No. 666,434. Patented Jan. 22, 1901.

H. W. O'DOWD.

GAS WATER HEATER.

(Application filed Apr. 9, 1900.

(No Model.) 2 Sheets—Sheet 1.

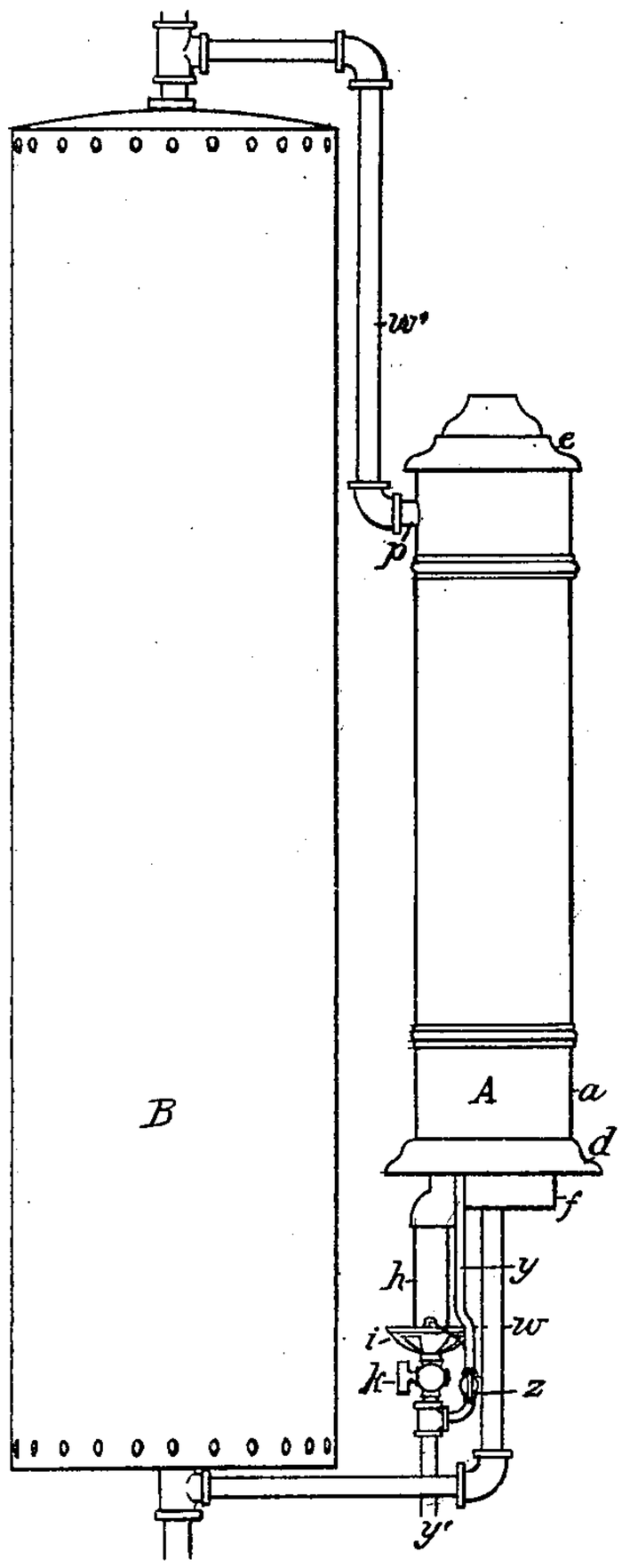

Fig. 1

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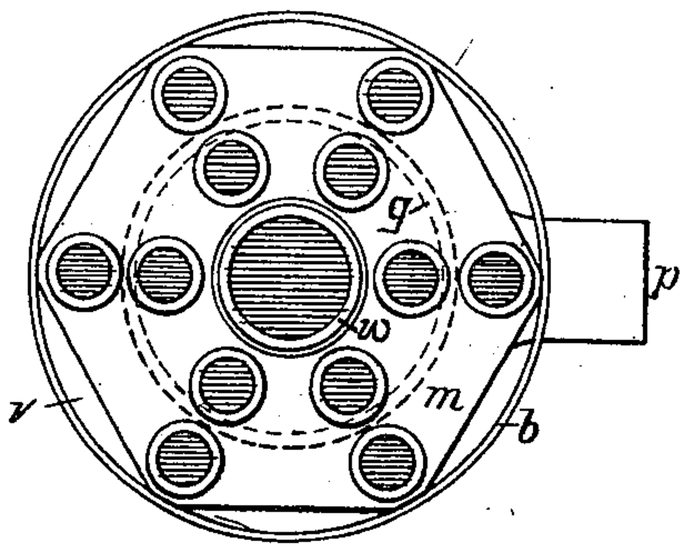

