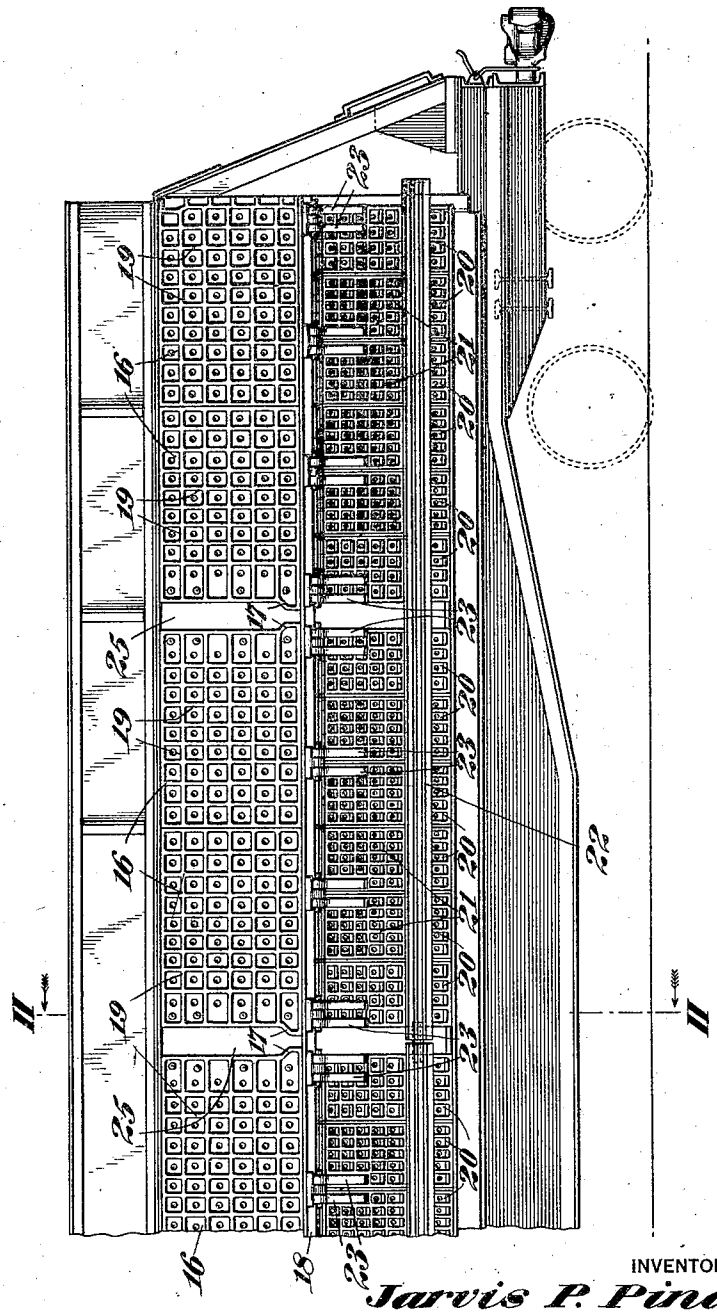
Jan. 1, 1929. 1,697,475

J. P. PINDER

COKE QUENCHING CAR

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Fig. 1.



