B. A. GEURINK.

WATER HEATER.

APPLICATION FILED MAY 10, 1909.

998,609.

Patented July 25, 1911.

2 SHEETS—SHEET 1.

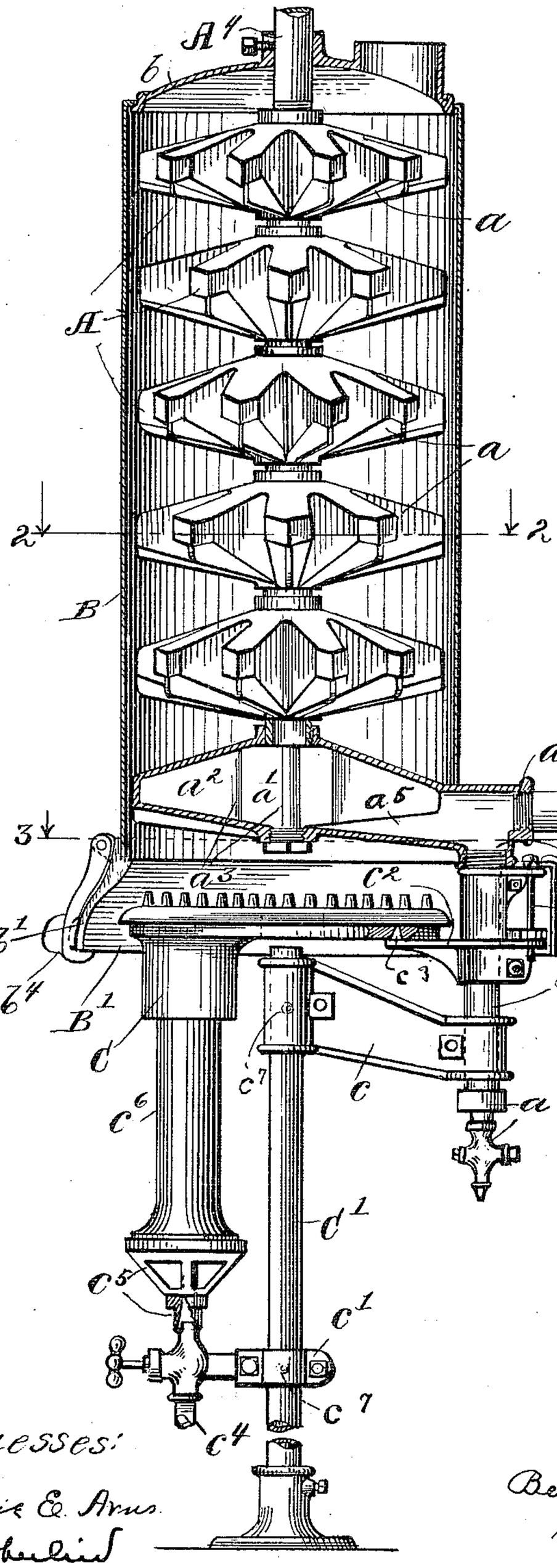

Fig. 1

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2 SHEETS—SHEET 2.

