

W. S. QUIGLEY.
FUEL OIL OR GAS FURNACE.
APPLICATION FILED AUG. 19, 1908.

975,068.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 2

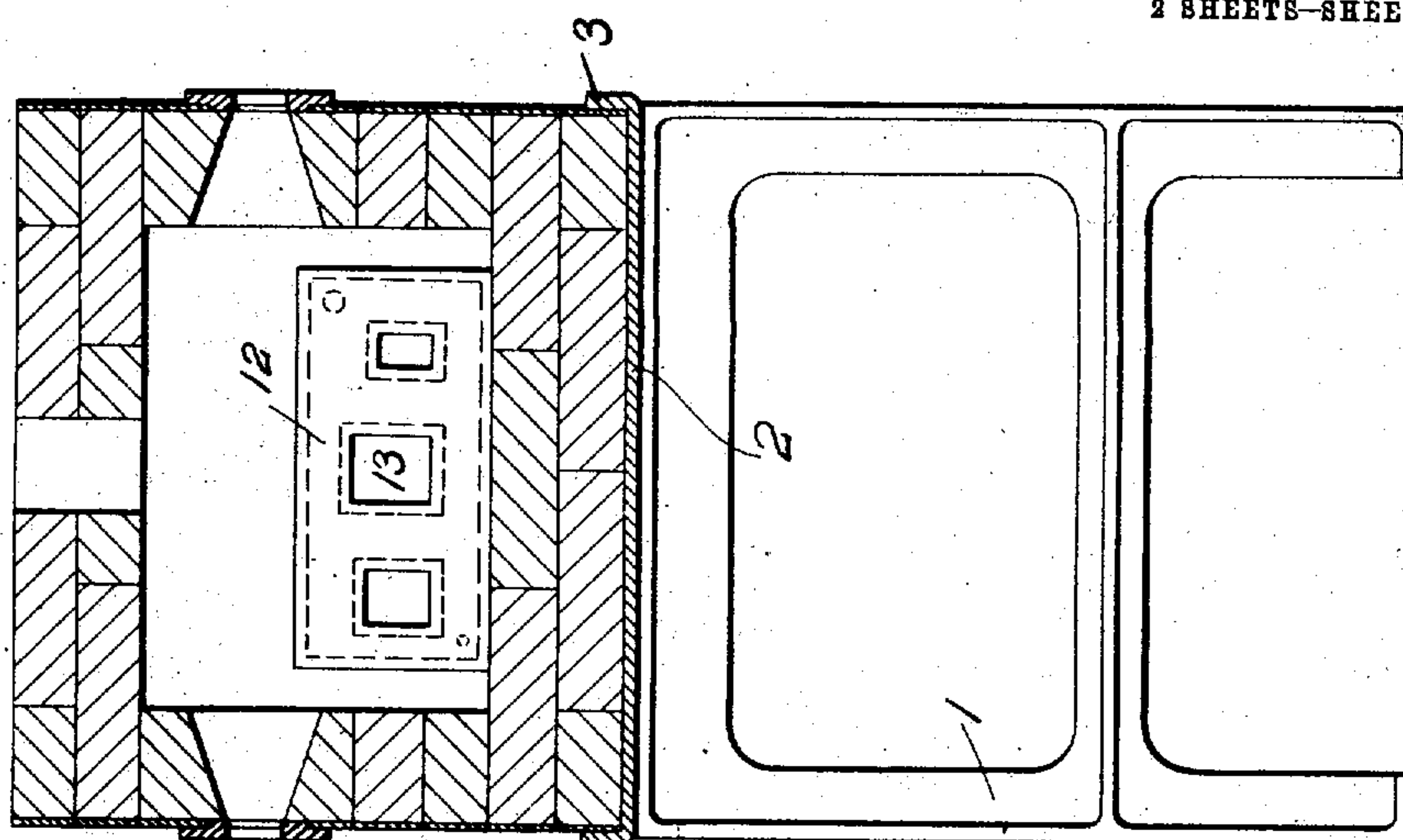
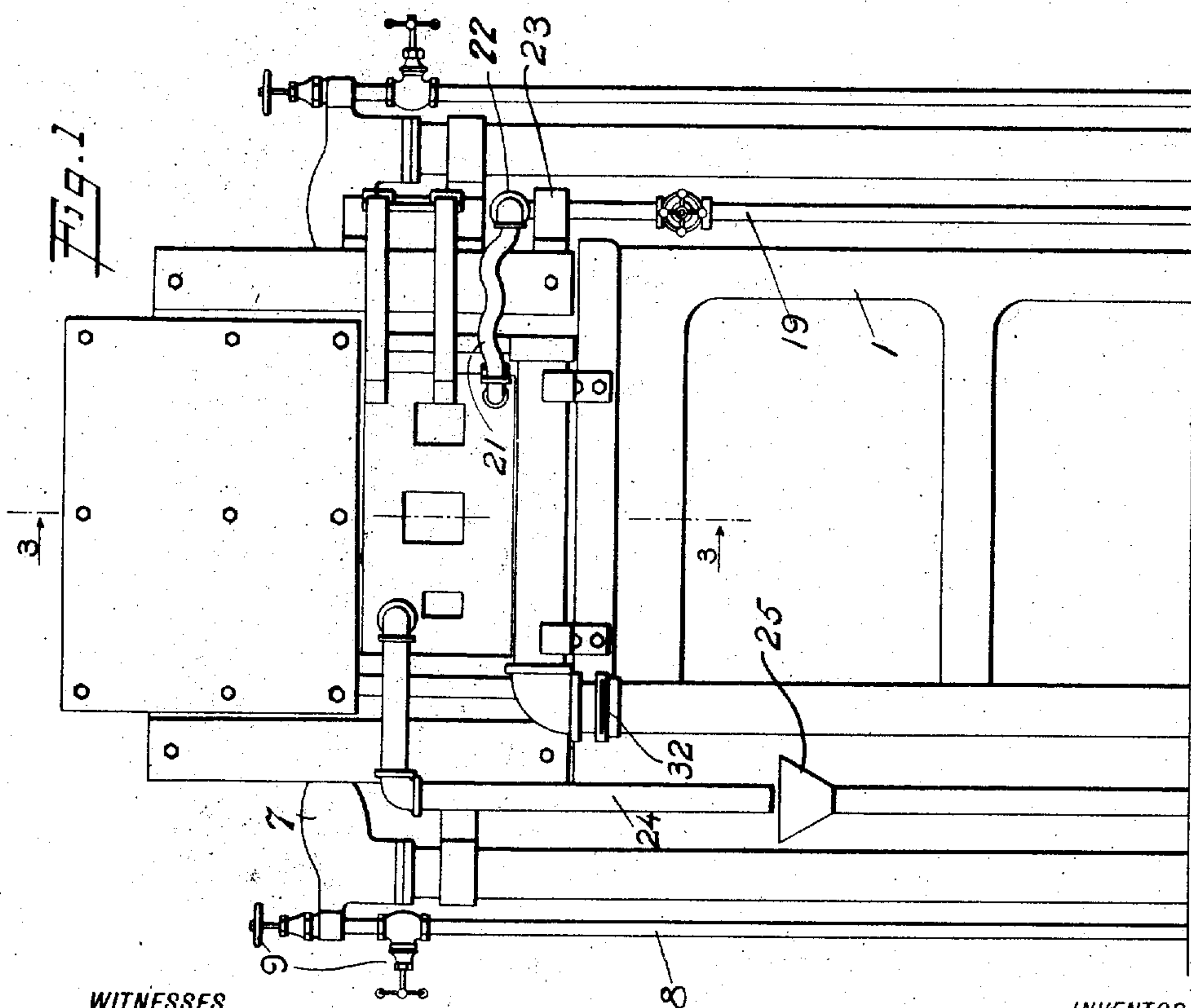


