

No. 777,789.

PATENTED DEC. 20, 1904.

E. W. JACKSON.
HYDROCARBON FURNACE.
APPLICATION FILED JAN. 28, 1904.

NO MODEL.

Fig. I

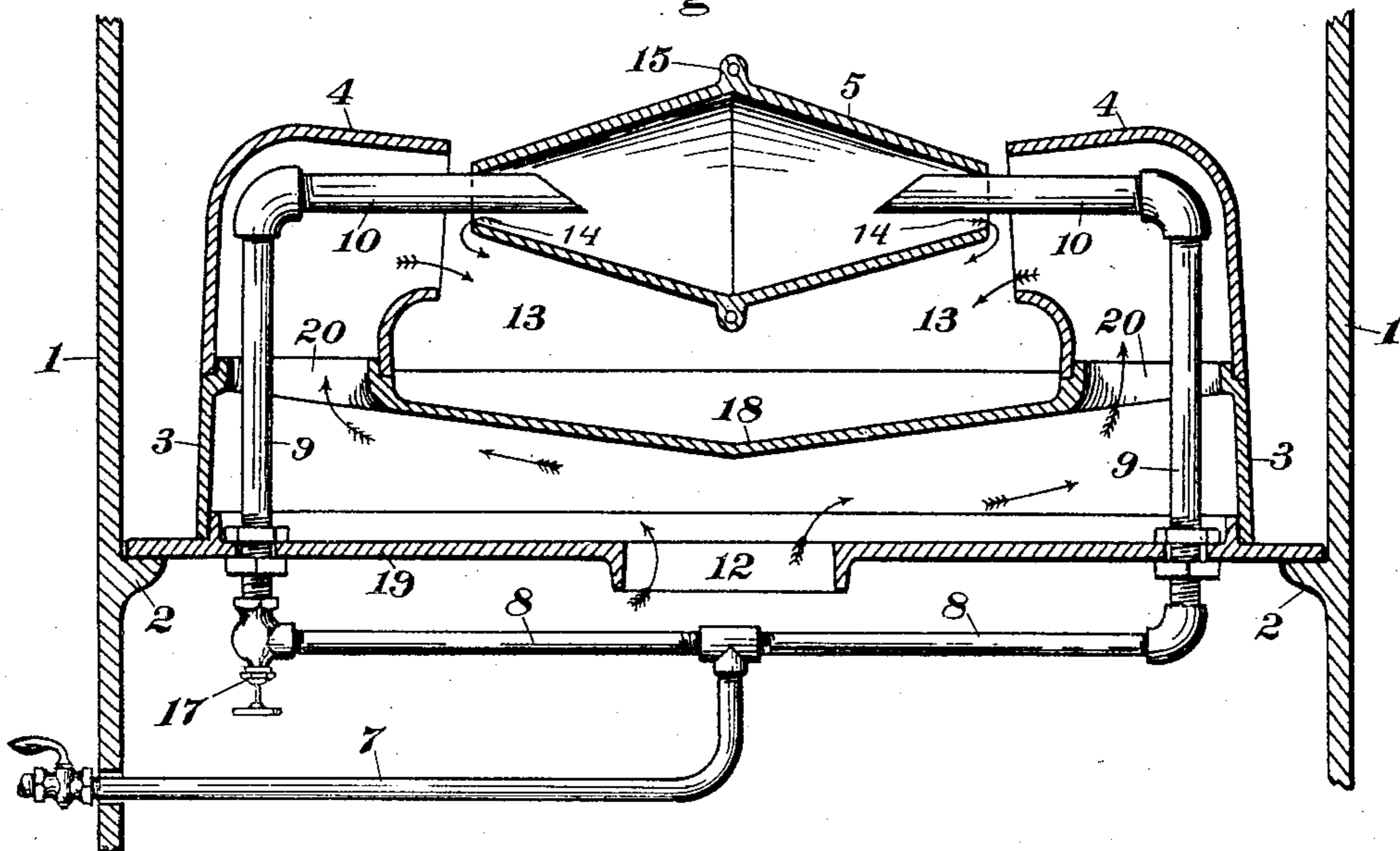


Fig. II

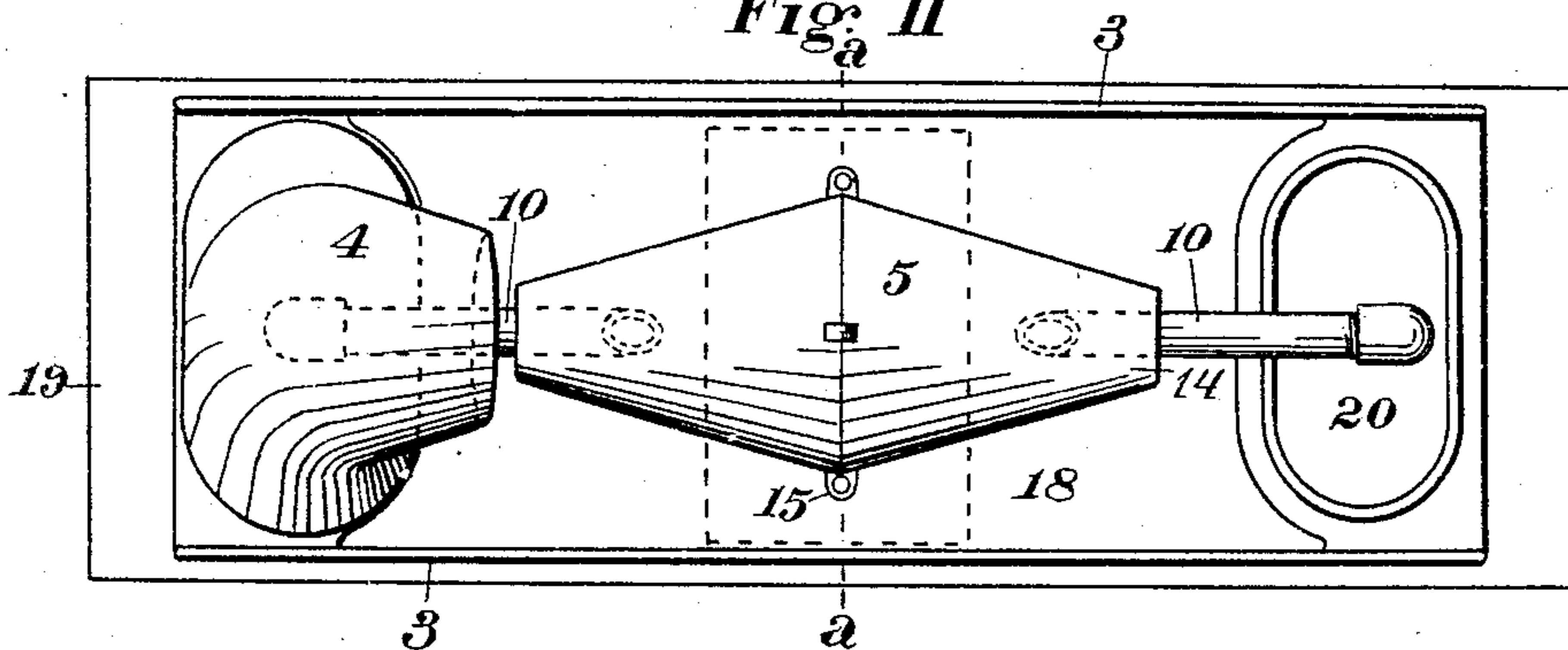
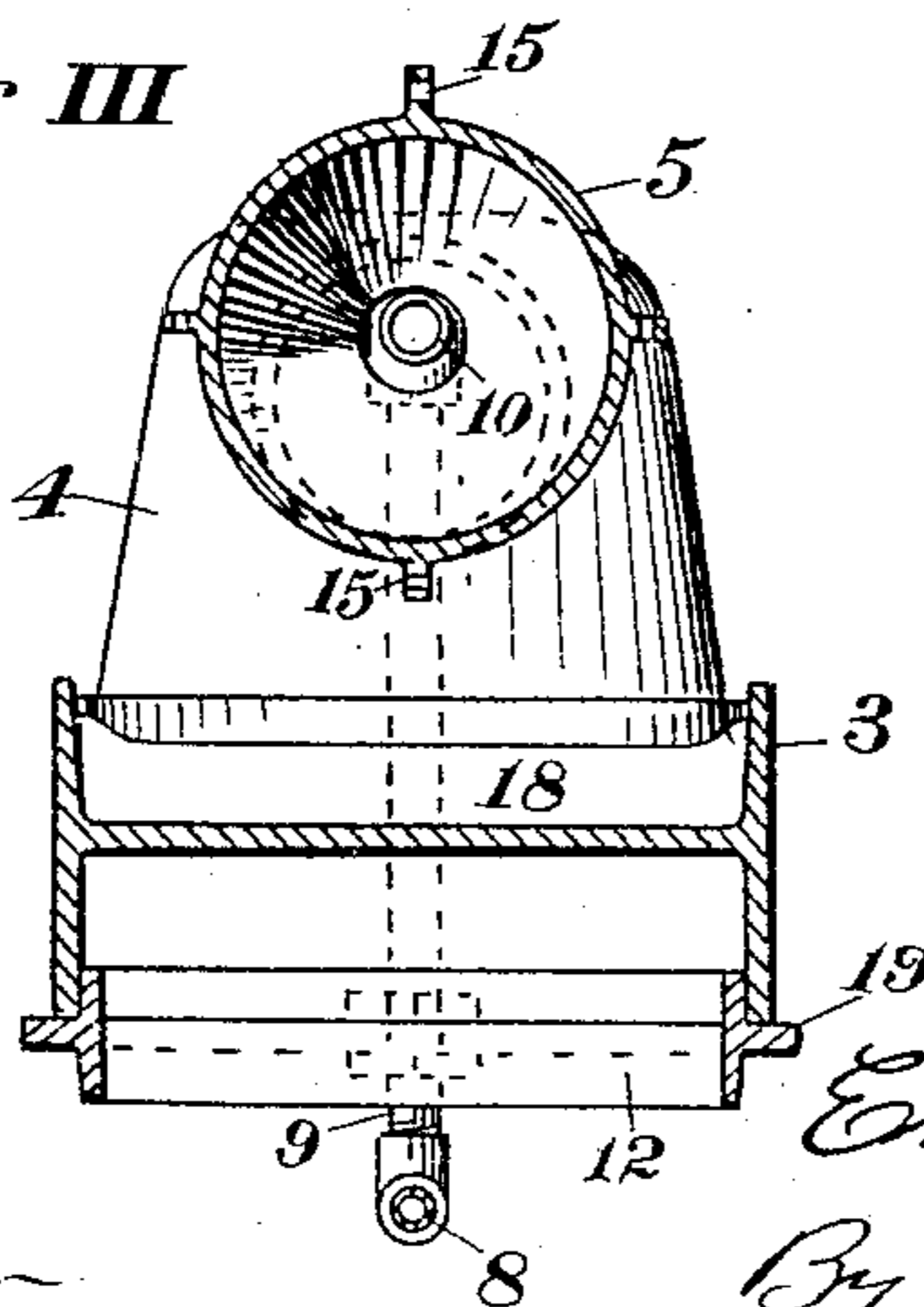