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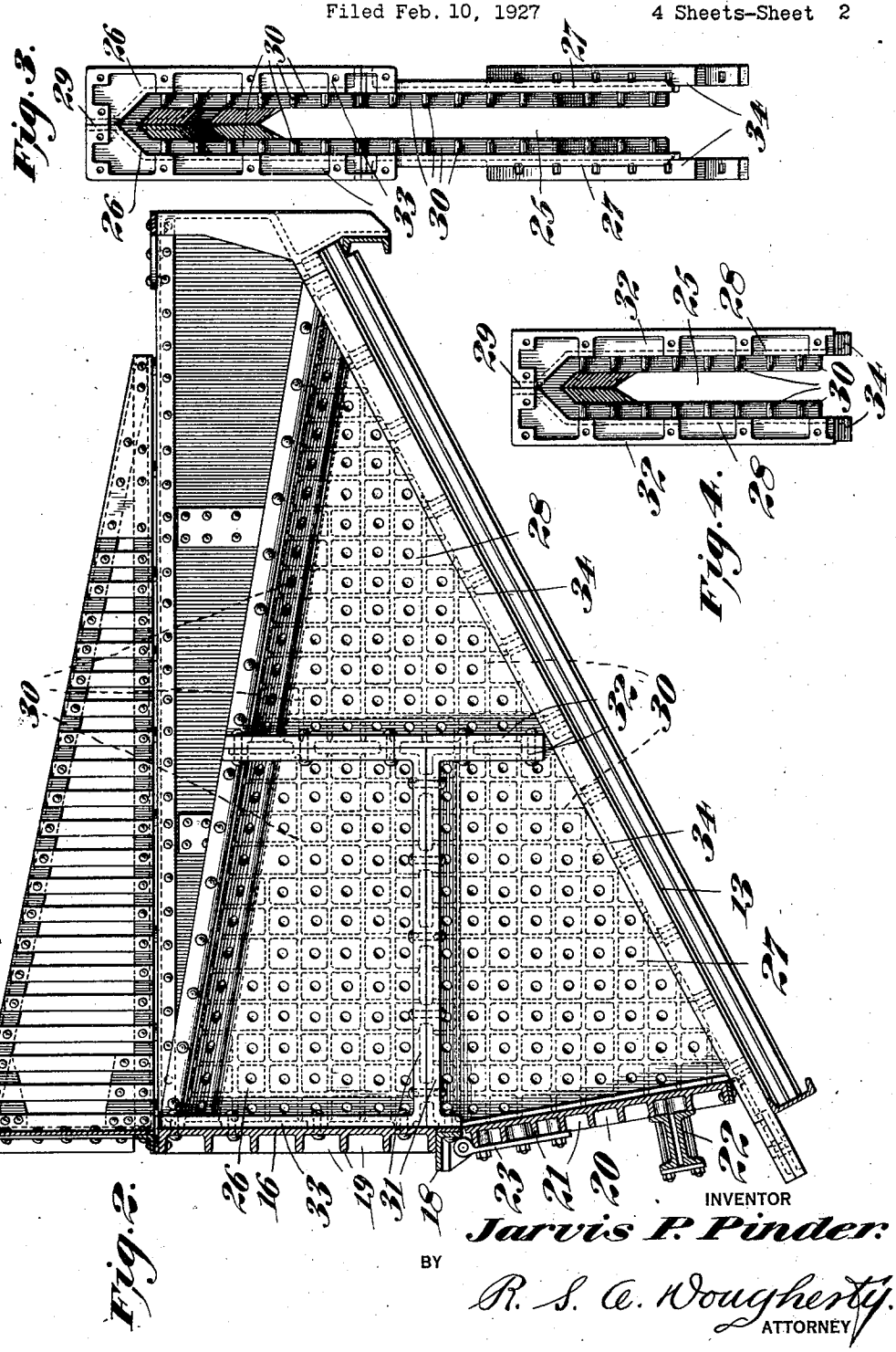
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COKE QUENCHING CAR

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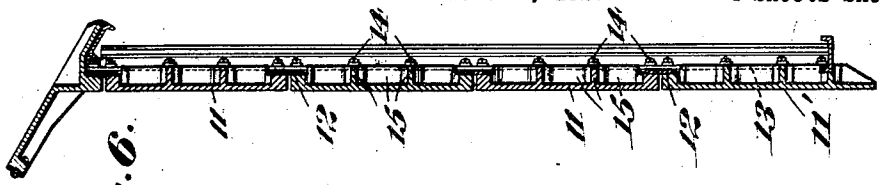


Fig. 6.

