

No. 634,499.

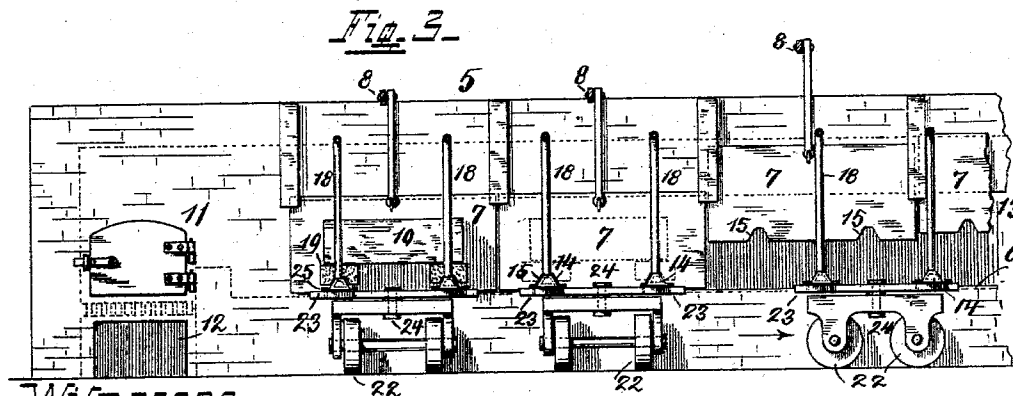
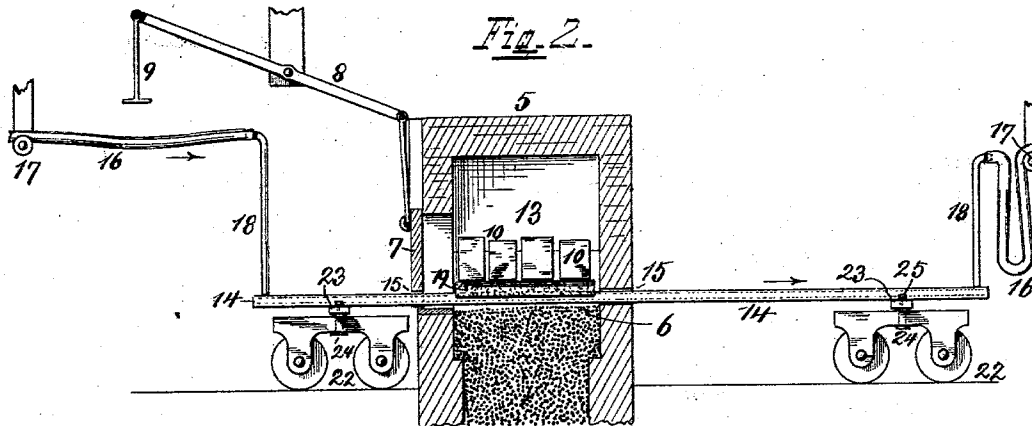
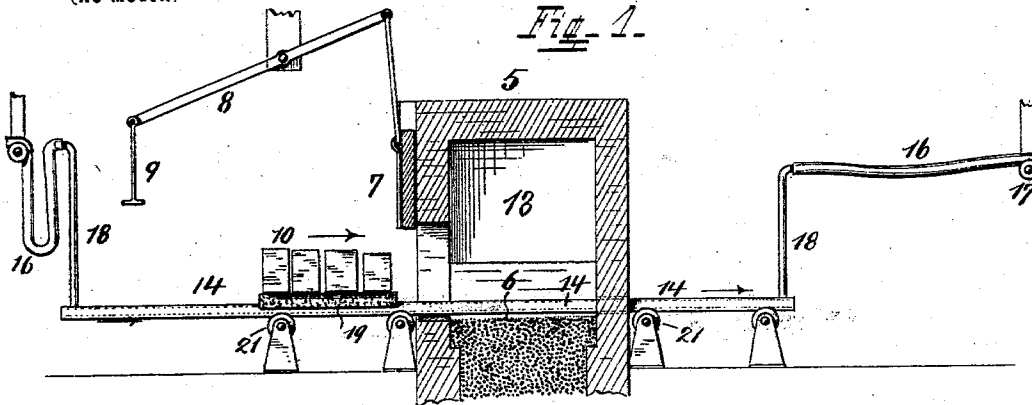
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J. HUNDLEY.

