

Krieder et al.

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[54] **VACUUM ELECTRIC FURNACES**

3,625,499 12/1971 Western 432/205

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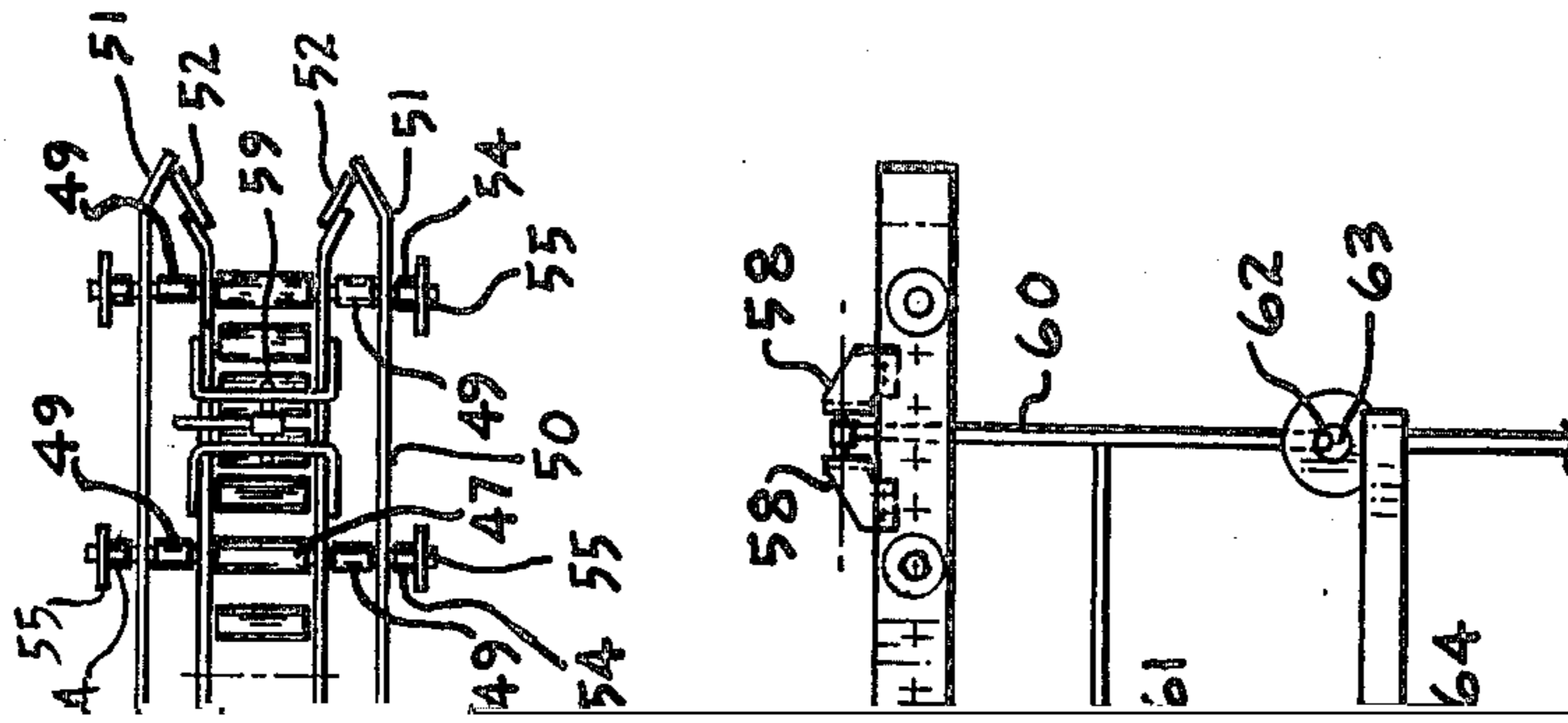
by **James H. ...**