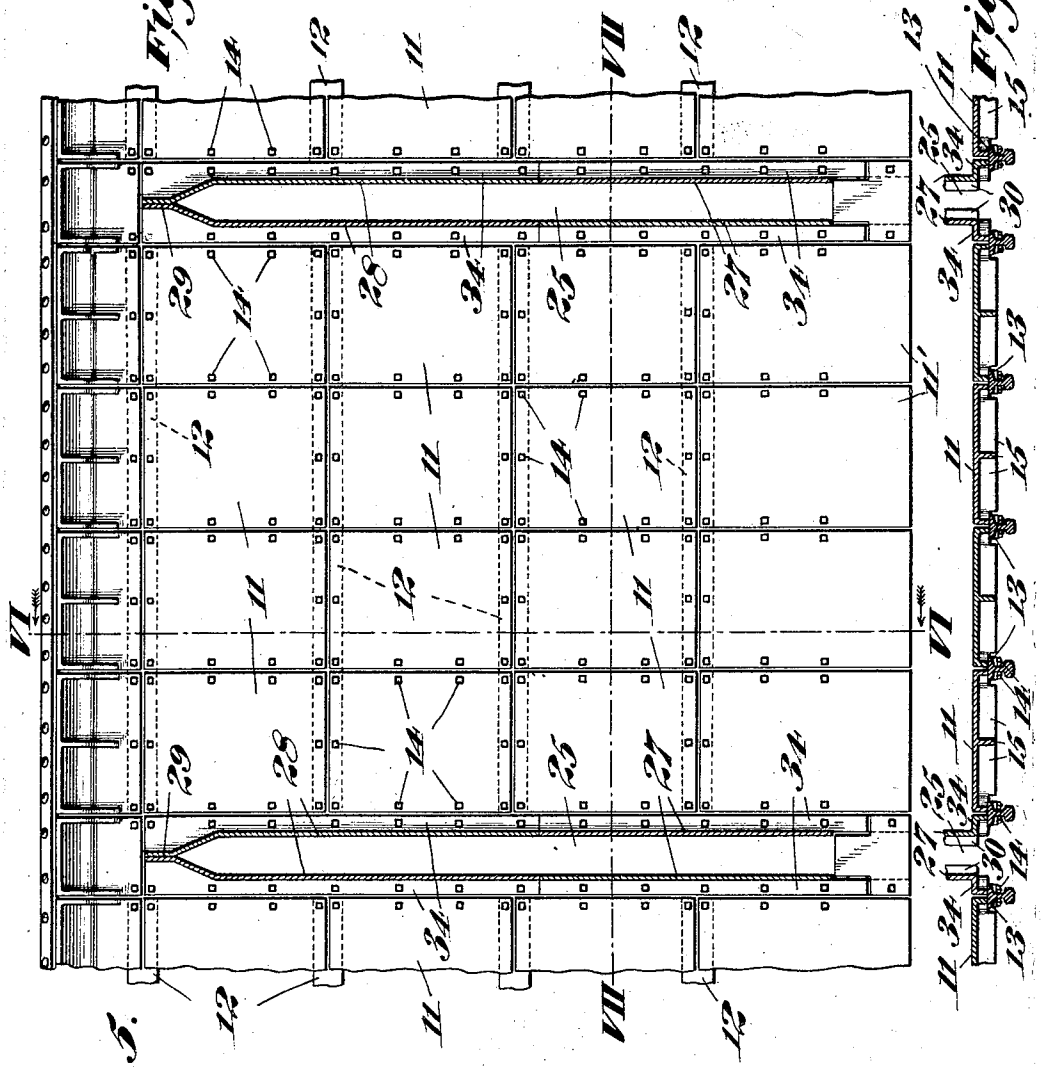


Fig. 5.

Fig. 7.

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Fig. 11.

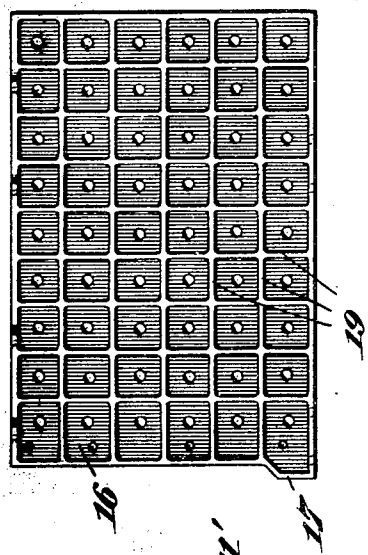


Fig. 10.

