(No Model.) 2 Sheets—Sheet 1.

S. DUNN.

COMBINATION FREIGHT CAR.

No. 590,804. Patented Sept. 28, 1897.

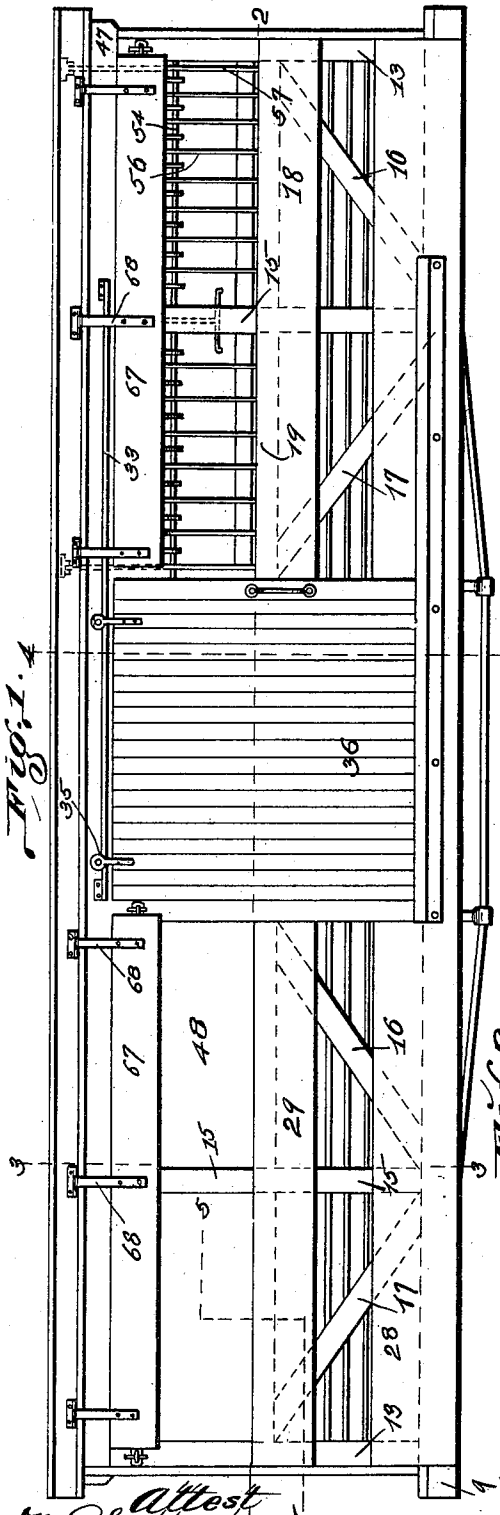

Fig. 1.

