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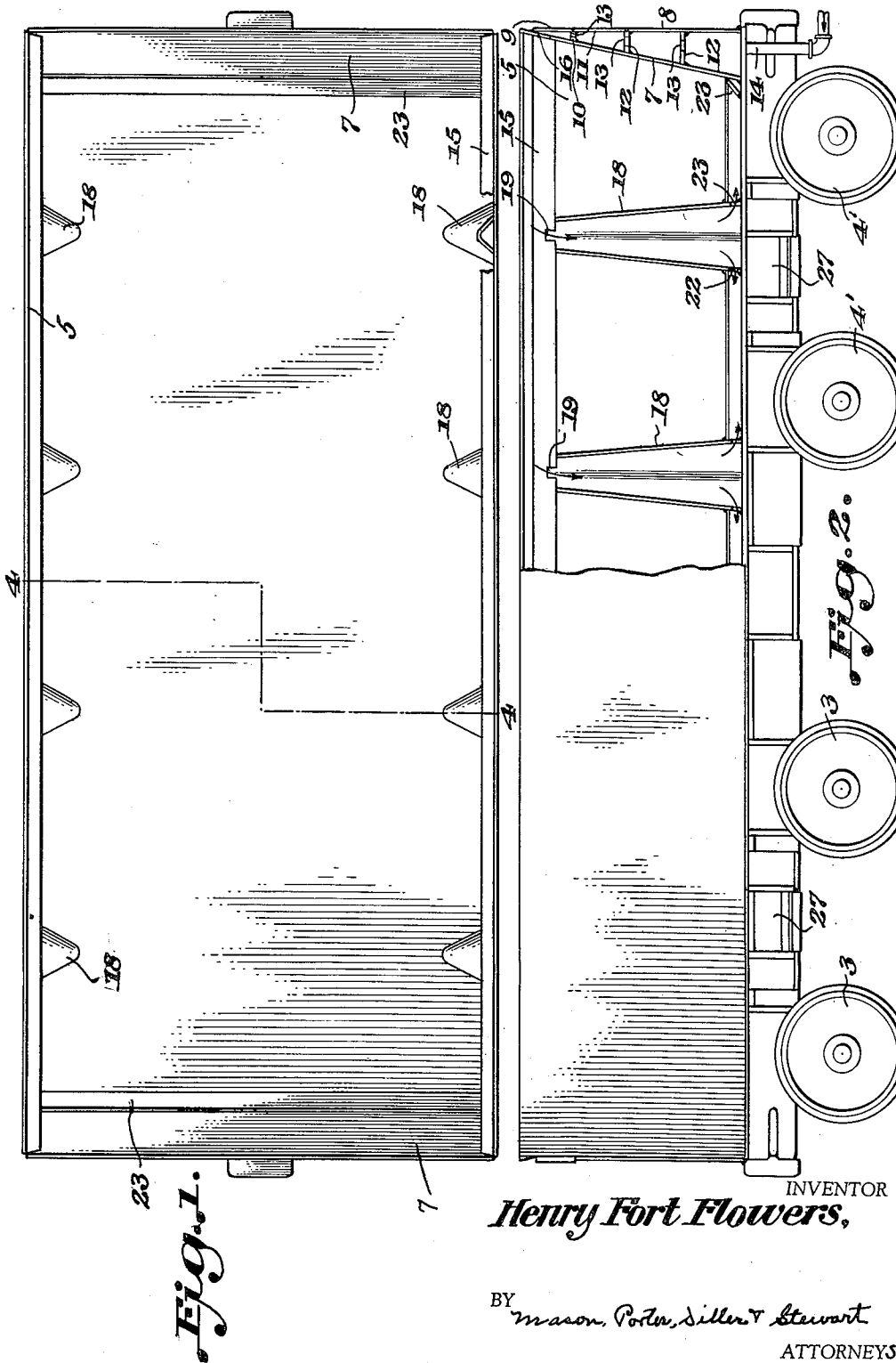
H. F. FLOWERS

2,766,705

HEATING MEANS FOR THE WALLS AND FLOOR OF A MINE CAR

Filed Aug. 13, 1951

2 Sheets-Sheet 1



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Fig. 4.

