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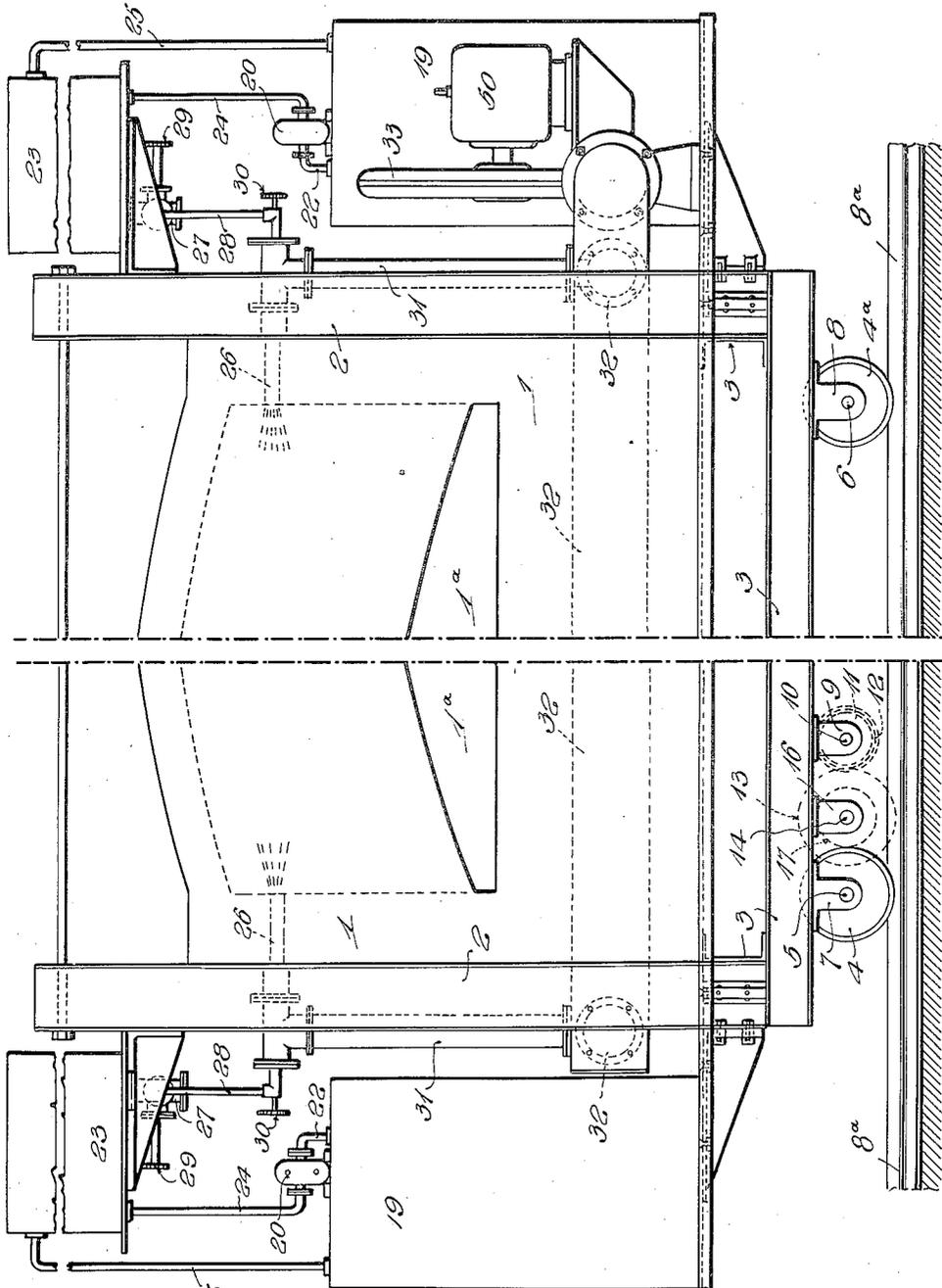
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LIQUID FUEL FURNACE

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2 Sheets-Sheet 1



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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL FURNACE.

Application filed February 20, 1924. Serial No. 694,110.

To all whom it may concern:

Be it known that I, DOUGLAS WHIMSTER CHISHOLM, of Woodhead, Garnkirk, Lanarkshire, Scotland, a subject of the King of Great Britain, have invented certain new and useful Improvements in Liquid-Fuel Furnaces, of which the following is a specification.

This invention relates to liquid fuel furnaces of the kind which are capable of movement backwards and forwards in front of a draw bench or rolls or other machinery.

An object of the present invention is to improve the construction of furnaces of the kind specified by making them entirely self contained, another object of the invention being to improve the means of propulsion of said furnaces.

