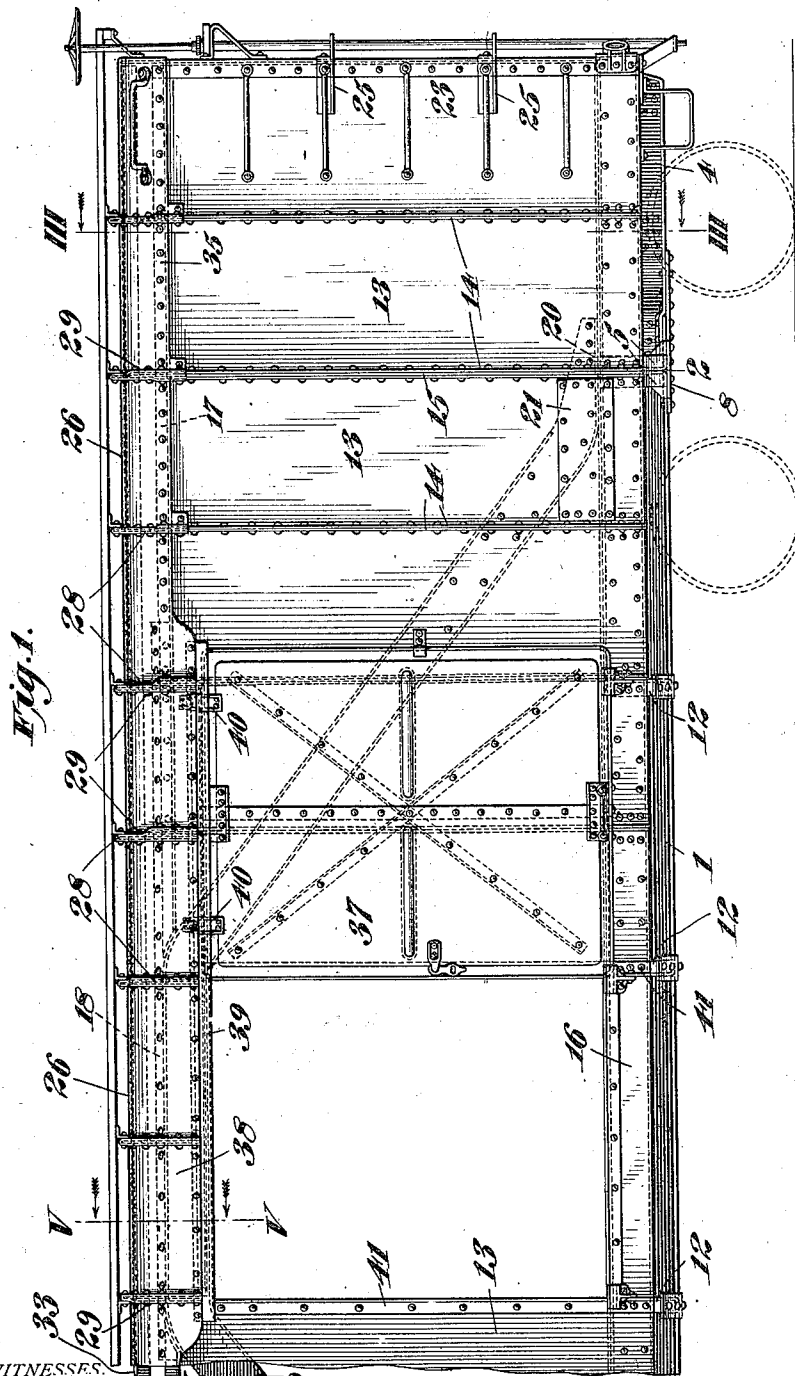


R. V. SAGE.
STEEL BOX CAR.
APPLICATION FILED AUG. 3, 1911.

1,059,770.

Patented Apr. 22, 1913.

