Jan. 18, 1938. G. C. McCORMICK 2,105,838

RAIL WEARING SURFACE

Filed Jan. 21, 1937 2 Sheets-Sheet 1

Fig. 1.

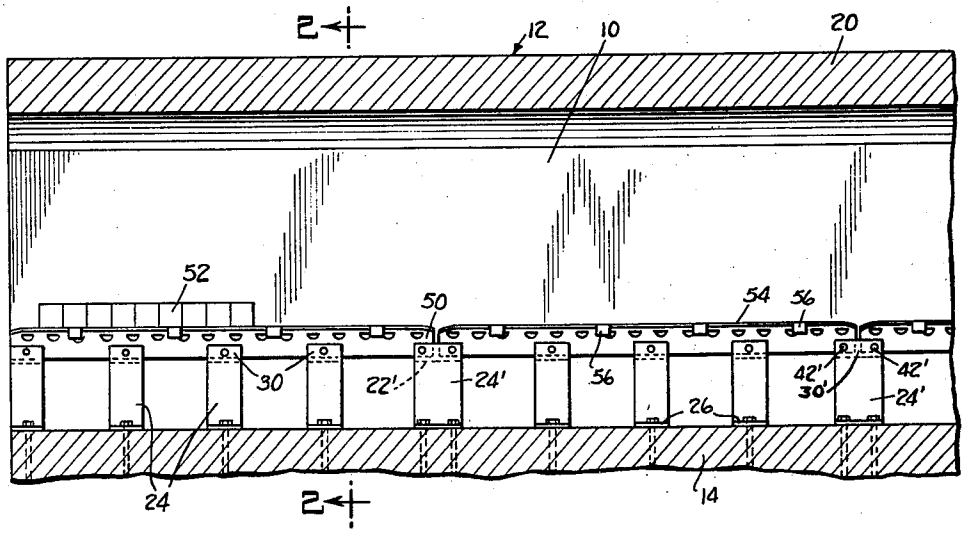
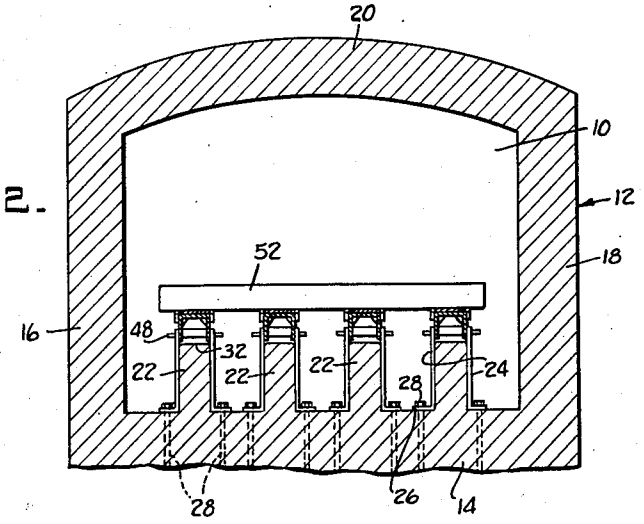


Fig. 2.



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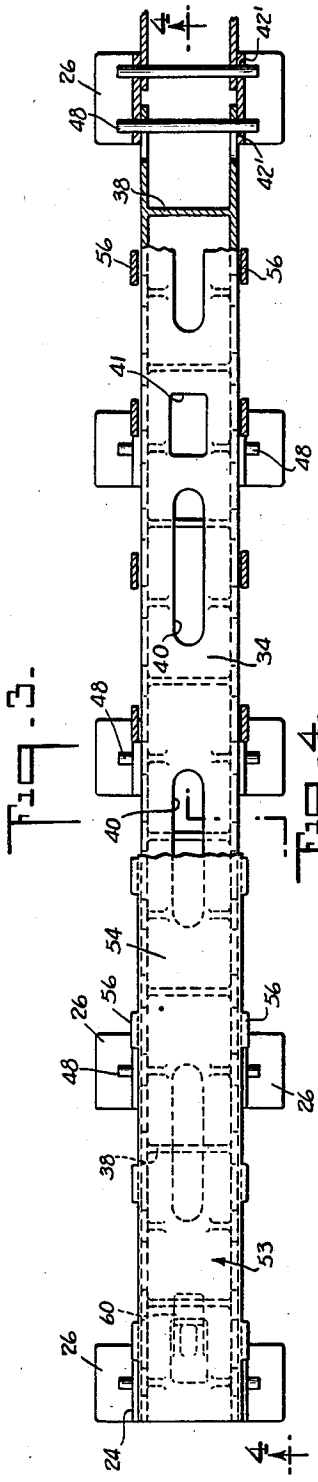


