Aug. 6, 1929. E. WIRZ 1,723,319

HEATING FURNACE APPARATUS

Filed Feb. 18, 1926

Fig. 1.

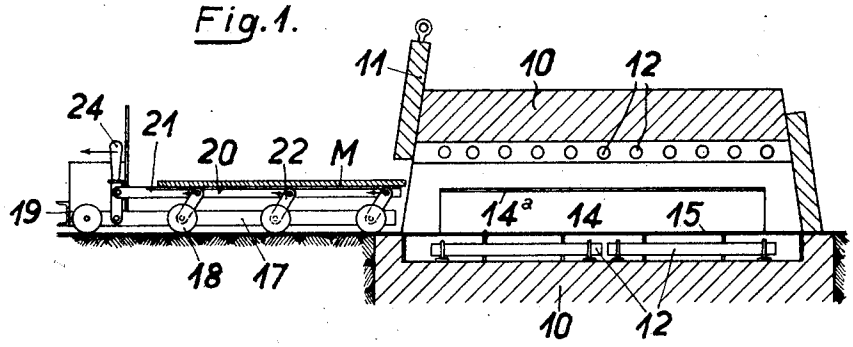


Fig. 2.

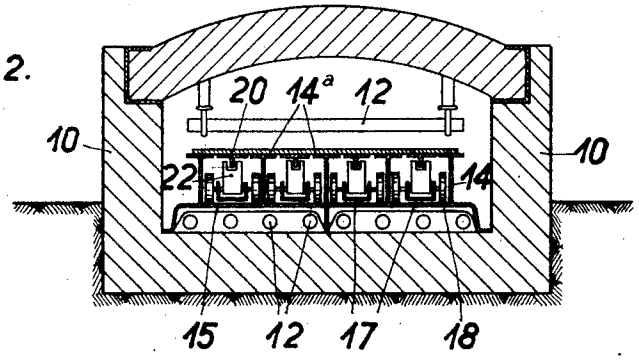
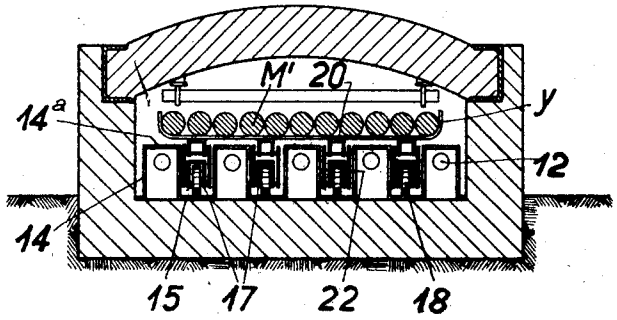


Fig. 3.



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Patented Aug. 6, 1929. 1,723,319

UNITED STATES PATENT OFFICE.

ERNST WIRZ, OF BADEN, SWITZERLAND, ASSIGNOR TO A. G. BROWN BOVERI & CIE., OF BADEN, SWITZERLAND, A JOINT-STOCK COMPANY OF SWITZERLAND.

HEATING-FURNACE APPARATUS.

Application filed February 18, 1926, Serial No. 89,193, and in Germany February 24, 1925.

This invention relates to furnaces for the heating of metal shapes and the like for rolling, fabrication, annealing, roasting, etc., and is concerned principally with the hearth and charging apparatus.

One of the objects is the provision of furnace apparatus whereby heat may be conserved in the furnace incident to the charging and discharging of material therein.

Another object is the provision of a hearth construction which is particularly adapted for electrically heated furnaces and which facilitates the charging and discharging operations.

Other objects will be pointed out or indicated hereinafter or obvious to one skilled in the art upon an understanding of the present disclosure. In the drawing forming a part of this specification I show two forms which the invention may take, but these are presented for illustration only and are not to be given any interpretation having the effect of limiting the invention claimed, short of its true and most comprehensive scope in the art. In the drawing,

Fig. 1 is a longitudinal sectional elevation of a furnace and elevational view of the charging carriage.

Fig. 2 is a transverse sectional elevation of the furnace with the charging carriage therein, and

Fig. 3 is a similar sectional elevation showing a different form of hearth. All the illustrations are diagrammatic.

In operation of electrically heated furnaces, the conservation of heat in the furnace is an important consideration, materially affecting the cost of operation. The present invention provides a construction for conserving heat by rendering it unnecessary, in charging or discharging, to remove the hearth or heated plate or support upon which the material rests while it is in the furnace, thus eliminating the necessity for heating up a cold supporting member with each new charge. In the form shown in Figs. 1 and 2, the reference numeral 10 designates top, bottom, and side walls of the furnace chamber which has at the end a movable closure 11. The chamber is heated by the heating units 12, disposed above and below the hearth. The latter is preferably a grate-like structure of heat resisting metal, though it may be made of other refractory material of good heat conductivity. It comprises the charge supporting members 14 which extend longitudinally of the furnace in laterally spaced relationship, projecting upwardly a substantial distance from the carriage supporting portions 15 and terminating at their tops in horizontally aligned rests 14^a suitably formed to sustain the material M to be heated. The charging carriage comprises a number of longitudinal frame members 17 carried on wheels 18 and connected at one end by transverse frame members 19, whereby they are held in parallel relationship. Each of the frame members 17 carries an elevating charge carrier 20, supported on a bar 21 carried on the links 22 which may be oscillated by a lever 24 to raise and lower the charge carrier 20 relative to the frame, the bars 21 of the several frames being operably connected to said lever, so that all may be operated in unison. The lateral spacing and dimensions of the frames 17 and the gear carried by them are such that they may run between the respective supports 14, and the extent of vertical movement of the charge carriers 20 is such that in elevated position they clear the tops of the rests 14^a and in lowered position are below the same, when the carriage wheels are on the charging floor 15. In charging, the material is placed on the carriage, resting on the charge carriers 20, which are in elevated position, and the carriage is run into the furnace, the respective frames 17 and charge carriers passing between adjacent support 14. Then the lever 24 is operated to lower the charge carriers so that the material is brought to rest on the supports 14, whereupon the carriage is backed out of the furnace. Discharging is accomplished by a reversal of these operations.

In Fig. 3 is shown a modified form of hearth, with the carriage therein, and U-shaped retaining strips or yokes y for retaining the tubes M′ which are to be heated. Here the wheels 18 are arranged within the frame members 17 instead of laterally thereof as in Figs. 1 and 2.

What I claim is:

1. In a furnace, means providing a heat chamber, heating elements disposed in said chamber, and means disposed in said chamber and over said elements and providing a protective heat-radiating casing therefor and providing a support for articles such as to support the latter in proximity to the

heat-radiating walls of such casing, said second-named means being formed to provide a track to accommodate an article carrier.

2. In a furnace, means providing a heat chamber, heating elements disposed in said chamber, and means disposed in said chamber and providing inverted heat-radiating casings receiving the respective heating elements and extending longitudinally of said chamber and providing a support for articles, such casings being spaced laterally with respect to each other to provide a track for accommodation of an article carrier.

In testimony whereof I have hereunto subscribed my name at Zurich, Switzerland, on the third day of February, A. D. 1926.

ERNST WIRZ.