3 SHEETS—SHEET 1.



WITNESSES:
Elmer Seavey
Robert A. Berris

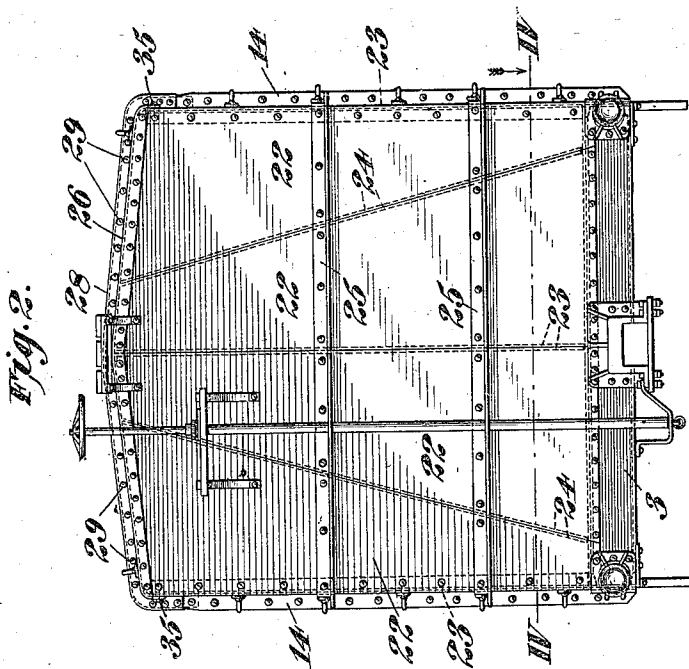
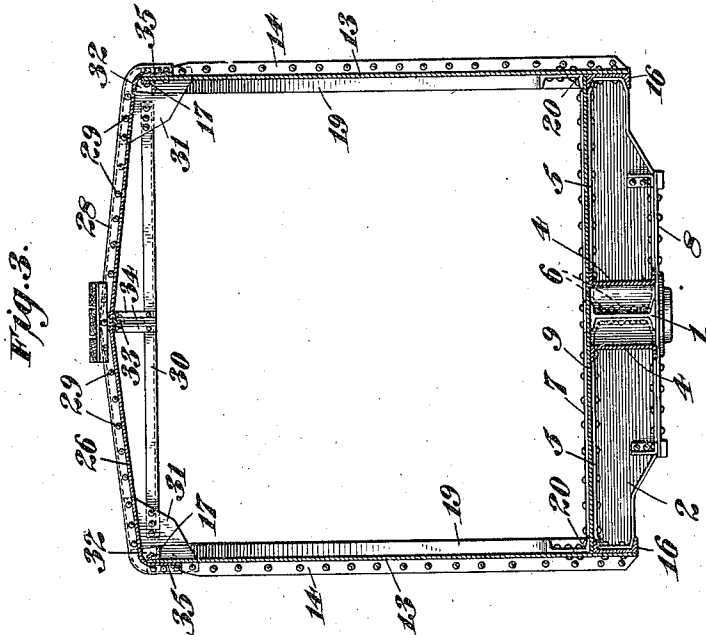
INVENTOR.
Ralph V. Sage
by *Geo. E. Thackray*
his ATTORNEY.

R. V. SAGE.
STEEL BOX CAR.
APPLICATION FILED AUG. 3, 1911.

1,059,770.

Patented Apr. 22, 1913

3 SHEETS—SHEET 2.



WITNESSES,

Elmer Leavely
Robert A. Burrs.

INVENTOR.

Ralph V. Sage
by Geo. E. Hackcray
his ATTORNEY.

R. V. SAGE.
STEEL BOX CAR.
APPLICATION FILED AUG. 3, 1911.

1,059,770.

Patented Apr. 22, 1913.