Fig. 3.

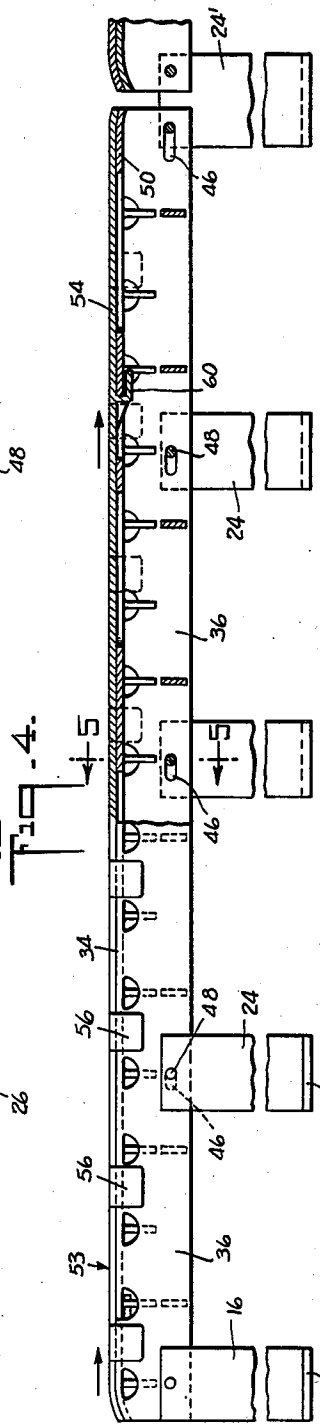


Fig. 4.

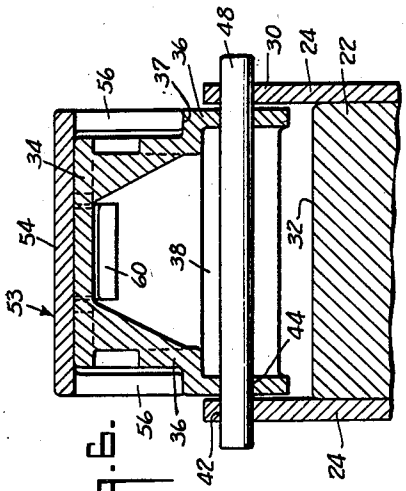


Fig. 6.

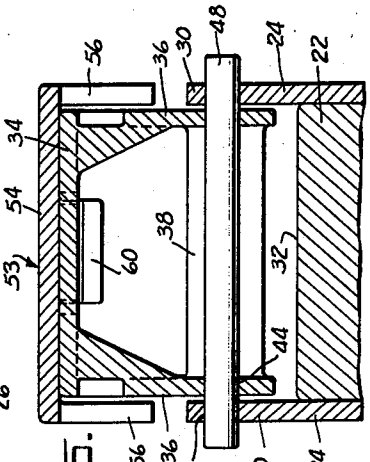


Fig. 5.

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RAIL WEARING SURFACE

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Application January 21, 1937, Serial No. 121,544

4 Claims. (Cl. 263—6)

My invention relates to rails for use in metal heat treating furnaces, along which rails work being treated is passed on skids or the like; and particularly relates to such rails with wearing surface members or tracks which can be readily replaced when desired.