CHARGING DEVICE FOR HEATING FURNACES.

(Application filed Apr. 10, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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CHARGING DEVICE FOR HEATING-FURNACES.

SPECIFICATION forming part of Letters Patent No. 634,499, dated October 10, 1899.

Application filed April 10, 1899. Serial No. 712,435. (No model.)

To all whom it may concern:

Be it known that I, JAMES HUNDLEY, a citizen of the United States, and a resident of Pomeroy, Meigs county, State of Ohio, have invented a certain new and useful Charging Device for Heating-Furnaces; and I do declare that the following is a clear, full, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form a part of this specification.

This invention relates to an adjunct for heating-furnaces such as are used in connection with rolling-mills for the purpose of heating metals preparatory to being acted upon by the rolls. This metal is in the form of piles, billets, or ingots; and the object of my invention is to provide a device whereby these piles, billets, or ingots may be conveniently charged into the heating-furnace and removed therefrom with equal facility.

A further object is to lessen the exposure to heat of those working about the furnace, to shorten the time required to heat the iron, to avoid the loss of heat and waste of fuel, to reduce the wear on the furnace, and to increase the output of the latter by a more efficient and economic operation.

The invention consists of the construction of such a charging device as shown and hereinafter set forth.

In the following specification, and particularly pointed out in the claims at the end thereof, is found a full description of my invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows a cross-section of a furnace used in connection with a rolling-mill for the purpose of heating piles and provided with my charging device, which is shown in a position prior to charging the furnace. Fig. 2 shows in a similar view the heating-furnace charged. The charging device is slightly modified as to the manner of supporting it. Fig. 3 is part of a front view of a furnace.

5 indicates a customary style of furnace for heating purposes as here in consideration.

6 is the hearth or bed thereof, which is usually made of sand.

7 are the charging-doors, of which there may be any number and of sizes to suit requirements. These doors are usually operated from a distance by means of a lever 8 and pull-rod 9. The heat, produced in any suitable way, as by coal, coke, or gas, proceeds from the fire-box 11, of which 12 is the ash-pit, and passes through the heating-chamber 13 to a suitable outlet in form of a stack.

My improved charging device does away with the direct charging upon the floor of the heating-chamber and contemplates the use of a movable structure to be loaded while outside of the heating-chamber, after which it is moved into the latter. It consists of two runners 14, formed of rails of iron disposed across the floor of the heating-chamber and immediately above the same. They are also adapted to be moved across this floor and in and out of the furnace, for which purpose they are supported on rollers located outside of this latter. These runners are of a length sufficient to cause them to project outside and beyond the furnace, so that during their movement they never need to leave their supports. Openings 15 are provided in the furnace-doors to clear the runners, and where a furnace has doors on one side only such openings are provided in the opposite furnace-wall. The rails constituting the runners are hollow to permit the passage of water, of which a constant circulation is kept up to protect them against the intense heat. This requires flexible connections at their ends to permit and compensate for the movement of the runners, which connection is obtained by means of hose-sections 16, suitably supported—as, for instance, on rollers 17. Upright pipes 18 may be interposed, which in conjunction with rollers 17 hold up the hose when slack, and thereby keep it out of the way of those working in the immediate vicinity of the furnace. The charging becomes now quite a simple operation. The runners are moved out of the furnace, which may be done either by hand or machinery, and loaded in the most convenient manner. The piles 10 may be placed accurate and close without waste of space, since the work is under complete control and readily seen, being not obscured by flame, gases, or smoke. The loss of heat and exposure thereto are also greatly lessened, since

the furnace-door may be closed while the loading of the charging device takes place. After this is done the doors are opened for a moment and the charge is run in. The removal of the heated piles is accomplished in the same manner and also while the doors are closed. Should turning of the piles be required, such may be quickly done while the charging device is outside. It is, however, hardly needed, except for very large piles, since my charging device supports them in a manner which gives complete access of heat. Neither the piles nor the runners come in contact with the furnace-floor, whereby the wear on this latter is greatly lessened.

