No. 614,450. Patented Nov. 22, 1898.

I. S. ELKINS, Dec'd.

J. A. ELKINS, Administratrix.

FLUID FUEL OR OIL BURNER.

(Application filed Dec. 11, 1897.)

(No Model.)

Fig. 7.

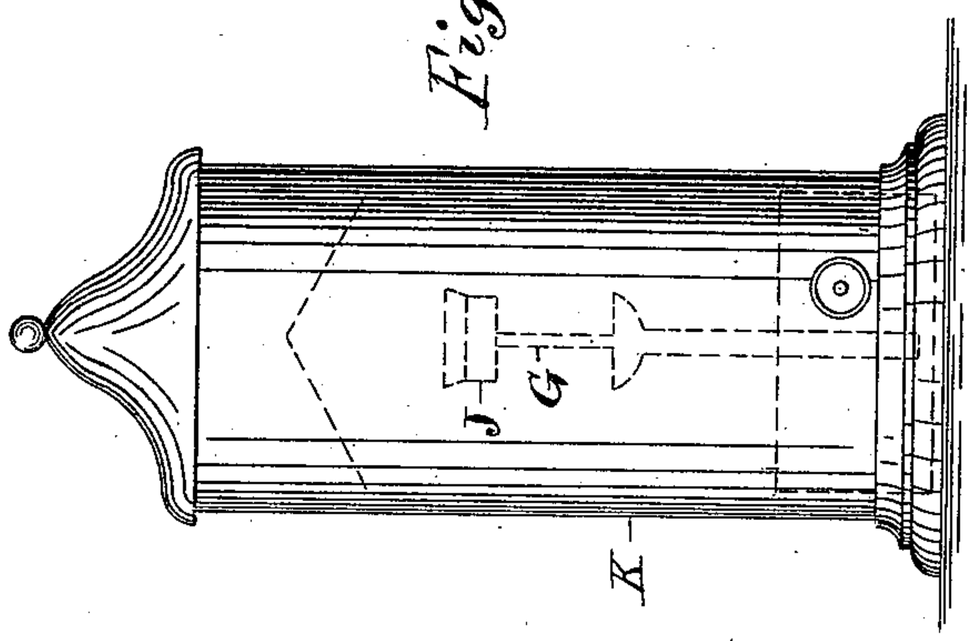

Fig. 3.

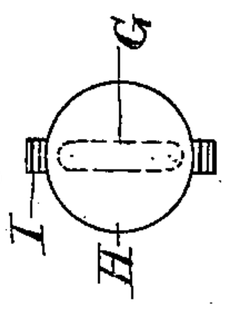

Fig. 4.

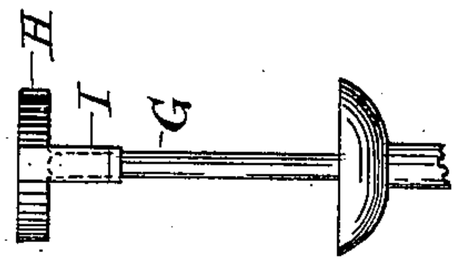

Fig. 1.

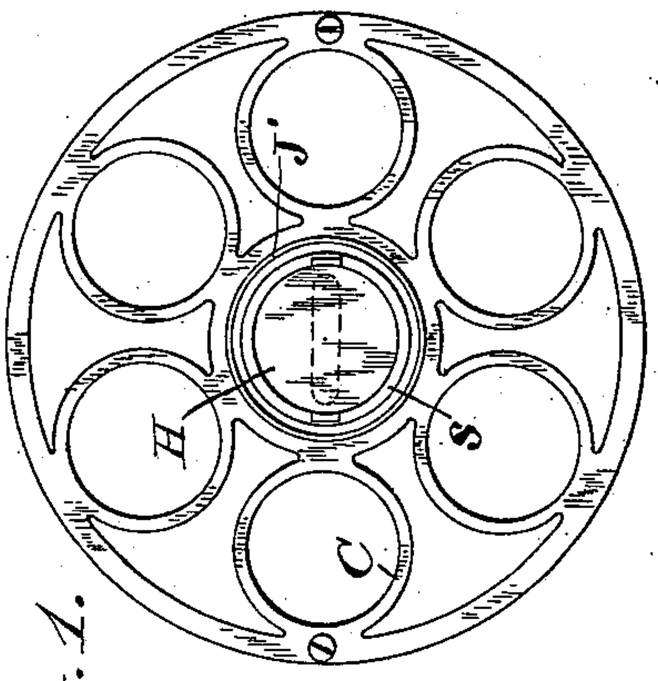

Fig. 8.