I have found in practice that most rails for heat treating furnaces, while structurally strong, are prevented from giving the maximum possible use because of warping, twisting, buckling, etc. out of usable shape under the varying conditions which necessarily prevail within metal treating furnaces. The work itself, usually quite heavy, in passing over the rails tends to abrade them; the chemical changes occurring within the furnace due to the presence of chemicals in compounds, etc. used for heat treating also adversely affect the rails; and further, the temperature variations within the furnace encountered in connection with causes such as introduction of heat into the furnace, extraction of heat by cold materials passing therethrough, and the like, all tend to distort, twist and otherwise harm the rails and greatly reduce their useful life. With solid unitary rails of ordinary construction injured portions cannot be separately renewed and any material local injury or destruction of a part of the rail necessitates replacement of the entire rail structure at great expense and with much attendant delay.

It is, therefore, an object of my invention to provide a rail structure composed of several parts, to wit, a stationary, permanently fixed rail bed or supporting structure; a semi-permanent rail; and a readily removable wearing surface structure, so that when any changes or replacements are needed, same can be accomplished in detail and will not involve the entire rail structure.

It is a further object of my invention to provide a wearing surface structure or member which is separate, distinct and apart from the rail bed and is removable and replaceable as a unit; and which can be attached to and removed from the rail bed easily, quickly, and at comparatively little expense, thereby effecting not only a longer rail life, but also making simple and inexpensive the process of replacing worn wearing surfaces, and thus attaining an economy of money, time, labor and ultimate working efficiency.

In the drawings annexed hereto, and made a part hereof, I have shown an illustrative embodiment of my invention, in which

Figure 1 represents a longitudinal section through a heat treating furnace showing the general rail assembly in elevation;

Figure 2 is a transverse section on the line 2—2 of Fig. 1;

Figure 3 is a plan, with parts broken away, of the rail and wearing strip assembly;

Figure 4 is an elevation along line 4—4 of Fig. 3, partly in section;

Figure 5 is a section on the line 5—5 of Fig. 4; and

Figure 6 is a similar section of a modification.

Reference numeral 10 indicates the inner chamber of metal heat treating furnace 12, which is of conventional size and shape, comprising floor 14, side walls 16, 18, and arched roof 20. On floor 14 a plurality of piers 22 are built, arranged in a desired number of columns extending in evenly spaced relation longitudinally and transversely of the chamber floor. These piers 22 may be of the same material as the furnace floor and walls, or of any other suitable material, the same are provided, on the two sides thereof facing the furnace walls 16, 18, with cast or otherwise formed metallic angle braces 24. The piers and bracing support the rail bed and the wearing surface. Each brace 24 consists of a body of structurally strong metal having a portion or ear 26 at one end disposed at right angles to the body thereof; and the ear 26 rests directly on floor 14 and is secured thereto by bolts 28 passing through a suitable opening in ear 26 into floor 14. The braces 24 are longer than the piers, and a portion 30 thereof extends upwardly beyond pier top 32; the extensions thereof at the opposite sides of the pier forming a U-shaped socket with pier top 32. This pier and bracing member assembly (Figures 1 and 2) form the permanent and fixed, rail supporting portion of my structure.

The rail or semi-permanent portion of my structure is of cast, or otherwise formed heat and corrosion resisting alloy metal. The rail is in sections comprising a flat-topped body portion 34 having side walls 36 depending downwardly from body 34 at right angles thereto (see Fig. 5). Side walls 36 are preferably angle-braced as shown and provided with integrally or otherwise formed struts or cross bars 38 to prevent spreading. Body 34 has a number of openings 40 therein, of any suitable size or shape, in order to lighten the rail, without causing any undue structural weakening of the rail sections.