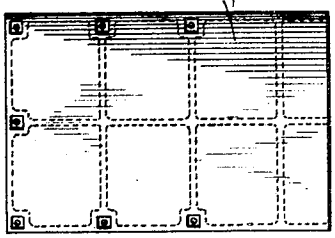


Fig. 9.

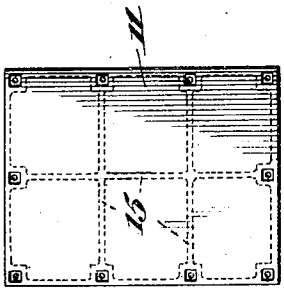


Fig. 8.

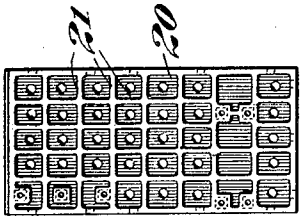


Fig. 13.

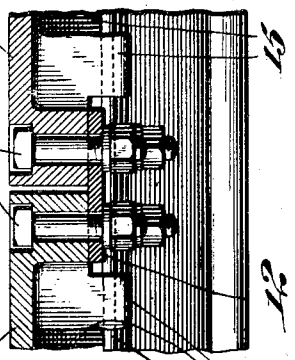
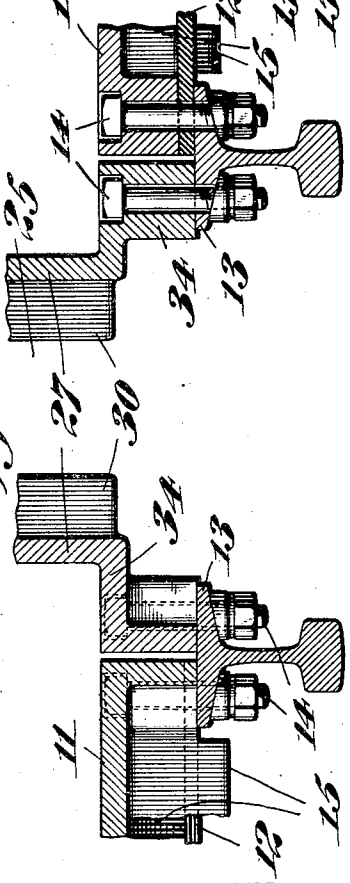


Fig. 12.



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Patented Jan. 1, 1929. 1,697,475

UNITED STATES PATENT OFFICE.

JARVIS P. PINDER, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO BETHLEHEM STEEL COMPANY.

COKE-QUENCHING CAR.

Application filed February 10, 1927. Serial No. 167,125.

This invention relates to railroad cars adapted to contain material heated to substantial temperatures and quenched, as for example coke quenching cars.

Cars of this type having a sloping bottom and side discharge doors are well known in the art, but an objectionable feature of such devices has hitherto been the wear and tear on the floor plates due to their warping and cracking under sudden changes of temperature, with the result that after being in service a short time portions of the coke charges are dropped through the floor and lost.

A further difficulty has arisen, due to the outward bulging of the side plates, and the consequent interference with the free and easy operation of the discharging doors.

It has also been recognized as desirable that the quenching water be permitted to drain from the car as quickly and completely as possible and that the cooling effect of the quenching water be supplemented by exposing the heated portions of the car structure to air currents, before the car be reloaded with another charge. These features have not hitherto been realized in quenching cars of known type.

This invention has therefore for an object, a design of floor plates, less susceptible to distortion and damage under quenching conditions than those used hitherto.

A further object of this invention is to provide an improved design of bracing members for the discharge side of the car, whereby the bulging of the side plates may be substantially overcome.

Further objects of this invention are to provide improved drainage means, whereby the quenching water may be quickly and completely removed from the coke, and to provide means for the efficient air-cooling of those portions of the structure, that have been most exposed to the high temperature of the incandescent coke.

