April 14, 1942. E. A. LERNER 2,279,689

MULTIPART CARRIER BLADE FOR ENDLESS CHAIN CARRIERS AND THE LIKE

Filed Oct. 14, 1940 3 Sheets-Sheet 1

Fig. 1.

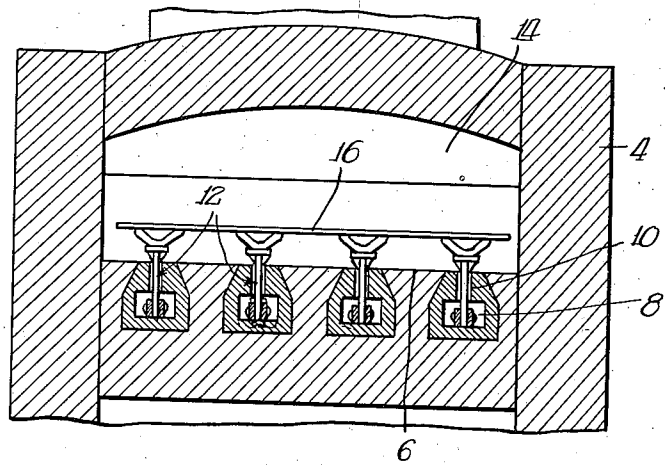


Fig. 2.

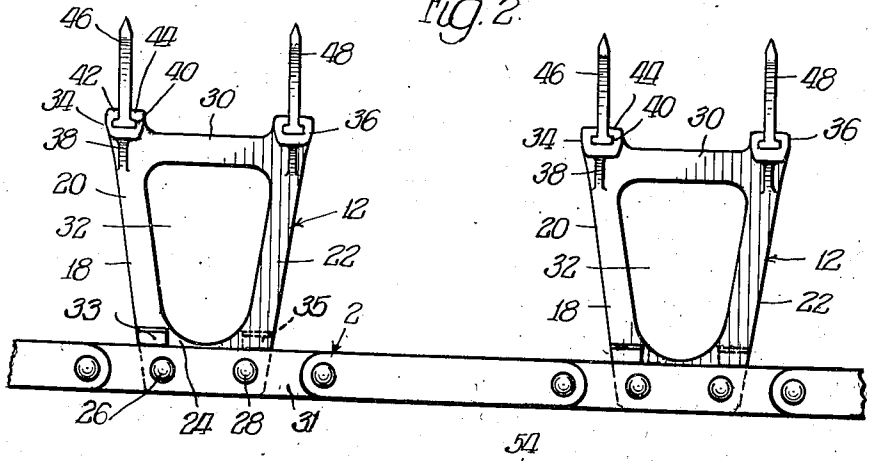


Fig. 3.

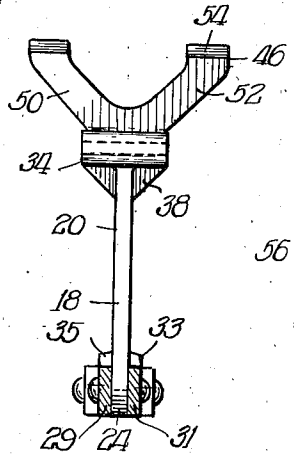
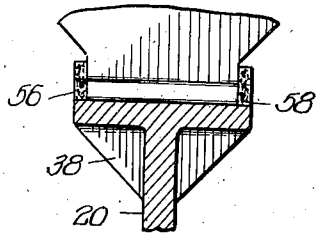


Fig. 4.