To the attainment of the aforesaid ends, according to my invention, I provide a liquid fuel furnace which, together with its liquid fuel supply, its heating and other accessories, is mounted on wheels or rollers so as to form a unitary or self contained structure capable of movement bodily backwards and forwards in front of a draw bench, or rolls or other machinery.

The liquid fuel is preferably fed from a supply tank or tanks on the furnace or furnace structure.

The furnace propelling means may take the form of a reversible electric motor on the furnace structure driving a primary shaft the said motor being under the direct control of an operator located near the furnace.

Reference is now made to the annexed drawings which illustrate, by way of example, one form of travelling furnace according to the present invention.

In the drawings:—

Fig. 1 is a back view of part of the furnace broken away in the center in order to clearly represent both sides of the structure.

Fig. 2 is a side elevation of the furnace broken away within the core in order to show the entire structure in larger scale.

Referring to the drawings:—

The furnace 1 is provided at its front with a vertically slidable door 1^a, and at its rear a similar vertically slidable door is provided. Each of these doors is supported in a steel frame work comprising vertical channel members 2 and horizontal members 3, the said members and furnace enclosed thereby

being mounted on flanged wheels 4 and 4^a running on rails 8^a. The said wheels are secured to cross shafts 5 and 6 journalled, respectively, in bearings 7 and 8 arranged beneath the frame work. An electric motor 9, arranged at the underside of the furnace, drives a primary shaft 10 which is rotatably arranged, at one end, in a bearing 11, see more particularly Fig. 1. A toothed pinion 12 is secured to the primary shaft 10 and meshes with gear wheel 13 on an intermediate shaft 14, the latter being rotatably arranged in bearings depending from horizontal member 3 as represented at 16 in Fig. 1 and in dotted lines at 15 in Fig. 2. The pinion 12 meshes with the gear wheel 13, and a pinion 17, secured on the shaft 14, meshes with a gear wheel 18 secured to the wheel shaft 5. Thus the drive of the motor 9 is transmitted through the pinion 12, wheel 13, pinion 17 and wheel 18 to the wheel shaft 5. The travelling furnace is provided, on each side, with a main liquid fuel tank 19 on which is mounted a rotary pump 20 driven by an electric motor 21 and withdrawing liquid fuel from the tank 19 through a suction pipe 22 and supplying it to an auxiliary tank 23 through a discharge pipe 24. Each tank 23 is provided with an overflow pipe 25 which allows excess of liquid fuel in the said tank to return to the main tank 19, the liquid fuel in the tanks 23 being kept at a constant head so as to ensure a regular pressure at the burners. In the particular construction illustrated, the furnace is provided at each side with three burners 26, which may be of any suitable known form and which are supplied with fuel from the tanks 23 through valves 27 and pipes 28 leading from said valves to the burners. The flow of fuel through the valves 27 can be shut off by means of handwheels 29, the amount of fuel passing to the burners being also directly controlled, at each burner, by means of an adjusting needle valve with hand wheel 30. Air, which may be cold or heated, is supplied to the burners through pipes 31 connected to a conduit 32 supplied with air from a fan 33 which is driven by an electric motor 50. The electrical energy is supplied to the motors from a source under the control of an operator located near the furnace in such position as to readily oversee the same.

From the foregoing description it will

be readily understood that the travelling furnace 1 is entirely self contained and that it may be made to move, at will, forwards or backwards before a drawbench 34, or it may be caused to remain stationary before said drawbench according to the position to which the operator in charge of the control (not shown) situated near the furnace sets said control to drive the motor 9 forwards or backwards.

A travelling furnace as above set forth may be made of much larger capacity than heretofore and may be adapted to heat quite a large number of strips, which can be drawn from the furnace as it is advanced, step by step, in front of the rolls, or the draw bench, as the case may be. The strips may be fed constantly in at the back of the furnace to replace those withdrawn at the front of the furnace.

Having now fully described my invention, what I claim and desire to secure by Letters Patent is:—

A traveling liquid fuel furnace comprising in combination a car structure, an oven having doors at each end thereof carried on said car structure, an extended platform on opposite sides of said car structure, a liquid fuel reservoir on each of said platforms, an auxiliary reservoir located over each of said aforementioned reservoirs, independent means for delivering liquid fuel from each of said aforementioned reservoirs to said auxiliary reservoirs, liquid fuel burners projecting into opposite sides of said oven and fed from each of said auxiliary reservoirs whereby material placed in said oven may be subjected to uniform temperature heat treatment from each side of said oven.

In testimony whereof I affix my signature in presence of two witnesses.

DOUGLAS WHIMSTER CHISHOLM.

Witnesses:

JESSIE W. WATSON,
SARAH KELLY.