

(No Model.)

2 Sheets—Sheet 1.

J. AITCHISON.  
OIL BURNER.

No. 510,149.

Patented Dec. 5, 1893.

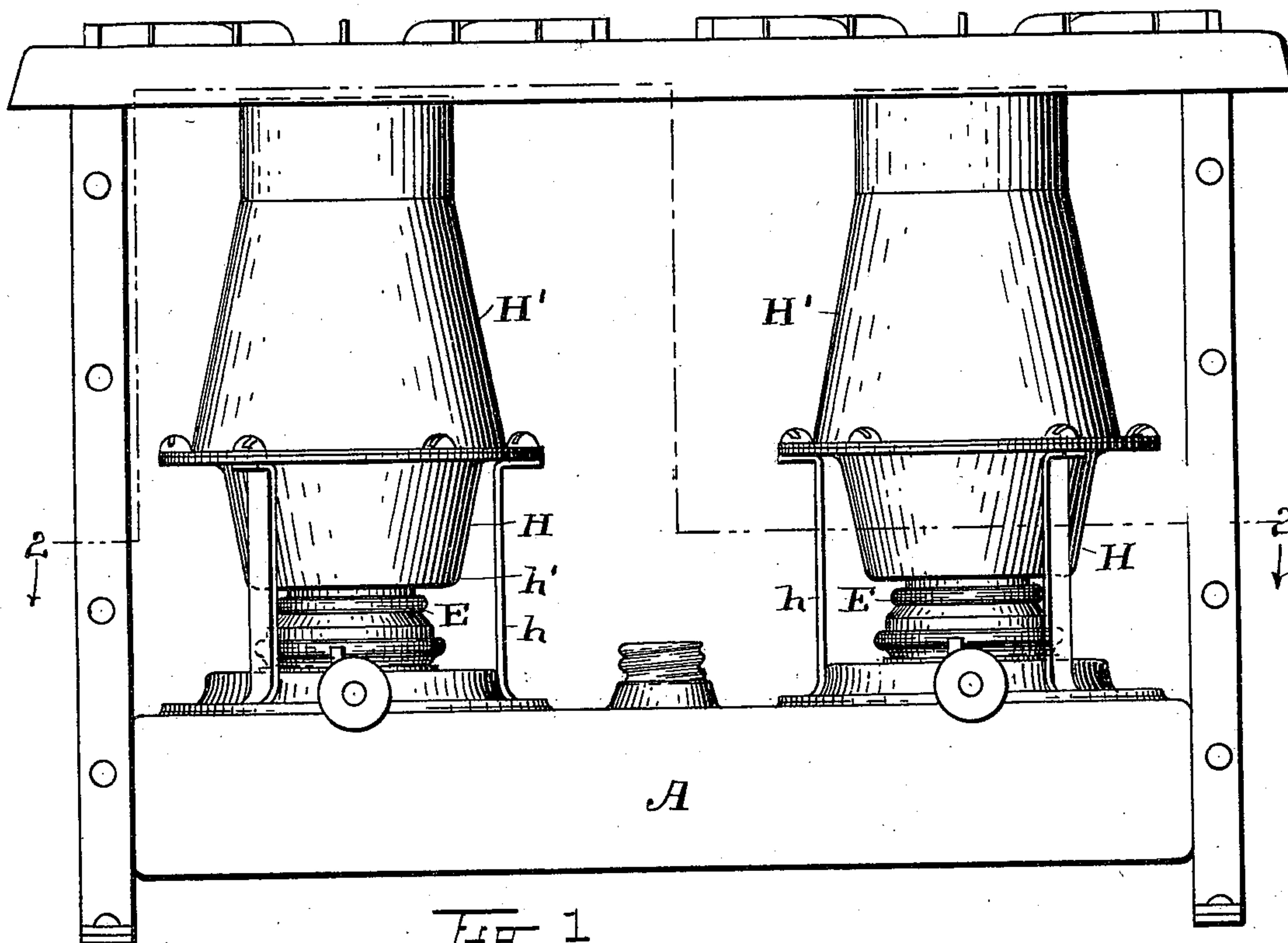


Fig 1

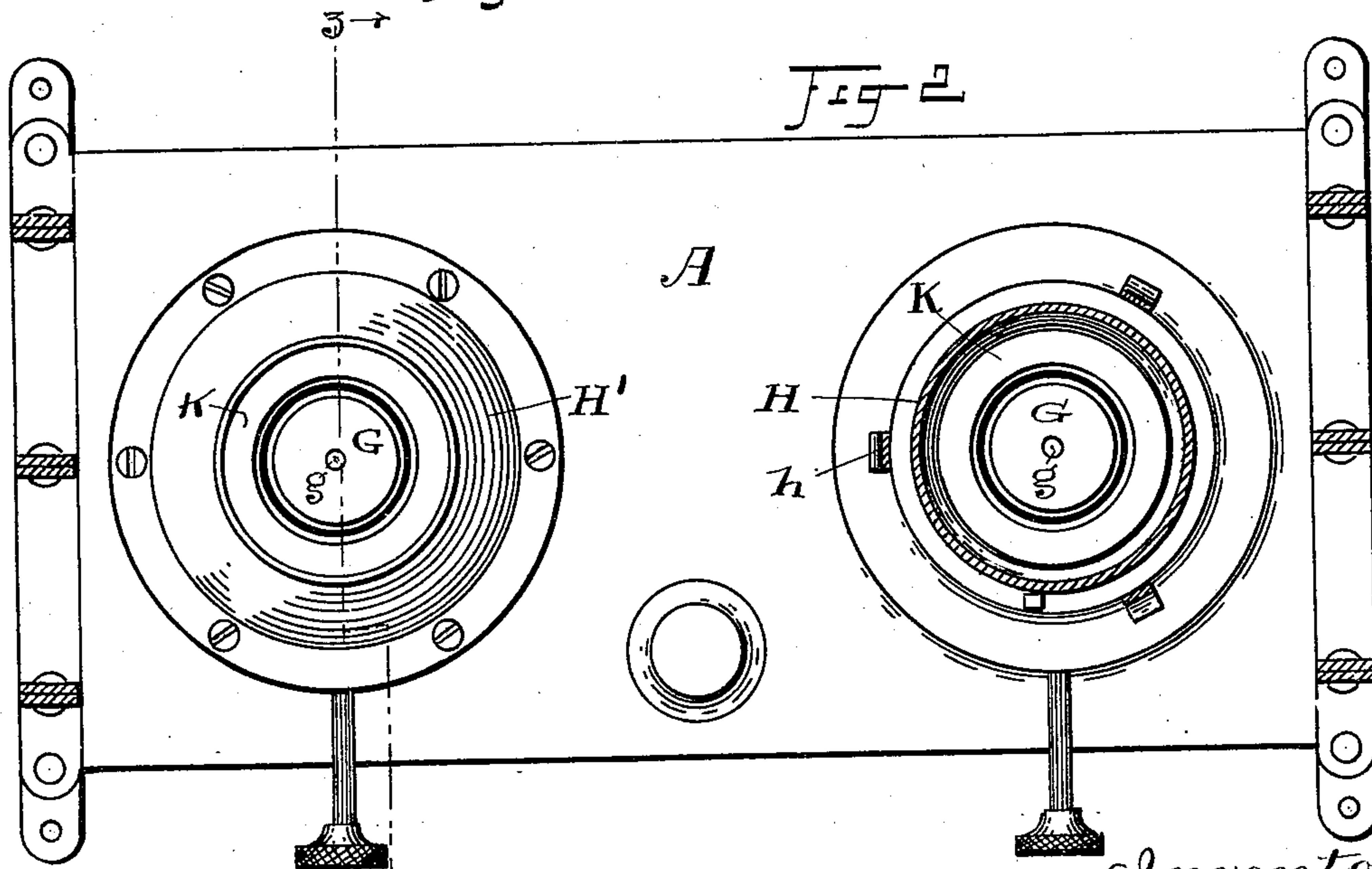


Fig 2

Attest  
Richard Moser.  
G. S. Schaeffer

Inventor.  
James Aitchison

By H. T. Fisher

Attorney

J. AITCHISON.  
OIL BURNER.

No. 510,149.

Patented Dec. 5, 1893.

