

No. 607,136.

Patented July 12, 1898.

A. P. A. ROSENSTAR.  
HYDROCARBON BURNER.

(Application filed Aug. 2, 1897.)

(No Model.)

FIG. 1.

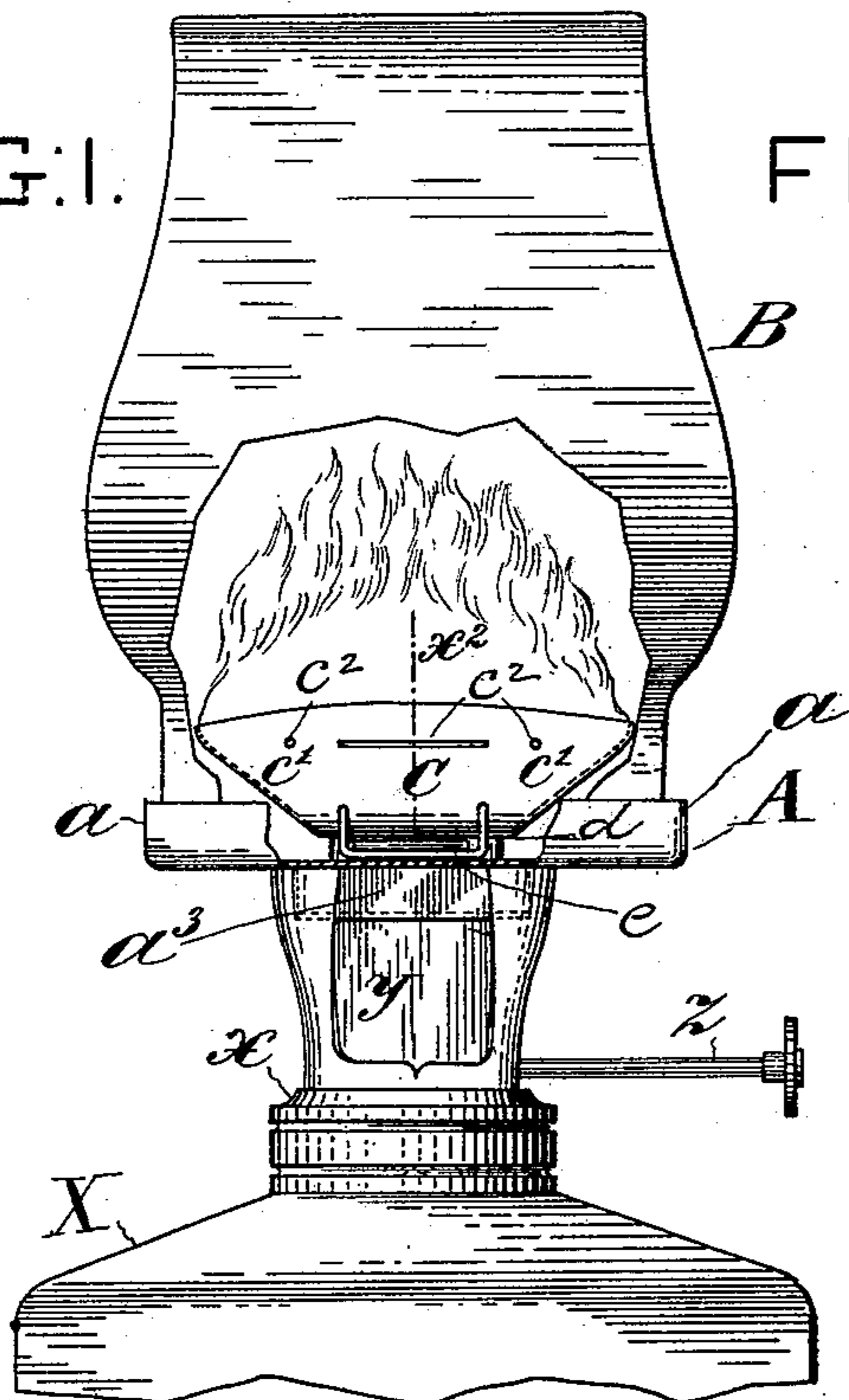


FIG. 2.