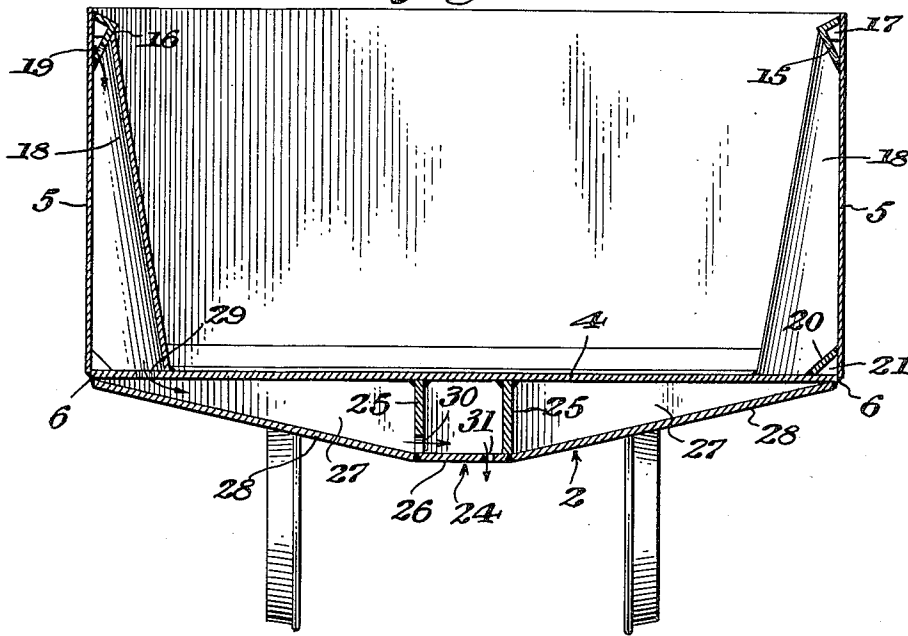
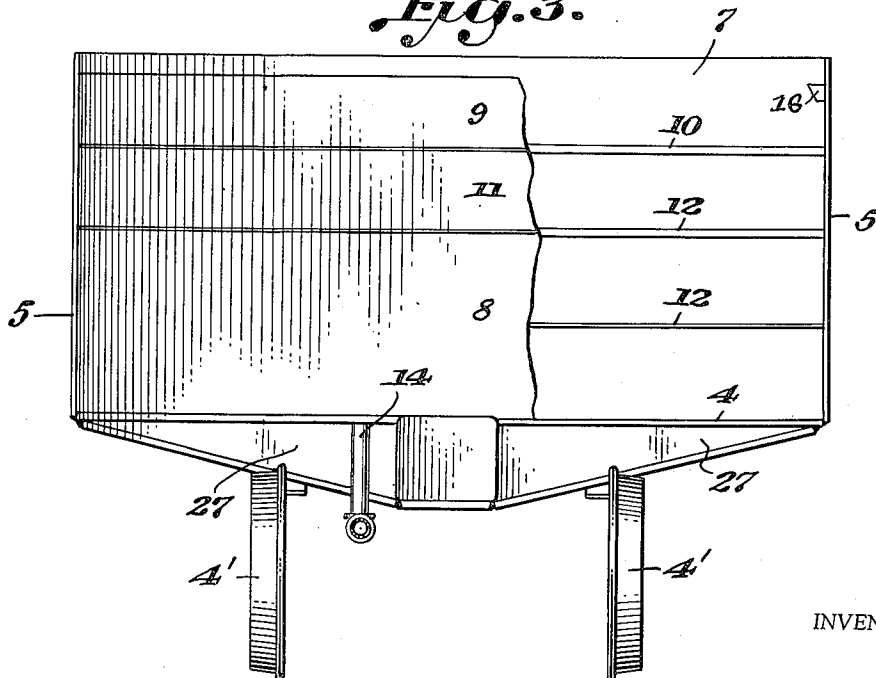


Fig. 3.