Fig. III



WITNESSES:

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UNITED STATES PATENT OFFICE.

ERNEST W. JACKSON, OF SAUSALITO, CALIFORNIA.

HYDROCARBON-FURNACE.

SPECIFICATION forming part of Letters Patent No. 777,789, dated December 20, 1904.

Application filed January 28, 1904. Serial No. 191,037.

To all whom it may concern:

Be it known that I, ERNEST WEDGEWOOD JACKSON, a citizen of the United States, residing at Sausalito, county of Marin, and State of California, have invented certain new and useful Improvements in Hydrocarbon-Furnaces; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to devices for burning hydrocarbon fuel and to certain improvements therein.

My improvements consist of a furnace containing a cylindrical-formed hollow retort or volatilizing-chamber revolvably mounted and performing functions as hereinafter explained, a furnace for combustion, air-passages to this furnace at opposite sides, with conducting-pipes for fuel and air, as described herein and illustrated by drawings that form a part of this specification.

The object of my invention is to provide a hydrocarbon furnace and burner especially adapted for still-firing or for use in burning mineral oils with low pressure or natural draft and suitable for house furnaces, stoves, or in any case of ordinary heating.

To these ends I provide devices as illustrated in the drawings herewith.

Figure I is a longitudinal section through one of my improved furnaces; Fig. II, a plan view of Fig. I with one hood removed, and Fig. III a transverse section through Fig. II on the line *a a*.

In hydrocarbon-furnaces of the class to which my invention belongs there are impediments in securing a complete incorporation of the volatilized fuel and the air, a destruction of the surfaces against which the flame-jets impinge, and in the case of fixed volatilizing-retorts they are soon eroded in certain parts by heat, also become clogged with residual substances. To avoid these impediments and to attain other useful ends, I construct furnaces for hydrocarbon fuel substantially as shown in the drawings and now to be described.

The containing-walls 1 may be of metal or

masonry and inclose more or less space and be of any desired form, such as the combustion-chamber of a furnace for coal or wood fuel.

My improved hydrocarbon-furnace consists of a hollow base 3, mounted within containing-walls 1, preferably on ledges 2, so as to be removable, said hollow base having upturned hollow hoods 4, with open inward projections facing each other. Within these hoods are oil-supply pipes 9, which have horizontal end extensions 10 projecting inwardly through the openings of the hoods 4 in alignment. On said extensions is loosely mounted to permit rotation the retort 5, having openings at its ends to receive the extensions 10, on which said retort is mounted, said openings being of greater diameter than that of the said extensions 10 for the purpose hereinafter explained. The oil-pipes 9 are suitably provided with pipe connections 7 8 from any suitable source of liquid fuel. Air is supplied from below to support combustion in such a manner as to thoroughly diffuse the gas or vapor as it issues from the apertures 13, bringing the flame into intimate contact with the retort 5 and furnace-bottom 18.

