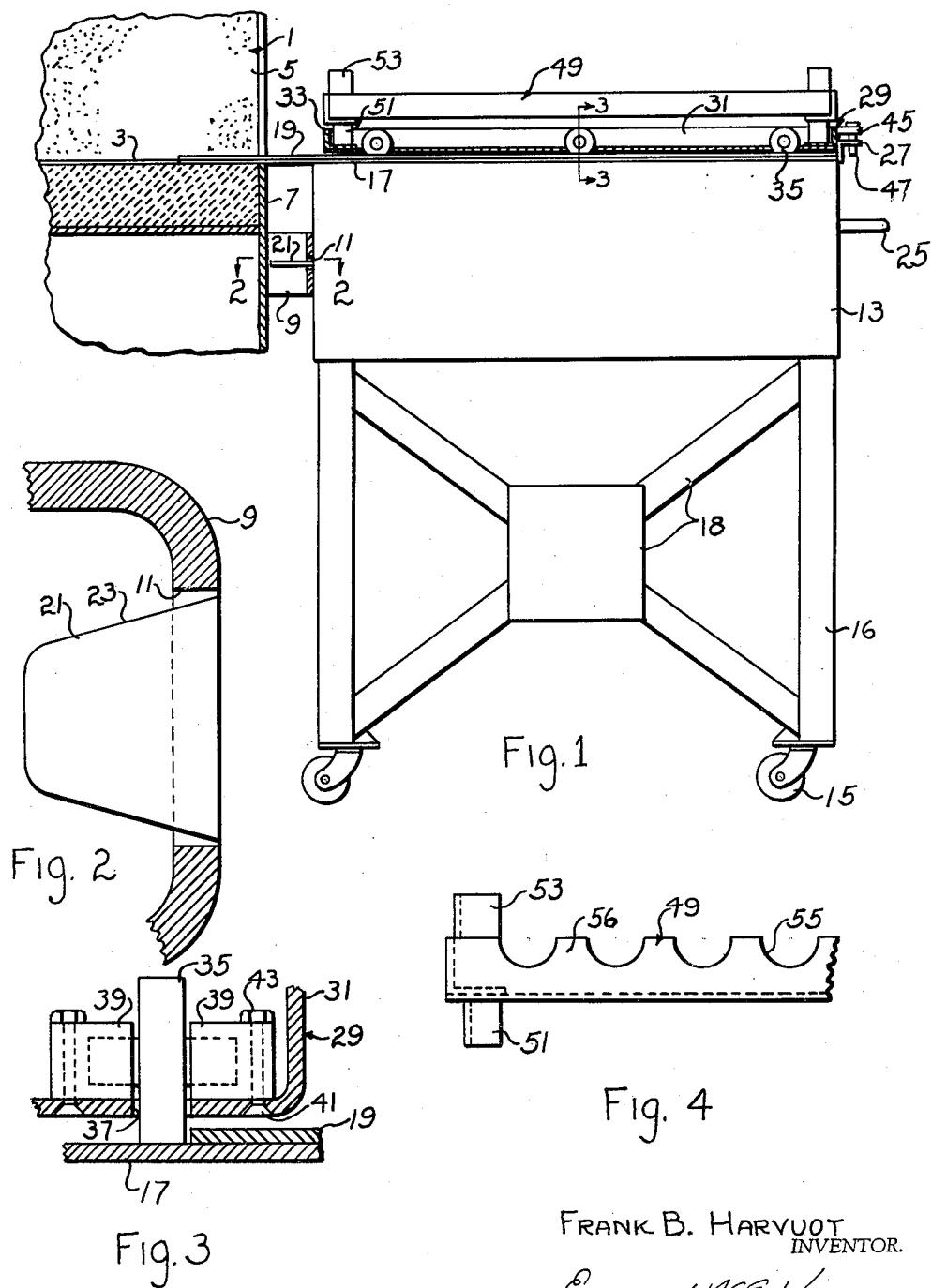


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F. B. HARVUOT
MATERIAL HANDLING DEVICE

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MATERIAL HANDLING DEVICE

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This invention relates to a material handling device, more specifically, it relates to a device for loading and unloading heat treating furnaces and similar devices.

It is therefore an object of this invention to provide a device for handling material.

It is another object of this invention to provide a material handling device which is mobile.

It is yet another object of this invention to provide a material handling device having a mobile platform supporting a carriage for moving material from the platform to a furnace or similar device, both the platform and the furnace having tracks which are moved into end-wise butting relation to form a continuous track.

It is still another object of this invention to provide means for axially aligning the tracks of a mobile device with a track of a stationary device.

These and other objects will become apparent from a study of this specification and the drawings which are attached thereto and made a part thereof and in which:

Figure 1 is an elevation of the material handling device in aligned position with a furnace.

Figure 2 is a section taken on the line 2-2 of Figure 1, showing the aligning finger in the guide slot.