Fig. 2

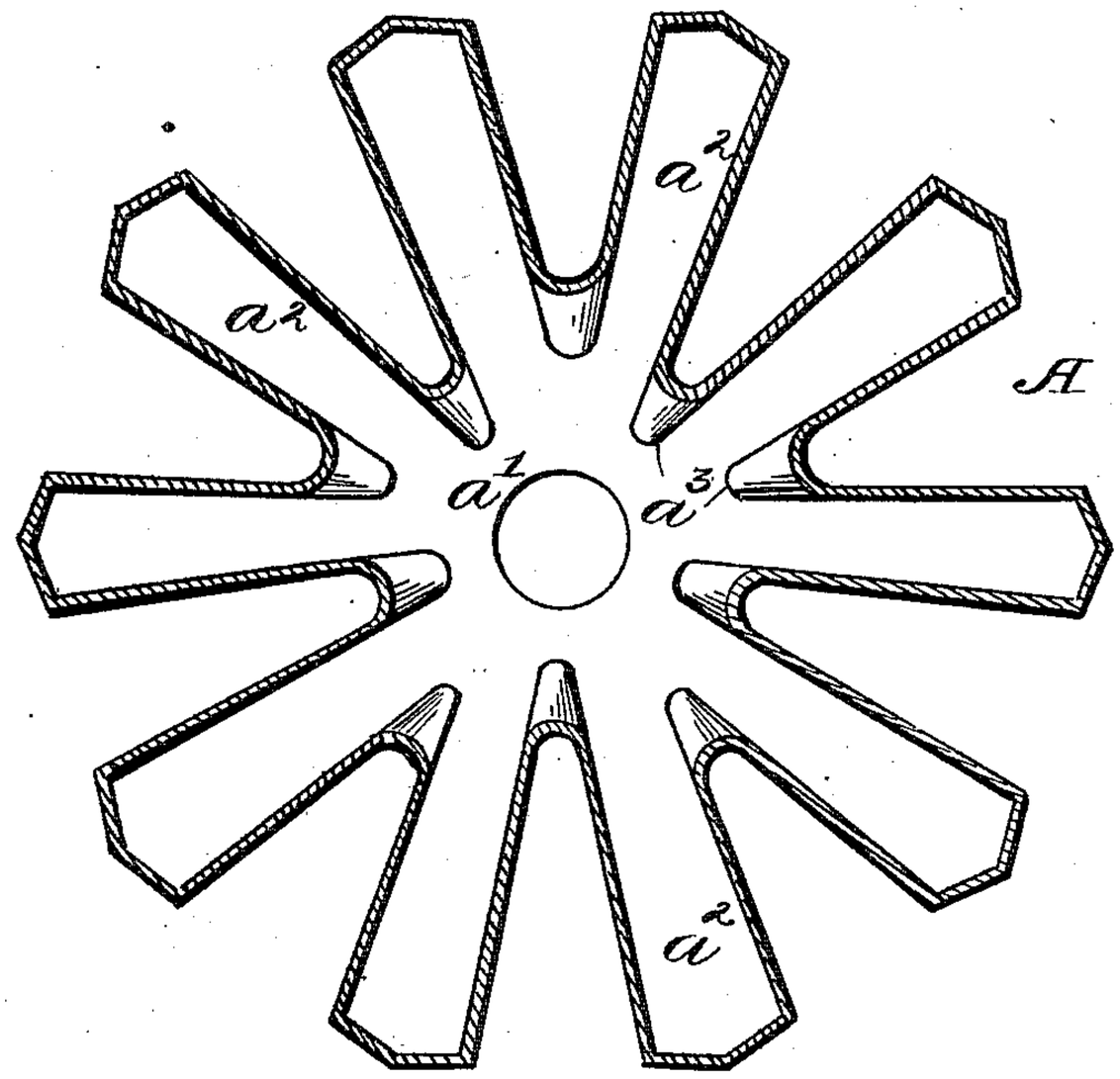
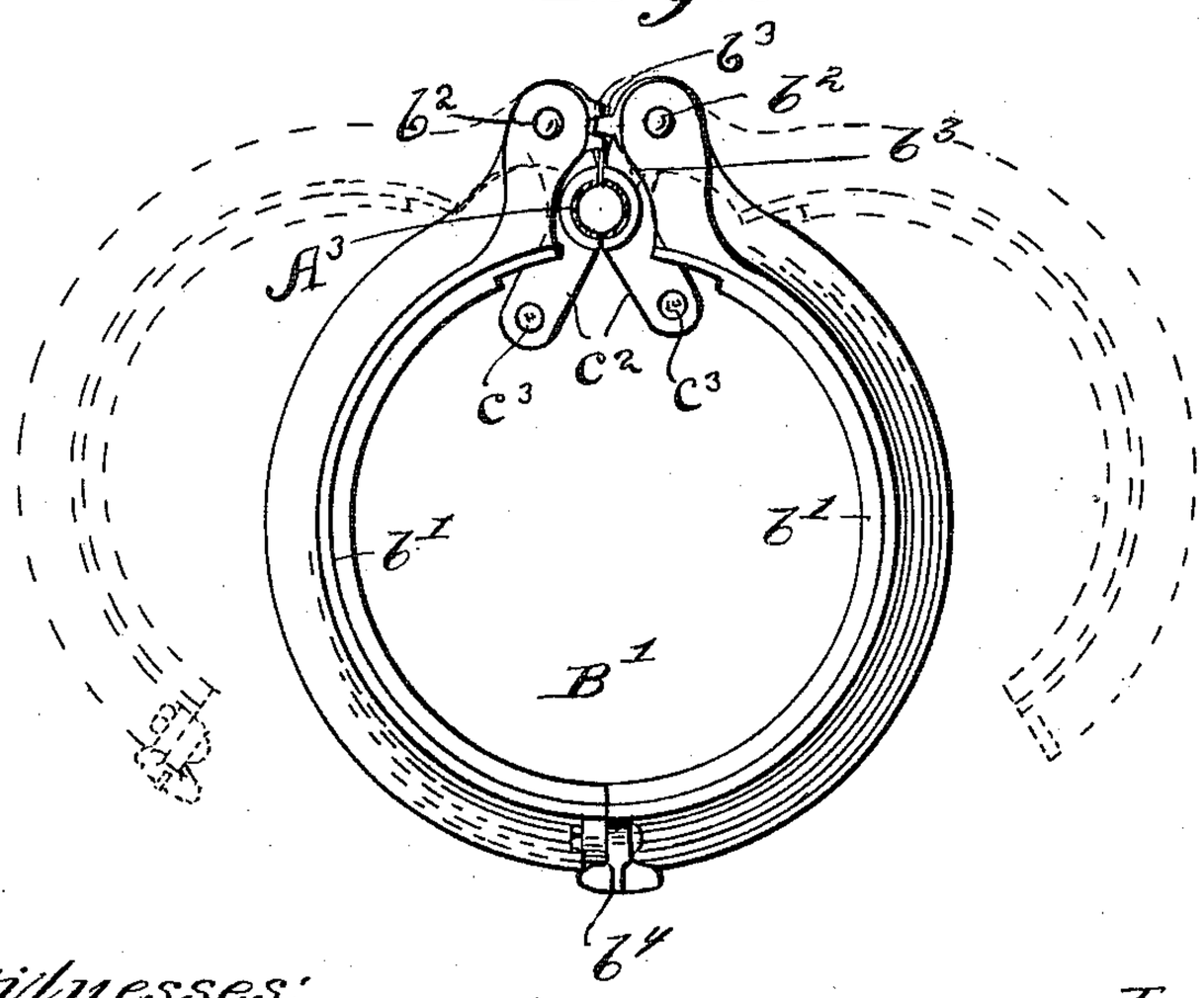


Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

BERNARD A. GEURINK, OF EAST CLEVELAND, OHIO, ASSIGNOR TO THE TRENKAMP STOVE & MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

WATER-HEATER.

998,609. Specification of Letters Patent. **Patented July 25, 1911.**

Application filed May 10, 1909. Serial No. 494,982.

To all whom it may concern:

Be it known that I, BERNARD A. GEURINK, a citizen of the United States, and a resident of East Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Water-Heaters, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The general type of water heater to which the present invention relates is that quite frequently found in connection with hot water tanks for residential use, such water heater consisting of a water container, a burner located below the same, and a casing laterally inclosing the container and burner, and gas being the fuel ordinarily used in the burner.

The object of the invention is the provision of a heater of this type, wherein the danger arising from the formation of an explosive mixture of air and gas in the lower portion of the casing incidental to the lighting of the burner is avoided, as also the provision of a casing so constructed and supported that in the case of an explosion, it may be lifted thereby freely upwardly; an improved arrangement of burner, and connections, whereby the water container may be completely drained whenever desired, form additional features of the heater.

To the accomplishment of the foregoing and related objects, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a vertical, central section of a heater embodying my several improvements; Fig. 2 is a transverse section on the line 2—2, Fig. 1, of one of the component elements or members of the water container; and Fig. 3 is a plan view of the base, or lower portion of the casing that surrounds said container and the burner located therebelow.

Referring to the figures just described, the water container A wherein the water is designed to be heated and thence passed on to the point of use, or to a suitable tank or like reservoir, is composed as usual of sections a mounted one above the other, their number being such as to provide a container of sufficient capacity for the particular use in hand. Each section of such container comprises a central chamber a' (Fig. 2) and a plurality of chambers a^2 radiating therefrom, the walls a^3 between such radiating chambers alternately approaching within a greater and a less distance of the center of the section, whereby the tendency to clog at the center is overcome. Furthermore the bottom walls of said radiating chambers are inclined downwardly toward such center of the section, with the exception of one such chamber a^5 in the lowermost section. This particular chamber is constructed so as to have a bottom inclined in the opposite direction, and is provided with openings a^6 a^7 in its side and bottom, respectively, to the first of which is connected a supply pipe A^2, while a drain pipe A^3, preferably provided with a cap and pet cock a^8, is connected with the other. The discharge pipe A^4 for the water after it has been heated is connected with the center of the uppermost section of the container in the usual fashion.

