

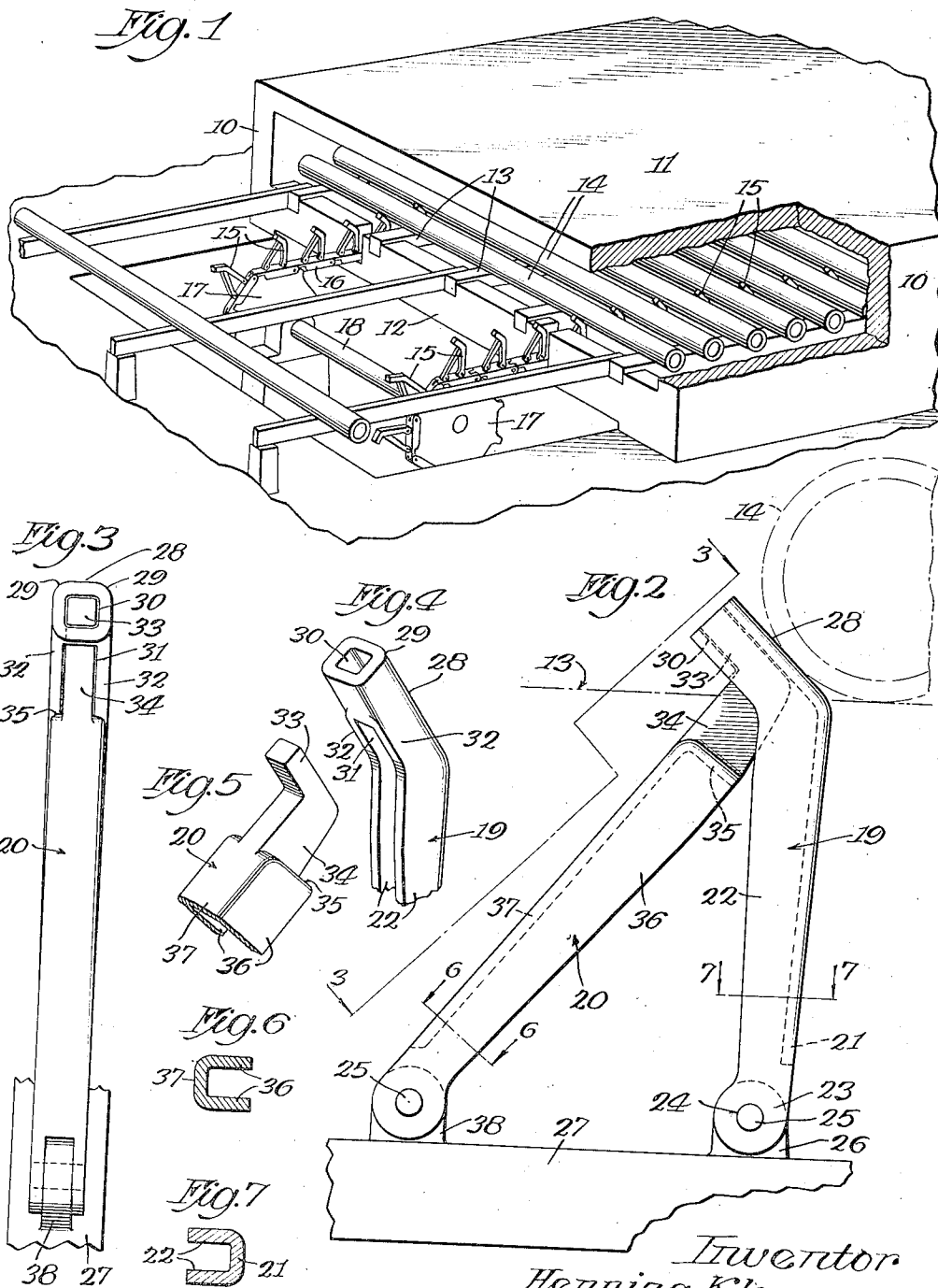
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FINGER FOR FURNACE CONVEYERS

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FINGER FOR FURNACE CONVEYERS

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Iron pipe and similar articles made by centrifugal casting are frequently "heat treated" to anneal and soften the metal before being put into service. In familiar apparatus used for that treatment the floor of the furnace is equipped with rails extending throughout its length and along which the pipes under treatment are rolled by conveyers running beneath the furnace floor and having fingers rising through the floor into engagement with the pipe in two or more places along its length. As the upper part of each finger is exposed to the high temperatures within the furnace, while the lower part being out of the furnace is relatively cool, they are subjected to racking stresses due to unequal expansion and contraction that result in frequent breakage with the consequent delay and expense of replacement. In addition the severe grinding action of heavy pipe rapidly cuts away the contacting portions of the fingers and with the ordinary construction the only practical restoration is the replacement of the worn fingers.

