

(No Model.)

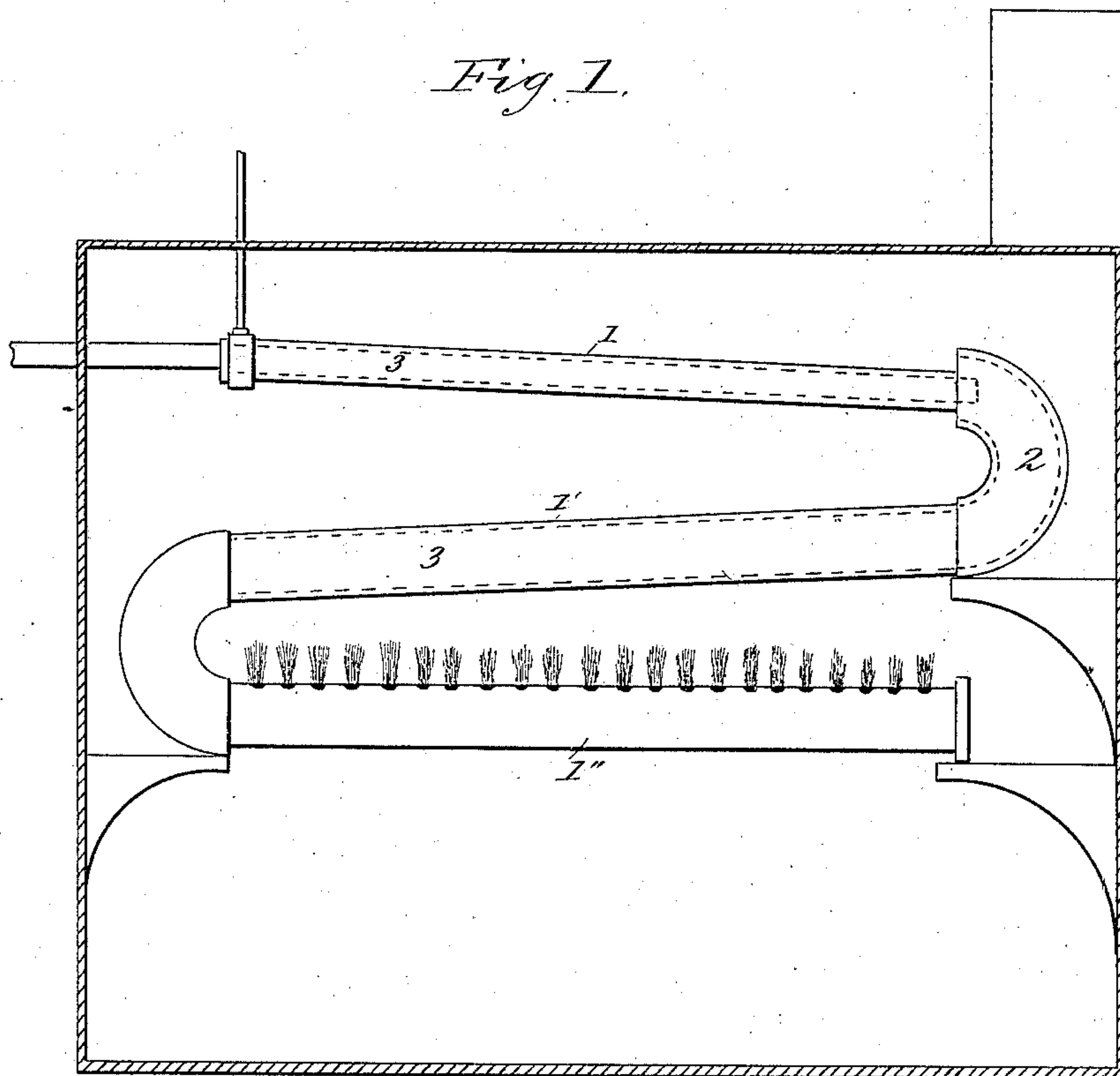
2 Sheets—Sheet 1.

J. ROBERTS.

APPARATUS FOR MANUFACTURING HEATING AND ILLUMINATING GAS.

No. 371,978.

Patented Oct. 25, 1887.



Witnesses:

J. R. Strait

L. Sward Bacon

Inventor:

James Roberts

By Emmert

(No Model.)

