigid portions of the hoods may be omitted or abbreviated.

It is manifest that the flexible and extensible hood, reaching below the platform as shown, may be employed in connection with a housing for the running gear of the character set forth in my aforesaid prior application as distinguished from one which is wholly rigid with the car body like that here illustrated. In that case, however, it will be desirable to make a support for the attachment of the inner edge of the depending portion of

the hood rigid with the car platform or body, as in the construction here shown.

I claim as my invention:

1. In combination with a railway car, an extensible hood, an inclined guide or way attached centrally to the upper end portion of the car, a bar fitted to said guide or way and pivoted by a vertical pivot to a movable point in the upper part of the hood, whereby the hood is raised in its retraction and has a tendency to project itself by gravity and whereby the free margin of the hood may adjust itself upon the vertical axis when the car is upon a curve of the track and is connected with another hooded car.

2. In combination with a car and an extensible hood applied to its end, mechanism connecting the car with the hood and supporting the free margin of the hood from the car, said mechanism being adapted to lift the hood in the retraction of the latter and also adapted to allow both a lateral vibration of the hood with respect to the car and an oscillation thereof on a vertical axis.

3. In combination with a car, a continuous, extensible hood which extends both above and beneath the platform or floor frame; a marginal, continuous frame at the outer edge of the hood and suitable movable supports for the marginal hood frame connecting the latter with the car both above and below the platform.

4. In combination with a car body, a housing for the running gear continuous with the car sides, a continuous, flexible, foliated hood attached to the margin of the end of the car and its gear-housing, a substantially rigid open plate or frame attached to the outer margin of the hood and means by which the hood is automatically projected, whereby the car, thus equipped, is adapted to form a junction with another car similarly equipped, in the longitudinal lines of their external surfaces.

5. In combination with a car, an extensible hood consisting of an interior jointed and folding portion, a flat, elastic exterior portion covering the folding part, and a marginal, open frame at its free edge, said hood being applied flush with the exterior of the car.

6. In combination with two coupled cars, extensible and flexible hoods attached to the adjacent ends of said cars, said hoods having meeting end frames provided with interlocking devices adapted to hold them practically immovable laterally relatively to each other, and means through which the gravity of the hoods tends to project them.

7. In combination with a car, an extensible hood applied to the end of the car constructed to rise at its outer end when being retracted and to descend when being projected, whereby its own gravity tends to project it, and a hand lever and suitable connections thereof with the outer part of the hood for retracting the latter.

8. In combination with a car having an end platform and side steps leading thereto, a rigid housing substantially flush with the car sides inclosing the platform space laterally and overhead, a housing beneath the platform and steps, continuous at its side margin with that inclosing the platform space, doors opposite the steps and platform, a continuous extensible and flexible hood applied to the continuous margin of the housings and provided with a continuous end plate or frame adapted to meet a similar hood plate on a similarly fitted car, and a diaphragm or partition arranged to prevent dust from rising through the hood and past the end of the platform, and to thereby prevent dust from entering the united and inclosed platform space of two such coupled cars.

9. In combination with a car, a housing for the running gear extending to the ends of the car, and divided by partitions outside the trucks, prolongations of the car sides to the ends of the gear housing, a roof terminating in line with the car sides and gear housing, and extensible hoods applied to the ends of the roof, sides and gear housing, adapted to meet similar hoods on contiguous cars.

10. In combination with a car, a housing for the running gear, divided vertically by partitions placed between the trucks to afford a central closed space, between the trucks.

11. In combination with a car, a housing for the running gear, having openings in its bottom for the wheels, end hoods substantially flush with the external surfaces of the car and its said housing, and partitions placed in said housing at opposite ends of the trucks forming inclosures of those portions of the housing through which the wheels project.

12. In combination with flexible hoods upon cars, adapted to be coupled together, inclined projections arranged to bring the end plates of the hoods into register in joining the cars, and clamps attached to said end plates for retaining them in contact.

13. In combination with a car and an extensible and flexible hood applied to the end thereof, a central support for the end plate of the hood having a universally jointed connection with the end plate and having sliding and vertically and horizontally vibratory connection with the car.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

FREDERICK U. ADAMS.

Witnesses:
M. E. DAYTON,
C. CLARENCE POOLE.