The principal object of this invention is to overcome these defects which is accomplished by making the fingers of two separate pieces loosely interlocked with one bracing the other, and mounted on the conveyers for separate replacement of the piece directly engaging the pipe.

A preferred embodiment of the invention is illustrated in the accompanying drawing in which Fig. 1 is a diagrammatic perspective view of a heat treating furnace;

Fig. 2 is an enlarged side elevation of a conveyer finger and a portion of one of the pipes under treatment;

Fig. 3 is a projection of that finger on a plane indicated by the line 3—3;

Fig. 4 is a perspective view of the upper or outer end of the contact piece of the finger;

Fig. 5 is a perspective view of the corresponding end portion of the brace piece of the finger, and

Figs. 6 and 7 are cross sections of the respective pieces of the finger taken on the lines 6—6 and 7—7 of Fig. 2.

But this particular illustration and the corresponding description are used for the purpose of disclosure only, whereas the invention is susceptible of embodiment in other forms.

The furnace chamber comprises walls 10, a top 11, and a floor 12 equipped with rails 13, along which pipe 14 is rolled by fingers 15 of conveyer chains 16, running on sprockets 17, carried by a shaft 18.

Each finger includes a substantially upright

contact piece 19 and a separate inclined brace piece 20 both made of heat resistant alloy.

For example—

Chromium	Percent	
Nickel	15 to 30	5
	8 to 40	

And the remainder principally iron.

The contact piece 19 is generally in the shape of a channel shown in cross section in Fig. 7. At the lower or inner end the web 21 is cut away and the ends of the flanges 22 appear as a fork 23 perforated at 24 to receive a pivot pin 25 by which it is secured to a lug 26, on a link 27 of the conveyer chain 16.

Adjacent to its upper end the contact piece is bent backwardly to present an inclined contact surface 28 having rounded corners 29. In this particular embodiment the flat portion of the contact surface is approximately one inch (1") wide and the rounded corners are on about a one-half inch ($\frac{1}{2}$ ") radius. Back of the contact surface 28 the inclined end portion is formed into a generally squared socket 30, having a narrow throat 31, Fig. 3, bound by ribs 32 on the edges of the flanges 22.

The socket receives a generally squared dowel 33 on the end of a rectangular shank 34, which enters the throat 31 of the socket, as best shown in Fig. 2, thus providing a brace directly opposite to the contact of the surface 28 with the pipe 14.

The shank 34 projects from a cross web 35, joining the upper ends of the flanges 36 which, with the web 37, form the channel body of the brace piece 20. At the lower end this piece has the web 37 cut away, leaving the flanges 36 as a fork astride the lug 38 on the link 27, where they are fastened by a pin 25.

It will be apparent from the illustration that, in assembly, the dowel and shank 34 are moved from the position shown in Fig. 5 into the throat 31 and socket 30 of the contact piece, as shown in Fig. 4. Thereafter the lower or inner ends are slipped over the studs 26 and 38 and the pins 25 inserted.

As the fingers heat up or cool down the two parts can have a relative movement allowed by slight clearance between the dowel 33 and the socket 30, thereby relieving them of all strain from that cause, and preventing the customary breakage. It has been found that with a dowel seven-eighths inch ($\frac{7}{8}$ ") square a one inch socket allows appropriate clearance and prevents objectionable looseness.

When the pipe grinds away a portion of the contact surface 28 the contact piece 19 is easily removed and replaced by a new one, or an old one that has had the wear restored by welding and the like.

5 The socket 30 has the inside corners rounded (for it is impractical to make a core with square corners) and in order to keep the wall section uniform and thereby avoid shrinkage localization, 10 the outside corners 29 are rounded as shown. This, of course, reduces the contact surface 28, but it has been found that what remains is sufficient.

I claim as my invention:—

15 1. A conveyer finger for furnaces comprising a contact piece and a brace piece at an angle to it and means for securing them together with free movement in expansion and contraction.

20 2. A conveyer finger for furnaces comprising a contact piece and a brace piece at an angle to it, one having a socket receiving the other

in loose interlocked relation to allow for expansion and contraction.

3. A conveyer finger for furnaces comprising a contact piece having a socketed end portion and a brace piece at an angle to the contact piece and having a dowel seated in the socketed end portion. 5

4. A conveyer finger comprising a contact piece having an inclined contact surface and a brace piece at an angle to the contact piece and secured to it opposite to the contact piece. 10

5. A conveyer finger comprising a contact piece having a contact surface with round edges and a brace piece secured to the contact piece adjacent to the contact surface. 15

6. In a conveyer for furnaces, a link, a finger having two separate pieces with adjacent ends loosely interlocked and separated ends secured to the link.

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