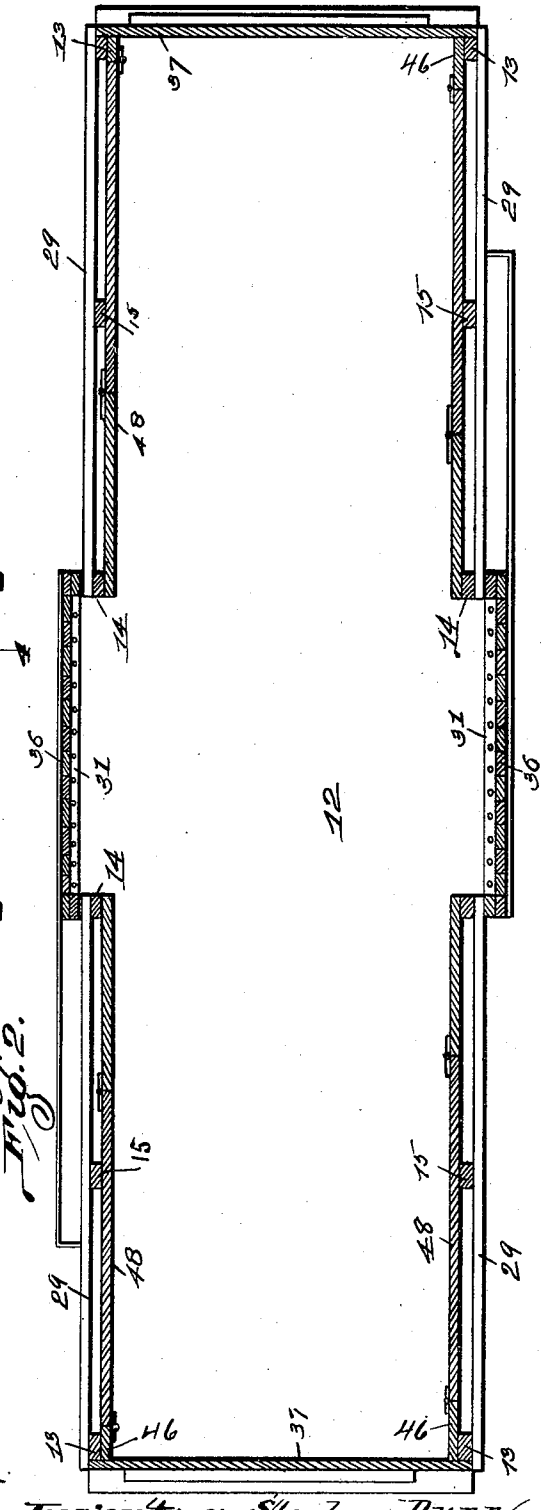

Fig. 2.

Attest
W. P. Smith
S. G. Wells.

Inventor:- Stephen Dunn.
By Higdon, Lougan & Higdon Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

S. DUNN.

COMBINATION FREIGHT CAR.

No. 590,804. Patented Sept. 28, 1897.