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HEATING MEANS FOR THE WALLS AND FLOOR OF A MINE CAR

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Application August 13, 1951, Serial No. 241,596

1 Claim. (Cl. 105—451)

The invention relates to new and useful improvements in ore carrying rail cars.

In my compending application Serial Number 239,826, filed July 25, 1951 there is shown and described a mine car which is particularly adapted for carrying ore from a mine to the docks for shipment by water. The car body structure and underframe structure are made from metal sheets joined by welding. The center sill, the bolsters and the cross bearers forming the underframe are hollow providing closed chambers. The end walls and reinforcing members for the side walls are likewise hollow providing closed chambers.

The present invention, as illustrated, is applied to a mine car of the above type.

An object of the invention is to provide a heating means for heating the side and end walls and the floor of a mine car of the above type, which heating means may be utilized for releasing ore frozen to the walls and to the floor for facilitating unloading.

A further object of the invention is to provide a means for utilizing the hollow chambers of a car of the above type for the passage of steam therethrough for heating the body walls and the floor so as to release ore frozen thereto.

In the drawings which show by way of illustration one embodiment of the invention;

Figure 1 is a plan view of a car embodying the improvements;

Figure 2 is a side elevation, a portion of the side wall being broken away to show the inner structure;

Figure 3 is an end view of the car but showing the end wall plates broken away to show the inner structure;

Figure 4 is a sectional view on the line 4—4 of Figure 2.

The rail mine car as illustrated includes a body 1 and an underframe structure indicated generally at 2. The car body and underframe structure are mounted on conventional railway trucks. The wheels thereof are indicated at 3, 3 and 4', 4' of the drawings.

The body consists of a floor plate 4 which is preferably made from a single sheet of relatively light steel plate. The body also includes side plates 5, 5 which extend from end to end of the car and are welded at 6, 6 to the floor plate. The ends of the body include a single smooth inner steel plate 7, a rear lower plate 8 and an upper plate 9. This upper plate 9 is shaped so as to provide a vertical portion and a flange web 10 which extends across and abuts against the inner plate 7 and is welded thereto. This upper vertical plate 9 is also welded to the upper end of the inner plate 7. There is an intermediate plate 11 which is welded to the plates 8 and 9. These plates 8, 9 and 11 make up a substantially vertical wall which at its bottom end is spaced away from the smooth wall 7. The smooth wall 7 therefore inclines outwardly towards its upper end. Extending from the inner plate to the outer plate are reinforcing webs 12, 12. There are passages through the webs 10 and 12, 12. They are indicated at 13. These inner and outer

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wall plates making up the end structure are welded to the floor plate and are also welded to the side plates 5 of the car body. This forms an end plate structure which is hollow.

A steam pipe 14 connected to a suitable source of steam is attached to the floor plate and directs steam into this hollow chamber of the end wall. The steam will pass up through the openings 13 to the upper end of the end plate and this will cause the front plate 7 to be heated sufficiently to release any ore that may be frozen thereto.

The upper edge portions of each side plate is reinforced by an L-shaped angle member 15. The edges of this angle member are welded to the inner face of the side wall plate. This reinforcing member extends the full length of the car body as shown in Figure 2. There is, of course, a reinforcing member on each side of the car body. The inner wall plate 7 of the end member is provided with a passage 16 which leads to the hollow chamber 17 formed by this L-shaped angle member. The steam passing up from the end member will enter this chamber 17 and pass along the same to the other end of the car body. The other end of the car body is constructed the same as the one just described in detail and the steam enters through a passage similar to the passage 16 into the hollow end member and through passages in the web so that the inner plate will be heated and any ore frozen thereto released.

At intervals along the side walls 5 are tapered posts 18. The reinforcing angle plate 15 is broken away at the right of Figure 2 to show in full the tapered posts. These tapered posts are preferably pressed from plates into U-shape and are gradually of decreasing cross sectional area from the lower end to the upper end thereof. As shown in the drawings, there are four tapered posts on each side of the car. These tapered posts are welded to the floor plate 4 and also at their vertical edges to the side plates and at their top edges to the angle plate 15. These tapered posts are of box like structure and hollow. The angle reinforcing plate 16 has a passage 19 leading into the hollow tapered post.