Fig. 1



WITNESSES

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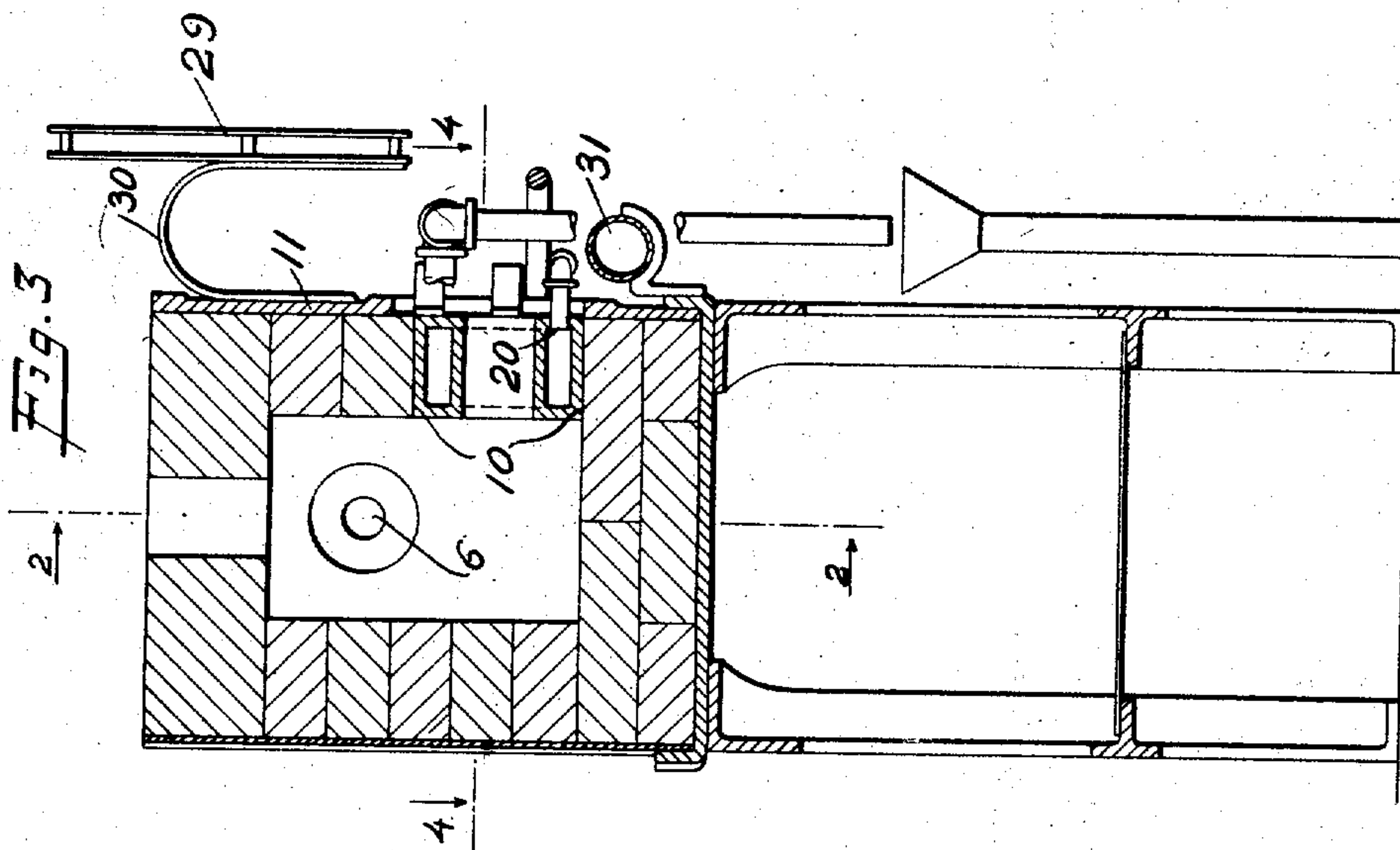