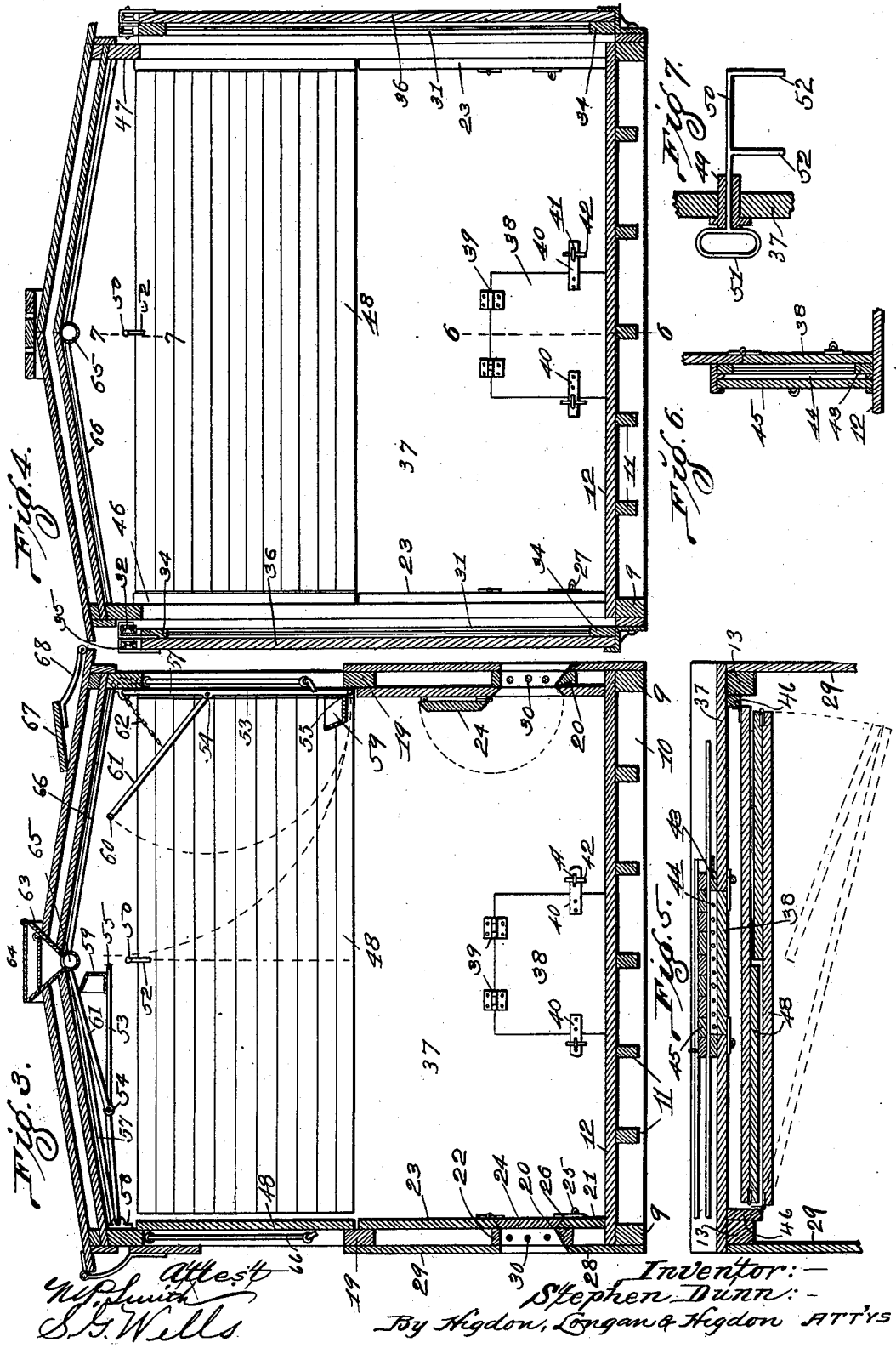

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Attest
W. P. Smith
S. G. Wells

Inventor:—
Stephen Dunn:—
By Higdon, Longan & Higdon Att'ys

THE NORRIS PETERS CO., PHOTO-LIT HO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

STEPHEN DUNN, OF NEW FRANKLIN, MISSOURI.

COMBINATION FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 590,804, dated September 28, 1897.

Application filed February 23, 1897. Serial No. 624,664. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN DUNN, of the city of New Franklin, Howard county, State of Missouri, have invented certain new and useful Improvements in Combination Freight-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to transformable cars; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

The object of my invention is to construct a car which may be readily transformed from a box-car to a ventilated car, such as required for use as a stock-car, a fruit-car, or a coal-car, and vice versa.

Figure 1 is a side elevation of a car constructed in accordance with the principles of my invention, one end of the car being closed and the other end of the car being ventilated. Fig. 2 is a horizontal sectional view of the car when in use as a box-car, the view being taken approximately on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view of the car, taken approximately on the line 3 3 of Fig. 1, one side of the car being closed and the other side being ventilated. Fig. 4 is a transverse sectional view of the car and taken approximately on the line 4 4 of Fig. 1. Fig. 5 is a horizontal sectional view through one end of the car and taken approximately on the line 5 5 of Fig. 1. Fig. 6 is a sectional view through one end of the car and taken approximately on the line 6 6 of Fig. 4. Fig. 7 is a sectional view through the end of the car, taken approximately on the line 7 7 of Fig. 4.

In the construction of a transformable car in accordance with the principles of my invention I employ the side sills 9, the ends of which are connected by the cross-sills 10, and the sleepers 11 are inserted between the side sills 9 and attached to the cross-sills 10. The floor 12 rests upon the sills 9 and 10 and the sleepers 11. The corner-posts 13 extend upwardly from the corners of the bed thus constructed. The posts 14 extend upwardly from the side sills 9 and form the door-casings, and the posts 15 extend upwardly from the side sills 9 at points approximately half-way between the posts 14 and the corner-posts. The braces 16 are inserted between the lower ends of the posts 15 and the corner-posts in an inclined position, the upper ends of said braces intersecting the corner-posts at the upper edge of the grain-line. The braces 17 are inserted between the lower ends of the posts 15 and the posts 14, the upper ends of said braces intersecting said posts 14 at the upper edge of the grain-line. The horizontal braces 18 are inserted between the posts 13 and 15 and form the supports for the upper edges of the grain-walls. The horizontal braces 19 are inserted between the posts 14 and 15 in alinement with said braces 18. Lines of timbers 20 commence at the corner-posts 13 and extend in horizontal planes to the posts 14, said timbers being attached to the corner-posts and the braces 16 and 17 to the posts 15 and to the posts 14. Lines of boards 21 are placed in position with their lower edges resting upon the floor 12 and their upper edges attached to the inner faces of the lines of timbers 20. Strips 22 are mounted in positions parallel with the lines of timbers 20 and a short distance above said timbers 20, and the lines of boards 23 are placed in positions with their lower edges attached to the lines of timbers 22 and their upper edges attached to the braces 18 and 19.

The trap-doors 24 are hinged to the lower edges of the lines of boards 23 and in position to swing inwardly, and when closed the free edges of said trap-doors 24 engage the upper edges of the lines of boards 21. The boards 21 and 23 and the trap-doors 24 form the side walls of the grain-bin. The upper edges of the boards 21 and the lower edges of the boards 23 are beveled, and the edges of the trap-doors are correspondingly beveled, as required to form tight joints between said doors and said boards by pressing said doors tightly into position, and said doors are held tightly closed by the use of staples 25 and hasps 26 and wedge-pins 27, inserted in said staples and engaging said hasps. The more the wedge-pins are driven into position in the staples the tighter the doors will be closed.