The furnace-frame 3 is preferably of rectangular form, having a bottom plate 19, through which air enters at 12, and an upper plate or furnace-bottom 18, with nipples 20, through which air passes to the hoods 4, as seen in Fig. I.

The volatilizing-retort 5, which constitutes an important feature in my invention, is preferably made of a double-cone or a spindle form, as shown in the drawings, but can be of any contour or of any suitable section—circular, elliptical, or polygonal—and is loosely mounted upon or around the discharge ends of the pipes 10 or may be supported in any suitable manner.

The passages in the ends of the retort 5 are made enough larger than the pipes 10 to leave lune-shaped apertures at 14, through which gas or vapor can escape, as indicated by arrows in Fig. I, and the retort is loosely revolvable on these pipes, so as to be turned at intervals to prevent the accumulation of carbonaceous deposit at the bottom. In case of

such deposit it is soon burned off when the retort 5 is turned, and the incrustated matter is removed from contact with the entering oil. Lugs 15 are provided to facilitate turning the retort, and by moving it endwise to telescope over one of the pipes 10 it can be instantly removed and replaced or a new retort substituted. This latter-named feature permits inexpensive renewal and maintenance of the furnace, the retort being the only part liable to erosion or injury by heat.

Oil can be supplied through either or both of the pipes 10, usually through but one at a time, so that in case of one issue being clogged the other pipe is brought into use, a valve 17 being provided to close one of the pipes 9, and thus alternate their use.

In operating the retort 5 is partially filled with oil and is heated by some light fuel in the pan or furnace-bottom 18 beneath the retort 5, and when this latter becomes hot the oil therein is converted to gas or vapor, which is ejected through the apertures 14, meeting and mingling with the air entering at 12 and passing through the converging hoods 4, as indicated by arrows in Fig. I. This combustion of air and the gas or vapor that passes into and fills the furnace-space 13 with hot flame keeps the retort 5 at the temperature required. The air entering at 12 is heated while passing beneath the pan or furnace-bottom 18 to promote combustion when it meets the gas or vapor from the retort 5.

It will be understood that in cases when the amount of heat required is less than the capacity of the furnace, as shown, one-half of the furnace can be operated, admitting oil and air at one end only, or the furnace being dual in its operative parts can be bisected in the middle and constructed singly.

Having thus described the nature and objects of my invention and the manner of constructing the same, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-furnace, oil-supply pipes, and a retort revolubly mounted on said pipes, provided with end openings to permit the escape of vapor, substantially as specified.

2. In a hydrocarbon-furnace, oil-supply pipes, a retort revolubly mounted on said pipes, said retort provided with end openings to permit the escape of vapor, and hollow hoods arranged to supply air to mix with said vapor, substantially as specified.

3. In a hydrocarbon-furnace, a retort revolubly mounted having end openings to receive

the supports and permit the escape of vapor around said supports, oil-supply pipes constituting said supports, projecting within said end openings, and hollow hoods around said supports for directing air against the vapor issuing from the retort through said end openings, substantially as specified.

4. In a hydrocarbon-furnace, a retort revolubly mounted, provided with end openings to permit the escape of vapor, oil-supply pipes projecting within said openings at each end, on which the retort is mounted so as to slide thereon and be readily revolved or removed, hollow hoods at each end of said retort for directing air against the escaping vapor, and means for supplying air through said hoods, substantially as specified.

5. In a hydrocarbon-furnace, a main frame having a double bottom providing an air-space, hollow hoods leading from said air-space, oil-supply pipes in said hoods, a retort having open ends, revolubly and removably mounted on said oil-supply pipes between said hoods, and means for supplying air through said air-space and hoods, substantially as specified.

6. In a hydrocarbon-furnace, a hollow base provided with upturned hollow hoods, oil-supply pipes passing through said hollow hoods and having horizontal end extensions, and a retort loosely mounted to permit rotation on said extensions, having openings to receive said extensions, of greater diameter than the diameter of said extensions, to permit the escape of vapor, substantially as specified.

7. In a hydrocarbon-furnace, a hollow base provided with upturned hollow hoods, oil-supply pipes passing through said hollow hoods and having horizontal end extensions, and a retort loosely mounted to permit rotation on said extensions, having openings to receive said extensions of greater diameter than the diameter of said extensions to permit the escape of vapor; said hollow base having an opening in its bottom plate for the passage of air to the ends of the retort through the upturned hoods, to support combustion, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST W. JACKSON.

Witnesses:

ALFRED A. ENQUIST,
M. A. RODNEY.