Fig 3

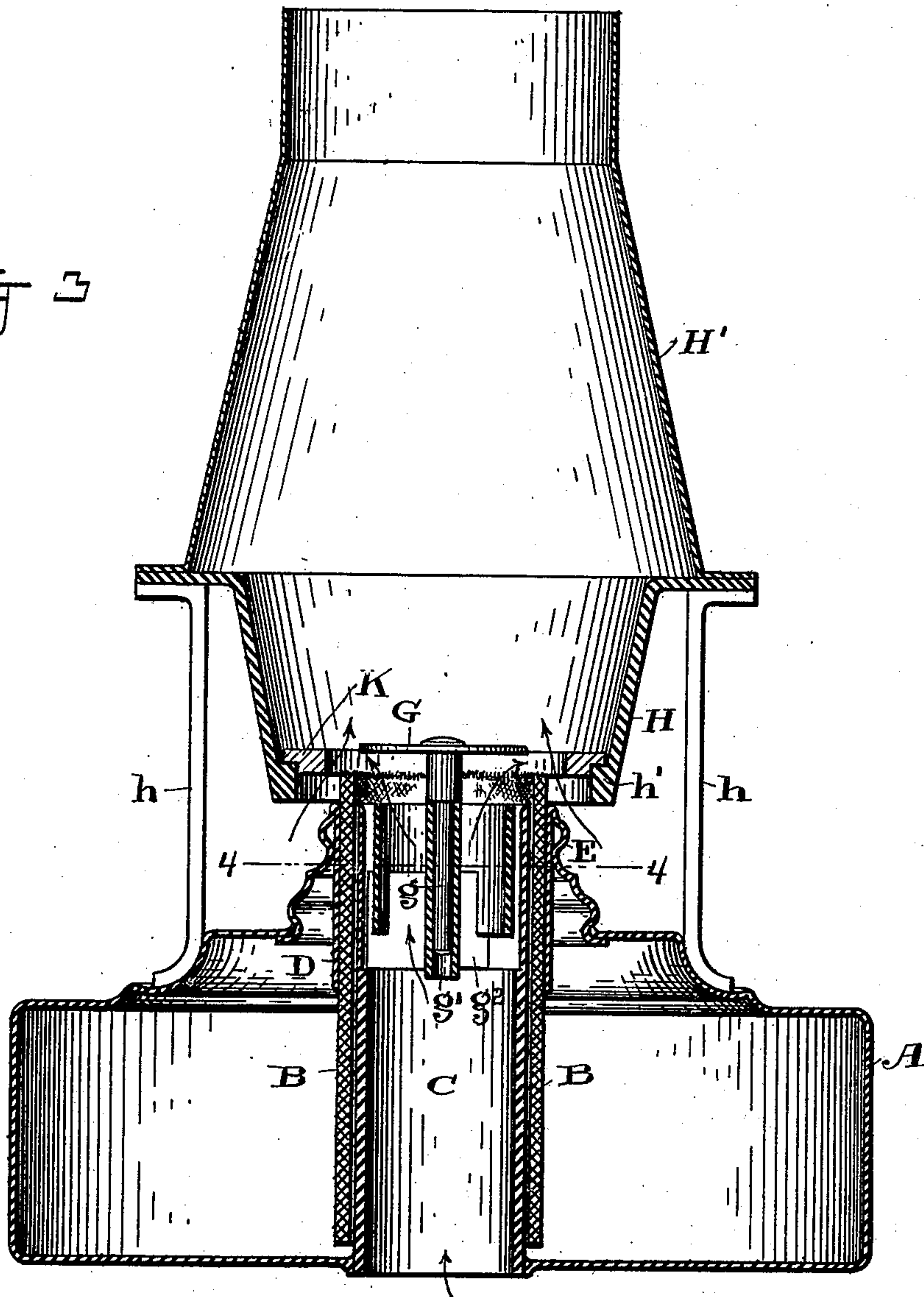


Fig 5