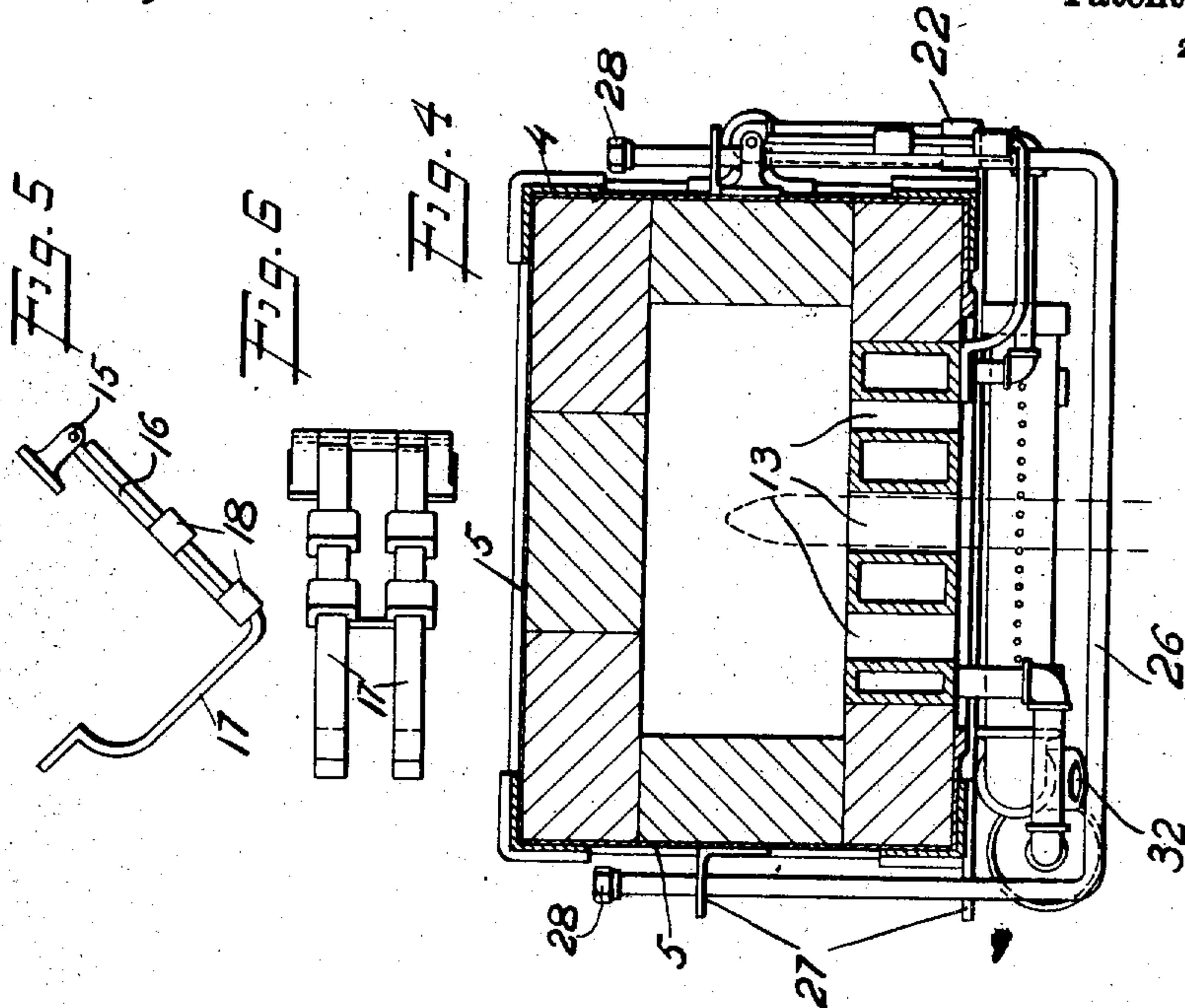
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UNITED STATES PATENT OFFICE.