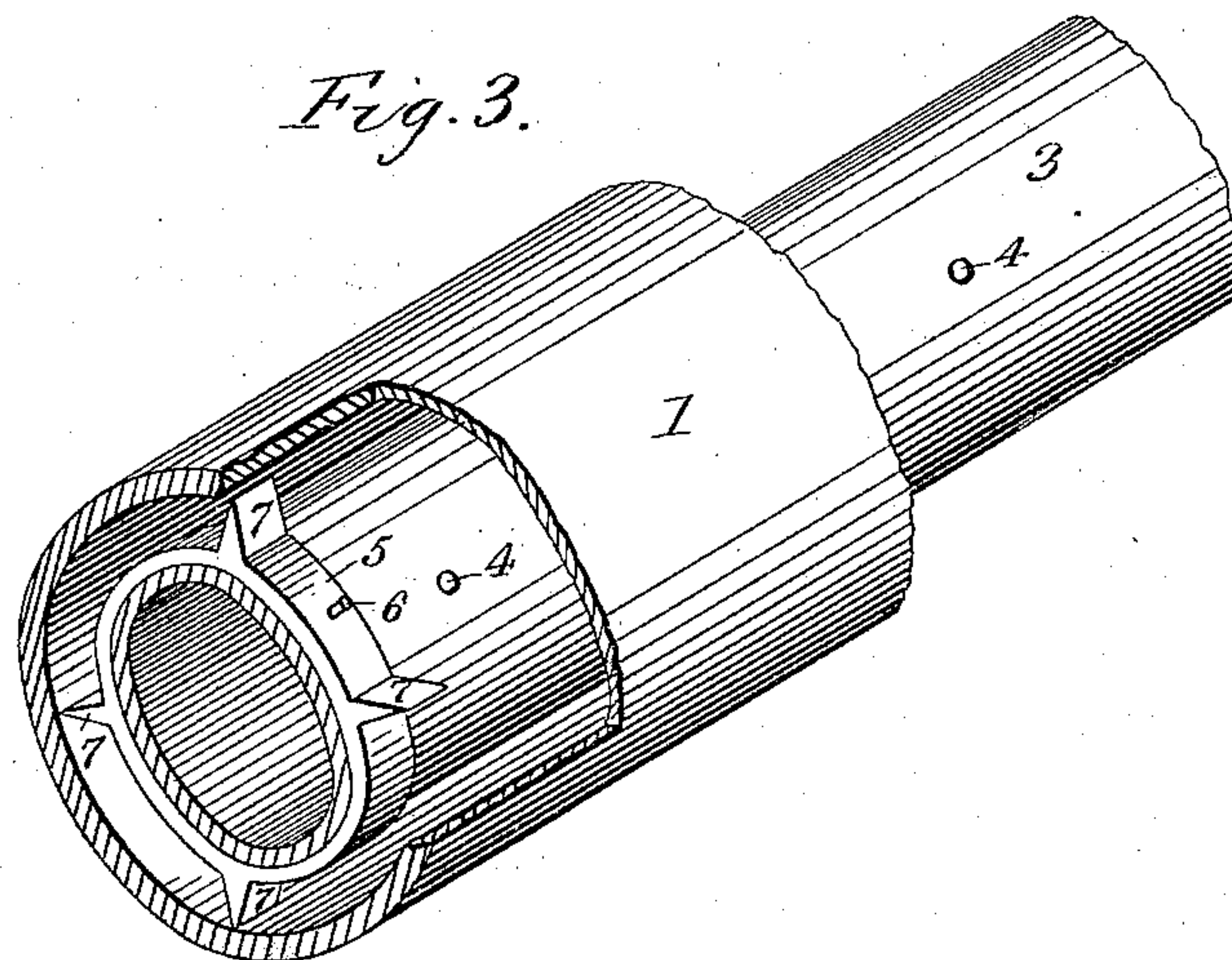
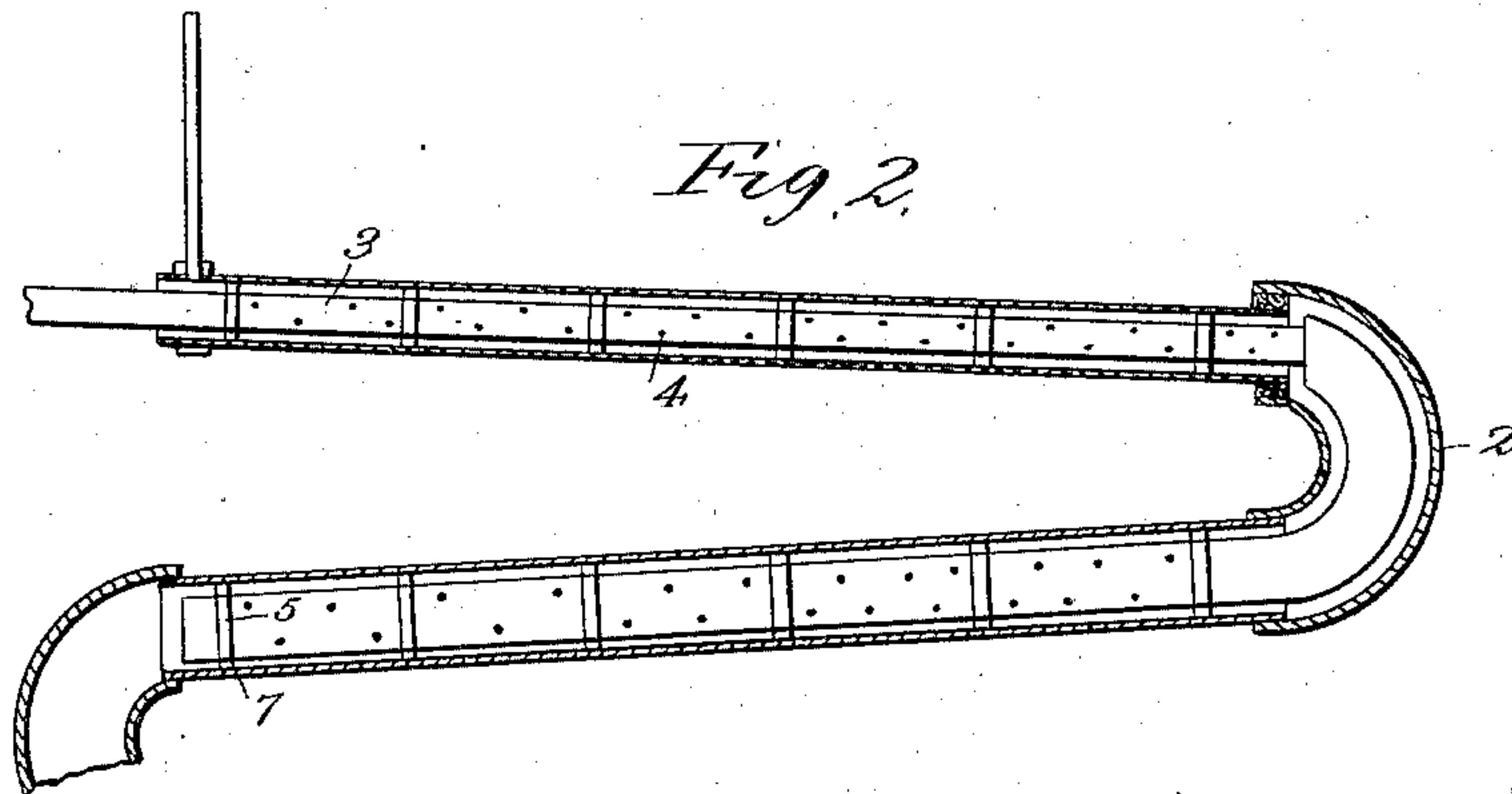
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No. 371,978.