Extending from one end of the car body to the other is a gusset bar 20. This gusset bar extends across the corner where the side walls join the floor plate and is welded at its edges to the side wall plates and to the floor plate. This provides a chamber 21. The gusset bar extends the full length. The gusset bars terminate at each hollow side post and there is a passage 22 at each side of the hollow side posts leading to the chamber 21. Steam entering the chamber 17 from the hollow end wall will pass into the hollow side posts through the openings 19 and will also pass into the chamber 21 formed by this gusset bar through the openings 22. There is a similar gusset bar 23 extending from one side of the car to the other and across the corner formed by the inner plate 7 of the end wall and the floor plate.

From the above it will be apparent that if the ore during transportation freezes to the side walls and end walls of the car body, steam may be admitted through pipe 14 to the hollow end wall and the steam will follow the passages above described and thus heat the end walls, the angle reinforcing bar along the top edges and side walls, the hollow posts and the corner gusset plates so that the ore will be released from the end plates and side plates to facilitate dumping.

The underframe includes a center sill 24 formed of spaced side plates 25, 25 which extend from end to end of the car. These side plates are welded at their upper ends to the floor plate. There is also a bottom cover plate 26 which provides a substantially closed center sill except for openings at the ends for the draft gear. Extending laterally from the center sill are bolsters 27, 27.

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Each bolster includes spaced vertical webs and a cover plate 28 welded to the bottom edges of the webs. These webs are also welded to the floor plate. This makes up a box-like bolster tapering in cross section from the sill to the outer end of the floor plate. These bolsters are hollow and provide a chamber so that the steam in the hollow side post may pass through openings 29 into the bolsters and through openings 30 into the hollow center sill. This is the lower part in the car frame structure and steam condensing in the hollow center sill may drain out through the opening 31.

The steam passing from the hollow side posts into the bolsters and center sill will heat the floor plate and this may further aid in releasing any frozen ore from the car body when the car body is inverted for dumping the ore therefrom.

By the heating arrangement described in detail, if ores should freeze to the walls or floor of the car body during transit steam may be introduced through the pipe 14 and the wall plates, and the floor plate can be quickly heated sufficiently to release the ore and facilitate unloading.

It is obvious that many changes in the details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

I claim:

A railway mine car comprising a car body structure and an underframe structure all formed of sheet metal parts joined by welding, said body structure including a floor plate extending from one end of the car body to the other, side plates welded thereto, hollow end walls formed from sheet metal plates welded to the floor plate and the side plates and to each other at their upper ends, reenforcing L-shaped members extending along the upper edge portions of the side plates and welded thereto and to the end walls so as to provide a passage extending along

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each side plate and connecting the hollow end walls, hollow tapered posts disposed at intervals along the inner face of the side plates and extending from the floor plate to the reenforcing L-shaped members, said hollow posts being connected to the passage formed by the L-shaped members, gusset bars extending across the inner corners between the side plates and the floor plate and forming a hollow passage connected to the hollow posts, said underframe including vertical plates welded to the floor plate and a plate connecting said vertical plates and forming a hollow center beam, vertical plates welded to the floor plate and to a center beam plate and a plate welded to the vertical plates and forming hollow bolsters extending transversely of the floor plates, said floor plate having passages therethrough connecting the hollow posts to the hollow bolsters, and said hollow beam having a passage therethrough connecting the hollow bolsters to said hollow center beam, said hollow beam having a connection leading to the atmosphere, whereby steam may be passed into one of the hollow end walls and from there through the hollow L-shaped reenforcing members to the other hollow end wall, also to the hollow side posts and from the side posts to the hollow gussets and through the floor plate to the hollow bolsters and from the hollow bolsters to the hollow center beam for heating ore frozen to the floor plate, side, and end walls to facilitate the unloading of the ore.

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