WIRT S. QUIGLEY, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO ROCKWELL FURNACE COMPANY, A CORPORATION OF NEW YORK.

FUEL OIL OR GAS FURNACE

975,068.

Specification of Letters Patent.

Patented Nov. 8, 1910.

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To all whom it may concern:

Be it known that I, WIRT S. QUIGLEY, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Fuel Oil or Gas Furnaces, of which the following is a specification.

My invention relates to improvements in fuel oil or gas furnaces, and in particular to a device of this character designed for tempering tools, but it will be understood that the invention is not limited to this single use.

In tempering tools, especially those made of modern high speed steel alloys, it is desirable to heat to a high temperature only the end or cutting portion of the tool. When using a coal fire for this purpose, the heat is more or less concentrated and the shank of the tool is protected by the coal bed so that practically only the point of the tool is heated. It is otherwise with an oil or gas furnace as the heat is diffused throughout the furnace chamber, and as the tool has to be thrust well within the furnace chamber, under ordinary conditions, the shank as well as the cutting portion of the tool is heated.

It is one of the objects of my invention to provide a fuel oil or gas furnace wherein these objections are overcome.

Another object is to provide means for protecting the operator from the direct heat of the furnace.

Further objects will appear as the specification proceeds.

In the carrying out of my invention the furnace is provided with an opening which is closed by a so-called door, the door having suitable tool receiving orifices and serving as a tool holder. This tool holder is adapted to support the tool with its inner end projecting within the furnace and some means are provided for cooling the tool holder to prevent overheating of the outwardly projecting portion of the tool. This cooling effect is preferably obtained by making the tool holder double-walled and circulating a cooling fluid through the same. This cooling fluid might simply be water, or for some purposes a stream of air could be caused to circulate through the tool holder. The tool holder would preferably be mounted so that it might readily be removed from the furnace opening, as by means of a hinge struc-

ture which would permit of the holder being withdrawn from the furnace and then swung to one side.

The tool holder would preferably be constructed with openings or orifices, of various sizes, adapting it to receive different-sized tools and the holder would preferably be mounted so as to be easily detachable from the furnace, so that tool holders adapted for different purposes might be interchanged. I also provide in connection with the support for the door or tool holder, pipe connections for supplying the cooling fluid to the holder, capacitated to have the same relative movement as the holder.

Still another feature resides in providing a support for the outer portions of extra large tools or implements. This support would preferably be adjustable and also capable of being removed from the furnace.

In the accompanying drawings is illustrated the preferred embodiment of the invention but various changes in the structure and arrangement of the parts might be made without departing from the spirit of the invention.

Figure 1, is a front or face view of the preferred form of the invention. Fig. 2, is a longitudinal sectional view of the same taken on line 2—2 of Fig. 3. Fig. 3, is a transverse sectional view of the invention taken on the line 3—3 of Fig. 1. Fig. 4, is a horizontal sectional view taken on the line 4—4 of Fig. 3. Fig. 5, is a plan view of the sliding hinge support for the tool holder, and Fig. 6, is a front elevation of the same.

Similar reference characters indicate like parts throughout the several views.

The furnace structure is preferably supported on suitable framework 1. The body of the furnace is made of fire brick or other refractory material and it preferably rests upon a bed plate 2 having an upturned retaining flange 3. The corners of the furnace are preferably strengthened by the angular corner bars 4, and the sides or walls by the sheet metal plates 5 as shown most clearly in Fig. 4. The furnace is provided with the usual openings 6 in the ends thereof for the introduction of the burners. Oil or gas is used as a fuel and the burners 7, are supplied with such fuel by means of the pipes 8, the burners being governed by means of valves 9. The front wall of the furnace has

an opening 10 therein, and the face plate 11, of the furnace has a corresponding opening.

In the furnace opening is fitted the tool holder 12, which acts as a door or closure to said opening. This tool holder is hollow as seen in Figs. 3 and 4 so as to receive a suitable cooling medium and it is provided with orifices or openings 13, for the introduction of the tools or implements. These tool orifices would preferably be of various sizes to receive tools of different size.

The tool holder is preferably mounted so that it may be moved out of the way to allow ready access to the interior of the furnace. This mounting for the tool holder would preferably consist of an angular hinge bracket illustrated in detail in Figs. 5 and 6 adapted to swing on a pintle 15, the bracket being extensible so as to permit of the holder being first withdrawn from the furnace opening before it is swung to one side. This extensible movement could be accomplished by making the angular hinge bracket in two parts, as illustrated, a hinge part 16, having direct connection with the pintle and a slidable part or parts 17, connected to the holder, the second part or parts being adapted to slide in the guide loops 18, on the hinge part.

