(No Model.) 3 Sheets—Sheet 1.

E. H. BECKLEY.

RAILROAD CAR.

No. 434,755. Patented Aug. 19, 1890.

Fig. 1.

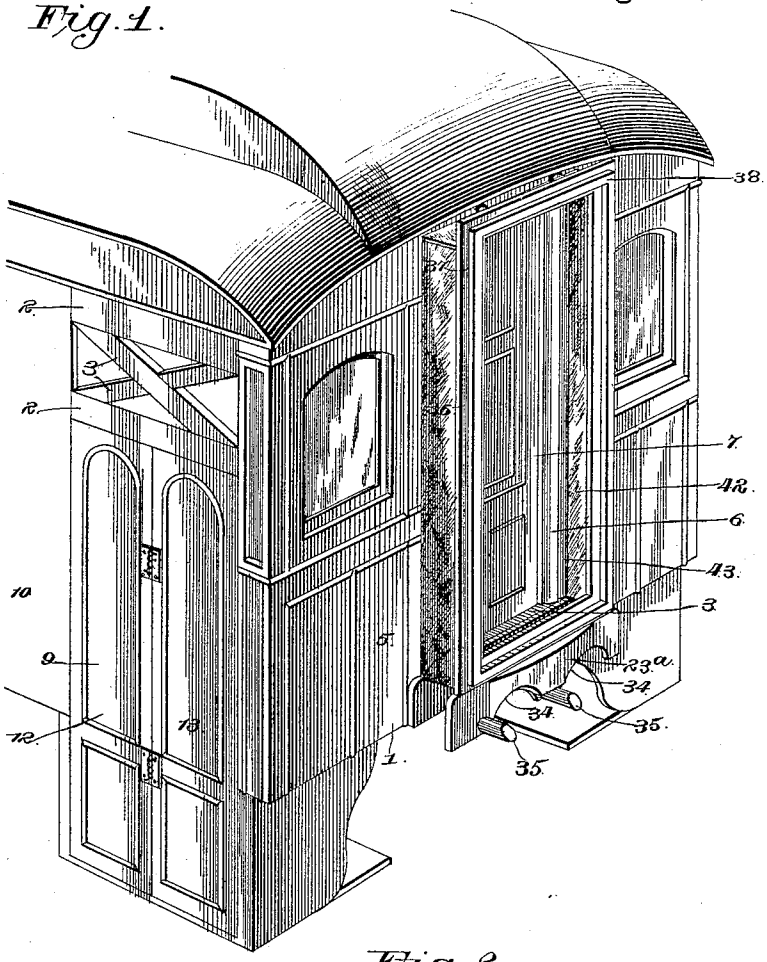
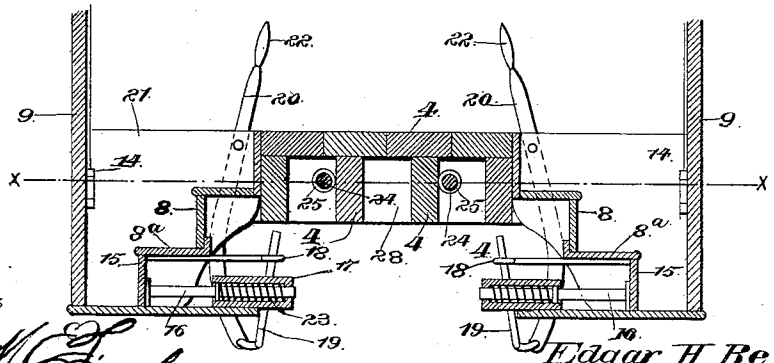


Fig. 2.