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MULTIPART CARRIER BLADE FOR ENDLESS CHAIN CARRIERS AND THE LIKE

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Fig. 5

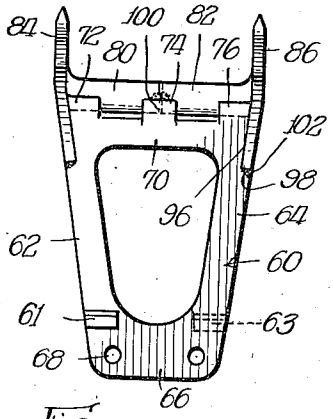


Fig. 6

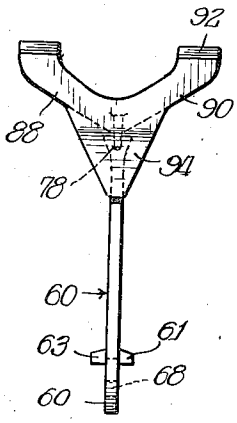


Fig. 7

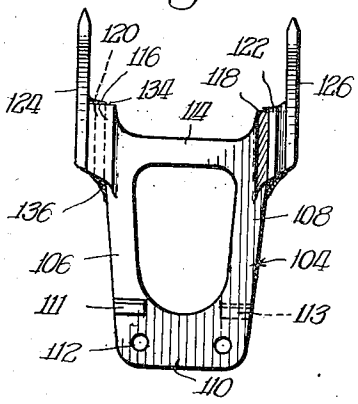


Fig. 8

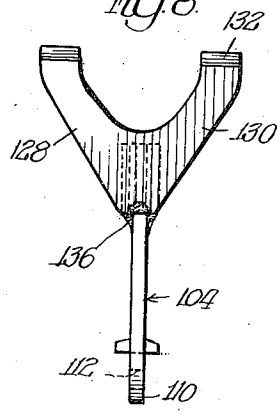


Fig. 9

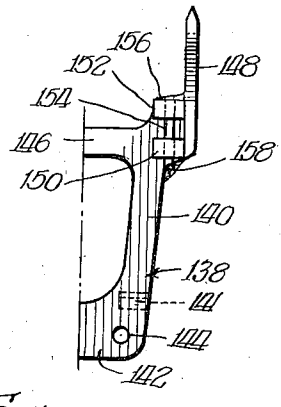


Fig. 10

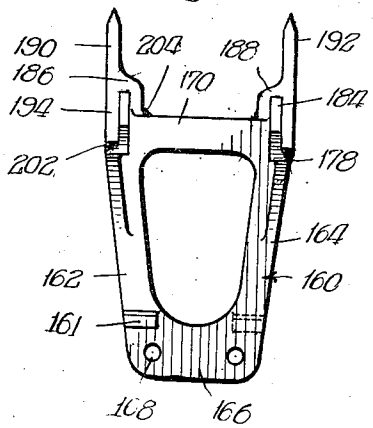
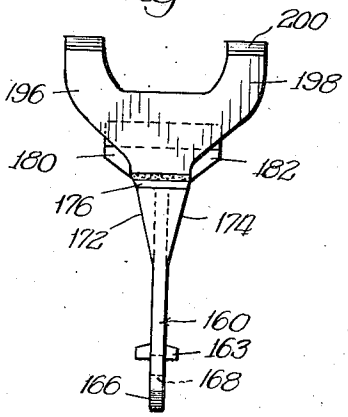


Fig. 11



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MULTIPART CARRIER BLADE FOR ENDLESS CHAIN CARRIERS AND THE LIKE

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Fig. 12.

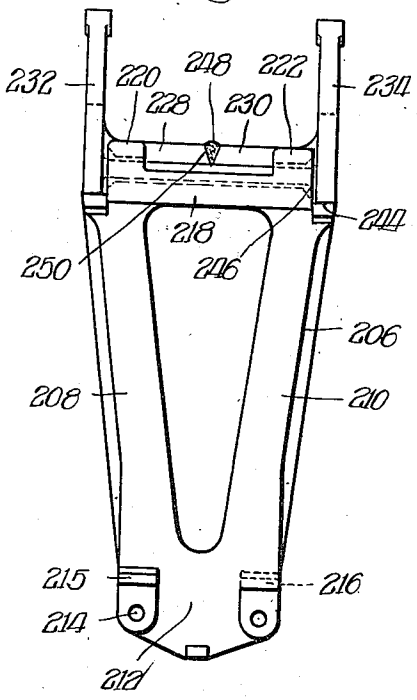


Fig. 13.

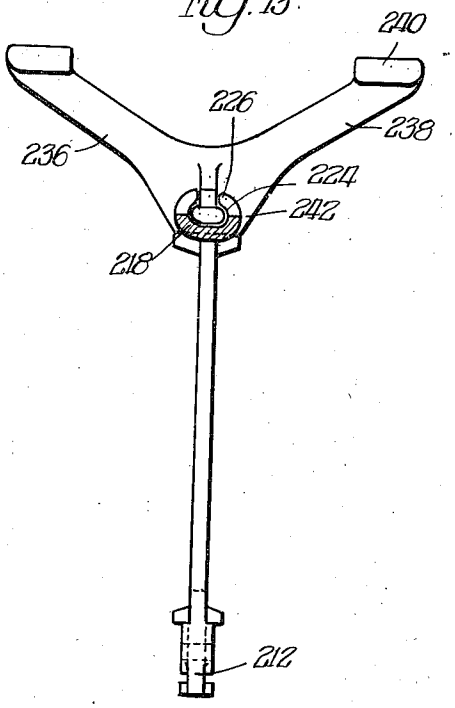
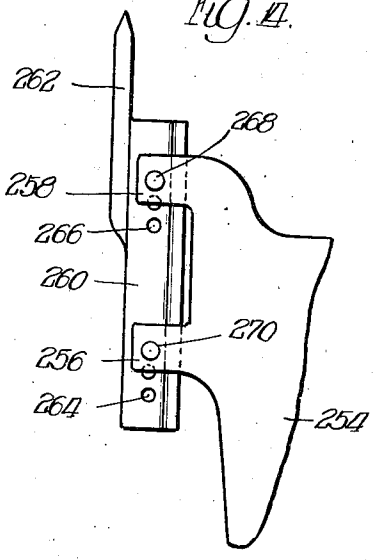


Fig. 14.



