

No. 617,893.

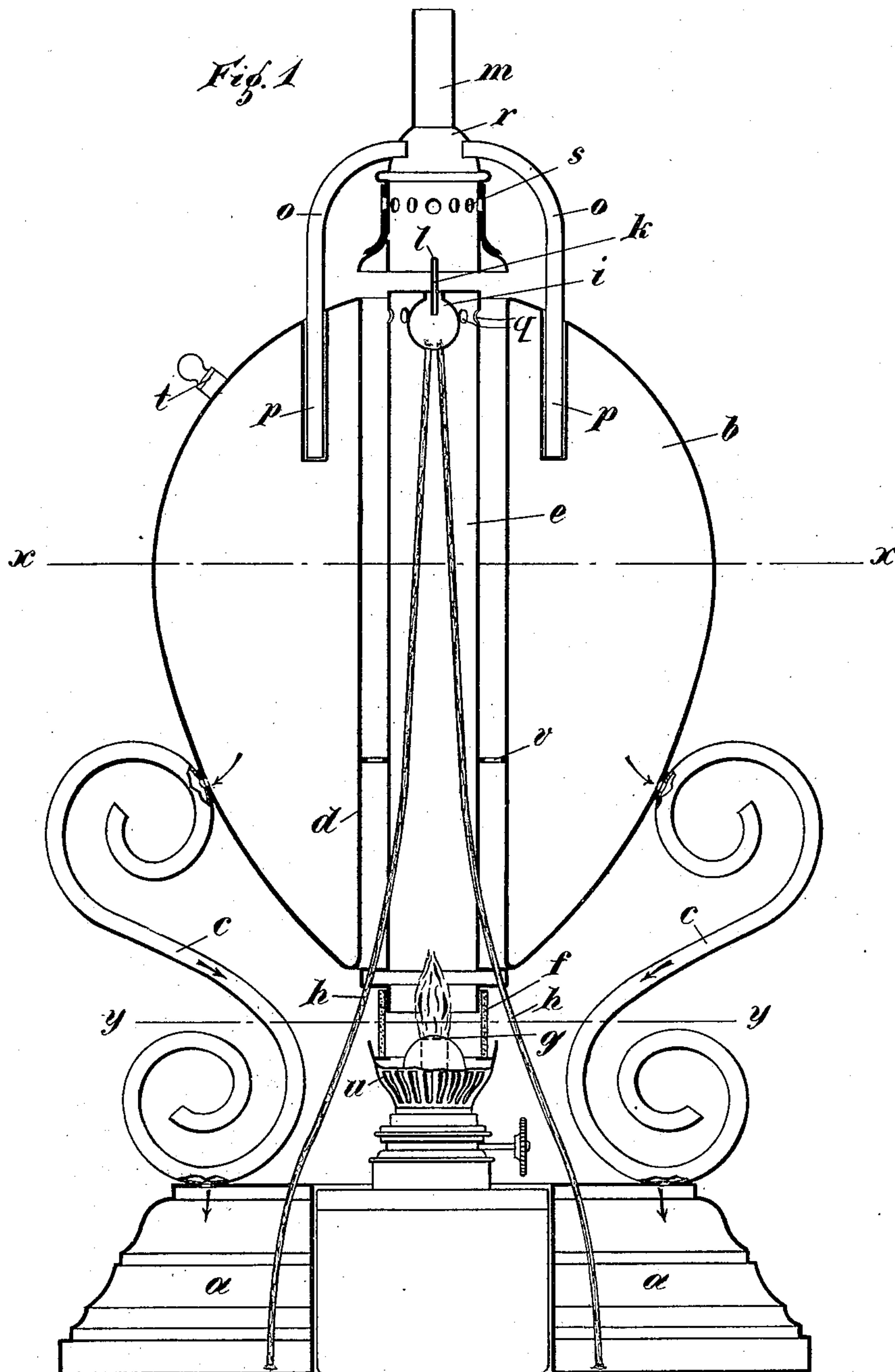
Patented Jan. 17, 1899.

