

No. 790,311.

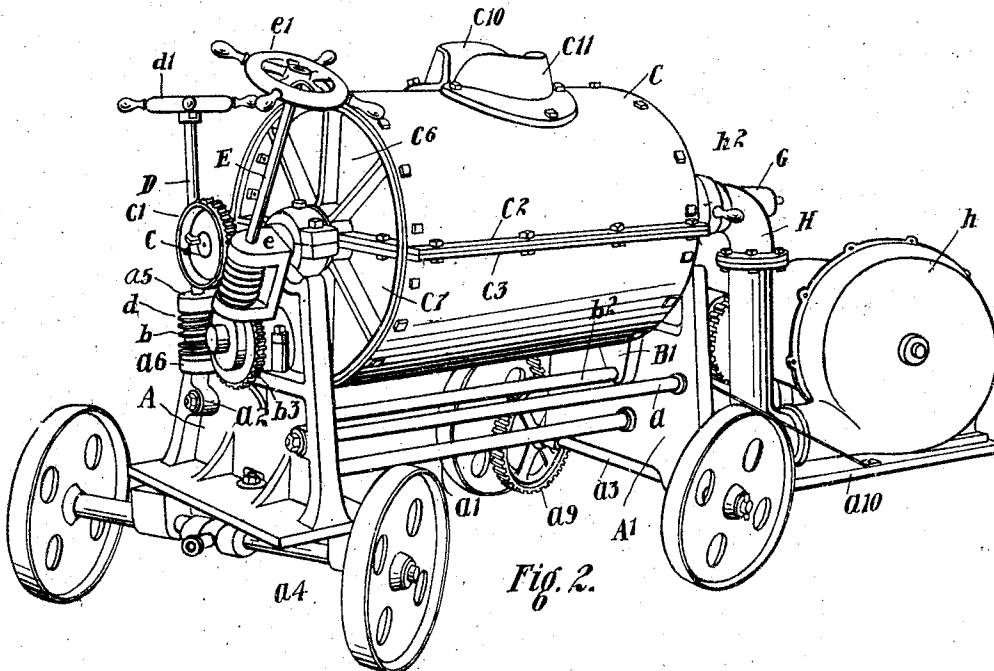
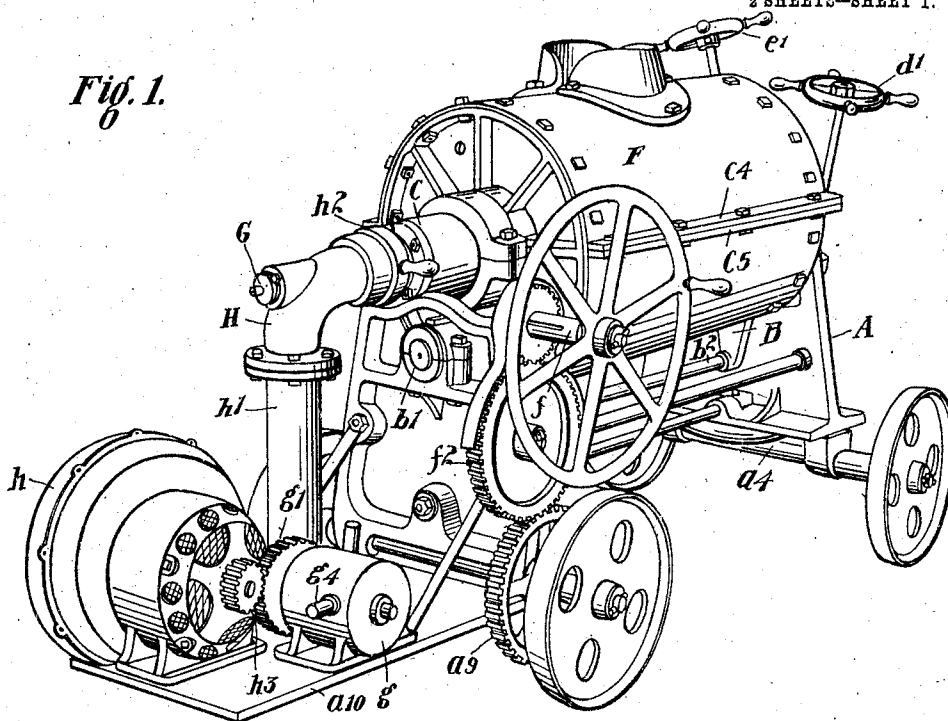
PATENTED MAY 23, 1905.

J. PORTEOUS.
PORTABLE METAL MELTING FURNACE.

APPLICATION FILED MAY 13, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

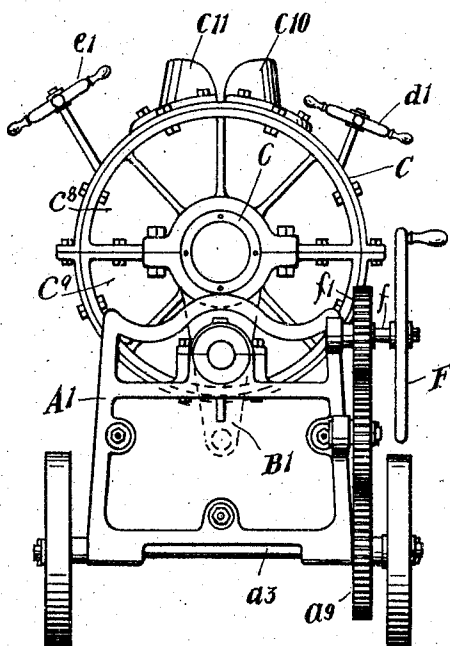


Fig. 4.