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Patented Apr. 14, 1942 2,279,689

UNITED STATES PATENT OFFICE

2,279,689

MULTIPART CARRIER BLADE FOR ENDLESS CHAIN CARRIERS AND THE LIKE

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Application October 14, 1940, Serial No. 361,042

16 Claims. (Cl. 263—8)

The present invention relates to improvements in endless chain carriers for heating furnaces and the like, and more in particular to the fingers or carrier blades thereof which travel within the slotted conduits constructed in the hearth of said furnace and which are provided with goods supporting members adapted to support various objects above the said hearth during a heating operation.

Among the objects of the present invention is to provide novel carrier blades for endless chain carriers which are of multi-part construction wherein the parts are conveniently connected together and wherein the said members which are particularly subject to deterioration can be readily and easily repaired or replaced when necessary, due consideration being given in the improved structure according to the present invention to suitable designs facilitating foundry practice which will result in perfect castings free from flaws and other defects.

Heretofore various types of carrier blades have been provided for endless chain carriers for heating furnaces and the like, the desideratum in each of the designs being to provide carrier blades which are free from cracking, spelling or distortion because of the severe stresses which are set up in them by unequal heating and cooling as they pass from the outside atmosphere into the furnace, and from the furnace back to the atmosphere. While these various improvements in the art have met with some success in the field, nevertheless, because of the rapid deterioration of the parts disposed within the heating chamber, maintenance of the carriers in operative condition has required replacement of the entire individual carrier blade from time to time, thus greatly increasing operating costs due to such changes. Furthermore, the said parts of the blade which project into the chamber of the heating furnace are particularly subject to breakage and distortion during the charging of the furnace, thus likewise causing rapid wear and misalignment, as well as other distortion of those parts of the carrier blades. Still again, these blades of integral construction have been provided without particular regard for the metal sections which are provided at various points in the structure, and especially at those points which are subjected to severe temperature changes so that foundry defects at various points in the carrier blade construction have been common occurrences, which defects quickly lead to breakage or distortion after the said fingers or carrier blades are placed in the endless chain carriers and used under actual operating conditions.

The present invention has therefore proceeded upon the theory of providing novel carrier blades of multi-part construction wherein the goods supporting members which are disposed above the hearth within the heating chamber are separately formed and interconnected to the carrier blade members in such a manner as to be readily assembled or disassembled therewith to provide for the facile replacement thereof when the same have become worn or have deteriorated to such an extent as to require new goods supporting members as parts of the assembled unit.

The present invention further includes as an object the idea of providing a novel carrier blade assembly which is of multi-part construction, with the connection between the said members of such a design as to facilitate foundry practice in manufacturing these elements, and which will result in uniform metal sections greatly decreasing the possibility of breakage or undue stress concentrations, as well as deterioration when the same are subject to rapid changes in temperature which are experienced in furnace constructions of the type in which these endless chain carriers are used.

Still another object within the purview of the present invention is to provide a new and simplified multi-part carrier blade construction wherein the connection between the various elements is of simplified design facilitating the ready replacement of those elements which are unduly stressed and subject to deterioration during the operation thereof, and wherein the advantages of the prior art structures as exemplified in the Fahrenwald Patent No. 1,700,366 are embodied to prevent cracking, spalling and distortion which have been experienced heretofore in certain types of carrier blade structures.

Other objects, features, capabilities and advantages are comprehended by the invention, as will later appear and as are inherently possessed thereby.