According to one mode of connecting the rail sections to the supports, I provide openings 42 in bracing extensions 30 and coincidental openings

44 (some of which 46 are slotted to allow for rail expansion and contraction) in depending side walls 36, and pass pins 48 therethrough to maintain said rail sections in movable relation to the rail bed supports. Openings 42 and 44 are so placed as to maintain the rail 34 somewhat above pier top 32. As shown, rail portion 34, with its depending walls 36, are of such width as to be receivable within the U-shaped sockets formed by the braces 24 and the pier top. I employ a considerable number of these rail sections in the furnace to avoid having any one section too long and of consequent weakness, and I curve the ends 50 thereof downwardly so as to provide no obstruction to an easy and uninterrupted passage of work 52 through furnace 12 from one section on to the succeeding section. Certain piers 22', and the bracing members therefor 24', are of greater longitudinal dimension than the others to receive the end of one rail section and the beginning of the next, and extensions 30' thereof are provided with plural openings 42' for the same reason.

The track or wearing surface portion 53 comprises the third component of my structure, the easily removable and replaceable component thereof, and consists of a flat member 54 also of heat and corrosion resisting alloy metal which might be cast or rolled provided with a number of lugs 56 depending downwardly from the sides thereof at right angles, to fit over rails 34 and keep the track portion 53 from sidewise movement relative to said rails (see Figs. 3 and 5).

A number of hooks 60 are formed projecting downwardly and forwardly of the underside of sheet 54, and when strip 53 is fitted over the rail structure, hooks 60 are received within certain of the openings therein, and the wearing surface is locked to the rail when the former is pushed forward in the direction of the arrows in Fig. 4, the rail being received within the angle of the hook. Lugs 56 and hooks 60 keep the wearing strip from sidewise movement with respect to the rail, and the hook connection keeps the strip 53 from relative endwise movement, particularly when disposed with the hook projecting in the direction of travel of the work through the furnace, which is the preferable arrangement.

My construction, as a whole is easily demountable, and the parts thereof, with the exception of the rail bed, are easily and quickly replaceable. When the wearing surface members need replacement, all that is necessary is to slide strip 53 back to disengage hooks 60 and lift same up and away from the rail, and insert a new strip. Modifications may be resorted to within the scope of my invention. For instance, in Fig. 6 I have shown a rail 34, the sides 36 of which have a shoulder 37 formed therein on which lugs 56 may be rested. Again, the wearing surface members may be of such length as to extend for two entire rail sections, bridging over the intermediate gap. My invention, however, is not to be limited to the specific showing of the particular embodiment illustrated, except as covered by my claims.

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

1. In a heat treating furnace, the combination of a rail and a wearing surface member therefor, the rail having a plurality of openings therein through the top thereof, and the wearing surface member comprising a body portion overlying the rail and having a plurality of integral holding means formed thereon comprising hooks projecting downwardly from the surface member through the openings in the rail, and extending in the direction of work travel through the furnace, whereby the wearing surface member is locked against endwise movement with respect to the rail by abutment of the hooks against the walls of the openings therein during work travel through the furnace.

2. In a heat treating furnace, a floor therein, means to support a rail in spaced relation to the furnace floor comprising a series of stationary supporting members fixed to said floor, a semi-permanent rail immovably connected to the first of said supporting members and slidably connected to the remaining supporting members, a rail wearing surface member and means to support same upon said rail in overlying relation thereto.

3. In a heat treating furnace, the combination of a plurality of rail sections and surface members therefor, the rails comprising flat body portions, the surface members comprising similarly flat portions overlying the rails, openings in the tops of the rails and hook portions on the underside of the surface members extending in the direction of work travel within the furnace, said hooks being adapted to fit down through the openings in the rails and secure the surface members to the rails when the surface members are disposed relatively to the rails with the hooks pointing in the direction of work travel.

4. The combination of claim 2, in which the rail has a plurality of openings therein, and the wearing member has a plurality of hooks formed on the underside thereof, and the means to support the rail wearing member on the rail comprises an engagement between the hooks on the underside of the wearing member and the openings in the rail.

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