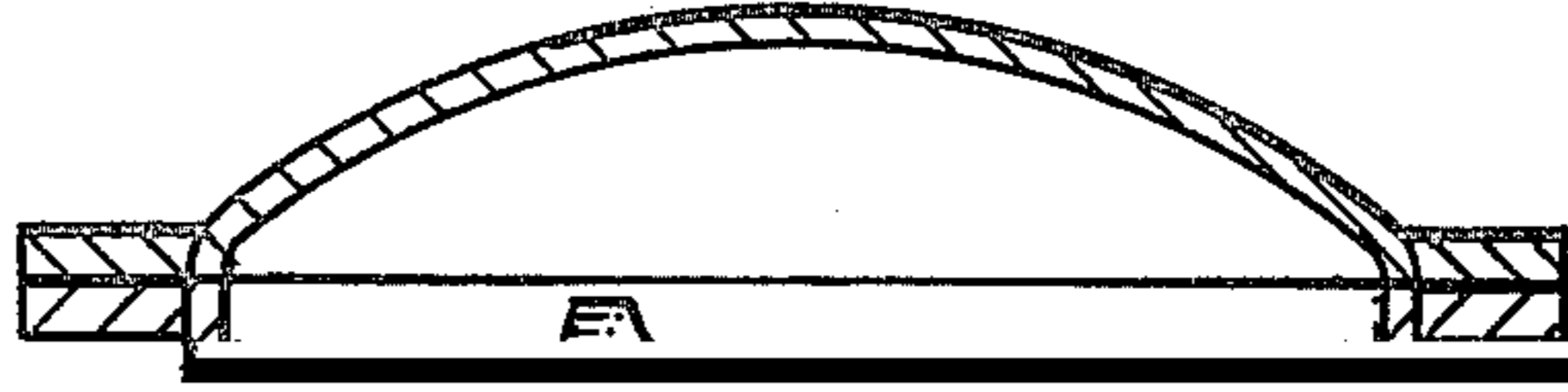
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FIG. 1





BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to vacuum electric furnaces having a plurality of aligned treating zones and more particularly to apparatus for moving work pieces

process.

The structures heretofore available for moving work pieces within a vacuum furnace have various shortcomings, do not make adequate provision to accommodate the growth of both the supporting rails and carrier oc-

FIG. 8 is a sectional view, enlarged, taken approximately on the line 8—8 of FIG. 5; and

FIG. 9 is a sectional view, enlarged, taken approximately on the line 9—9 of FIG. 5.

It should, of course, be understood that the description and drawings herein are illustrative merely and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings, a vacuum electric furnace is there illustrated which includes a plurality of aligned vessels constituting a preheating section A, a treating section B and a cooling section C. An entrance door 15 is provided supported in any desired manner for movement to an open position for access to the interior of the section A. The entrance door 15 in closed position seals the interior of the furnace against fluid or vacuum leakage.

An isolating valve 16 is interposed between the furnace sections A and B to prevent fluid or vacuum leak-

placement by nuts 34 which are not however tightened to the extent to impose any restraint on expansion or contraction.

Intermediate track rails 35 are also provided mounted and supported in the same manner as the end track rails 32. The rails 32 and 35 are of any suitable metallic material.

The supports thus provided for the rails 32 and 35 accommodate the growth in length of the track rails 32 and 35 upon increase in temperature attendant upon the heating thereof over the wide range of temperatures which occur within the furnace section A from ambient temperature at shut down to operating temperature for heating, as well as the shrinkage thereof upon cooling.

The rails 32 at their terminal ends 36 in the furnace section A, at the entrance and exit of the furnace section A, are preferably relieved to guide the carriers as hereinafter explained.

In order to operate the carriers hereinafter to be described a plurality of operating sprockets 40 on shafts 41 are provided preferably with mounting mechanism 42 activated from outside the furnace section A, two being utilized on each side in a specific embodiment of furnace section A.

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outer frame bars 50 parallel to the frame bars 46 for substantial portions of their length but interrupted to avoid stress transmission to the bars 46. The outer frame bars 50 also have inturned end portions 53. The shafts 48 at predetermined locations are extended outwardly through the frame bars 50 through fixed and elongated openings 48a and 48b to allow for expansion and contraction and for the reception of track engaging rollers 54 with outer washers 55. The rollers 54

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and heating elements disposed within the reflective shield, the improvement which comprises spaced parallel longitudinal track rails within the chamber and interiorly of the heating elements, members for supporting said longitudinal track rails, said connecting members between supporting members and said track rails accommodating longitudinal expansion and contraction of said track rails

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work supporting members are carried in pendant relation on said carrier brackets.
17 The combination defined in claim 11 in which

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section for accommodating said gate means between the ends of the rails of each chamber section

said work supporting members are pivotally carried in

said gate means being movable in the space between