G. TRESENREUTER.
APPARATUS FOR BURNING HYDROCARBONS.

(Application filed Nov. 21, 1896.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

William B. Roberts.
Geo. S. Wheelock.

INVENTOR

Gustav Tresenreuter

BY *James H. McGuire*
ATTORNEYS.

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Fig. 2

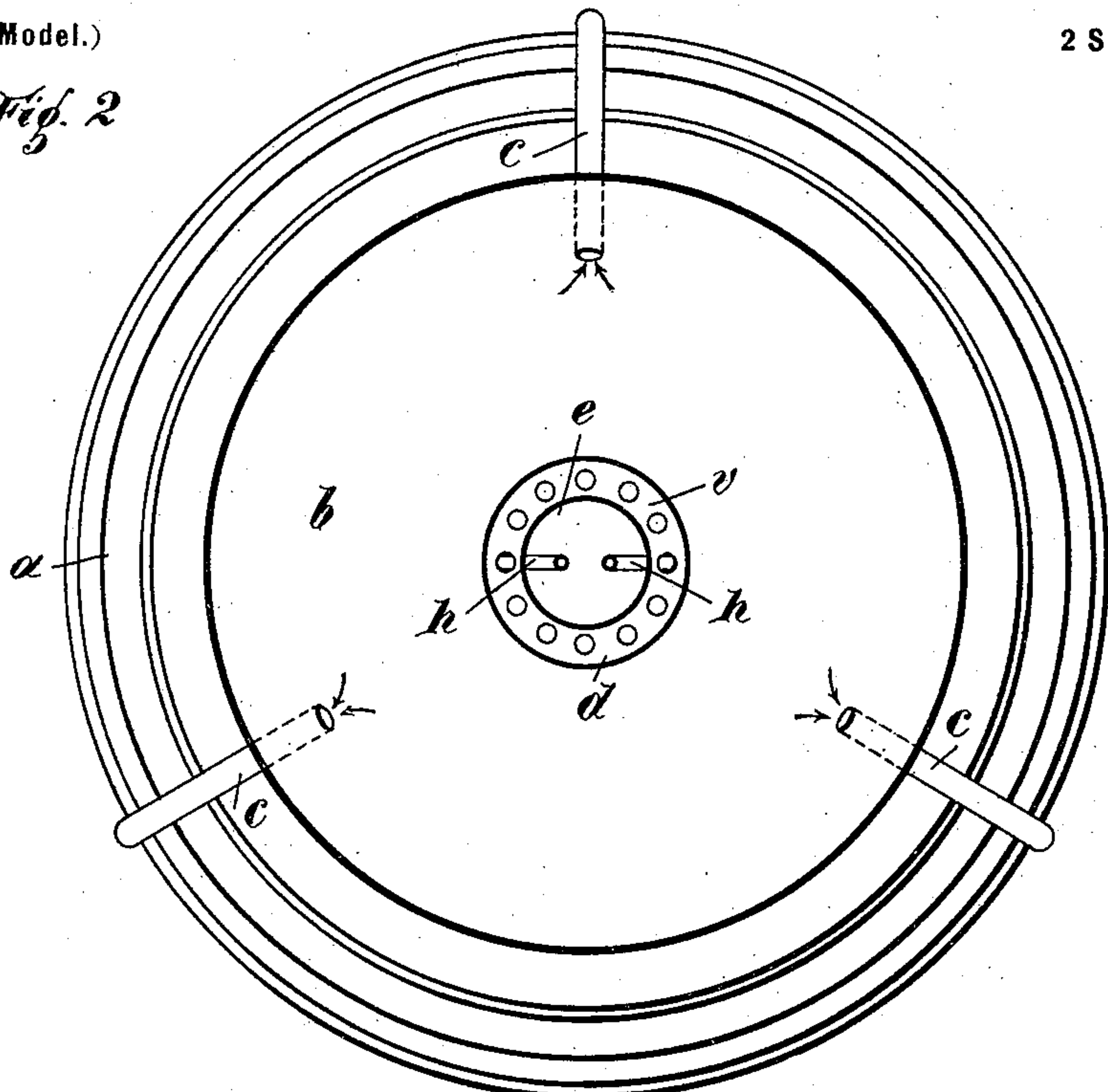
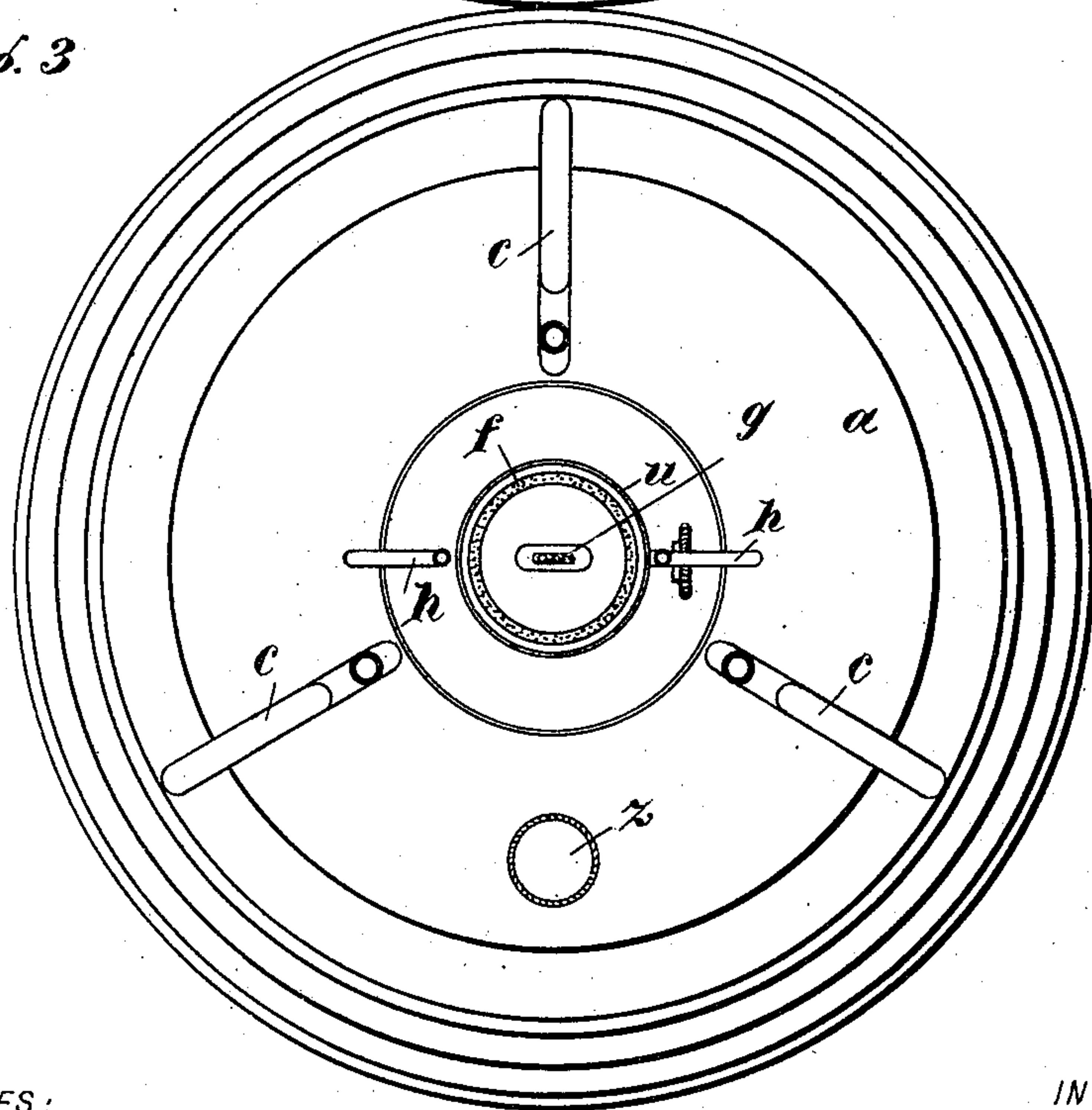