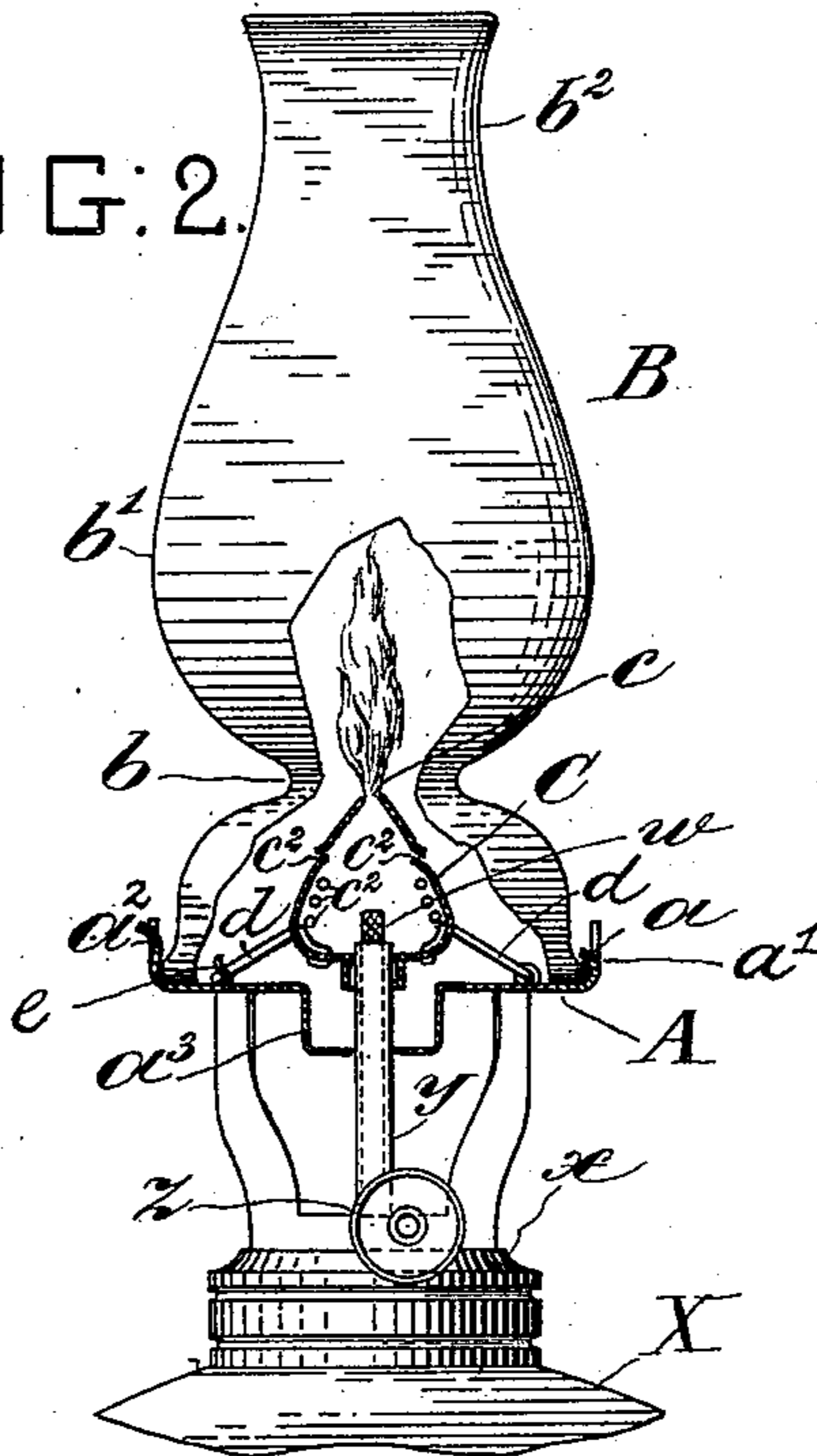


FIG. 3.