3 SHEETS—SHEET 3.

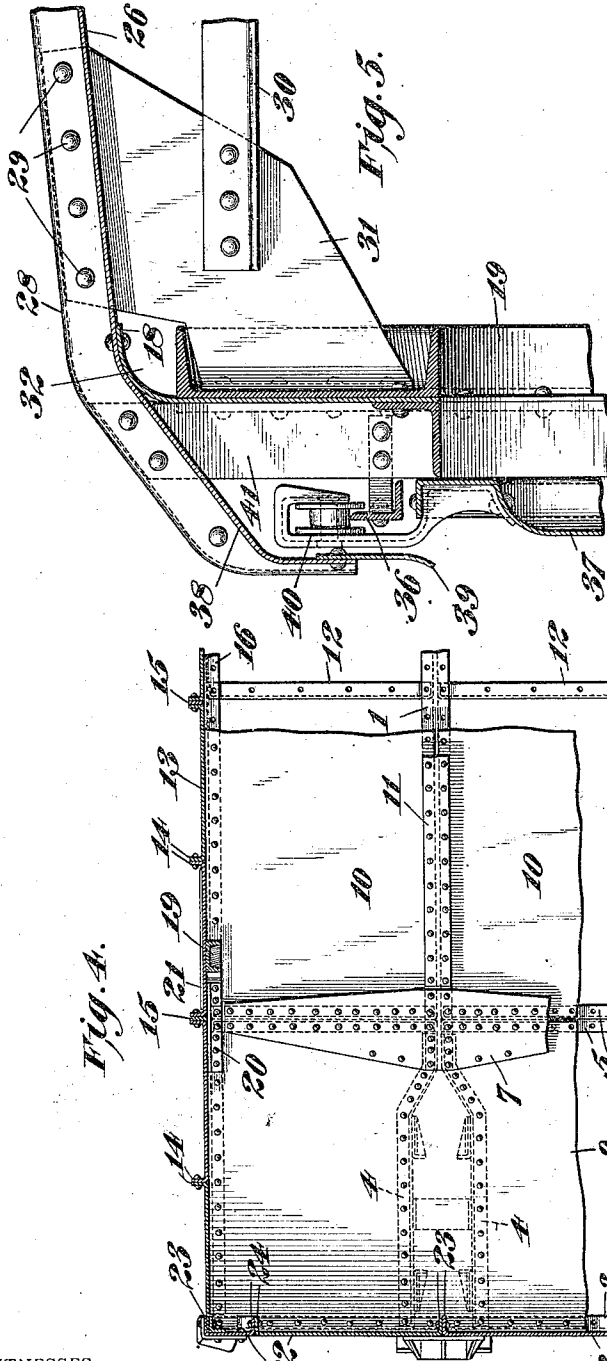


Fig. 4.

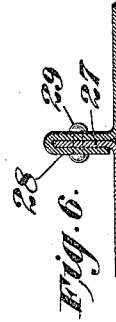


Fig. 6.

WITNESSES,

Elmer Seavey
Robert A. Beers.

INVENTOR.

Ralph V. Sage
by Geo. E. Thackray
his ATTORNEY.

UNITED STATES PATENT OFFICE.

RALPH V. SAGE, OF WESTMONT BOROUGH, PENNSYLVANIA.

STEEL BOX-CAR.

1,059,770.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed August 3, 1911. Serial No. 642,192.

To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Steel Box-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to railway cars and more particularly to freight box cars which are constructed entirely of metal.

The principal objects of my invention are to produce a metal box car which can easily be constructed, is light in weight, and of sufficient strength and rigidity to withstand the rough usage to which a car of this kind is subjected.

One novel feature of my invention consists in my manner of constructing the roof, the plates being flanged and formed in such a way that the seam of the roof forms the top chord of the trussed roof structure, while the ends of the plates on both sides of the car near the center thereof are extended to form a shield or hood over the sliding doors to protect the door sheaves and runways thereof, while the side sheets are bent inwardly and riveted directly to the roof.