Fig. 3



WITNESSES:
William B. Roberts.
Geo. S. Wheelock.

INVENTOR
Gustav Tresenreuter
BY *Joseph H. Regener*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GUSTAV TRESENREUTER, OF BERLIN, GERMANY.

APPARATUS FOR BURNING HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 617,893, dated January 17, 1899.

Application filed November 21, 1896. Serial No. 613,010. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV TRESENREUTER, a citizen of the Empire of Germany, residing at Berlin, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Apparatus for Burning Hydrocarbons, of which the following is a specification.

This invention has reference to an improved process and apparatus for generating vapors from liquid hydrocarbons—such as petroleum, alcohol, and the like—which vapors are applicable to various uses in the arts, and more especially in illumination and for incandescent gas-lamps.

The main points to be considered in the construction of effective gas-lamps in which liquid hydrocarbons are used are, first, the generation of the required pressure, and, second, the keeping cool of the liquid fuel, such as petroleum, which is necessary for combustion.

The present invention has for its object the furnishing of an apparatus which meets the requirements referred to, and which is constructed in such a manner that the hydrocarbon is forced by means of a circulating current of air to the desired level, and which has the further advantage that the circulating air-current, which exerts a direct pressure on the liquid hydrocarbon, forms a cold stratum of air and absolutely prevents thereby the heating of the hydrocarbon.

In the accompanying drawings, one form of lamp embodying my invention is shown, and in which—

Figure 1 is a vertical central section of my improved apparatus. Figs. 2 and 3 are horizontal sections on lines $x\ x$ and $y\ y$, respectively, of Fig. 1.

My improved apparatus consists, essentially, of two chambers or reservoirs a and b . Chamber a is intended for receiving the liquid hydrocarbon, such as petroleum, which is introduced through an opening that is closed by a suitable device z , while the chamber b , that is supported above the chamber a , contains atmospheric air. The connection between the two chambers a and b is produced by tubes c , which are made in suitable shape, so as to form a support for the chamber b above chamber a . The vessel b is perfectly air-tight and is provided with a central tube

d , into which the chimney e for carrying off the products of combustion of the heating-flame is placed. The chimney e is supported on a short cylindrical portion f , of insulating material, which rests directly on the gallery u , that surrounds the burner g of the heating-flame. The chamber or oil-fount a is connected by small tubes h , which extend downward to nearly the bottom of the fount a and above the heating-flame into the chimney e , with a vaporizing-chamber i , that has at its top a small jet-tube l , through which the gas is conducted to the burner m . The burner is supported in any suitable manner above the air-chamber b , as by means of supporting-rods o , which are inserted into sockets which extend into the air-chamber b . The chimney e is closed over at its top and provided just below its closed top with an opening or openings q , which permit the escape of the products of combustion from the heating-flame g . Immediately above the top of the chimney e is arranged a bell-shaped chamber r , which is provided with an opening or openings s , that give access of air to the flame. The bell-shaped chamber r extends downward from the burner m toward the chimney, so that a uniform heating of the burner is produced by the heating-flame g , which produces not only on one hand the quicker starting of the apparatus, but on the other hand the uniform burning of the oil. The air-chamber b is further provided with an outlet t , the object of which will be described hereinafter.