Referring to the drawings:

Figure 1 is a view in cross section of a heating furnace in which are installed endless chain carriers or conveyors provided with fingers or carrier blades constructed in accordance with the present invention;

Figure 2 is a fragmentary view in side elevation of an endless chain carrier for use in the furnace shown in Figure 1 and embodying in its construction carrier blades made in accordance with the present invention;

Figure 3 is a view in end elevation of a carrier blade such as disclosed in Figure 2 of the drawings;

Figure 4 is an enlarged fragmentary view in cross section taken through the carrier blade of Figure 3 of the drawings at one of the connections between the elements or members thereof;

Figure 5 is a detached view in side elevation of a modified form of carrier blade of multi-part construction made in accordance with the present invention;

Figure 6 is a detached view in end elevation of a carrier blade as shown in Figure 5 of the drawings;

Figure 7 is a view in side elevation of still another form of carrier blade of multi-part construction made in accordance with the present invention;

Figure 8 is an end view in elevation of the carrier blade shown in Figure 7 of the drawings;

Figure 9 is a fragmentary view in side elevation disclosing still another form of the present invention, the carrier blade of multi-part construction disclosed in said figure conforming in certain respects to the construction of Figures 7 and 8 of the drawings;

Figure 10 is a view in side elevation of still another form of carrier blade according to the present invention and which is likewise of multi-part construction;

Figure 11 is a view in end elevation of the carrier blade as shown in Figure 10 of the drawings;

Figure 12 is a view in side elevation of still a further embodiment of the present invention;

Figure 13 is a view in end elevation of the carrier blade as shown in Figure 12 of the drawings; and

Figure 14 is a fragmentary view in side elevation of still another form of carrier blade made in accordance with the present invention.

Referring now more in detail to the drawings, the various forms of carrier blades all shown of multi-part construction are adapted to be used as elements in endless chain carriers more particularly shown in Figure 2 of the drawings and generally referred to by reference numeral 2. These endless chain carriers are conventionally disclosed in Figure 1 of the drawings, representing a furnace 4 having a hearth 6, the said endless chain carriers being disposed within the conduits 8 suitably spaced with respect of the hearth 6 and provided with slots 10 through which the carrier blades, generally referred to as 12, and made in accordance with the present invention project into the heating chamber 14 of the furnace and are adapted to support objects or goods, such as the sheet 16, thereon for conveying the said sheet through the heating furnace during a heating operation.

As disclosed in Figures 1 to 4 inclusive, a carrier blade of multi-part construction comprehended by the present invention is shown as comprising a carrier blade member 18 of open frame-like construction, including the opposed upright elements 20 and 22 interconnected at their lower ends by a web 24 which is provided with means, such as openings, whereby the said carrier blade member can be connected, as by means of rivets 26 and 28, to the opposed link members 29 and 31 of an endless chain carrier so as to form a part thereof. The said upright elements, at their junction with the web 24, are provided with the opposed shoulders 33 and 35 engageable with the said link members 29 and 31, respectively, for positioning the carrier blade with respect to the endless chain carrier. The upper ends of the upright elements 20 and 22 are bridged or interconnected by means of a web 30, thus providing a substantial opening 32 between the elements of the carrier blade member to prevent undue deterioration of this part of the assembly, all in accordance with the objects and purposes disclosed and explained in the Fahrenwald patent above referred to.

At the upper ends of the supporting elements 20 and 22 adjacent the junction of the same with the connecting web 30 are the spaced socket elements 34 and 36 integrally formed with the carrier blade member 18 and extending transversely with respect to the plane of said member 18, the same preferably being reinforced by fillets 38 to provide a rigid construction. The sockets 34 and 36 are formed with grooves 40 extending longitudinally thereof and being provided in part by an enlarged recess communicating with a restricted part formed by the overhanging flanges 42 and 44. In association with the sockets 34 and 36 are goods supporting members 46 and 48, respectively, which are wing-shaped to include the diagonally and upwardly extending arms 50 and 52 having the wedge-shaped goods contacting ends 54 and which terminate adjacent their intersection with a downwardly depending T-head fitting within the T-shaped groove formed in the socket members 34 and 36. Displacement between the goods supporting members and the carrier blade member is prevented by weld deposits as at 56 and 58, or, if desired, the construction lends itself to the use of pins or rivets (not disclosed) which may be inserted through openings provided in the socket members and the tongues provided on the goods supporting members 46 and 48.

In the formation of the carrier blade members according to the present disclosure, due consideration has been given to provide suitable metal sections adjacent the sockets 34 and 36 which facilitates foundry practice so as to provide such members free from flaws, cracks or other objectionable characteristics which would otherwise cause spalling, cracking or undue distortion and deterioration when the same are used during operation in the assembly according to the disclosure in Figure 1 of the drawings.

Furthermore, the connection provided in the assembly hereinabove described is such as to facilitate replacement of the goods supporting members 46 and 48 which, in the environment disclosed in Figure 1, above the hearth 6 of the heating furnace, are subjected to severe temperatures and to rapid changes in temperature in their operating cycle. These elements can be readily and easily replaced without extended shut-downs in operating procedures, thus facilitating the conditioning processes involved in passing objects and articles, such as the sheet 16, through the furnace during heating operations.