Witnesses

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

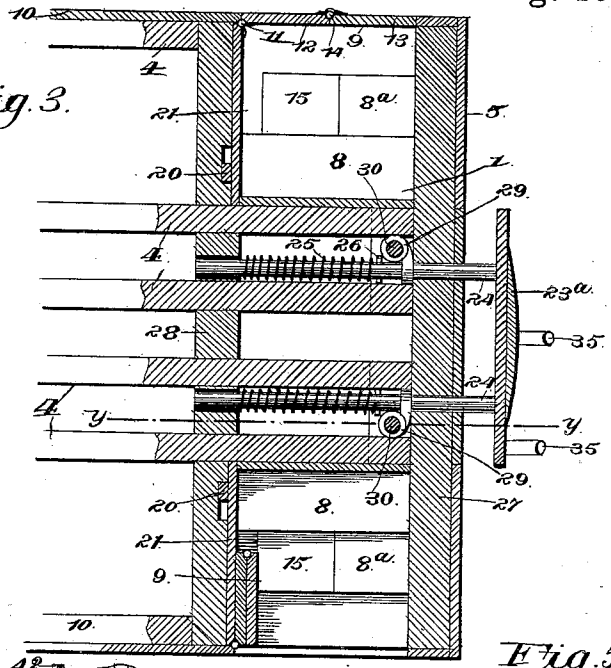


Fig. 4.

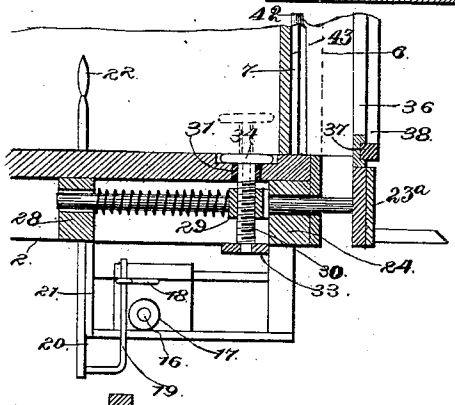


Fig. 5.

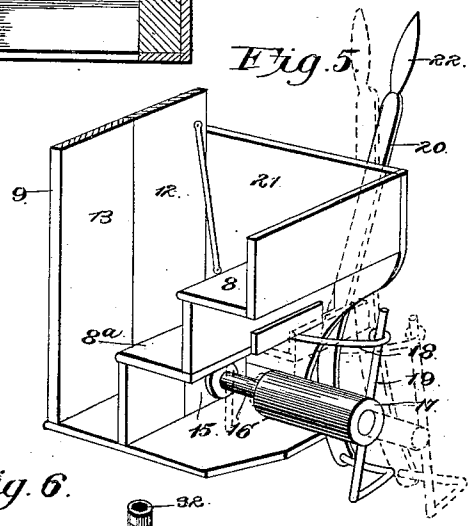


Fig. 6.

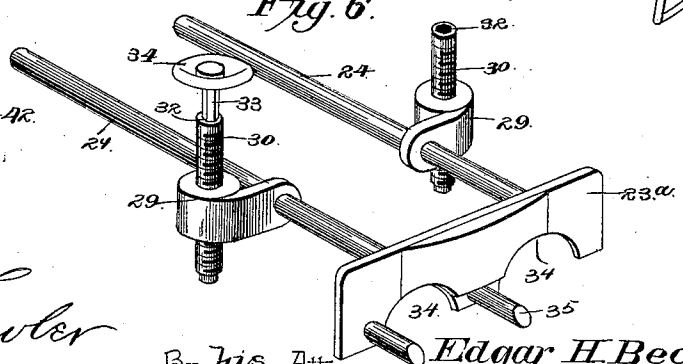
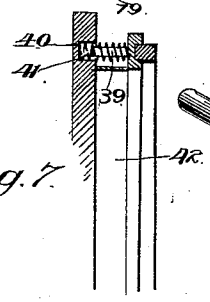


Fig. 7.



Witnesses

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(No Model.) 3 Sheets—Sheet 3.

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RAILROAD CAR.