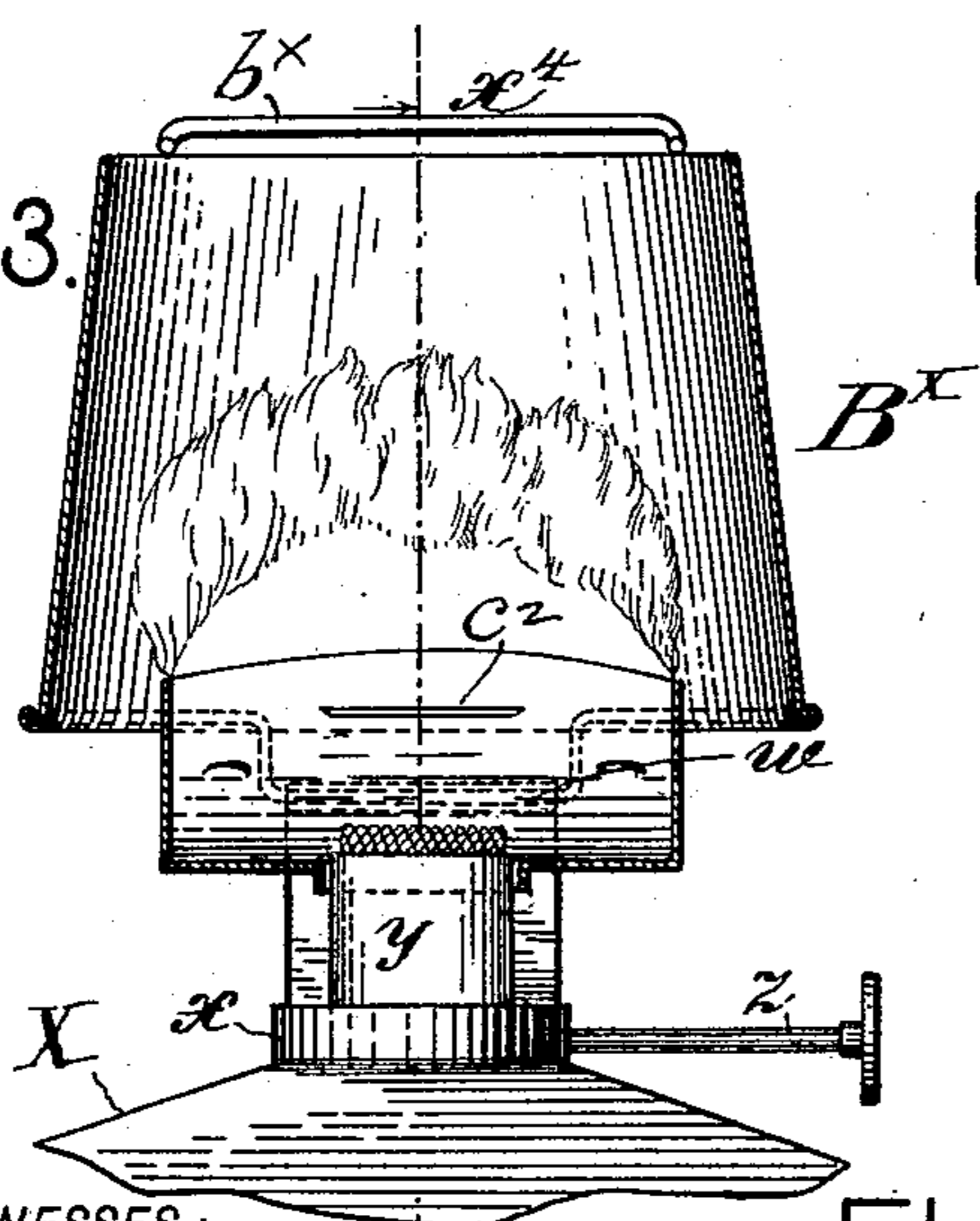