A further illustrative embodiment of the invention is disclosed in Figures 5 and 6 wherein the carrier blade comprises a carrier blade member 60 conforming substantially to that corresponding element in the assembly of Figures 1 to 4 inclusive, and which includes the upright supporting elements 62 and 64 interconnected at their lower ends by the web 66 provided with means in the form of openings 68 whereby the said carrier blade can be connected to opposed link members of an endless chain carrier, such as shown in Figure 2 of the drawings. Opposed shoulders 61 and 63, corresponding to shoulders

33 and 35, are provided at the junction of upright elements 62 and 64 and the connecting web 66 for positioning the carrier blade with respect to a chain carrier, all as heretofore explained in connection with the embodiment of Figures 1 to 4 inclusive. The upper ends of elements 62 and 64 are interconnected by the web 70 which, at its upper marginal edge, is provided with the opposed flanges, such as 72, 74 and 76, providing grooves, such as 78, therebetween for the reception of tongues 80 and 82 of the goods supporting members 84 and 86, respectively.

Each of the goods supporting members 84 and 86 is of wing-shaped construction, embodying the opposed upwardly and angularly extending arms 88 and 90, with their wedge-shaped goods engaging ends 92. Said arms merge into a depending flange 94 adapted to be received within a stepped portion 96 formed on the outer marginal edge of the supporting elements 62 and 64 which is provided with a shoulder 98 at the lower end thereof. The goods supporting members 84 and 86 are secured in operative association with the carrier blade member 60 to prevent relative displacement thereof by means of weld deposits, such as 100 and 102, located at the joint between the tongues 80 and 82 and at shoulders 98, respectively. If desired, however, other forms of connections, such as pins or rivets, may be used to connect the parts together, as suggested in connection with the description of the embodiment shown in Figures 1 to 4 inclusive.

As in the embodiment disclosed in Figures 1 to 4 inclusive, the carrier blade is of multi-part construction to facilitate ready replacement of members 84 and 86 which, because of their disposition within the heating chamber 14 of the furnace, are subjected to rapid deterioration, making such changes at short intervals of time necessary. The connections provided for the parts of this carrier blade are such that sound structural elements can be provided in the foundry.

As hereinabove described, the embodiment shown in Figures 5 and 6 embraces a tongue and groove connection between members 84 and 86 and member 60 comprising a groove formed with straight sides and a tongue adapted to be received therein, which is likewise provided with straight and parallel side surfaces. However, the invention comprehends the use of a tongue and groove connection between these elements corresponding to the tongue and groove shown in Figures 2 to 4 inclusive.

Still another modified form of carrier blade or finger of multi-part construction is shown in Figures 7 and 8, incorporating a carrier blade member 104 conforming substantially in its structural characteristics to corresponding elements of the assemblies shown in Figures 1 to 6 inclusive. In this embodiment, the said carrier blade member includes the upright supporting elements 106 and 108 interconnected by the web 110 provided with means in the form of opening 112 for securing said members to opposed link members of an endless chain carrier, such as particularly shown in Figure 2 of the drawings. Opposed shoulders 111 and 113, as in the previous embodiments, are provided to position the carrier blade with respect to the chain carrier. The upright supporting elements 106 and 108, as in the previous illustrative embodiments, are interconnected by a bridging web 114, adjacent the intersection of which with said upright supporting elements 106 and 108 are provided opposed outwardly opening sockets 116 and 118 conforming substantially to the construction for the sockets 34 and 36 except that sockets 116 and 118 are vertically disposed in the plane of the carrier blade member 104 and are adapted to receive the inwardly disposed T-shaped lugs or tongues 120 and 122, respectively, of goods supporting members 124 and 126 which extend transversely with respect to the plane of the carrier blade member 104.

As in the previous illustrative examples of the invention, the said goods supporting members 124 and 126 are of wing-shaped construction, embodying the upwardly inclined arms 128 and 130 terminating in the goods engaging ends 132 and merging adjacent their central part to form a support for the inwardly disposed T-shaped lugs or tongues 120 and 122. As in the previous illustrations, weld deposits, such as 134 and 136, are used to secure the goods supporting members 124 and 126 in association with the carrier blade member 104 and to prevent their displacement with respect thereof, although, as previously indicated, one or more pins or rivets extending through the socket and tongues could be provided as substitute means for the weld deposits to secure said members against relative displacement.