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Fig 8

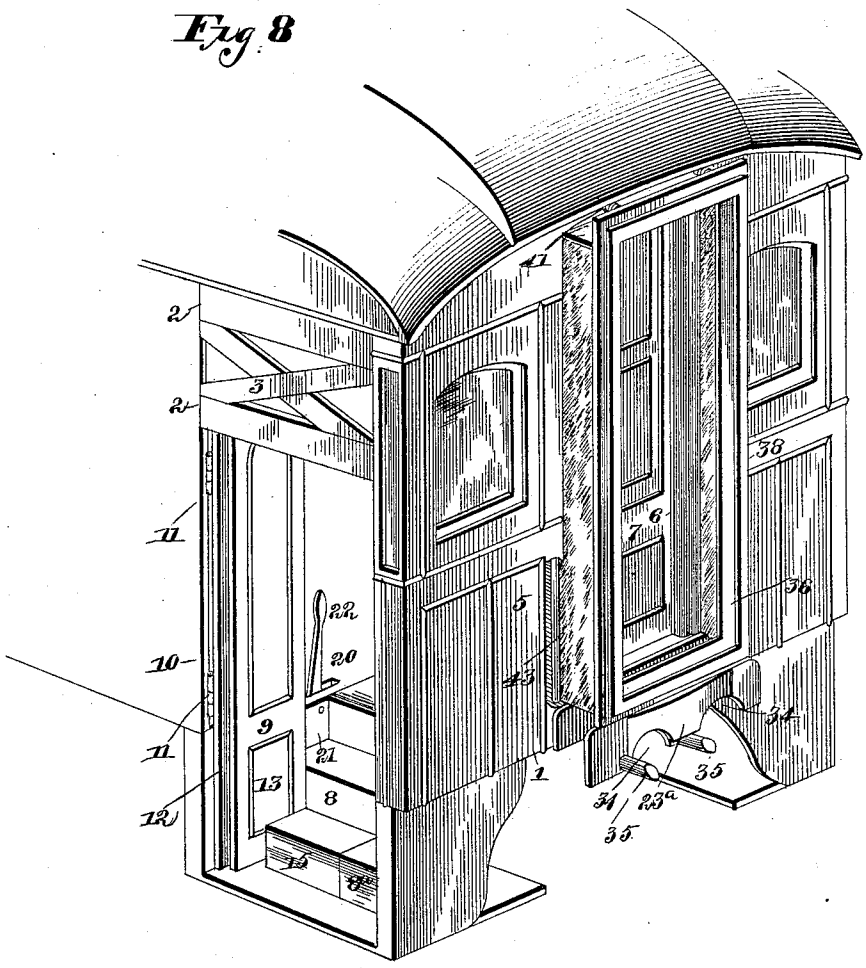
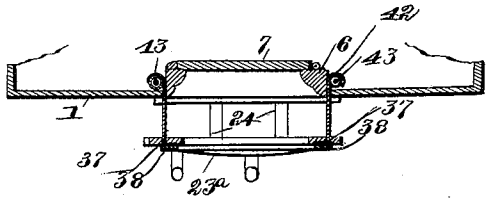


Fig 9



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UNITED STATES PATENT OFFICE.

EDGAR HENRY BECKLEY, OF ELKHART, INDIANA.

RAILROAD-CAR.

SPECIFICATION forming part of Letters Patent No. 434,755, dated August 19, 1890.

Application filed February 21, 1890. Serial No. 341,254. (No model.)

To all whom it may concern:

Be it known that I, EDGAR HENRY BECKLEY, a citizen of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented a new and useful Railroad-Car, of which the following is a specification.

This invention relates to railroad-cars; and it has for its object to construct the cars in such a manner that communication may be established between adjacent cars of a train, after the manner of so-called "vestibule-cars," without communicating with the external air.

My invention consists in constructing the cars with extensions forming permanent and integral parts thereof, and adapted to be entered from the sides of the cars, thereby practically bringing the end of adjacent cars very close together, and enabling the space between the cars to be bridged by flexible connections of rubber, cloth, or like material.

The invention further consists in the detailed construction and arrangement of the doors and steps by which the cars are entered.

The invention further consists in the construction and arrangement of braces whereby the extensions of the cars are greatly strengthened, and danger of telescoping in the event of accident to a great extent avoided.

The invention further consists in certain improvements in the construction of the buffers whereby the cars are held together in such a manner as to avoid any excessive swaying motion, and to avoid the danger of any one car jumping from the track and telescoping into the adjacent car.