Since direct contact of the piles with the water-cooled runners would be objectionable, I interpose a pillow 19 of suitable material, preferably fire-bricks. They are shaped to correspond to the runners which they straddle. The piles are thereby raised still higher above the bed of the furnace and rendered more accessible to the heat, thus shortening still more the time it is required to heat them. As has been stated, the runners are supported on rollers, which may be either stationary, as shown at 21 in Fig. 1, or in form of a truck, as shown at 22 in Figs. 2 and 3. In this latter case the truck carries a bolster 23, to which it is secured by a king-bolt 24, on which it may be turned in a manner to permit a set of runners to be moved in a direction at right angles to their usual movement, so as to change their position with reference to the furnace-bed. This applies to furnaces where the charging-doors closely adjoin each other in front of a continuous charging-opening which is not interrupted by intermediate pillars and which permits the entire front to be opened at once in case such is required for special work. The runners rest on this bolster in a manner to be adjustable to or from each other to suit the size of the piles. They may be held in their adjusted positions between pins 25, to be inserted in holes, of which a suitable number is provided in bolster 23. The number of the runners may be increased—that is, more than two may be used in a set—to suit special, particularly larger, sizes of work.

The profile of the runners may be of any shape suitable to support the piles.

Having described my invention, I claim as new and desire to protect by Letters Patent—

1. The combination with a furnace as described, of a carrier for moving the charge into and out of the heating-chamber thereof and consisting substantially of hollow runners adapted to support the charge arranged parallel side by side and disposed to extend across the floor of the heating-chamber, supporting means for these runners located outside of the heating-chamber and which permit them to be moved horizontally across the

floor of the heating-chamber to bring that portion thereof upon which the charge rests either within or outside of the heating-chamber and means to produce an uninterrupted water circulation through these runners in all their positions.

2. The combination of a heating-furnace having a heating-chamber adapted to receive piles, charging-openings through which these latter are admitted, doors for these openings, and runners supported within these charging-openings and disposed across the furnace-floor and projecting beyond the confines of the furnace on opposite sides of the latter, there being openings in such confines to clear the runners which latter are adapted to support piles and are capable of being moved in and out of the charging-doors.

3. The combination with the heating-chamber of a heating-furnace, of runners adapted to support piles and disposed across the floor of the heating-chamber of the furnace, beyond the confines of which latter these runners project on opposite sides of the furnace and rollers under these projecting parts of the runners whereby these latter are supported in a manner to permit them to be moved across the furnace-floor for the purpose of moving the piles into and out of the furnace.

4. The combination with the heating-chamber of a heating-furnace intended for heating piles, of hollow bars adapted to carry water and serving as a carrier upon which these piles rest and whereby they are charged into the heating-chamber and also removed from the latter, said bars disposed across the floor of the heating-chamber of the furnace beyond the confines of which latter they project on opposite sides thereof, means to support these runners in a manner to permit them to be moved across the furnace-floor and water-conduits of flexible material connected to the ends of the runners whereby the water is supplied to these latter and carried off therefrom.

5. The combination with the heating-chamber of a heating-furnace intended for heating piles, of hollow runners adapted to carry water and serving as a carrier upon which these piles rest and whereby they are charged into the heating-chamber and also removed from the latter, said runners disposed across the floor of the latter and projecting beyond the confines of the furnace on opposite sides thereof, pillows 19 interposed between these runners and the piles to be supported by them and means to support the runners in a manner to permit them to be moved across the furnace-floor.

In testimony whereof I hereunto set my hand in presence of two witnesses.

JAMES HUNDLEY.

Witnesses:

C. A. ROBERTS,
CLARENCE A. IHLE.