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CONTINUOUS FURNACE

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Fig. 1.

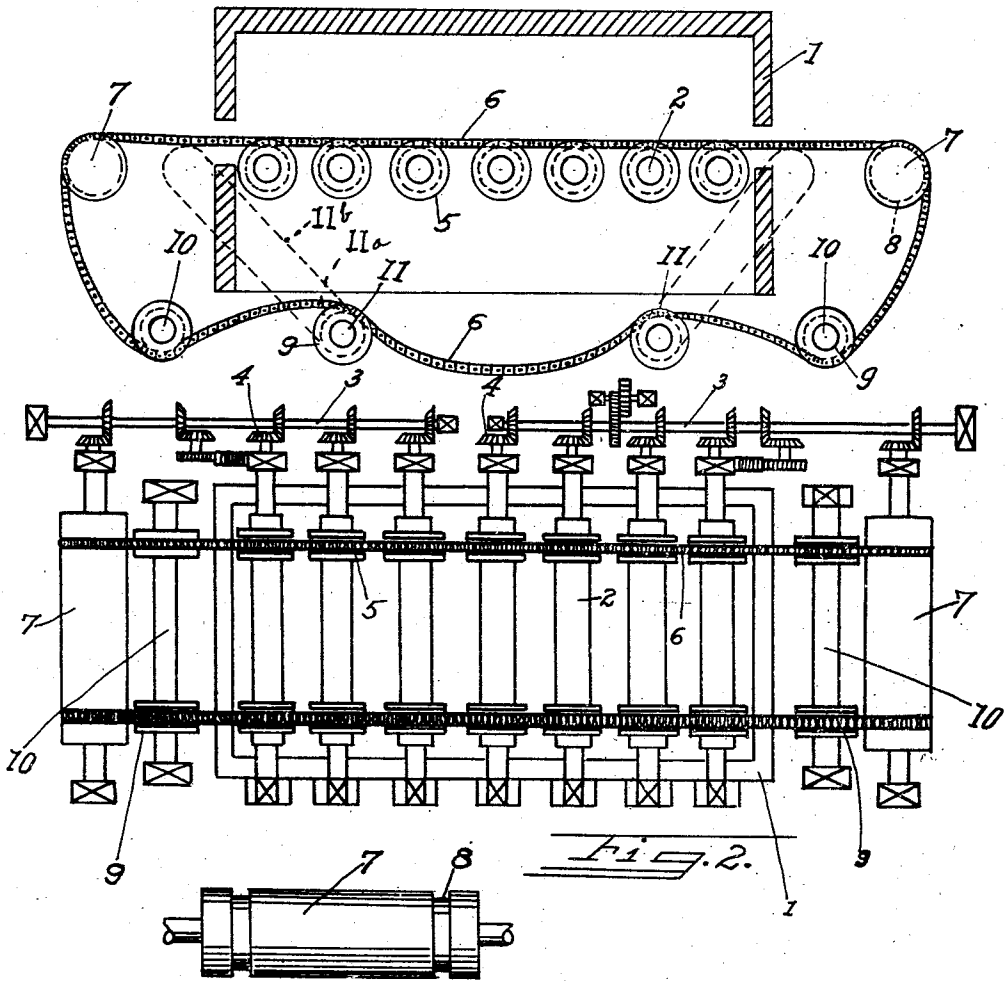


Fig. 2.

Fig. 3.

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CONTINUOUS FURNACE.

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My invention relates to continuous furnaces of the type in which pieces of metal are fed through the furnace, for the purpose of adjusting their temperature. It particularly relates to furnaces in which the piece is carried on endless chains.

The difficulty met with in the past in furnaces in which chains are employed to carry the pieces over the rolls within the furnace has been the necessity of driving the chains by means of sprockets. The heat within the furnace is such that expansion and contraction of the chain links will result in the links hitting the advancing faces of sprocket teeth instead of engaging smoothly over them, as the chains are moved along, with the result that a chain, with the piece carried upon it, rises up on the sprocket, displacing the chain, and also the piece carried thereby. Thus the sprocket teeth for a chain must be arranged a distance apart such that the advancing face of the teeth will engage the link pins without any free play, and under high heat conditions the distance between link pins varies for different parts of the chain, due to irregular expansion and contraction, so that the riding of the chains up onto the teeth of the sprockets is unavoidable.

It is the object of my invention to overcome this particular difficulty in chain feed furnaces, and this I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawing:

Figure 1 is a diagrammatic vertical section taken lengthwise through a furnace.

Figure 2 is a plan view of the rollers and drive, for the furnace.

Figure 3 is a side elevation of one of the end rolls.

It is not intended to show all of the details of a furnace, but only sufficient to point out the features of my invention. I have thus indicated furnace walls at 1, with a series of shafts 2 mounted within the furnace, and driven by means of shafting 3 and gears 4. These shafts 2 have sheaves 5 arranged thereon, said sheaves having no teeth within their peripheral channels, and the channels being of a size to easily retain the chains 6. There are shown two chains 6 and thus two sheaves on each shaft, in the illustration.

The terminal rolls 7, 7, around which the chains pass, are formed with channels 8 therein, like the channels of the sheaves.

Beneath the series of sheaves below the carrying level of the furnace are a series of return sheaves 9, over which the chains pass. These sheaves are mounted on shafts 10 and 11, of which shafts, the shafts 10 may be idle, and shafts 11 driven, and are arranged so that the return portions of the chains are balanced with relation to the carrying portions.

Pieces of metal are received onto the terminal rolls and chains and are carried through the furnaces by the chains. The shafts 11 may be driven by gears 11^a and chains 11^b.

With adequate support for the return portions of the chains, and all sheaves rotated at the same speed, it may be observed that a balanced condition is provided, such that without sprocket teeth in engagement with the chains, they will still be fed along even though the engagement with them is a frictional one only.

Thus I avoid the use of sprockets entirely, and by so supporting the chains, that there is a substantially equal load thereon at each end, I provide a feed which is adequate to carry pieces of metal through the furnace at the desired rate of speed.

The reason for providing sheaves and channels in the end rolls is to hold the chains in line, which purpose might, it is evident, be provided for in other ways. The essence of my invention is the frictional feeding of an endless chain, supported in a condition of balance as to its return portion, so that a very slight force applied to it will give it motion, and in the use of the motion so applied, to carry along pieces of metal through a furnace.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In combination, a furnace, a series of relatively smooth rotatable bodies in the furnace, chains arranged over said bodies, said chains being endless and supported in a condition of balance as to their return portions, and means for driving at least one of the rotatable bodies.

2. In combination, a furnace, a series of relatively smooth rotatable bodies arranged

in a horizontal plane, endless chains arranged over said bodies, and means for supporting the return portions of the chains in a condition of balance, and means for driving at least one of the rotatable bodies.

5 3. In combination, a furnace, a series of rotatable bodies, having channels peripherally thereof, endless chains lying in said channels, rotatable bodies supporting the chains in condition of balance, as to its re- 10 turn portions, and means for driving the first noted series of rotatable bodies, said channels being formed relatively smooth so as to drive the chains frictionally only.

JOHN B. TYTUS.