Patented Oct. 25, 1887.



Witnesses:
T. H. Stuart.
L. Seward Bacon

Inventor:
James Roberts.
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UNITED STATES PATENT OFFICE.

JAMES ROBERTS, OF NEW YORK, N. Y., ASSIGNOR TO THE ACMÉ LIQUID FUEL COMPANY, OF SAME PLACE.

APPARATUS FOR MANUFACTURING HEATING AND ILLUMINATING GAS.

SPECIFICATION forming part of Letters Patent No. 371,978, dated October 25, 1887.

Application filed November 2, 1886. Serial No. 217,794. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROBERTS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Manufacturing Heating and Illuminating Gas; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in the construction of the apparatus disclosed in Letters Patent No. 345,649, dated July 13, 1886, granted to me for process of and apparatus for manufacturing heating and illuminating gas; and it consists in the construction, combination, and arrangement of the parts, as hereinafter described, and definitely pointed out in the claims.

One object of my invention is to provide perforated pipes for forcing steam through the feeding-pipes to prevent foreign matter from settling therein and to cleanse them of impurities which may become deposited therein, and at the same time act as an auxiliary to force the oil through the pipes, and thereby prevent any retardation thereof.

A further object of my invention is to provide suitable collars or rings in connection with the internal and external pipes, which will support said pipes free from contact with each other, and at the same time permit of a free uninterrupted passage of the fluids passing through said pipes.

My invention consists in the peculiar construction and combination of parts hereinafter particularly described, and pointed out in the claims.

I attain the above-named objects by the construction and arrangement of parts illustrated in the accompanying drawings, wherein the same reference-numerals indicate the same parts in the several views, and in which—

Figure 1 represents a vertical longitudinal section of the shell or furnace-casing and a side elevation of the reversely-inclined pipes and the burner, the perforated pipes being shown in dotted lines. Fig. 2 is a longitudinal vertical section of the pipes, showing the collars or rings for the support of the interior

perforated pipes. Fig. 3 is a broken perspective view of a portion of the pipes, showing one of the supporting collars or rings in position.