An embodiment of my invention is shown in the accompanying three sheets of drawings, in which like characters indicate like parts:—

Figure 1 is a side elevation of a portion of the car showing a little more than half of the car side, the door being in the center of the car. Fig. 2 is an end elevation. Fig. 3 is a vertical transverse section taken on the line III—III of Fig. 1. Fig. 4 is a horizontal section taken on the line IV—IV of Fig. 2, showing parts of the floor plates broken away to expose the underframe. Fig. 5 is a section taken on the line V—V of Fig. 1, and Fig. 6 is a vertical transverse section on an enlarged scale showing the connection between the roofing plates or sheets.

Referring now to the various characters of reference upon the drawings:—My car structure comprises a center sill 1 of any approved form but preferably as shown here of a single I-beam to the end of which, be-

tween the bolsters 2 and the end-sills 3, are attached the channel draft sills 4, these being spaced apart to receive the draft gear, and their inner ends bent inwardly as shown in Fig. 4 so as to embrace the vertical web of the I-beam center sill 1, while their outer ends are attached to the end sills 3.

The bolsters 2 are built up of four pressed metal plates of similar size and shape, but rights and lefts formed into shallow box shaped members with flanges 5 extending outwardly and entirely around the edges of the same. These pressed metal members are disposed in pairs on either side of the center sill, and placed back to back with their webs in contact, the flanges extending outwardly. On the inner side the flanges 5 are connected together through the center sill by means of rivets as shown at 6, while the floor plates 9 and 10 and the cover plates 7 are attached to the upper flange. The central and end portions of the bottom flanges extend horizontally parallel to the top portion with an inclined portion between, the deeper center and the shallower end. The inner parts of these box shaped members are of the same depths as the center sill 1 so that the horizontal bottom plate 8 ties them together, but the outer end is of less depth corresponding to the depth of the side sill to which it is attached, thereby forming an efficient construction for the purpose intended.

The floor of the car is made of plates 10 between the bolsters which have their meeting edges on top of the center sill covered by a cover plate 11 which also reinforces and protects the center sill. The ends of the floor between the bolsters and end sills are composed of the plates 9 secured to side sills, end sills and draft sills as shown. The plates 10 are also riveted to and supported by the transoms 12 which are spaced at suitable distances apart between the bolsters and have their ends attached to the center and side sills of the car.

13 designates the side plates of the car which have integral outwardly extending flanges 14 along their vertical edges by means of which the side plates are riveted together and act as the side stakes of the car. If desired a strip 15 or other strengthening members may be inserted between these flanges to further stiffen the sides of the

car. The lower ends of the side plates 13 are riveted directly to the side sills 16 which are of channel shape and extend the full length of the car with their flanges turned inwardly toward the center of the car.

Angles 17 are attached to the upper edges of the side plates on either side of the runway for the door, but at this point the side plates 13 extend upwardly and are bent inwardly being attached to the car roof as at 18.

A truss 19, consisting of a rolled channel member having its web riveted to the car side, passes over the door and acts as a lintel for same, from which point it extends diagonally downward and outward therefrom with the ends of its bottom flange attached to the upper flange of the side sills as at 20. A patch plate 21 is placed on the outside of the car side at this point to further strengthen this connection by being riveted to the side sills 16, the side plates 13 and the ends of the truss 19.

The ends of the car are made up of four plates 22 with inwardly extending flanges 23 and 24 acting as inside stakes or braces. These plates 22 are angular in form, the flanges 23 in the center and the end or corner edges of the car are vertical while the intermediate flanges 24 incline inwardly toward the center of the car from the end sill 3 until it reaches the roof to which it is secured.

Horizontal end braces 25 extend across the outside ends of the car with their ends bent at right angles and riveted to the sides of the car.