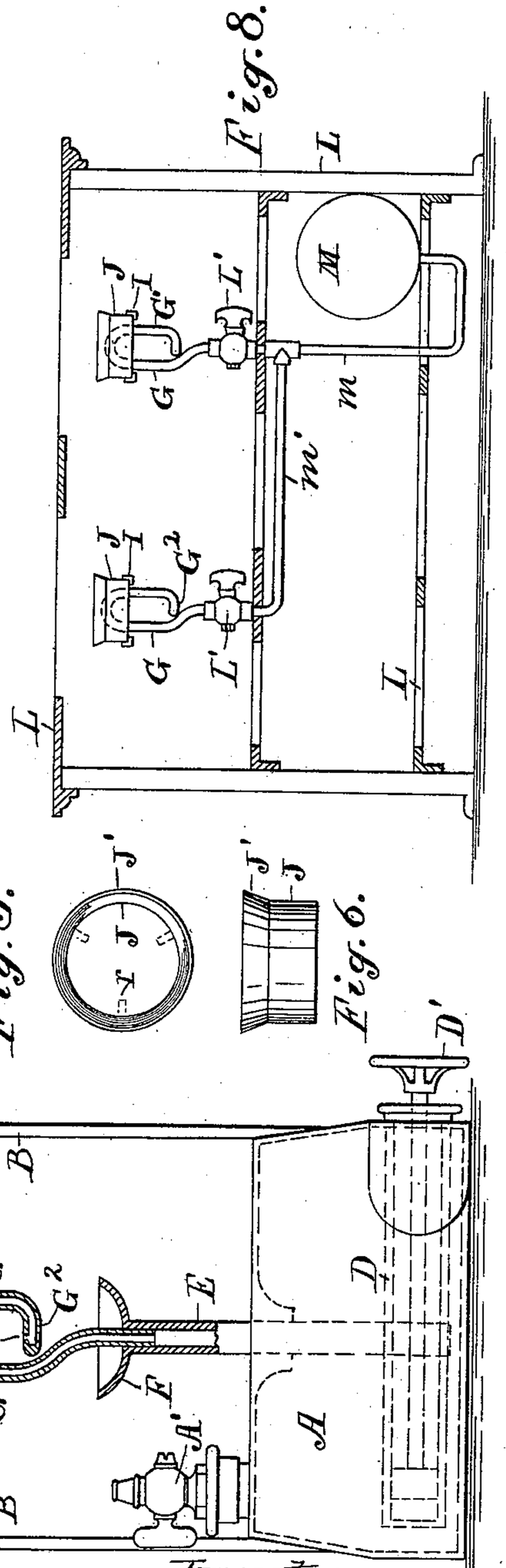

Fig. 5.

Fig. 6.

Fig. 2.

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UNITED STATES PATENT OFFICE.

JANE ANN ELKINS, OF NEW YORK, N. Y., ADMINISTRATRIX OF IRA S. ELKINS, DECEASED.

FLUID-FUEL OR OIL BURNER.

SPECIFICATION forming part of Letters Patent No. 614,450, dated November 22, 1898.

Application filed December 11, 1897. Serial No. 661,525. (No model.)

To all whom it may concern:

Be it known that I, JANE ANN ELKINS, a citizen of the United States, residing at New York, (Brooklyn,) county of Kings, State of New York, am the administratrix of the estate of IRA S. ELKINS, late a citizen of the United States, deceased, who did invent new and useful Improvements in Fluid-Fuel or Oil Burners, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to a particular construction for the burner used for vaporizing and burning liquid hydrocarbons in portable furnaces, stoves for heating or cooking, and similar devices. The construction comprises a single tube extended upwardly from the reservoir of liquid hydrocarbon and bent into an arch over the burner-outlet, which latter is formed by extending an arm of the tube downwardly and horizontally below the arch and forming an aperture in such horizontal portion directed upwardly to the arch. The end of the tube is closed by any suitable means adjacent to the aperture, and a circular button or disk is united permanently to the upper side of the arch and supports a collar around it at a suitable distance to form an annular passage for the flame. The collar is preferably extended downward to encircle the arch, and thus inclose the flame where it strikes the button and the arched portion of the tube, the upper edge of the collar being arranged to encircle the disk and formed with an outwardly-flared conical flange, which permits the flame to spread as it passes through the annular passage. By forming the tube in a single piece and uniting the button thereto the entire burner is made of the simplest possible construction, while the flame is controlled and directed in the most efficient manner.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a plan, and Fig. 2 an elevation in section at the center line where hatched, of a portable gas-furnace containing one of the burners. Fig. 3 is a plan of the burner-tube and the button. Fig. 4 is a side elevation of the same parts. Fig. 5 is a plan, and Fig. 6 a side elevation, of the collar. Fig. 7 is an elevation of a heating-stove provided with one of the burners; and Fig. 8 is an elevation, partly in section where hatched, of a cooking-range provided with two of the burners.