The invention further consists in certain details of construction, all of which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of one end of a railroad-car equipped with my improvements. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a horizontal sectional view taken on the line $x\ x$ of Fig. 2. Fig. 4 is a vertical sectional view taken on the line $y\ y$ of Fig. 3. Fig. 5 is a pespective detail view of the door, the sliding step, and the operating mechanism for the same. Fig. 6 is a detail view in perspective of one of the buffers and mechanism connected therewith. Fig. 7 is a detail sectional view of the flexible connections for the contacting frames of the cars. Fig. 8 is a perspective view similar to Fig. 1, but showing the door open. Fig. 9 is a horizontal section.

Like numerals of reference indicate like parts in all the figures.

My improved railroad-car is constructed at its ends with extensions 1, which take the place of and occupy the space usually occupied by the car-platforms. The longitudinal timbers 2 2 at the side of and near the upper end of the car are extended through the extensions 1, and are connected by the cross-braces 3. The car-extension is constructed upon the floor-timbers 4, and comprises the front wall 5, abutting against the ends of the longitudinal timbers 2 and having the door-frame 6, in which the door 7 is arranged. The car-extension 1 is provided on both sides with steps 8, leading to the sides of the car in the manner of the ordinary platform-steps.

9 designate the doors, which are connected to the ends of the sides 10 of the car by means of spring-hinges 11, which tend to force the doors automatically shut. Each of the doors is composed of two sections 12 and 13, which are connected together by spring-hinges 14. The joint action of the spring-hinges 11 and 14 is to hold the doors in a closed position, and the steps of the car are thus protected from snow, sleet, and rain. The doors 9 extend between the bottom steps 8 and the lower longitudinal timbers 2. The step 8^a, which is next to the bottom one, has a sliding portion 15, the rear end of which is provided with the shank 16, extending through a guide sleeve or tube 17, which extends rearwardly from the bottom step. The sliding step 15 is also provided with a rearwardly-extending arm 18, which engages a U-shaped arm 19 at the lower end of a lever 20, which is pivoted upon the inner side of the side plate 21 of the steps, and the upper end of which is extended upwardly to form a handle 22, by means of which the sliding step portion 15 may be manipulated. A spring 23, located within the tube 17 and coiled around the stem of shank 16, serves to force the sliding step 15 automatically in an outward direction. The space between the

step portion 15 and the side plate 21 is sufficient to accommodate the door 9 when the latter is in a folded and open position. When the door is in this position, it is retained securely by contact with the said step portion 15. In order to close the door, it is only necessary to operate the lever 20, so as to withdraw the sliding step portion 15, when the door will be closed by the automatic action of the spring-hinges. It will be seen that the arm 18, although it engages the arm 19 of the lever 20, is not connected with the latter; hence the action of pushing the door open will not affect the position of the said lever.

The ends of the car are provided with buffer-plates 23ª, which are mounted upon the front ends longitudinal shanks or stems 24, which are forced automatically in an outward direction by the action of springs 25, coiled around the said stems or shanks and bearing against transverse pins 26 near the outer ends of the latter. The front ends of the stems 24 extend through the front sills 27, and the rear ends of said stems or shanks are socketed in or extended through the transverse sill 28 in such a manner, however, as to admit of a limited vertical adjustment of the front ends of said shanks. The shanks 24 are connected near their front ends with swiveled sleeves 29, having vertical screw-threaded perforations, through which are extended the adjusting-screws 30. The latter extend through sleeves 31 in the floor of the car and are provided at their upper ends with recesses 32, adapted to receive the stems or shanks 33, the upper ends of which are provided with hand-wheels 34, which are normally level or flush with the floor of the car. The stems or shanks 33 are polygonal in cross-section, as are the recesses 32, in which they are mounted. The lower ends of the adjusting-screws 30 are swiveled or socketed in plates 33 at the lower ends of the longitudinal frame-beams of the bars. It will be seen that by raising the hand-wheels 34 so as to partially withdraw the shanks 33 from the sockets 32 the adjusting-screws 30 may be turned, thereby vertically adjusting the front ends of the stems 34 and the buffers 33 carried thereby.