Figure 3 is a section taken on the line 3-3 of Figure 1, showing the arrangement of the carriage wheels and track.

Figure 4 is an end view of the tray showing the construction of the tray for handling cylindrical objects.

Referring to Figure 1 of the drawings, the numeral 1 is used to designate a furnace of conventional design, having tracks 3 mounted parallel to each other on each side of the heat treating chamber 5. The chamber is enclosed by a casing 7 which also serves as a support. A U-shaped member 9 is fastened to the casing by welding or other means and has a horizontal slot 11 formed therein.

A platform 13 is mounted on casters 15 by means of suitable legs 16 and bracing 18 and has two tracks 17 mounted on it which are parallel to each other and extend over one end of the platform. The tracks 17 have the same elevation and lateral spacing as the furnace tracks 3. The tracks 17, as shown in Figure 1, are inserted through the furnace door and butt against the ends of the furnace tracks. A guide strip 19 is fastened to the top of each track 17 on the outside and extends the full length of the track.

A guide finger 21 is welded or otherwise fastened to the end of the platform over which the track

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projects, at the same height as slot 11 and engages the slot to align tracks 17 with tracks 3. The guide finger is tapered 23 on each side to facilitate its insertion in the slot.

A handle 25 is provided at the opposite end of the platform to be used in moving the platform. An angle 27 is secured to the same end of the platform as the handle and extends above the level of the track. The horizontal section of the angle is provided with a hole (not shown) for the reception of a pin 47.

A rectangular carriage 29 is made of two pairs of angles 31 and 33 with the horizontal leg on the bottom and the other leg on the outside to provide an upwardly extending flange which extends entirely around the carriage. Rollers 35 extend through the slots 37 in the horizontal legs of the angles 31 and rest upon tracks 17. The rollers are journaled in bearings 39 which are fastened to angles 31 by screws 41 and nuts 43. A clip 45 is fastened to one end of the carriage and has a hole (not shown) aligned with the hole in the angle 27 so that a pin 47 may be inserted for holding the carriage on the platform.

A rectangular tray 49 of substantially the same size as the carriage is provided and has legs 51 made of angle iron at each corner which nest within the carriage. Angle iron supports or guides 53 extend vertically above the tray at each corner and are positioned to receive the legs 51 so that the trays can be nested without damaging the material being handled. Semi-circular slots 55 shown in Figure 4 are formed in the upwardly extended legs 56 of the tray angles and are used to cradle cylindrical material and may be varied to suit the need. Of course, any suitable tray or material support may be used to support the material on the carriage.

Operation

In the process of manufacturing the articles to be treated, they are loaded on the individual trays and the first full tray is loaded on the carriage with the legs 51 resting on the horizontal legs of the carriage angles 31 and 33. The next tray is placed so that its legs 51 are supported by the horizontal legs of the angles 56 of the first tray and in telescopic relation with the guides 53 of the first tray. Other trays are similarly stacked until the load is complete.

The operator then pushes the platform toward the furnace, opens the door and manipulates the platform until the guide finger enters slot 11. He then pushes it into full engagement with the slot and thus automatically lines up the tracks 3

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and 17. The pin 47 is then withdrawn and the carriage with the trays is then pushed into the furnace. The furnace door is then closed and the heat treatment is started.

The carriage with the trays of treated parts can be withdrawn from the furnace onto the platform in an obvious manner and the trays can then be unloaded. The same platform can be used with a plurality of carriages. Thus, while one load is in the oven, a second carriage can be placed by hand on the platform and held by the pin 47. This carriage and the platform can be loaded and used to load another furnace or perform another operation.

Similarly, the carriage may be returned to the platform after treatment of the load and by it, be hauled to an unloading or storage bench or rack where the carriage can be deposited with its load. If the rack is provided with tracks, then an aligning arrangement similar to that on the oven may be provided.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, applicant does not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, he desires protection falling fairly within the scope of the appended claims.

What I claim to be new and desire to protect by Letters Patent of the United States is:

1. In a material handling means, the combination of casters, a platform mounted on said casters, a track rigidly mounted on said platform and projecting beyond the end thereof, a carriage movable upon and removable from said track, a receiver for said carriage having a track at substantially the same elevation as said first track, and means on said platform and said re-

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ceiver for aligning said tracks, comprising a laterally, outwardly tapered projection on the platform and a guide member on the receiver having a horizontal slot to receive said member, the ends of said slot cooperating with the widest portion of said projection to position said platform accurately, laterally of said receiver in response to endwise motion of the platform.

2. In a material handling means, the combination of casters, a platform mounted on said casters, a track mounted on said platform, a carriage movable upon and removable from said track, a receiver for said carriage having a track at substantially the same elevation as said first track, and means on said platform and said receiver for aligning said tracks in response to endwise motion of the platform, comprising a laterally tapered projection on the platform and a guide member on the receiver having an opening to receive said member, said opening being disposed at substantially the same height as the guide member and being substantially equal in lateral width to the widest portion of said projection.

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