In my above-named patent a series of inclined oil and water pipes of increasing diameters are shown and their purposes and operation described, said pipes being adapted to contain and feed the oil and water desired to be decomposed into their component gases and convey the mingled gases therefrom into a burner which is common to them all, where they are ignited and form a heating source for the pipes through which the liquids pass.

In the drawings, 1 and 1' indicate two pipes inclined in reverse directions and united at their ends by an elbow, 2. The pipe 1' is of larger diameter than the pipe 1, the said pipes being especially adapted for the conversion of hydrocarbon oils into gas and for the feeding of the same to the burner 1", where ignition and combustion thereof take place, as fully described in my former patent. Within the pipes 1 and 1' steam-conveying pipes 3 are inserted and supported, which are of proportionately-increasing diameters with the external pipes through which they pass and of the same inclination. The pipes 3 have connection with a suitable steam source and are provided with apertures 4, arranged at suitable intervals, any number being employed to secure the desired effectiveness of said pipes. The steam passes out through the said apertures 4, and, striking against the internal sides of the pipes 1 and 1', prevents any dirt from being deposited therein from the oil and comes into forcible contact with the latter and secures uniformity in its forward movement or circulation.

The pipes 3 are supported within the pipes 1 and 1' by means of collars or rings 5, which surround the pipes, and are secured thereto by means of set-screws 6. These collars or rings are constructed with a series of wedge-shaped rests, 7 7, which fit against the inner surfaces of the pipes 1 1', and by their wedge-shaped construction allow the liquids passing through said pipes to have an uninterrupted flow, and at the same time keep the pipes 3 in stationary position within the external pipes, 1 1', at whatever angle the latter may be placed. The

support of the said internal pipes centrally of and free from contact with the pipes surrounding the same is highly beneficial to the successful operation of the external pipes, in that by the free passage of the oil said external pipes are kept clear of all matter which might prove deleterious thereto or affect the proper conduct of the process. Also, in consequence of the wedge-shaped construction of the supports of the collars, a clear open passage for the oil is provided, and by extending outward from different points of said collars they are in contact with and provide means whereby the pipes 3 are supported equally at all points by the inner circumferential surface of the pipes 1 1'.

In the use of the pipes 3, steam may be admitted thereto through a suitable stop-cock connected at one end thereof at some convenient and accessible point. (Not shown.) When the steam under pressure enters the said pipes it passes through the same and escapes through the apertures 4 into the surrounding pipes 1 1', whereby sediment or other foreign matter is prevented from settling in the pipes 1 1'; or, if it should settle therein, it is loosened by the pressure of the steam and blown along through the pipes until it reaches a point where it may be readily removed, thereby keeping the pipes free and clean. A further advantage of this current of steam under pressure passing through said apertures is, that the hydrocarbon passing through the pipes 1 1' will be spread out more uniformly, and thereby be more readily converted from the liquid into the gaseous form, and also it impels the oil forward and prevents any tendency to retardation.

By the use of these improvements the process covered by my patent aforesaid is rendered more effective and the operation of the apparatus is greatly improved.

I do not wish to be understood as claiming a single horizontal perforated steam-pipe of

uniform diameter and arranged within an oil-conducting pipe for heating and steaming oil, as I am aware that the same is not new; but I am not aware that the combination of inclined pipes of increasing diameters with perforated pipes centrally arranged and supported within said inclined pipes, and being of proportionately increasing diameter therewith, has ever before been known or used for conveying steam into said inclined pipes for cleaning the same and for assisting in forcing the oil forward therein; also, I am not aware that collars or rings having wedge-shaped projections have ever been employed for supporting perforated pipes within inclined oil-pipes and permitting a free and unobstructed passage of the oil.

Having thus fully described my invention, what I claim as new is—

1. In an apparatus for manufacturing gas, the combination of a burner with a series of external inclined pipes having increasing diameters, of a series of centrally-arranged internal perforated pipes of smaller diameter than but of proportionately increasing diameter with exterior pipes for conveying steam into said exterior pipes for cleaning the same and for assisting in forcing the oil forward therein, substantially as described.

2. In an apparatus for manufacturing gas, the combination, with the series of external inclined pipes having increasing diameters, of a series of internal perforated pipes of smaller diameter than but of proportionately increasing diameter with said external pipes, and collars for supporting said perforated pipes centrally within the inclined pipes, substantially as described.

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

JAMES ROBERTS.

Witnesses:

JOSEPH C. JACKSON,
WM. H. MAIN.