No. 668,236.

Patented Feb. 19, 1901.

G. C. THOM.

OIL BURNER FOR FURNACES.

(Application filed Mar. 23, 1900.)

(No Model.)

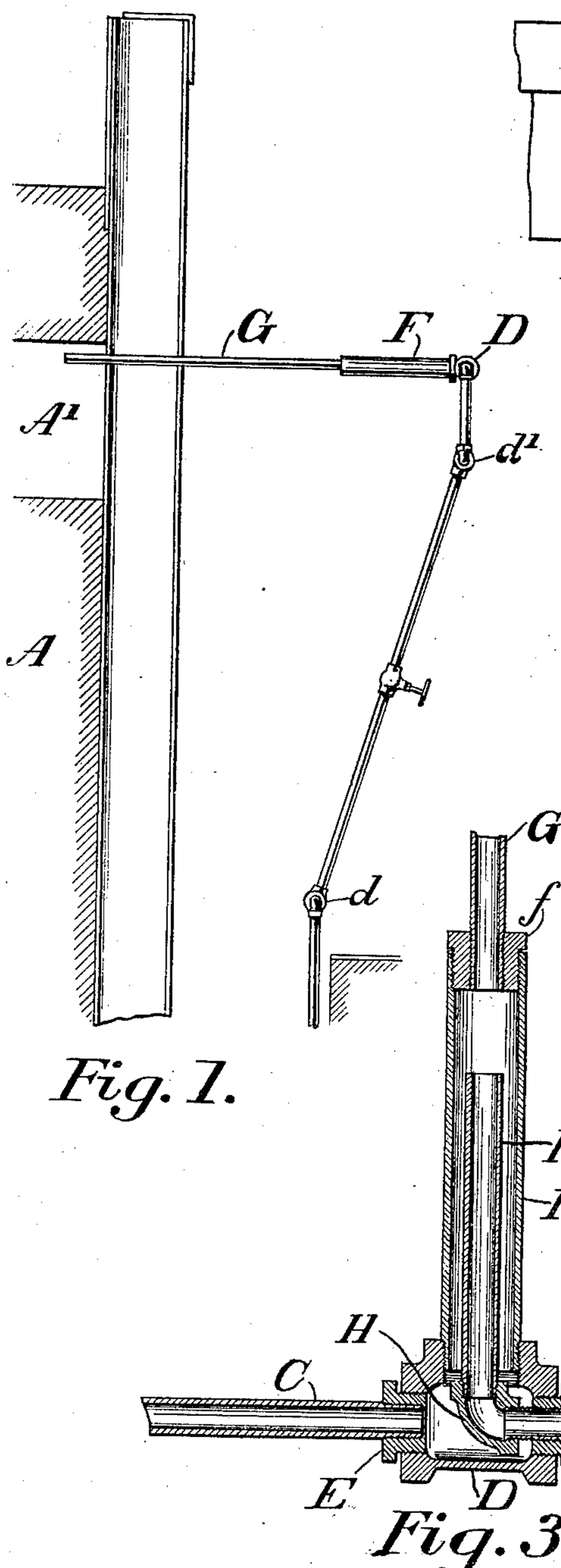

Fig. 1.