The lines of boards 28 are attached to the outer faces of the sills 9 and the lines of timbers 20, and the lines of boards 29 are attached to the outer faces of the lines of timbers 22 and the braces 18 and 19. The rods

30 are inserted through the corner-posts 13, the braces 16, the posts 15, the braces 17, and the posts 14 in horizontal position to form a grating outside of the trap-doors 24.

The ventilated doors 31 are slidingly mounted in position to close the openings between the posts 14, said doors being suspended from the pulleys 32, which run upon the track 33. The ventilated door 31 is formed of vertical rods, the ends of which are held together in any suitable way, as by the timbers 34. The track 33 is a double track, and the pulleys 35 operate upon one portion of said track, and the solid door 36 is suspended from said pulleys 35 in position to operate beside the ventilated door 31, as shown in Fig. 4.

The posts 13 are connected by the boards 37, thus forming solid end walls for the car, said walls extending to the roof. Openings are cut in the central lower portions of the end walls, and the doors 38 fit in said openings. The doors 38 are swingingly mounted upon the hinges 39, attached to said end walls in position to allow said doors to swing inwardly and upwardly, and said doors are held closed by means of the hasps 40, attached to the inner faces of said doors and engaging the staples 41, and the wedge-shaped pins 42, inserted through said staples, hold said hasps securely in position.

The timbers 43 form the casing around the door 38 upon the outside of the end walls of the car, and the rods 44 are inserted in said casing in vertical positions to form gratings over said doors. Outside of the gratings formed by the rods 44 are sliding doors 45.

Timbers 46 are inserted in the corners of the car in vertical positions and in alinement with the grain-walls, and said timbers extend from the braces 18 upwardly to the timbers 47, which timbers extend the entire length of the car, connecting the upper ends of the corner-posts and forming supports for the roof. The folding doors 48 are attached to the timbers 46 by means of hinges. The doors 48 are formed in two sections hinged together to fold upon each other, and said doors when extended to their full length reach from the timbers 46 to the posts 14, as shown in Fig. 2, and when so extended said doors are in alinement with the grain-walls of the car and serve to transform the car into a box-car. The doors 48 fold into the end of the car, as shown in Fig. 5. One section of each door may be approximately twice as long as the other section of the door, and when so constructed one of said short sections should be hinged to swing outwardly and fold upon the long section and the other one of said sections should be hinged to swing inwardly and fold upon the long section.

The tubular blocks 49 are inserted through the end walls of the car on the line slightly above the upper lines of the folding doors, and the shaft 50 is rotatably mounted in said tubular blocks, said shaft having an operating-handle 51 upon its outer end and having the arms 52 projecting in parallel lines from its inner end. Before the doors are folded into position the handle 51 is operated to bring the arms 52 into a horizontal position. After the doors have been folded, as shown in Fig. 5, the handle 51 is operated to turn the arms 52 downwardly into a vertical position, one of said arms coming inside of the doors and the other one of said arms coming outside of the doors, thus forming a keeper to hold said doors from swinging. When the doors 48 are folded to ventilate the car, their places are occupied by the ventilated doors or grates 53. The grates 53 consist of the horizontal rods 54 and 55, connected together at points intermediate of their ends by the vertical rods 56, which are just long enough to connect said horizontal rods. The vertical rods 57 are substantially twice as long as the rods 56, and said rods 57 are mounted in positions parallel with the rods 56, one at each end of and connecting said rods 54 and 55, and said rods 57 serve as hinges, their upper ends being bent into horizontal planes and inserted through the ears 58, which ears are attached to the inner faces of the timbers 47. The rods 57 are of such a length that the grate will swing downwardly and bring the rods 55 to positions adjacent the braces 18 and 19.

The water-troughs 59 are attached to the inner sides of the grates and immediately above the horizontal rods 55.

The horizontal rods 60 are placed in positions parallel with the rods 54 and 55, and the vertical rods 61 connect said horizontal rods 60 with the horizontal rods 54, thus forming a grate or hay-rack, and the chains 62 are attached to the ears 58 and to the side ones of the rods 61, as required to hold said rods 61 in an inclined position, as shown in Fig. 3. The grates 53 swing upwardly under the roof of the car, and when it is desired to fold said grates out of use the chains 62 are disengaged from the rods 61 and said rods swing downwardly against the water-troughs 59.

There are four of the grates 53, all constructed alike, one on each side of each of the side doors of the car, and each of these grates 53 carries a hay-rack, as described.