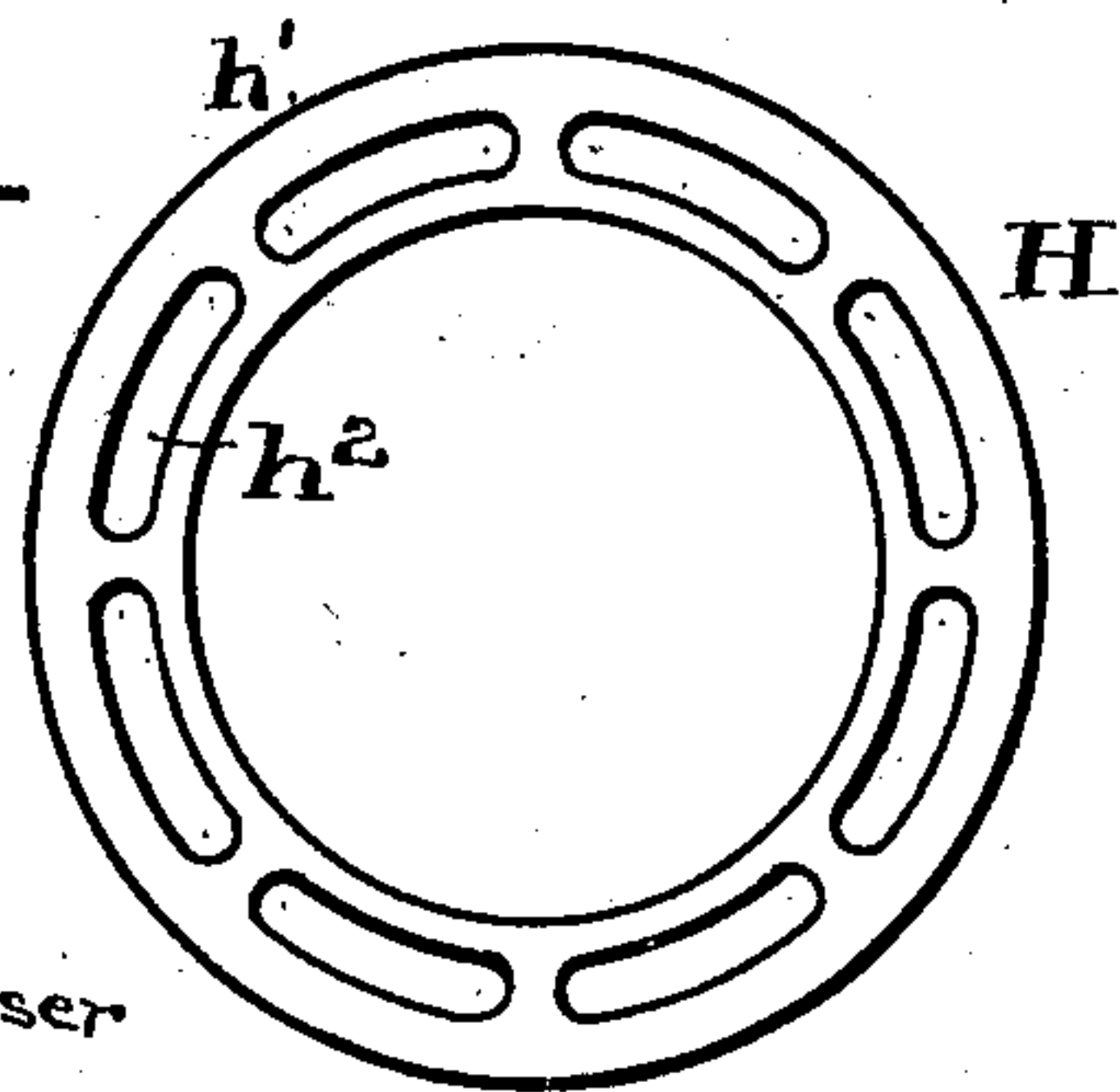
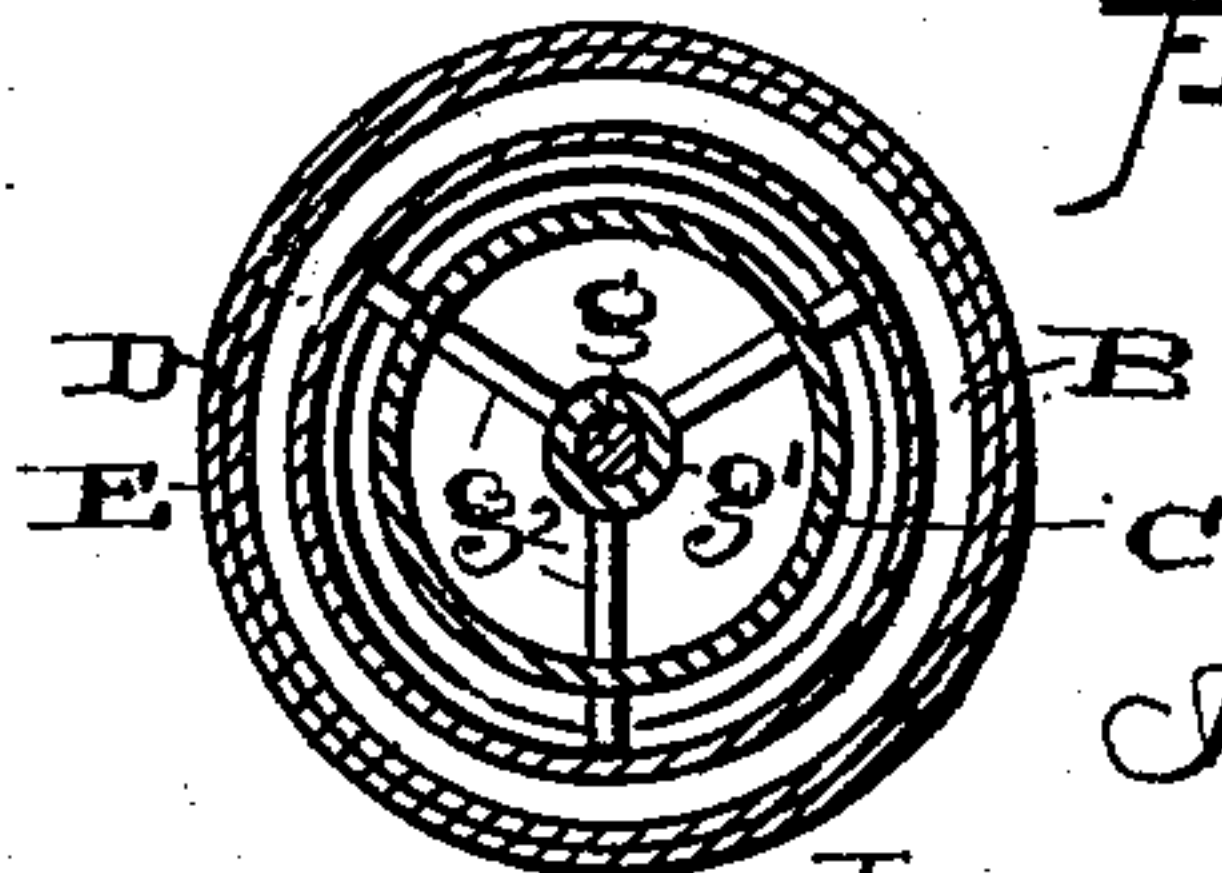