The roofing plates 26 are joined together transversely of the car and as shown in Fig. 6 consist of one flange 27 bent at right angles to the body of the plate while the opposite side is first bent upward and then downward as at 28 in order to interlock and overlap the other flange 27; and rivets 29 pass through these flanges and secure them together. The roof of the car is supported by a plurality of trusses, the flanged members 27 and 28 forming the top chord or compression member while an angle 30, which connects to the corner gusset plates 31 at either end of the truss, forms the tension member. The gusset plates 31 have their upper edges riveted between the flanges 27 and 28 of the roof plates while their vertical sides are bent at right angles and attached to the car side. The extreme corners of these gusset plates are cut away as at 32 to make room for the top chord angle 17, or the upper flange of the truss channel as shown.

A T-bar 33 on the inside of the car connects the trusses together longitudinally and forms the ridge of the car roof. A central strut 34 composed of two angles, the lower ends of which are attached to the compression member 30 while their upper ends are

riveted to the vertical leg of the T-bar 33, serve as the king post for the roof trusses.

It will be noticed by referring to Figs. 1 and 3 that the ends of the roofing plates are bent down and attached directly to the sides of the car as at 35, but where the runway 36, of the door 37, is located the ends of the roofing plates project beyond the car side as at 38 and are outwardly and downwardly inclined with a binding strip 39 attached thereto to form a hood to protect the door hangers 40 and the runway 36.

The door posts 41 also serve the purpose of side stakes, the lower ends of which extend to the side sills and are riveted thereto together with the end of the transoms 12, the other ends being attached to the hood as shown in Fig. 5. Other angles are placed at the top and bottom of the door frame. In this way a strong and durable door frame is provided.

Although I have shown and described my improvements in considerable detail, I do not wish to be limited to the exact and specific details shown and described, but may use such substitutions, modifications or equivalents thereof, as are embraced within the scope of my invention or as pointed out in the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a railway car, a roof formed of a plurality of plates, having integral flanges bent upwardly at right angles to the body of the plate along their meeting edges, one of said flanges being formed to overlap and embrace the opposite flange to form the compression member of a truss, the outer ends of said plates being bent downwardly and secured to the upper portion of the car side, connecting members inserted between the opposed flanges of said roof plates at the outer ends thereof, secured thereto and to the car side to form the ends of said truss.

2. In a railway car, a roof supported by a plurality of trusses, roofing plates having integral flanges bent at right angles to the body portions thereof, one of said flanges being formed to overlap and embrace the opposite flange to form one of the compression members of the trusses, the outer ends of said plates being bent downwardly and secured to the upper portion of the car side, gusset plates inserted between the opposed flanges of said roof plates at the outer ends thereof, secured thereto and to the car side to form the ends of said trusses.

3. In a railway car, a roof supported by a plurality of trusses, roofing plates having integral flanges bent at right angles to the body portions thereof, one of said flanges being formed to overlap and embrace the opposite flanges to form the compression

members of the trusses, gusset plates forming the ends of the trusses and the corner brackets of the car, a tension member connecting the gusset plates together to form the lower chord member of the trusses, and a strut in the center of said trusses for connecting the said tension and compression members.

4. In a railway car, a roof formed of a plurality of flanged plates riveted together transversely of the car, and having their ends extending outwardly and downwardly beyond the sides of the car, to form the hood or shedding plates for the car door and track thereof.

5. In a railway car, a roof formed of a plurality of flanged plates riveted together transversely of the car, the upper ends of the side plates of the car being flanged inwardly and attached directly to the intermediate portion of said roof, the intermediate roof plates extending outwardly and downwardly beyond the sides of the car to form

a hood or shedding projection over the car door, and door posts attached between the meeting edges of the flanged roofing plates.

6. In a railway car, a roof supported by a plurality of trussed roofing plates each having an integral flange bent at right angles to its body portion, one of said flanges being formed to overlap and embrace the opposite flange of the adjoining roof plate to form the compression members of the trusses, gusset plates forming the ends of the trusses with the upper portion thereof attached between the flanges of the compression member aforesaid and with the vertical edges thereof bent at right angles and attached to the car side.

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

RALPH V. SAGE.

Witnesses:

ELMER SEAVEY,
ROBERT A. BEERS.