The casing inclosing the container A and burner C is constructed in two portions; an upper portion B extends downwardly so as to substantially entirely incase the lowermost section a of the container, and at its upper end fits loosely around the cap b that covers the top of the container. As a result it will be seen that such upper casing portion may move freely upwardly in case of an explosion, thus avoiding the danger of the explosion being given a downward and outward direction, as also any liability of the casing being ruptured by the expansive force of the exploded gases. The lowermost portion B′ of the casing, preferably formed of cast metal as distinguished from the lighter sheet metal, whereof such upper casing portion is formed, is made in two sec-

tions b' pivoted at the rear of the heater on separate pins b^2, so as to be movable outwardly. When such members b' are thus opened, the burner C is obviously exposed on all sides, as also a considerable space thereabove, and any tendency toward the formation of an ignitible mixture within the casing prior to lighting the burner is avoided, while the burner is at the same time open to inspection, and a match or other torch to effect ignition of the gas escaping therefrom may be easily and directly applied at the proper points. The sections of such base portion of the casing are furthermore provided in the rear with intermeshing gear teeth b^3 whereby movement of either section effects corresponding movement of the other; while to retain said sections in their closed position, a latch or catch, as b^4, is provided at the forward ends of said section, said latch being constructed so as to draw the latter together and at the same time retain them on the same level.

To support the container, the supply pipe in connection with the additional support afforded by the discharge pipe, and, where the drain pipe A^3 is exteriorly connected by that afforded by the latter, are relied on. Such pipe A^3 is also utilized, in connection with a stand C′ to support the burner C; or, where the pipe is not exteriorly connected but is cut short and capped as shown in Fig. 1, it may be regarded as being itself supported by said stand. A bracket or clamp arm c, secured at its one end to said pipe and at its other to said stand, serves thus to connect said two members, while other brackets or clamp arms c' c^2 are respectively adapted to receive and detachably support the upper end of the burner, and the gas supply pipe c^4. The arm c^2 is formed with lugs c^3 adapted to engage corresponding recesses in the burner, while the gas supply pipe c^4 is detachably engaged by the lower end c^5 of said burner, so that the latter may be bodily lifted out and removed from the heater. Such lower burner end is constructed to form the usual mixing chamber, while the portion immediately thereabove is fashioned to present a handle c^6 that facilitates the removal or installation of the burner, as may be desired.

Any description of the mode of operation of my improved heater, other than that already given incidentally to the description of its several structural features, is deemed unnecessary. Similarly, the several advantages arising from such construction, notably the convenience and simplicity characterizing the mounting for the burner and associated parts, as also the freedom from the danger of explosions secured by the casing construction, are all readily apparent. Further, it will be observed that the entire container, including each individual section thereof, can be thoroughly drained of its contents through pipe A^3. It is intended, in conclusion, that the positions of clamp arms c and c' on stand C′ shall be determined and fixed, before the heater is sent out from the factory, so as to allow for a proper amount of space between the burner and the lowermost section of the container, having due regard to the fuel to be used. To this end one member of each clamp arm is cast with a lug c^7 on its inner face which requires to be accurately registered with a corresponding recess drilled in the stand. The plumber, or less skilled workman, who may chance to install the heater cannot thus either ignorantly, or with a mistaken notion of improving the adjustment, make any changes in this respect.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A water heater comprising a suitable support, a water container mounted thereon, a casing for said container, a fuel supply pipe fixed with respect to said support, and a burner adapted to removably rest upon said support and, when thus resting, to loosely engage said supply pipe.

2. A water heater comprising a suitable support, a water container mounted thereon, a casing for said container, a vertically disposed fuel supply pipe fixed with respect to said support, and a burner adapted to removably rest upon said support, said burner including a mixing chamber formed to present a handle and adapted, when thus resting on said support, to loosely engage said supply pipe.

3. A water heater comprising a suitable support, a water container mounted thereon, a burner adapted to removably rest upon said support, a casing inclosing said container and burner, an arm projecting from the support below the burner, and a pipe provided in the outer end of said arm and connected with said water container.

4. A water heater comprising a suitable support, a water container mouted thereon, a burner adapted to removably rest upon said support, a casing inclosing said container and burner, an arm projecting from the support below the burner, a pipe provided in the outer end of said arm and connected with said water container, and a projection provided on said pipe and adapted to partially support said burner.

5. A water heater comprising a suitable support, a water container mounted thereon, a burner adapted to removably rest upon

said support, a casing inclosing said container, an arm projecting from the support below the burner, a pipe provided in the outer end of said arm and connected with said water container, a projection provided on said pipe and adapted to partially support said burner, two other vertically spaced projections provided on said pipe, and a casing inclosing said burner, said casing comprising two sections hinged between said spaced projections.

Signed by me this 7th day of May, 1909.

BERNARD A. GEURINK,

Attested by—

JNO. F. OBERLIN,

D. T. DAVIES.