Fig 4



Attest

Richard Moser  
G. S. Schaeffer

Inventor  
James Aitchison

By H. J. Fisher.

Attorney



# UNITED STATES PATENT OFFICE.

JAMES AITCHISON, OF CLEVELAND, OHIO.

## OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 510,149, dated December 5, 1893.

Application filed May 19, 1893. Serial No. 474,743. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES AITCHISON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to oil burners, and the invention consists in the construction substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of an oil stove showing two of my improved burners, and Fig. 2 is a plan view thereof, and sectional on line 2, 2, of Fig. 1. Fig. 3 is a vertical central sectional elevation of the burner on line 3, 3, Fig. 2, and somewhat enlarged. Fig. 4 is a cross section of the burner on line 4, 4, Fig. 3. Fig. 5 shows a modified form of base, as hereinafter more fully described.

This burner is designed for burning kerosene or other oil, and is of the variety which has the oil supplied by means of a wick, very much as an ordinary lamp.

The idea and purpose of the invention is to make the burner and stove as simple and cheap and convenient as possible, combined with safety and economy in operation. Ordinarily it would not be deemed either desirable or safe to arrange the oil well in the close relation here shown to the burner without special precautions against overheating the oil, but by reason of the novel construction of my burner and the method of supplying air, I may bring the point of combustion very close to the oil receptacle and yet not incur the slightest danger, and all this because the burner is so constructed as not to either transmit the heat by conduction nor to reflect the same upon the oil receptacle. This will appear upon a further description of the invention.

—A— represents the oil well or receptacle, and —B— the wick. The wick is supported as usual between the inner and outer concentric tubes —C— and —D—. The tube —C— extends down centrally through the bottom of oil receptacle —A— and affords an air sup-

ply passage for the burner up through the center thereof. The tube —D— encircles the wick and both tubes terminate, in this instance, with what may be called the crown —E— of the receptacle, which extends some distance above the top proper of said receptacle and the usual oil level. This construction may, however, be largely varied and still be within the scope of my invention. Any suitable means may be employed to raise and lower the wick.

Centrally over the inner air passage and at a suitable elevation in respect to the top of the wick is the flat disk-shaped deflector —G—, provided with a spindle —g— supported in a socket or its equivalent —g'—, held centrally in the burner by the webs or supports —g<sup>2</sup>—. The deflector —G— and its spindle may be made adjustable, if desired, or they may be made rigid in or with their support, as shall be preferred. The deflector serves a double purpose. First, it crowds the full volume of air flowing in from below laterally into the flame to supply and perfect combustion, and it spreads and widens the flame and causes it to burn in a ring rather than running together to a point as would be the case if this deflector or its equivalent were not used. The parts thus constructed are designed to be employed with a suitable chimney or flue, and this part is shown here as constructed, preferably, of a base portion —H— and what is more distinctly the chimney or top portion —H'—. Suitable supports or legs —h— are shown here as sustaining the base —H—, though other means than these may be used for this purpose, and the two portions —H—, —H'— are preferably flanged and riveted together.