In the embodiment illustrated in Figure 7 of the drawings, the weld joints may be broken when either one or both of the goods supporting members have deteriorated to such an extent as to require repair and the said member or members reshaped at the supporting end, after which the member may be replaced and welded in place and at the proper elevation with respect to other of the members in the chain carriers. This form therefore lends itself to continued use of these members until such time as replacement becomes necessary, thus further economizing in the way of maintenance expense.

The illustrative embodiment disclosed in Figure 9 of the drawings corresponds essentially to that shown in Figures 7 and 8, and includes carrier member 138 provided with spaced upright supporting elements, such as 140, interconnected at their lower end by way of a web 142 which is provided with means in the form of an opening 144 for securing the carrier blade in operative association with opposed link members of an endless chain carrier, such as shown in Figure 2 of the drawings. Opposed lugs, such as 141, are provided adjacent the junction of upright supporting elements 140 and the connecting web for positioning the carrier member with respect to the chain carrier. As in the previous illustrated examples of the invention, the upper ends of the supporting elements 140 are bridged or interconnected by web 146 to provide an open frame-like structure for this element of the assembly. In this illustration of the invention, each of the goods supporting members, such as 148, and which may take the form of the members 124 and 126 of the embodiment shown in Figures 7 and 8 of the drawings, is provided with spaced sockets 150 and 152 which extend inwardly with respect to the plane of said member and are adapted to embrace a T-shaped lug or tongue 154 formed integrally on the carrier blade member 138 at the junction of the connecting web 146 and an upright member 140. The goods supporting members in this embodiment may be secured in position to prevent displacement thereof with respect of the carrier blade member

by means of weld deposits 156 and 158 at the upper and lower ends of the said tongue 154. This tongue and groove connection conforms to that shown in Figures 2 to 4 inclusive of the drawings, and the same may be maintained in operative condition by way of one or more pins or rivets inserted through the socket members 150 and 152 and the tongue in operative association therewith, instead of the weld deposits as illustrated on the drawings.

Figures 10 and 11 illustrate a further modification, all within the scope of the present invention, the same including a carrier blade member 160 of substantially the form shown in the other modifications, and incorporating the spaced upright supporting elements 162 and 164 interconnected at their lower ends by the web 166 provided with means in the form of openings 168 for securing the carrier blade to opposed link members of an endless chain carrier, such as shown in Figure 2 of the drawings. As in the previous embodiments, opposed lugs 161 and 163 are provided adjacent the junction of upright supporting elements 162 and 164 and the interconnecting web for positioning the blade member with respect to the chain carrier. The upper ends of the supporting elements 162 and 164 are bridged or connected by means of the web 170 to provide an open frame-like structure conforming to the structure of the other modifications herein illustrated. Each of the supporting elements 162 and 164 adjacent the web 170 is formed with integral upwardly and transversely disposed diverging webs 172 and 174 merging in a seat 176 extending transversely of the member 160 and providing a shoulder 178 on its upper surface constituting a stepped portion defined at its inner marginal edge by the transversely extending webs 180 and 182, both formed integral and extending upwardly beyond the upper marginal edge of the connecting web 170 to provide a tongue 184.

These tongues are web-like in construction and are adapted to be received within grooves formed in part by the inwardly disposed flanges 186 and 188 of the goods supporting members 190 and 192, respectively, and in part by the centrally disposed flanges 194 of said members. These members 190 and 192 are of wing-shaped construction conforming substantially to corresponding members of other modifications of the invention herein described, and include the upwardly and angularly disposed arms 196 and 198 terminating to provide the goods supporting ends 200. The centrally disposed flanges 194 of these members are formed at the junction of arms 196 and 198 and integral therewith, and are disposed in opposed relation to the shoulders 178 formed in the stepped portions of the carrier blade member 160 when the members of the carrier blade are assembled.

The members 190 and 192 are secured in respect to the carrier blade member 160 to prevent displacement thereof by means of weld deposits 202 and 204 at the joints between flanges 194 and shoulder 176, and flanges 186 and 188 and the connecting or bridging web 170, respectively. If desired, the tongue and groove connection as specifically illustrated in these figures, may take the form of the tongue and groove connection between corresponding members as shown in the modification illustrated in Figures 2 to 4 inclusive. Furthermore, a pin or rivet may be inserted through the tongue and groove connection to prevent displacement of the members of the assembly, instead of the weld deposits as specifically shown in the illustrative examples of the invention.