Referring to the drawings:

Fig. 1 is a side elevation of the discharging side of a portion of a coke quenching car, embodying the specific features of my invention;

Fig. 2 is a sectional view upon the line II—II of Fig. 1;

Fig. 3 is a side elevation of an assembly of upper and lower bracing plates defining a draining pocket;

Fig. 4 is a side elevation of the rear bracing plates defining same;

Fig. 5 is a plan view of part of the sloping floor of the car, showing the assembling of the floor plates;

Figs. 6 and 7 are sectional views along the lines VI—VI and VII—VII respectively of Fig. 5;

Fig. 8 is a plan view of a door plate;

Fig. 9 is a plan view of a floor plate;

Fig. 10 is a plan view of one of the floor plates on the discharging side of the car;

Fig. 11 is a plan view of a side plate on the discharging side of the car;

Fig. 12 is a sectional view of portions of the right and left hand plate members of a brace, with portions of contiguous floor plates showing their attachment to cross members of the car; and

Fig. 13 is a sectional view of portions of two adjacent floor plates showing their attachment to a longitudinal supporting member and their relation to a cross member.

Referring to Figs. 5, 6, 7 and 13, I show floor plates 11 having their edges downturned so as to rest on the longitudinal support members 12 and on the wide flange 13 of inverted rail sections disposed transversely of the car frame. Sufficient clearance is provided between adjacent plates to permit their free expansion when heated; but the open joints so formed are masked by the members 12 and the rail flanges 13. Dependent ribs 15 are provided on the lower surfaces of the plates, for the purpose of preventing the plates from warping and also to effect some degree of air cooling between consecutive coke charges.

The floor plates 11 are held down to the members 12 and the inverted rail sections by suitable bolts 14 the heads of the latter being recessed in the plates. The bolt holes provide sufficient clearance for the free expansion and contraction of the plates. In Fig. 9 I show a plan view of typical plates 11 used in all parts of the car floor except those adjacent the discharge doors, which I show at 11′ in Figs. 5, 6 and 10.

I also show in Figs. 1 and 11, perforated and ribbed side plates 16 having lower projecting portions 17 disposed to the right and left of adjacent plates alternately. These plates are suitably supported by, and attached to a longitudinal side member 18 of the car. Plates to each hand when assembled

in pairs have their perpendicular edges contiguous and their ribbed surfaces 19 exposed exteriorly of the car. The discharging doors comprise the right and left hand perforated plates 20 shown in detail in Fig. 8, having ribs 21 on their exposed faces. These plates are suitably drilled for attachment to a member 22, which connects the separate plates, so that they may be operated simultaneously by any suitable device, as for example, by an air cylinder. The plates are further drilled for attachment of hinges 23, whereby the plates may be suitably suspended from a longitudinal member 18 of the car structure.

As will be observed in Figs. 1 and 5, spaces are provided in the assembly of the side plates 16, the door plates 20 and the floor plates 11 and 11′ for the drain pockets 25. These pockets are defined by upper, lower and rear bracing plates shown respectively at 26, 27 and 28 in Figs. 2, 3 and 4. The upper edges of bracing plates 26 and 28 are flanged to right or to left hand, in such a manner as to be susceptible of assembly in pairs and form an upper closed joint 29. The faces of the bracing plates are further provided with air cooling strengthening ribs 30 on the same sides as the right and left hand upper flanges above mentioned. Suitable flanges 31 and 32 are also provided on the obverse side of the plates for securing the bracing plates 26, 27 and 28 to one another and a flange 33 for securing the upper bracing plates 26 to the side plates 16. The lower and the rear bracing plates 27 and 28 have flanges 34 at their lower edges for attachment to the supporting members of the car structure. In Fig. 12 I show my preferred method of securing a right and left hand bracing plate 27 to the flange 13 of an inverted rail section forming the cross member of the car, together with a portion of adjacent floor plates 11 with their dependent ribs 15, said plates being supported at their longitudnal edges by the longitudinal support members 12.