Each of the buffer-plates 23ª is provided in its lower edge with notches or recesses 34, which are curved, as shown, and adjacent to which the said buffer-plates are provided with forwardly-extending studs 35. The studs 35 of each buffer-plate are adapted to enter and engage the recesses 34 in the buffer-plate of the adjacent car. It will be seen that either of the cars will thereby be prevented from jumping the track, and also that the lateral or swaying motion of the cars, while not absolutely prevented, is greatly controlled and limited by the weight of each car being partially supported upon the buffer of the adjacent car. The cars having my improved buffers will as a consequence ride more easily upon the track, and will not in the event of accident be very liable to leave the track and to crash into each other.

To the buffers 23ª are connected the upwardly-extending frames 36, which may be constructed of wood, and the outer sides of which have grooves 37, in which are seated the packing-strips 38, of felt, rubber, or other suitable material. The upper ends of the frames 36 are provided with rearwardly-extending spindles or shanks 39, extending into sockets 40, in which springs 41 are arranged to force the said shanks and the frames automatically in an outward direction. The frames 36 are connected with the door-frames 6 by means of flexible connections of cloth or other suitable material, the inner ends of which flexible connections (designated by 42) are connected with spring-actuated rollers 43, whereby the said flexible connections are automatically kept taut. In practice the frames 36 of adjacent cars will be held in contact with each other, said frames being mounted yieldingly upon the spring-buffers 23 and 39. The packing-strips 38 serve to make tight joints between the said frames, and the flexible connecting-strips 42 serve to effectually exclude the outer air from between the cars. The openings or spaces between the ends of the floors of adjacent cars may be covered by suitably-constructed mats, so as to form uninterrupted communication between adjacent parts.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood.

My improved railroad-car differs from the ordinary vestibule-car in this, that the cars are practically extended so as to leave a space of only a few inches between adjacent cars. Ordinary vestibule-cars and all cars that are constructed with platforms are, in the event of accident, subject to a very serious danger, for the reason that the platforms are very easily broken up or destroyed, thus permitting the cars to crash or telescope into each other by the impetus of their movement. By my improvement platforms are dispensed with and the longitudinal timbers of the cars are extended to the extreme ends and very securely braced; hence when, in the event of accident, the cars crash together they will have the impetus of only a short movement represented by the actual space between the cars, and the force with which they crash together is consequently greatly diminished. The cars, it will be observed, are entered from the sides, and inside of the doors in the ends of the cars. Said end doors may therefore be locked at stations where a large number of passengers are expected to enter or leave the cars, and the nuisance of passengers crowding from one car into the adjacent one may therefore be avoided. When the side doors of the car are closed, it will be impossible for any one to enter the car when the lat-

ter is in motion, and accidents arising from attempts to board the cars of a moving train will therefore be avoided. The general construction of the car is simple and of such a nature as not to materially increase the expense.

Having thus described my invention, what I claim is—

1. A railroad-car constructed with end walls having door-frames, steps leading to the sides of the car inside of the end walls, and doors at the lower ends of said steps and closing flush with the sides of the car and inclosing the steps, substantially as set forth.

2. A railroad-car constructed with end walls having door-frames, steps leading to the sides of the car inside of said end walls, and folding doors arranged at the lower ends of said steps and closing flush with the sides of the car and concealing the steps, substantially as set forth.

3. In a railroad-car, the steps arranged inside of the end walls and leading to the sides of the car, in combination with the folding doors arranged at the lower ends of the steps, closing flush with the sides of the car, and having spring-hinges arranged to force said doors automatically shut, substantially as set forth.

4. In a railroad-car, the steps arranged inside the end walls and leading to the sides of the car, in combination with the doors hinged to the ends of the side walls of the cars to close flush with said side walls, said doors being composed each of two sections hinged together and having spring-hinges that serve to force said doors automatically shut, substantially as set forth.