In Fig. 1, A designates the reservoir for fluid hydrocarbon, and B are standards supporting above the reservoir a grating C.

D is a pump-cylinder within the reservoir, having handle D′ to actuate the pump to force the fluid upward into the tube E, which is provided with the usual drip-cup F.

The burner proper is made of a single pipe or tube extending upward from the drip-cup into an arch *g*, from which it is recurved downward into an arm G′, which is bent horizontally below the arch into an arm G^2, having the burner-aperture *g* upon its upper side. The portions G and G′ upon the opposite sides of the arch are disposed vertically and the arm G^2, which contains the burner, is disposed horizontally and is closed at its end. The jet-opening *g*′ directs the flame upwardly against the under side of the arch *g*. A circular button or disk H is united permanently (as by brazing) to the top of the arch to form a horizontal deflector for the flame, and a collar J is shown supported upon such button by depending hooks I. The hooks extend downwardly to support the body of the collar about the arch, and the upper edge of the collar is formed with the conical flange J′, which is flared outwardly around the sides of the button. With this construction the body of the collar confines the flame and directs it upwardly into the annular space *s* between the button and collar, the button tending to drive the flame outwardly and the flare upon the collar permitting such outward passage of the flame, which is thus distributed over any surface above it. It is obvious that the collar may be attached to the button by radial studs *r*, as indicated at three points within the collar in Fig. 5, the essential feature of the construction being the annular space between the button and the collar and the conical shape of the flange J′ adjacent to the button.

In operating the burner the pump is used to force the hydrocarbon fluid up to the jet-aperture *g*, where it is ignited, if inflammable, or vaporized by a suitable fluid in the cups F,

if required. A cock A′ is provided upon the reservoir to relieve the pressure if excessive. All of such features are common in using other burners for gasolene and oil, and it is only the construction of the burner that is claimed herein.

The burner may be used in any situation that is desired, one of the burners being shown within a heating-stove K in Fig. 5 and two of the burners within a cooking-range L in Fig. 8.

A reservoir M is shown in Fig. 8 connected with the burners by pipes *m* and *m′*, and each burner is provided with a separate cock L′. The burner may obviously be used with an elevated reservoir, which supplies the fluid to the burner by gravity, as is common in such constructions. The pipe is bent continuously in the same direction in forming the burner, and may thus be readily and very cheaply shaped around a suitable former, and when the button is secured thereto the construction contains no parts that are liable to wear or derangement.

The collar J is distinguished by the cylindrical body around the arms G and G′, with the conical flange J′ at the top, where it surrounds the button, which produces the effects described above.

I am aware that it is common to expose to the heat of the flame a part of the tube through which the fluid passes to reach the jet-aperture, and I do not therefore claim, broadly, a burner in which the tube extends over the flame nor one having the burner formed of a continuous bent pipe.

I am also aware that collars and cones have been used around the flame, and do not therefore claim a mere tube and collar in a burner.

The burner-tube in my construction is formed with the arms G G′ G^2, bent expressly as shown, and is combined with the button and collar in the relation herein set forth, so that my claims are for the specific construction described.

Having thus set forth the nature of the invention, what is claimed herein is—

1. The liquid-hydrocarbon burner herein shown and described, consisting of the single tube formed with the arms G, G′, G^2, the arms G and G′ being vertically disposed and connected at the top of the arch *g*, and the arm G^2 being closed at the end and extended horizontally from the lower end of the arm G′, and having the upwardly-directed aperture *g′*, in combination with the button *h* attached rigidly to the top of the arch *g*, and the collar J sustained by the button and extended downwardly around the arch and having the conical flange J′ extended upwardly around the button, as and for the purpose set forth.

2. The liquid-hydrocarbon burner herein shown and described, consisting of the single tube formed with the arms G, G′, G^2, the arms G and G′ being vertically disposed and connected at the top of the arch *g*, and the arm G^2 being closed at the end and extended horizontally from the lower end of the arm G′, and having the upwardly-directed aperture *g′*, in combination with the button H united to the top of the arch and provided with the depending hooks I, and the collar J supported upon such hooks around the arch, and provided at the top with the conical flange J′, as and for the purpose set forth.

In testimony that I claim the foregoing as the invention of IRA S. ELKINS I have hereunto set my hand in the presence of two witnesses.

JANE ANN ELKINS,
Administratrix of the estate of Ira S. Elkins.

Witnesses:
B. F. CARPENTER,
THOMAS S. CRANE.