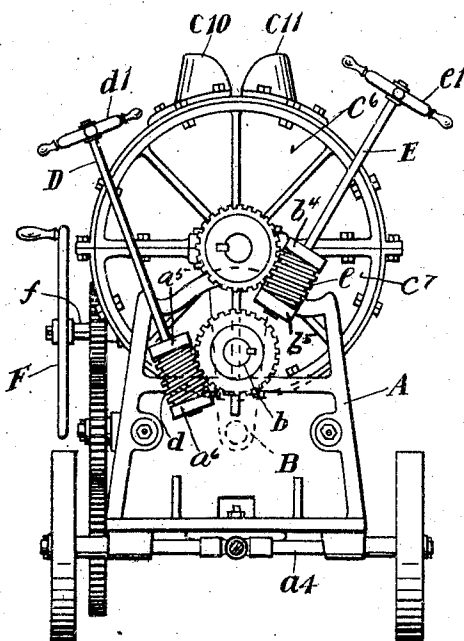


Fig. 3.

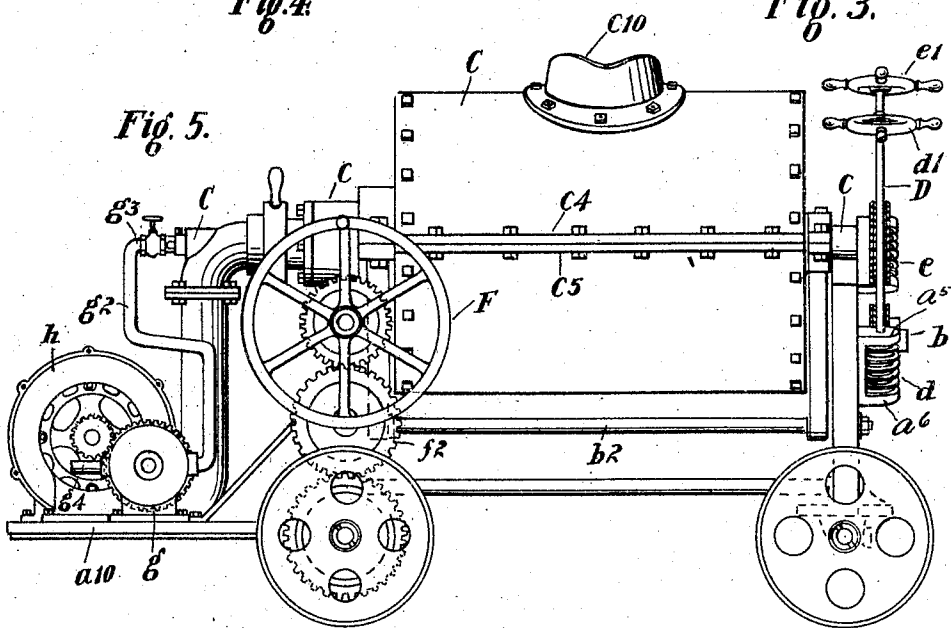


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN PORTEOUS, OF CINCINNATI, OHIO.

PORTABLE METAL-MELTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 790,311, dated May 23, 1905.

Application filed May 13, 1904. Serial No. 207,720.

To all whom it may concern:

Be it known that I, JOHN PORTEOUS, a citizen of the United States of America, and a resident of Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Portable Metal-Melting Furnaces, of which the following is a specification.

The object of my invention is to provide a means for conveying molten metal direct from the furnace to the flasks, so as to obviate the use of crucibles to carry the metal from the furnace to the flasks. This object is attained by mounting the furnace so that it may be moved with the molten metal in it from place to place and by providing a means whereby it may be actuated to discharge any quantity of metal at a certain point—as, for instance, into the gate-hole of a flask.

Referring to the accompanying drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, Figure 1 is a perspective view of a portable metal-melting furnace embodying my invention, the view being taken from the rear end. Fig. 2 is a similar view of the same, taken from the front end of the furnace. Fig. 3 is a rear elevation of the same with the motor and pump removed therefrom. Fig. 4 is a front elevation of the same. Fig. 5 is a side elevation.

Referring to the parts, the supporting-frame of the furnace consists of front and rear brackets A A', secured together by bolts a , a' , and a'' and mounted upon axles a^3 a^4 , bearing wheels at their outer ends, the rear axle a^3 being rigid and the front axle a^4 being swiveled, so as to guide the furnace to the desired point and to make it readily movable from place to place. In bracket A a yoke B is journaled upon a stud-shaft b , and in bracket A' a yoke B' is journaled upon a stud-shaft b' . Yokes B and B' are secured together at their lower ends by means of a rod b'' . At the upper ends of the yokes B and B' the shaft c of the furnace C is journaled. Shaft c likewise has a bearing at each end upon the upper ends of brackets A A'.