5. In a railroad-car, the steps arranged inside of the end walls and leading to the sides of the car, one of said steps having an inwardly-sliding portion, in combination with the folding door, arranged to fold into the space between the said sliding-step portion and the side plate of the step-frame, and to be thereby held in an open position, substantially as set forth.

6. In a railroad-car, the steps arranged inside of the end walls and leading to the side of the car, one of said steps having a sliding spring-actuated portion, in combination with the folding door arranged to fold into the space adjacent to said spring-actuated sliding-step portion, and having spring-hinges arranged to force the said folding door automatically shut when released from the said sliding-step portion, substantially as set forth.

7. In a railroad-car, the herein-described sliding-step portion having an inwardly-extended shank, in combination with a guide-tube extending inwardly from the bottom step, a spring coiled upon the shank of the sliding-step portion and forcing the latter in an outward direction, and a folding door having spring-hinges adapted to force it automatically shut, said door being arranged to be folded into the space adjacent to the sliding-step portion and to be held by the latter in an open position, substantially as set forth.

8. The combination, with the sliding spring-actuated step portion having an inwardly-extending arm, of a lever pivoted upon the inner side of the side plate of the steps and having a curved arm engaging the arm of the sliding-step portion to force the latter inwardly against the tension of its spring, substantially as set forth.

9. In a railroad-car having steps arranged inside of its end walls and leading to the sides of the car, the combination of the sliding spring-actuated step portion, a lever arranged to force the latter inwardly against the tension of its spring, and a folding door arranged to fold into the space adjacent to the sliding-step portion, and having spring-hinges adapted to force said door automatically shut when the sliding-step portion is withdrawn, substantially as set forth.

10. A railroad-car having the steps arranged inside of the end walls and leading to the bottom of the car, in combination with the frame-beams extended above the steps and to the end walls of the cars and the cross-braces connecting said frame-beams, substantially as set forth.

11. The combination, with a railroad-car, of the spring-actuated buffers provided with notches or recesses in their lower edges and with forwardly-extending studs adapted to engage the recesses in the buffer of the adjacent car, substantially as and for the purpose set forth.

12. The buffer-plates mounted upon the longitudinally-sliding spring-actuated shanks, in combination with the sleeves swiveled to the said shanks, the screw-threaded adjusting-rods extending through the screw-threaded openings in said swiveled sleeves, the supporting-plates having sockets for the lower ends of said adjusting-rods, and means for operating the latter, substantially as set forth.

13. The combination of the spring-actuated shanks carrying the buffer-plates, the swiveled interiorly-screw-threaded sleeves, the adjusting-rods extending through the latter and having polygonal recesses at their upper ends, and the stems fitted in said recesses and having hand-wheels at their upper ends, substantially as and for the purpose set forth.

14. The combination, with a railroad-car having the end walls, the door-frames in the latter, and the steps arranged inside of said end walls and leading to the sides of the car, of the buffer-plate mounted upon spring-actuated shanks, means for vertically adjusting the front ends of said shanks, and the studs projecting forwardly from the buffer-plate and adapted to engage recesses in the lower edge of the buffer-plate of the adjacent car, substantially as set forth.

15. In a railroad-car, the combination of the spring-actuated buffer, the frame extending upwardly from said buffer, a flexible connec-

tion between said frame and the door-frame in the end of the car, and a packing-strip seated in a groove in the outer side of said frame, substantially as and for the purpose set forth.

16. In a railroad-car, the combination of the spring-actuated buffer-plate, the frame extending upwardly from the same, the spring-buffers supporting the upper end of said frame, the packing-strip seated in a groove in the outer side of said frame, and the flexible connecting-strips secured to the inner side of said frame and connected with spring-actuated rollers mounted in the door-frame in the end wall of the car, substantially as and for the purpose set forth.

17. In a railroad-car, the steps arranged inside of the end walls and leading to the side of the car, one of said steps having a sliding spring-actuated portion, in combination with the folding door arranged to fold into the space adjacent to said spring-actuated sliding step portion and a lever to operate the spring-actuated step portion against the tension of the spring, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EDGAR HENRY BECKLEY.

Witnesses:
C. L. HORTON,
H. T. PHELLIBE.