Between the central tube d of the air-chamber b and the chimney e is interposed a metallic ring v , which serves for conducting the heat from the chimney to the air-chamber. The size of the ring v , as well as the special position of the same, depends on the dimensions of the apparatus and forms an element of considerable importance in the construction of the same.

The heating-flame g produces, in connection with the chimney arranged above the flame, a rapid supply of air with such an intense heat that in a very short time the vaporization of the liquid hydrocarbon takes place. The heat is conducted from the chimney e by means of the metallic ring v and by means of the air-chamber b . This air passes through part of the connecting-tubes c into the cham-

ber *a*, while the air contained in the latter is conducted through one of the tubes *c* into the air-chamber *b*. The air that is passing in downward direction through the tubes *c* is cooled off by contact with the walls of the tubes and exerts on the body of the hydrocarbon a pressure sufficient to force the same through the smaller tubes *h* in upward direction. In each of the small tubes *h* is placed a wick, preferably made from asbestos fibers, for conducting the liquid hydrocarbon in cool condition in upward direction, so that the vaporizing of the same commences only when the hydrocarbon passes into the portions of the connecting-tubes *h* which are located in the chimney *e*.

The heating up of the hydrocarbon in the chamber *a* is by the apparatus described positively prevented, and consequently the result obtained is a more reliable functioning of the apparatus. Therefore it is obvious that when the air-chamber *b* is made large the ring *v* has to be made larger also, in order that the air in the chamber *b* can be heated to the same degree, and that the ring *v* has to be made smaller when placed nearer to the heating-flame. The different size of the ring *v* is mainly dependent on its location relatively to the heating-flame and on the dimensions of the remaining parts of the apparatus.

When the use of the apparatus is to be discontinued, the heating-flame *g* is first extinguished and then the plug *t* to the opening in the air-chamber removed, so that the warm air in the air-chamber can pass off and immediately produce a reduction of pressure in the air-chamber. The outlet-opening and plug *t* can also be used for regulating the air-pressure in the chamber *b* by regulating the size of the opening.

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

1. In an apparatus for generating hydrocarbon vapors, the combination of an oil-chamber, an air-chamber supported above and in communication with the oil-chamber, a retort, tubes connecting said retort with the oil-chamber, and a burner adapted to heat the retort and air-chamber, substantially as set forth.

2. In an apparatus for generating hydrocarbon vapors, the combination of an oil-

chamber, an air-chamber supported above the oil-chamber and in communication therewith, said air-chamber having a central tubular opening extending therethrough, a retort arranged in said opening, a suitable source of heat arranged below said opening and tubes connecting said retort with the oil-chamber, substantially as set forth.

3. In an apparatus for generating hydrocarbon vapors, the combination of an oil-chamber, an air-chamber supported above and in communication with the oil-chamber, a retort provided with an exit-tube in its upper portion, a main burner suitably supported above the exit-tube, tubes connecting said retort with the oil-chamber, and a burner or source of heat for heating the retort and air-chamber, substantially as set forth.

4. In an apparatus for generating hydrocarbon vapors, the combination of an oil-chamber, an air-chamber supported above and in communication with the oil-chamber, a retort provided with an exit-tube in its upper portion, tubes connecting said retort with the oil-chamber, a main burner above said retort adapted to receive the vapor therefrom, supports on said main burner fitting in suitable recesses in the top of the air-chamber, and a burner or a source of heat adapted to heat the retort and air-chamber, substantially as set forth.

5. In an apparatus for generating hydrocarbon vapors, the combination of an oil-chamber, an air-chamber suitably supported above and in communication with the oil-chamber and provided with a central opening extending therethrough, a burner or source of heat arranged below said central opening, a chimney supported on said burner and extending through said central opening, a perforated ring in contact with the wall forming said central opening and with said chimney, a retort at the upper part of said chimney, tubes connecting said retort with the oil-chamber, and a main burner supported above said retort, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GUSTAV TRESENREUTER.

Witnesses:

W. HAUPT,
KARL FRANZ.