A tank 63 is mounted in an opening in the roof of the car, and the upper side of said tank is closed by the trap-door 64. The tank 63 communicates with the pipe 65, which extends longitudinally of the car directly under the apex of the roof. Branch pipes 66 lead from the main pipe 65 to the sides of the car and down the posts 15, and the lower ends of said branch pipes are in position to discharge water into the troughs 59. The doors 67 are attached to the eaves of the car-roof by means of the strap-hinges 68, said hinges being constructed to allow said doors to swing downwardly against the outer faces of the timbers 47 and close the space above the horizontal rods 54 and to allow said doors to swing upwardly to positions upon the roof of the car.

Assuming that the car is in use as a box-car, the doors 24 are closed, the doors 38 and 48 are closed, and the doors 36 are closed. If it is desired to transform the car into a stock-car, the doors 24 are opened by swinging them upwardly and holding them in any suitable way, the doors 48 are folded into the ends of the car, the doors 36 are opened, the grates 53 are swung downwardly to take the places of the doors 48, and the rods 61 are swung upwardly and engaged by the chains 62. The rods 61 serve as a hay-rack, and hay may be placed in said rack by turning the door 67 upwardly on top of the car and inserting the hay through the space normally occupied by said door 67. After the racks have been filled with hay the doors 67 are turned downwardly to their normal positions and will serve to keep fire out of the hay.

When it is desired to load steel rails into the car, the doors 38 and 45 are opened and the rails are inserted into the car between the rods 44.

When it is desired to load coal into the car, the grates 53 are swung upwardly, thus leaving the sides of the car open above the grain-line.

While I prefer the construction shown, it is obvious that it may be modified in various ways without departing from the spirit of my invention.

I claim—

1. In a transformable car, the timbers 46 inserted in vertical positions in the corners of the car, the folding doors 48 hinged to the timbers 46 and to swing in horizontal planes, said folding doors being constructed to fold up and swing into the ends of the car when their use is not desired, the grates 53 hinged to the timbers supporting the roof of the car and consisting of the horizontal rods 54 and 55 connected together by the vertical rods 56, and the vertical rods 57 forming the end pieces of the grates and serving as hinges, the water-troughs 59 attached to the inner sides of said grates, the rods 60, placed parallel with the rods 54, the rods 61 connecting the said rods 60 with the rods 54 thus forming a grate or hay-rack, and the chains 62 attached to the upper ends of said rods 57 and to the free ends of the side ones of the rods 61, said chains being detachable as required to allow the hay-racks to swing downwardly when it is desired to fold the grates 53 into the top of the car, substantially as specified.

2. In a transformable car, the timbers 46 inserted in vertical positions in the corners of the car, the folding doors 48 hinged to the timbers 46 and to swing in horizontal planes, said folding doors being constructed to fold up and swing into the ends of the car when their use is not desired, the grates 53 hinged to the timbers supporting the roof of the car; said grates consisting of the horizontal rods 54 and 55, the vertical rods 56 connecting said rods 54 and 55 at points intermediate of their ends, and the vertical rods 57 connecting the ends of said rods 54 and 55 and extending upwardly and hinged to the frame of the car; the water-troughs 59 attached to the inner sides of said grates, a tank mounted in the roof of the car, and pipes leading from said tank downwardly into position to discharge water into said water-troughs 59, substantially as specified.

3. In a transformable car, the timbers 46 inserted in vertical positions in the corners of the car, the folding doors 48 hinged to the timbers 46 and to swing in horizontal planes, said folding doors being constructed to fold up and swing into the ends of the car when their use is not desired, the grates 53 hinged to the timbers supporting the roof of the car and consisting of the horizontal rods 54 and 55 connected together at points intermediate of their ends by the vertical rods 56, and the vertical rods 57 connecting the ends of said rods 54 and 55 and forming the end pieces of the grates and serving as hinges, the water-troughs 59 attached to the inner sides of said grates, the rods 60, placed parallel with the rods 54, the rods 61 connecting the rods 60 with the rods 54 thus forming a grate or hay-rack, the chains 62 attached to the upper ends of said rods 57 and to the free ends of the rods 61, said chains being detachable as required to allow the hay-racks to swing downwardly when it is desired to fold the grates 53 into the top of the car, the doors 67, the strap-hinges 68 connecting said doors to the eaves of the car-roof, said hinges being constructed to swing the door to a position on top of the roof when the door is open and to a position at the side of the hay-rack when the hay-rack is in position for use, substantially as specified.

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

STEPHEN DUNN.

Witnesses:

EDWARD E. LONGAN,

MAUD GRIFFIN.