The water or other cooling medium is led from the vertical feed pipe or riser 19, into the lower portion of the hollow tool holder at the point 20, and a length of flexible tubing 21, is preferably interposed in the supply pipe, to allow for the swinging movement of the tool holder. In addition to this, the horizontal portion of the supply pipe extending alongside the end of the furnace would preferably be made in telescoping parts and provided with a stuffing box 22, to permit extensible movement of the supply pipe corresponding to the extensible sliding movement of the hinge. The riser would also be swiveled in the block 23 so that the movements of the hinge and the supply pipe would be harmonious. The water or other cooling element is allowed to escape through the overflow pipe 24, said pipe emptying into a funnel 25 or other receptacle. A constant circulation of cooling fluid is thus provided for in the tool holder and by means of the connections described, the holder may readily be withdrawn from the furnace and swung to one side without in any way interfering with the other parts of the furnace.

The usual position of the tool or other article being tempered or otherwise treated in the furnace, is indicated in dotted lines, Fig. 4, where it will be seen that the tool is supported by the holder with its inner end projecting within the furnace chamber and that the holder surrounds the outwardly projecting portion of the tool and prevents overheating of the same. If the tool is extra long or heavy, the extreme outer portion

of the tool could be allowed to rest on the tool supporting bracket 26, which is slidably carried on brackets 27, so as to be adjustable to and from the furnace.

If desired, the tool holder may be entirely disconnected from the furnace by disengaging the hinge support and the water connections. This might be done for the purpose of substituting another tool holder having different tool-receiving openings, or for using the furnace for another purpose. When the holder is to be disconnected or swung out of the way, the tool supporting bracket may be removed by unscrewing the retaining nuts 28 on the ends of the bracket and pulling the bracket out.

As the heat generated in furnaces of this character is very intense, it is desirable to provide means for protecting the operator from the direct heat of the furnace. For this purpose a double-walled heat shield 29, may be supported on brackets 30, in front of and above the tool holder and in addition to this I prefer to employ a perforated blast tube 31, arranged in front of and below the tool holder, which directs a blast of air upward past the face of the holder, which prevents any great degree of heat from shooting out through the tool-receiving openings in the holder and directs what heat that does escape straight upward inside the heat screen. To a certain extent this blast also helps to cool the outwardly projecting portions of the tool or tools carried by the holder. The air blast may be regulated by a slide valve 32.

The terms "water" and "water-cooled" as used in the claims are to be construed broadly as including cooling fluids or mediums other than water. Also while the furnace has been described in its use for tempering tools it will of course be understood that any implements or materials other than tools could be hardened or otherwise treated in the said furnace.

What is claimed, is:—

1. A liquid fuel or gas furnace having a water cooled tool holder adapted to receive a tool so that its end will project into the furnace chamber, the tool holder surrounding the outwardly projecting part of the tool to prevent overheating thereof, and means supporting the tool holder in active relation to the furnace and permitting removal thereof from the furnace, said means also supporting the tool holder during its removal from the furnace.

2. In combination with an oil fuel or gas furnace having an opening in one of its walls, a water cooled door acting as a closure to said opening and constituting a tool holder; a pivoted hinge bracket serving to support said door, and a sliding joint in the hinge bracket permitting the door to be freed of the opening and then swung to one side.

3. In combination with an oil fuel or gas furnace having an opening in one of its walls, a water cooled door acting as a closure to said opening and constituting a tool
5 holder, a pivoted hinge bracket serving to support said door, and a sliding joint in the hinge bracket permitting the door to be freed of the opening and then swung to one side, and means for supplying the cooling
10 fluid to the door.

4. In combination with an oil fuel or gas furnace having an opening in one of its walls, a water cooled door acting as a closure to said opening and constituting a tool
15 holder, a pivoted hinge bracket serving to

support said door, and a sliding joint in the hinge bracket permitting the door to be freed of the opening and then swung to one side, and a pipe for supplying fluid to the door, the supply pipe and the hinge bracket 20 having a common center.

Signed at New York, borough of Manhattan in the county of New York and State of New York, this 15th day of August A. D. 1908.

WIRT S. QUIGLEY.

Witnesses:

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ARTHUR L. STEVENS.