Fig. II

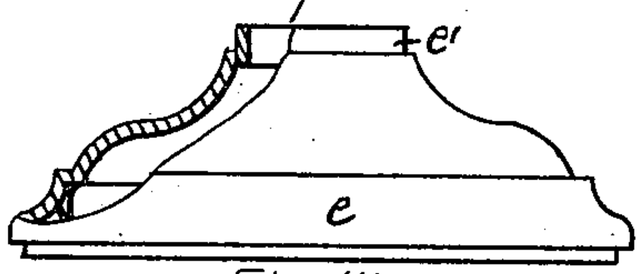

Fig. III

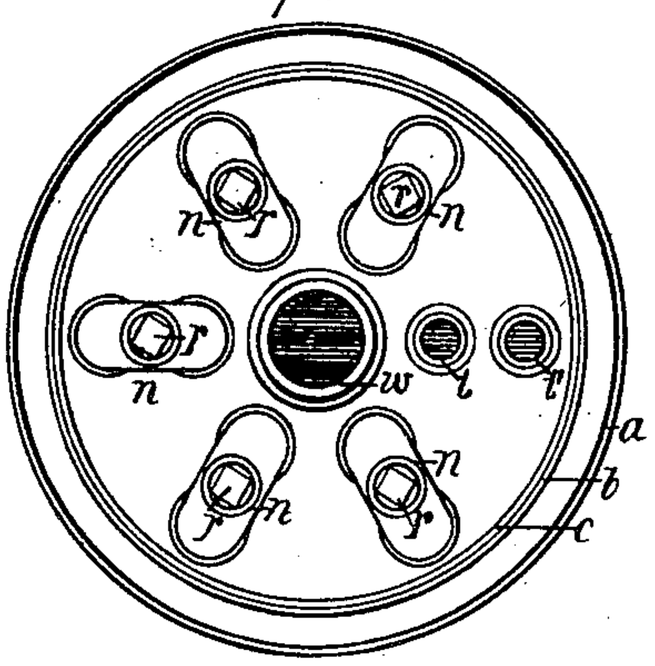

Fig. IV

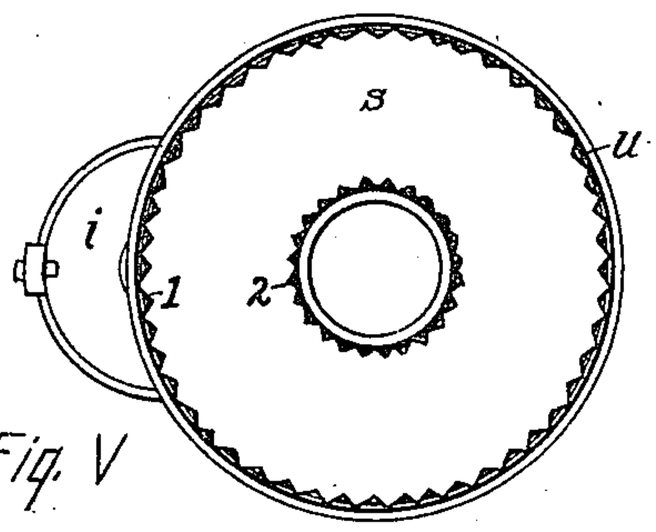

Fig. V

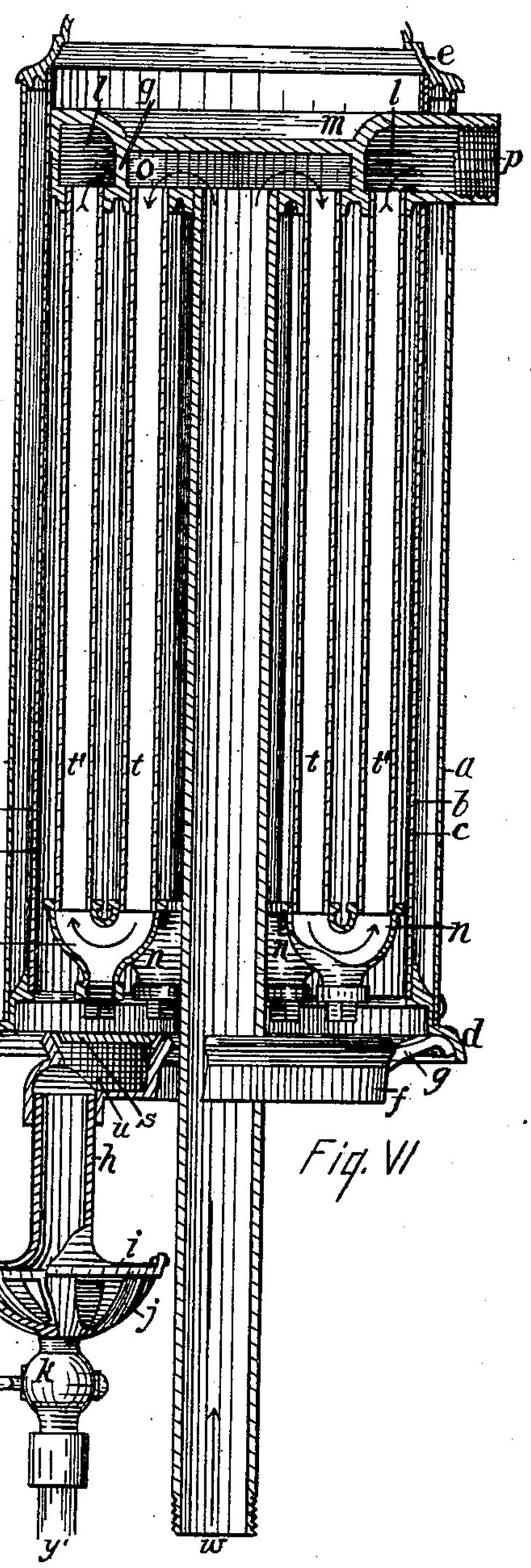

Fig. VI

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UNITED STATES PATENT OFFICE.

HENRY WATKINS O'DOWD, OF JERSEY CITY, NEW JERSEY.

GAS WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 666,434, dated January 22, 1901.

Application filed April 9, 1900. Serial No. 12,155. (No model.)

To all whom it may concern:

Be it known that I, HENRY WATKINS O'DOWD, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Gas Water-Heater, of which the following is a specification.

My invention relates to apparatus for quickly heating water with gas for a fuel; and its object is to provide a compact, effective, and inexpensive combination of circulating-tubes for that purpose.

My invention is fully set forth in the accompanying drawings.

Figure I represents in elevation a kitchen-range boiler having my gas water-heater as an attachment. Fig. II is a view of the under side of the chambered head to which the circulating-pipes are attached. Fig. III represents the hood, partly in section, that is supported by the double sheet-iron jacket. Fig. IV is a bottom view of the circulating system and the sheet-iron jackets without the base and burner. Fig. V is a plan of the gas-burner, and Fig. VI is a vertical cross-sectional view of the heater.

Reference to Fig. I will show the type of heater to which my invention belongs. It may be used in connection with a range-boiler, as there shown, or it may have an independent water-supply through the pipe *w*, and the hot water may be drawn directly from the pipe *p*, or it may be led from said pipe to any point where the hot water may be required. It is usual when such heaters are connected with range-boilers, as shown, for the cold water to flow from the bottom of the boiler B into the heater, the hot water flowing from the top of the heater through the pipes *p w'* into the top of the boiler, whence it goes to the bath, basin, kitchen, or other places where it is usual to draw hot water from the boiler.