Figures 12 and 12 illustrate still a further modification, all within the scope of the present invention, the same including a carrier blade member 206 comprising the spaced upright supporting elements 208 and 210 interconnected at their lower ends by the web 212 provided with means in the form of openings 214 for securing the carrier blade to opposed link members of an endless chain carrier, such as shown in Figure 2 of the drawings. The said carrier blade member at its lower end and adjacent the web 212 is provided with the opposed lugs 215 and 216 adapted to cooperate with the chain carrier to position the carrier blade, all in accordance with the preceding description of the other embodiments herein disclosed. The upper ends of the supporting elements 208 and 210 are interconnected by the arcuately formed web 218 terminating at its ends in opposed arcuate-shaped flanges, such as 220 and 222, which, together with the interconnecting web 218, provides a transversely disposed groove 224 restricted as at 226 for receiving the T or bulbous-shaped laterally and inwardly extending tongues 228 and 230 of the goods supporting members 232 and 234.

The goods supporting members 232 and 234 are of wing-shaped construction, each being provided with the angularly extending parts 236 and 238 terminating in the goods supporting ends, such as 240, and merging adjacent their central part with a supporting head or flange 242 adapted to seat with a shoulder 244 of a stepped portion 246 at the face of the member 206. The assembly as above described is perfected by way of a weld joint 248 deposited between the angularly disposed end surfaces 250 of the tongues 228 and 230.

The embodiment herein immediately above described has all of the advantages of the previously described embodiments, the same incorporating in its structure novel means whereby the goods supporting members 232 and 234 may be readily replaced at will. When the said goods supporting members need replacement, weld 248 may be cut in any desired manner and the goods supporting members removed and replaced by new ones which may be welded by a deposit of weld material corresponding to weld material 248 shown in the drawings. The construction according to this disclosure provides rigidity in the assembly, the seating relation between the goods supporting members 232 and 234 and the carrier blade member 206 being such as to prevent angular displacement therebetween and to prevent any excessive stress or strain being placed upon the flange elements 220 and 222 of the carrier blade member.

A still further embodiment of the invention is shown in Figure 14 of the drawings and comprises a carrier blade member 254 which may conform in its general characteristics to those of the previously described embodiments. The carrier blade includes the spaced sockets 256 and 258 extending laterally thereof and being shaped to provide grooves corresponding to grooves shown in Figures 7 to 9 inclusive of the drawings, and which grooves are adapted to receive the tongue extension 260 of a goods supporting member 262 formed integral therewith, the present embodiment, like those previously described, including spaced goods supporting members on opposite sides of the carrier blade member 254.

The tongue extension **260** is T or bulbous-shaped to fit the grooves of sockets **256** and **258**, and the said goods supporting member **262** may be wing-shaped as illustrated in the previously described embodiments. The opposed flanges of the sockets **256** and **258** are formed with aligned openings adapted to coincide with spaced openings **264** and **266**, respectively, provided in the tongue extension **260** whereby the tongue extension **260**, as well as the integrally formed goods supporting member **262**, may be adjustably positioned and secured in place with respect to the carrier blade member **254** by means of pins **268** and **270** extending through the aligned openings of the tongue extension **260** and the sockets **256** and **258**.

The particular embodiment herein disclosed and including the adjustable pin connection has certain advantages in that when the member **262** has deteriorated to such an extent as to prevent normal movement of the goods supported thereon through the furnace, the said member may be removed, reground or refinished and the same put back in place and connected to the carrier blade member **254** by way of the pins **268** and **270** in suitable adjusted position to conform to the elevation of the opposed carrier blade. In this way, the goods supporting member has an extended life, requiring replacement less frequently, and thus this assembly lends itself to economical maintenance expenses.

While the various figures of the drawings disclose illustrative examples of the invention, it is to be understood that the tongue and groove connection between the various elements of the assembly may take any form desired, and the invention is of such a scope as to comprehend an assembly wherein either of the elements of the tongue and groove connection may be formed on either of the members with which the connection is associated in the illustrative examples of the invention, without in any way departing from the spirit thereof.

It is to be observed in connection with the various modifications made in accordance with the present invention that the connection between the parts of the assembly can be readily effected whereby those parts of said assembly which are subject to rapid deterioration may be quickly and rapidly replaced without any great loss of time requiring a shut-down of the heating furnace with which the same are associated. Furthermore, the connection between the various members of the assembly is of simplified design, providing optimum metal sections to secure good sound castings without flaws which will be free from spalling, cracking, or other objectionable distortion during the use thereof, requiring quick replacement in order to provide an effective and efficient chain carrier in the environment in which the same is used.

While I have herein described and upon the drawings shown illustrative embodiments of the invention, it is to be understood that the invention is not limited thereto but may comprehend other constructions, arrangements of parts, details and features without departing from the spirit of the invention.