It will be noticed that base —H— is narrowest about its neck —h'— in its bottom, which comes down to a plane somewhat below the point of combustion on the wick so as to surround the same. It will also be noticed that the neck —h'— is just sufficiently contracted to provide a sufficient air passage around the top of the wick from the outside to supply the needs of combustion from that direction. When the wick is burning under full head with the requisite supply of oil, it is raised relatively to the other parts about as seen in Fig. 3. Now in order to render



combustion so complete that a beautiful blue flame will be maintained I introduce a concentrating ring —K— into the neck of the base, and this ring is so constructed and arranged as to narrow the air passage from the outside of the burner right at the point of initial combustion on the wick, and thus force a volume of fresh air into the gases and flame where it is most needed and where commingling of the elements insures perfect combustion. The ring —K— is shouldered about its edge to engage over the shoulder — $h'$ — of the base —H—, and the throat of the ring comes about the base of the flame and extends upward therefrom to about a level with the deflector —G—. From this point upward the sides of the base —H— diverge and there is a freespread and flow of the products of combustion. With this construction there is no back heating to the oil reservoir or well by conductivity because there is no back conductor, and by reason of the free upward flow of fresh air within and without the burner all the surfaces below the flame are kept absolutely cool. So true is this in actual experience that one can at any time when the burner is under full flame hold his finger on the top of the crown —E— immediately beneath the flame and not feel any heat in the metal itself nor reflection from the flame, while above the burner the heat is intense.

In the larger sizes of burners there may be need of a further check for the outside air and a restriction upon the throat — $h'$ — of the base to insure good results. I have, therefore, shown the throat in Fig. 5 contracted as compared with the view shown in Fig. 1, and there are air passages — $h^2$ — through the same. Any equivalent construction to this may be adopted, the purpose being to contract or limit the air passage at this point. As here shown the burner is circular, but it may be oblong in outline, if preferred, so as to use a straight wick instead of a circular one, the same principle of construction of course being used in both cases.

If the bottom of the burner flue were closed or contracted about the top of the burner tubes, there could be air passages provided laterally thereinto by means of suitable openings of more or less size according to the size of burner and thus air from the outside to the flame.

One of the advantages in having the neck — $h'$ — of the base section H of the chimney below the point of combustion is the projection it affords to the flame from distributing air drafts or currents. Oil and vapor burn-

ers are very susceptible to atmospheric disturbances, and a guard or apron of this kind about the flame is a necessary protection. If the sides of section H were run straight down instead of converging the bottom thereof it would still be constructed to afford this protection. The ring K is made separate from this section so as to be movable and adjustable to meet the varying needs of combustion, a very slight difference at this point making a great difference in the character of the flame. Otherwise it might be solid with the base H.

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

1. In an oil burner of the Argand type, an inside wick tube providing an air passage centrally through the burner, a deflector over said passage slightly above the wick, a chimney having its base opposite the exposed part of the wick and apart therefrom to leave an air passage from the outside, and a separate member within the base of the chimney constructed to narrow the outside air passage more or less and having its top surface substantially on a plane with the deflector, substantially as set forth.

2. In an oil burner of the kind described, the wick and wick tubes, the chimney having a contracted or narrowed base about the top of said wick and apart therefrom to leave an air passage between said parts, and a separate removable ring within the neck of said base to narrow the said air passage about the flame above the wick, and an air and flame deflector centrally in the burner above the top of the wick and substantially level with the top of the said ring, substantially as set forth.

3. The burner herein described consisting of the oil reservoir having a tubular air passage centrally through it and a wick about said passage, and a flat air and flame deflector immediately above said passage and wick, in combination with the chimney having a contracted neck at its base around the top of said wick and constructed inside to support a ring, and a ring seated in said base and constructed to narrow the passage and lift the flame above the said ring and deflector, substantially as set forth.

Witness my hand to the foregoing specification.

JAMES AITCHISON.

Witnesses:

S. Q. KERRUISH,  
GEORGIA SCHAEFFER.