Figure VI reveals the entire construction of the apparatus in detail. *m* represents a metallic head having a central chamber *o*, which is surrounded by an annular chamber *l*, the latter chamber having an outlet *p*, tapped to receive a pipe connection.

Fig. II shows a plan of the under side of the head. The circles in broken lines indicate the partition *g*, that separates the central and annular chambers *o l*. A hole in the center of the chamber *o* receives a pipe *w*. Concentric with this pipe-hole are six smaller ones in the chamber *o*, and radially in line with them are six other holes in the annular chamber *l*. In each pair of holes, in radial lines from the center of the head, pipes *t t'* are inserted, whose outer ends are united by means of return-bends *n n*, Fig. VI, and also shown in Fig. IV. In the latter figure one pair of pipes is shown without the return-bend. These pipes may be screwed into the head and the return-bends, or they may be fitted closely and secured with solder. The return-bends are provided with screw-plugs *r* to facilitate cleaning of the tubes when the nature of the water used renders cleaning necessary.

When the pipes are all in place, circulation of water through the apparatus will be as indicated by the arrows in Fig. VI—that is, water entering pipe *w* will flow into the chamber *o*, thence through the pipes *t* through the return-bends to pipes *t'* into the chamber *l* and out from the apparatus by the outlet *p*. This combination of head and pipes is inclosed with a sheet-iron jacket *b*, which has an asbestos lining *c*. A second jacket *a* incloses the first, leaving an air-space between the two, the outside jacket partaking of the ornamental. The jackets are united by suitable flanges and rims on the hood *e* and the base *d*, as shown in Fig. VI.

An annular gas-burner *f* is suspended from the base *d* by hangers, one of which is shown at *g*, Fig. VI. A plan of the gas-burner is shown in Fig. V. It gives out a double row of gas-jets from the openings 1 2, Fig. V, and these jets almost impinge against the return-bends. The heat and products of combustion pass up within the casing, circulating around the water-tubes, and find an outlet in the hood *e*. They are enabled to pass the head *m* by reason of a hexagonal shape given to the head, making vent-spaces *v* between the head and the jacket *b*, as shown in Fig. II.

The burner-body *f* has sufficient capacity for a good air and gas mixer, the air and gas entering the body through the pipe *h*. This pipe is supplied with an air-inlet chamber *i*, which has an adjustable cap *j* for regulating

the air-supply. Gas is admitted through the pipe y' by means of the cock k. The pipe y and cock z shown in Fig. I are for the purposes of a pilot-light.

A flange e' on the hood e, Fig. III, may have a pipe attached to it for carrying away the gases due to combustion within the apparatus.

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

1. The combination in a gas water-heater of a water-circulating system comprising a head having a central chamber with a supply-pipe central thereto, an annular chamber around said central chamber with an outlet therefrom, the two chambers connected with pipes in radial pairs parallel to the supply-pipe, each pair being united at their bottoms by return-bends, substantially as herein set forth.

2. The combination in a gas water-heater of a water-circulating system comprising a head having a central chamber with a supply-pipe central thereto, an annular chamber around said central chamber with an outlet therefrom, the two chambers connected with pipes in radial pairs parallel to the supply-pipe, each pair of pipes being united by return-bends, an inclosing double jacket sustained by a hood and a base substantially as shown, and a gas-burner suspended from the base in such relation to the pipes that the burner-flame shall impinge against the return-bends, substantially as herein set forth.

3. The combination in a gas water-heater of a double-chambered head with circulating-pipes substantially as described, the head being angular, as hexagonal, in plan for the purpose described, the head and pipes sustained within a cylindrical jacket, the jacket resting on a base and supporting a hood adapted to receive a pipe, and a burner suspended from within said base in such relation to the water-pipes that the burner-flame shall impinge against the return-bends, all arranged substantially as and for the purposes set forth.

Signed at New York city, in the county of New York and State of New York, this 26th day of March, A. D. 1900.

HENRY WATKINS O'DOWD.

Witnesses:
WM. M. CRANE,
CHAS. D. SHEPARD.