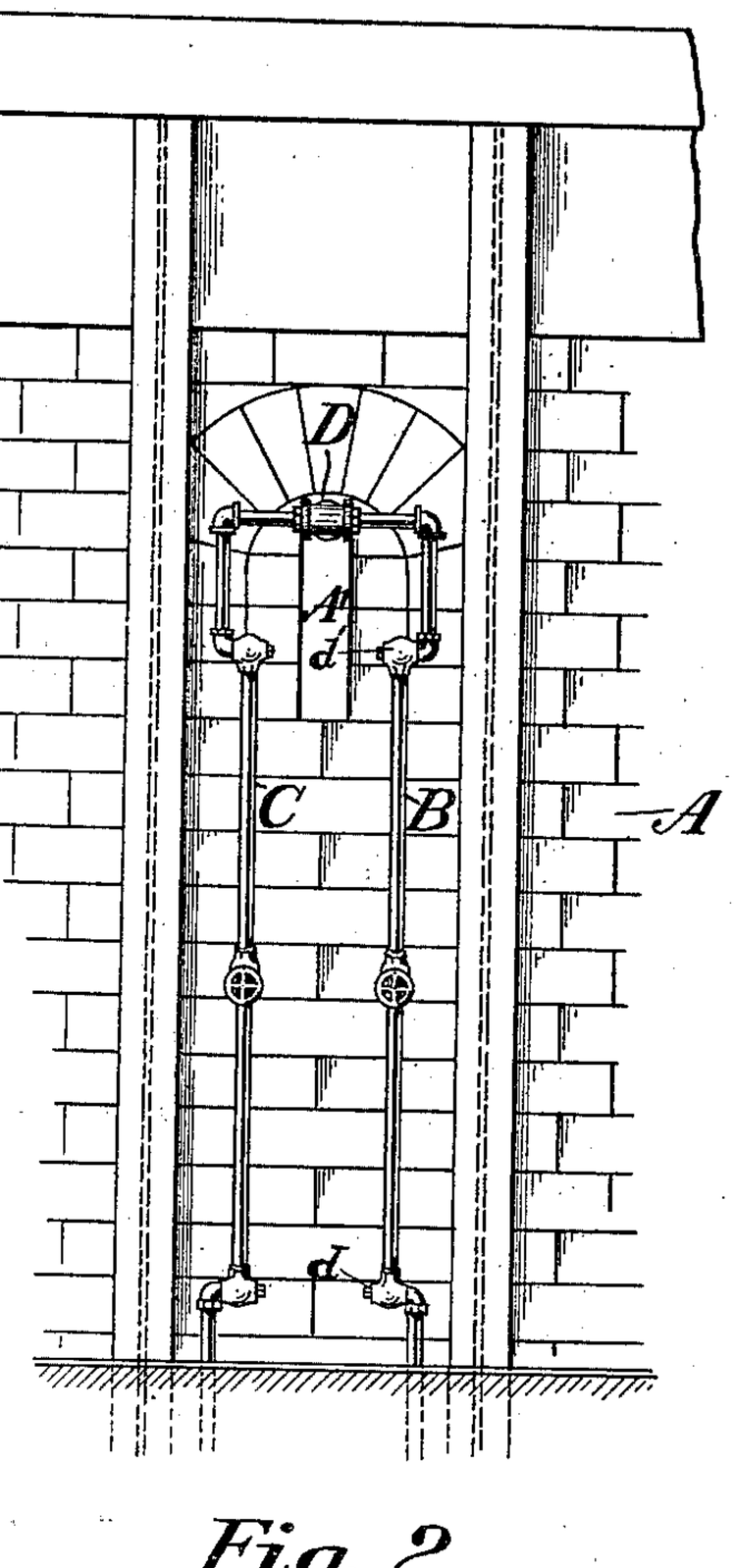

Fig. 2.

Fig. 3.

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OIL-BURNER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 668,236, dated February 19, 1901.

Application filed March 23, 1900. Serial No. 9,978. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. THOM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Oil-Burners for Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to certain new and useful improvements in oil-burners for furnaces, and more particularly to that class of burners in which steam is mixed with the oil before it enters the furnace.

The object of my invention is to provide a burner in which the oil and steam are so mixed as to insure a very high degree of combustion, which is composed of but few parts of simple character capable of being readily assembled and as readily detached for repairs, and which forms a very light structure capable of being supported by the pipes which supply it with steam and oil and of being moved toward and away from the furnace or directed into the furnace at any desired angle.

With this object in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of an end portion of a furnace, showing my improved burner in side elevation as in use. Fig. 2 is an end view of the furnace and burner, and Fig. 3 is a horizontal section of the mixer portion of the burner on a larger scale.

The letter A designates the furnace-wall, having a burner-opening A′ at its end.

B designates an oil-pipe leading from a suitable reservoir (not shown) and which supplies oil under pressure to the burner. C is a steam-pipe connected to a source of high-pressure steam. These two pipes extend side by side up the end of the furnace and form a stand or support for the mixer and burner. Each pipe is provided with a swivel-joint *d* near the base of the furnace and with a second swivel-joint *d′* near the burner-opening A′, said joints being arranged to permit movement toward and away from the furnace. At a point near the line of the upper wall of the opening A′ each pipe is bent laterally toward the other pipe and is connected to a T D by means of an internally-threaded nut or gland E, threaded into an opening in the end of the T. Connected to the third arm of the T is a pipe or small cylinder F, having a nut or gland *f* at its end, provided with a threaded opening, in which is screwed a burner or nozzle pipe G of comparatively small diameter. The oil-pipe B extends a short distance within the chamber of the T and is connected by a short elbow H with a pipe I, placed centrally within the pipe or cylinder F and extending to a point a short distance from the nut or gland *f*.

The operation will be readily understood. The oil in passing through the T and through the pipe I becomes heated to a considerable degree before it meets the steam. Coming in contact with the steam at the end of the pipe I it is largely atomized or vaporized and passing with the steam through the nozzle or burner pipe becomes thoroughly mixed therewith. The result is a very high degree of combustion. The arrangement of the steam and oil pipes is such, it will be seen, that notwithstanding the fact that there is a higher pressure in the steam than in the oil pipe there is no resulting detrimental back pressure in the latter; but, on the contrary, the action of the steam facilitates the feed of oil.

It will be observed that the construction is an extremely simple one, composed as it is entirely of pipe sections and fittings without castings of any kind. Besides being expensive to make and machine and their considerable weight castings are not satisfactory for use in burners of this class for the reason that when heated they expand to such an extent as to seriously obstruct the area of the several burner-passages unless careful provision be made for such expansion. The above-described construction also permits any part to be removed, cleaned, and replaced or renewed, if necessary. The joints permit the burner to be moved bodily into and out of the furnace, while the joints at *d′* enable it to be directed into the furnace at any desired angle.

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

1. The herein-described oil-burner, consisting of a hollow three-armed member, having two opposite arms each provided with a gland an oil-pipe secured in one of said glands, a steam-pipe secured in the other of said glands, a mixer-pipe secured in the third arm of said member, an oil-conducting pipe within the mixer-pipe and connected to the oil-supply pipe, and a burner-pipe secured in the free end of the mixer-pipe and separated from the oil-conducting pipe by a space which forms an oil and steam mixing chamber, substantially as described.

2. The herein-described burner, consisting of a T having its opposite arms provided with the removable internally-threaded glands E, the oil-supply pipe threaded into one of said glands and extending into the chamber of the T, a steam-supply pipe threaded into the opposite nut or gland, a mixer-pipe secured to the third arm of the T, and having a nut or gland in its outer end, a contracted burner-pipe threaded into the said nut or gland, an oil-conducting pipe within the mixer-pipe, and a short elbow-coupling within the body of the T and connecting the oil-supply and the oil-conducting pipes, substantially as described.

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

GEORGE C. THOM.

Witnesses:

MYRTLE E. SHARPE,

ANNIE M. MOSES.