It will be evident from the above description, that the floor plates 11 are so disposed in regard to their supporting means 12 and 13, that the clearances provided between the plates for their expansion are backed up and masked by said supporting means. The absence of overlapping joints in my design also renders the removal, or insertion, of the individual plates an easy matter. The deep ribs 15 on the under surface of the plates which project below their points of support, serve to substantially strengthen the plates and to dissipate the heat therefrom. Similarly in the case of the side plates 16 and the door plates 20 the externally exposed ribs 19 and 21 serve the double purpose of strengthening and cooling the plates which are in contact with the hot coke. It will also be evident that, the bracing plates 26, 27 and 28 disposed in pairs transversely of the car and secured to the side plates 16 and the sloping floor of the car, serve to prevent the former from bulging and therefore maintain the easy closing of the discharge door. The bracing plates moreover, when assembled in the manner shown define a pocket closed upwardly but open downwardly, into which quenching water may be quickly and effectively drained from the coke through the perforations in the bracing plates. As in the case of the other parts of the car in immediate contact with the hot coke, the bracing plates 26, 27 and 28 have strengthening and heat dissipating ribs 30 on their surfaces which are exposed to air cooling, that is to say towards the pockets.

By these several improvements, I have been able to substantially minimize the serious degradation of the exposed parts of a coke quenching car, and have therefore increased its length of service to a marked degree.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof, and I desire, therefore that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a coke quenching car having a floor inclined transversely from its charging to its discharging side, the combination of floor plates having their adjacent edges spaced for expansion, means to support the adjacent longitudinal edges of the plates, perforated side members at the discharge side of the car, perforated discharging members disposed beneath the side members, certain of the side members and certain of the discharging members being spaced for insertion transversely of vertical members therebetween, said members defining pockets for draining quenching water from the car.

2. In a coke quenching car having a floor inclined transversely from its charging to its discharging side, the combination of floor plates having their adjacent edges spaced for expansion, means to support the adjacent longitudinal edges of the plates, cross members to support said means, perforated side plates at the discharge side of the car, perforated door plates disposed beneath the side plates, certain of the latter and certain of the door plates being spaced for the arrangement transversely of drain pockets therebetween, perforated drain plates laterally defining said pockets, all the perforated plates aforesaid having air cooling ribs on their faces exposed externally of the car.

3. In a coke quenching car having a floor

inclined transversely from its charging to its discharging side, the combination of floor plates having their adjacent edges spaced for expansion, means to support the adjacent longitudinal edges of the plates, cross members to support said means, perforated side plates at the discharge side of the car, perforated door plates disposed beneath the side plates, certain of the latter and certain of the door plates being spaced for the arrangement transversely of drain pockets therebetween, inverted U-shaped braces defining the pockets, said braces being disposed transversely of the car and having their sides perforated, and means to secure the braces to the side plates and to the floor.

4. In a coke quenching car having a floor inclined transversely from its charging to its discharging side, the combination of floor plates having their edges turned downwardly, means disposed longitudinally and laterally of the car to support the edges of adjacent plates, dependent cooling and strengthening ribs projecting below the edges of the plates, perforated side plates at the discharge side of the car, perforated door plates disposed beneath the side plates, certain of the latter and certain of the door plates being spaced for the arrangement transversely of drain pockets therebetween, perforated drain plates laterally defining said pockets, all the perforated plates aforesaid having air cooling ribs on their faces exposed externally of the car.

5. In a coke quenching car having a floor inclined transversely from its charging to its discharging side, the combination of floor plates having their adjacent edges spaced for expansion, and means to support the plates at their adjacent edges longitudinally and transversely of the car, said means being such as to mask the clearances provided between the adjacent plate edges.

6. In a coke quenching car having a floor inclined transversely from its charging to its discharging side, the combination of floor plates having their adjacent edges spaced for expansion, and means to support the plates at their adjacent edges in such a manner as to mask the clearance provided between the adjacent plate edges.

In testimony whereof I hereunto affix my signature.

JARVIS P. PINDER.