Stud-shaft b has secured to it a gear-wheel b^3 , which intermeshes with a worm d upon

shaft D, which is journaled in lugs a^5 a^6 , formed integral with bracket A. Shaft D has at its upper end a hand-wheel d' . Shaft c has upon its front end a gear-wheel c' , which meshes with a worm e upon the shaft E, which is journaled in lugs b^4 b^5 , secured to the yoke B. Shaft E has at its upper end a hand-wheel e' . By turning the hand-wheel e' furnace C may be made to rotate upon its axis c . By turning hand-wheel d' the yokes B and B' are caused to rotate upon their stud-shafts b b' .

Mounted in bracket A' is a hand-wheel F, upon whose shaft f is secured a gear-wheel f' , which meshes with a gear-wheel f'' , which in turn meshes with a gear-wheel a'' , secured upon axle a^3 . By turning hand-wheel F the axle a^3 is rotated, and the furnace is moved in the desired direction.

Furnace C consists of two semicylindrical shells having flanges c^2 c^3 upon one side and flanges c^4 c^5 upon the other side, which are secured together by bolts. The heads of the cylinders consist each of semicircular disks c^6 c^7 c^8 , having horizontal flanges along their diameter secured together likewise by bolts. The cylinders may therefore be taken apart readily for any desired purpose, such as repair. Upon one side the furnace has a lip or lips c^{10} c^{11} .

The furnace is designed to be heated by the combustion of oil, which is carried into it through a pipe G, the air being supplied through coupling H. The interior construction of the furnace and the mode of applying the flame thereto is of ordinary construction and need not, therefore, be specifically described.

Projecting from the rear of the bracket A' is a horizontal shelf a^{10} , upon which is mounted a motor and fan h and a rotary pump g . To the discharge-spout of the fan a pipe h' is swiveled, the upper end of the pipe h being secured to the coupling H, which in turn is swiveled at h^2 to the hollow shaft c of the furnace. The shaft of the motor h has secured upon it a pinion h^3 , which meshes with the pinion g' , secured to the shaft of the rotary pump. The exhaust-port of the pump g has swiveled to it a pipe g^2 , which at its upper end is swiveled to pipe G, the pipe g^2 having lo-

cated in it a globe-valve g^3 . The admission-port g^4 of the rotary pump is to be coupled by means of a pipe or hose to the source of supply of oil.

5 In operation the metal to be melted having been placed in the furnace, the pipe g^4 is coupled, by means of a hose or pipe, to the supply of oil, and the electric current is turned into the motor, whose rotation actuates the pump
10 g and causes the oil to be carried up into the furnace through the pipe g^3 , the quantity being regulated by means of the globe-valve g^3 , and air is carried up through the pipe g' to commingle with the oil to produce a high degree of heat in the furnace. After the metal
15 has become molten the motor is stopped, the pipe g^4 disconnected from the source of oil, and by revolving the hand-wheel F the furnace is guided to a point over the flask to be filled. By revolving the hand-wheel e' the
20 furnace C is caused to rotate upon its axle c . Should the lip c'' be brought into a position by the turning of the furnace upon its axis such that the molten metal would not strike
25 the gate-hole centrally as the metal is being discharged, the relative position of the lip to the gate-hole may be regulated by revolving the hand-wheel d' , which will revolve the yokes B and B' about their shafts b b' and
30 move the furnace bodily transversely to the frame. It is seen, therefore, that by means of the hand-wheels d' e' the position of the discharge of the furnace relative to the point at which it is desired to discharge the metal may
35 be regulated to a nicety. After one flask has been filled the furnace may then be conveyed by turning the hand-wheel F to another flask, and so on, until the metal in the furnace has been all poured into the flasks. When it is

desired to reheat the furnace, all that is necessary is to couple up the hose for the oil to the pipe g^4 and to actuate the motor h .

There are many uses to which my portable furnace may be put with great advantage—as, for instance, in burning street-car rails the
45 furnace may be moved along upon the rails to the point desired and then by the manipulation of the hand-wheels d' e' be caused to deposit the molten metal upon the rail being operated upon.
50

What I claim is—

1. The combination of a frame, a metal-melting furnace mounted rotatably in the frame and so as to be capable of a bodily transverse motion relative thereto, a means for im-
55 parting a transverse motion to the furnace relatively to the frame, and means for propelling the frame.

2. The combination of a frame, a metal-melting furnace mounted rotatably in the
60 frame, a fan for supplying air, a pump for feeding oil and a motor for actuating both fan and pump mounted upon the frame, and a means for propelling the frame.

3. The combination of a frame, means for
65 propelling the frame, a metal-melting furnace mounted rotatably upon trunnions in the frame, an air and an oil pump mounted upon the frame, a pipe secured rotatably at one end to the oil-pump and rotatably at the other end
70 to one of the trunnions and a pipe secured rotatably at one end to the air-pump and rotatably at the other end to one of the trunnions.

JOHN PORTEOUS.

Witnesses:

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