I claim:

1. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, a goods supporting member, one of said members having a groove, and the other of said members having a tongue fitting said groove to interconnect said members.

2. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, a goods supporting member, one of said members having a groove, and the other of said members having a T-head tongue fitting said groove to interconnect said members.

3. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, a goods supporting member, one of said members having a groove, the other of said members having a tongue fitting said groove to interconnect said members, and means for securing said members together to prevent their relative displacement.

4. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, a goods supporting member, one of said members having a groove, the other of said members having a T-head tongue fitting said groove to interconnect said members, and means for securing said members together to prevent their relative displacement.

5. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member of open frame-like construction embodying spaced upright supporting elements, spaced goods supporting members supported by said first-named member at the upper end of said elements, said second-named members being connected to said first-named member by a tongue and groove connection, and means for securing said members in associated relation to prevent displacement thereof.

6. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member of open frame-like construction embodying spaced upright supporting elements, spaced goods supporting wing-shaped members disposed substantially normal to the plane of said carrier blade member and supported by said first-named member at the upper end of said elements, said second-named member being connected to said first-named member by a tongue and groove connection, and means for securing said members in associated relation to prevent displacement thereof.

7. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members supported by said first-named member, said second-named members being connected to said first-named member by a tongue and groove connection horizontally disposed and in the plane of said carrier blade member, and means securing said members in associated relation to prevent displacement thereof.

8. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members supported by said first-named member, said second-named members being connected to said first-named member by a tongue and groove connection vertically disposed and in the plane of said carrier blade member, and means securing said members in associated relation to prevent displacement thereof.

9. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members supported by said first-named member in stepped relation thereto, said second-named members being connected to said first-named member by a tongue and groove connection, and means for securing said members in associated relation to prevent displacement thereof.

10. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting wing-shaped members disposed transversely of the plane of said first-named member, said second-named members being connected to said first-named members by a tongue and groove connection disposed in the plane of said first-named member, said first-named member having transversely disposed shoulders, said second-named members each having a transversely disposed flange disposed in abutting relation to said shoulders, and means including the deposition of weld material at the joints between said flanges and shoulders to prevent displacement of said members.

11. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member of open frame-like construction embodying spaced upright supporting elements and a connecting web therebetween, said upright supporting elements being provided with a stepped portion providing shoulders, said member having a groove disposed in the plane thereof adjacent the marginal edge of said connecting web, spaced goods supporting wing-shaped members having a tongue disposed in said groove and a transversely disposed web received in said stepped portions and in abutting relation to said shoulders, and means for securing said members together to prevent displacement thereof.

12. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members disposed transversely of the plane of said first-named member, said second-named members having laterally disposed securing elements, said first-named member having a securing element at its upper marginal edge, said second-named members being connected to said first-named member by a tongue and groove connection formed by said securing elements, said first-named member having marginal shoulders, said second-named members having flanges transversely disposed with respect to the plane of said first-named member and having seating relation with said shoulders, and means connecting the inner adjacent ends of the securing elements of said second-named members to prevent displacement thereof with respect to said first-named member.

13. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members, said first-named member having laterally disposed securing elements, said second-named members having extensions providing securing elements, said second-named members being connected to said first-named member by a tongue and groove connection formed by said securing elements, said securing elements having openings adapted to be aligned when said second-named members are adjusted in various positions with respect to said first-named member, and means disposed in the aligned openings of said securing elements for adjustably securing said second-named members with respect to said first-named member.

14. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members, said first-named member having laterally disposed securing elements provided with grooves, said second-named members having extensions forming securing elements provided with tongues adapted to be received in the grooves of said securing elements, said securing elements having openings adapted to be aligned when said second-named members are adjusted in various positions with respect to said first-named member, and means disposed in the aligned openings of said securing elements for adjustably securing said second-named members with respect to said first-named member.

15. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member, spaced goods supporting members, said first-named member having laterally disposed securing elements, said second-named members having securing elements, said second-named members being connected to said first-named members by a tongue and groove connection formed by the securing elements of said members, and means providing for the ready adjustability of said second-named members with respect to said first-named member.

16. A finger for supporting conveyors of heating furnaces, comprising a carrier blade member of open frame-like construction, spaced goods supporting members, said first-named member having spaced laterally disposed securing elements provided with grooves, said second-named members having extensions forming securing elements provided with tongues adapted to be received in the grooves of said securing elements, said securing elements having openings adapted to be aligned when said second-named members are adjusted in various positions with respect to said first-named member, and means disposed in the aligned openings of said securing elements for adjustably securing said second-named members with respect to said first-named member.

EARL A. LERNER.