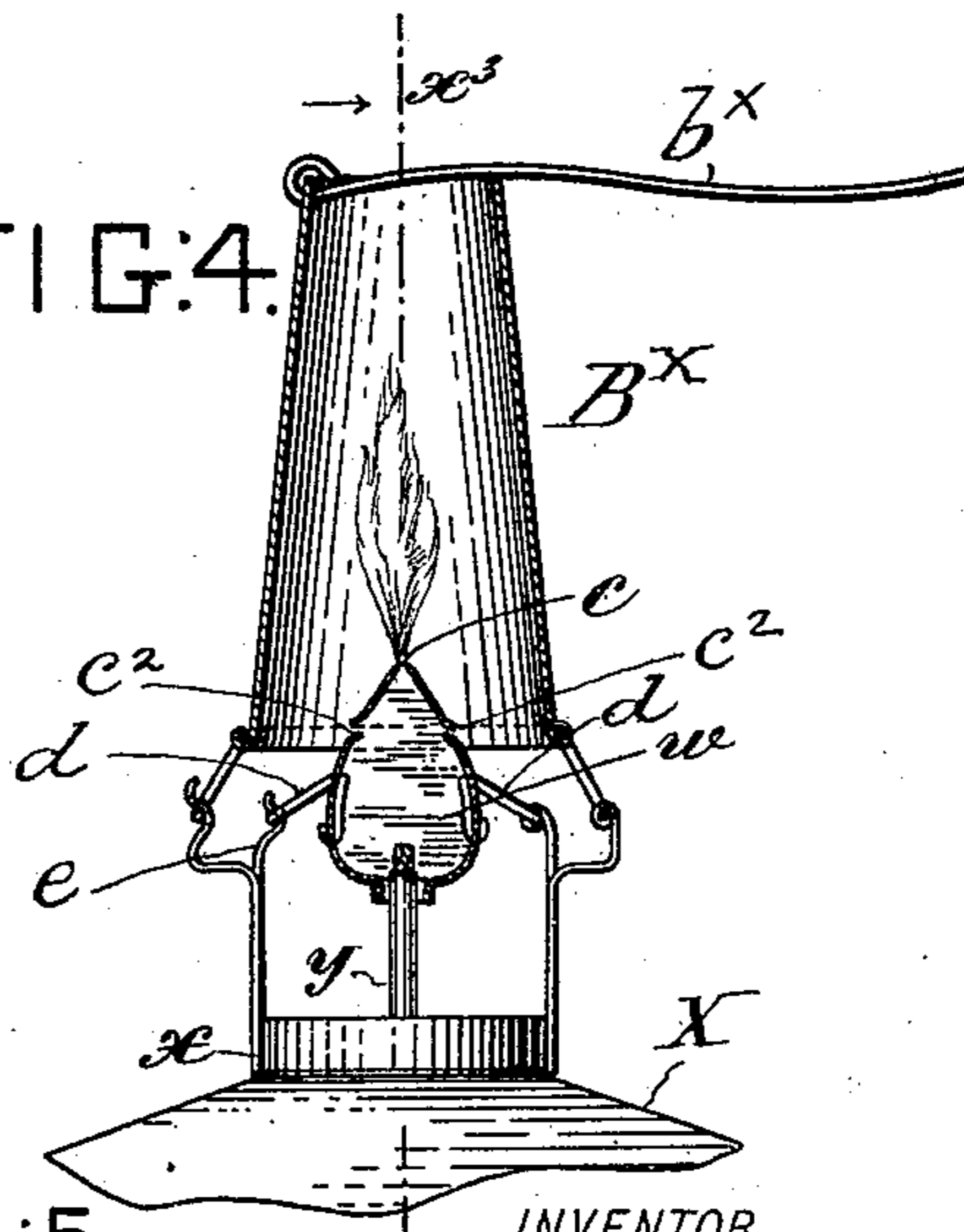


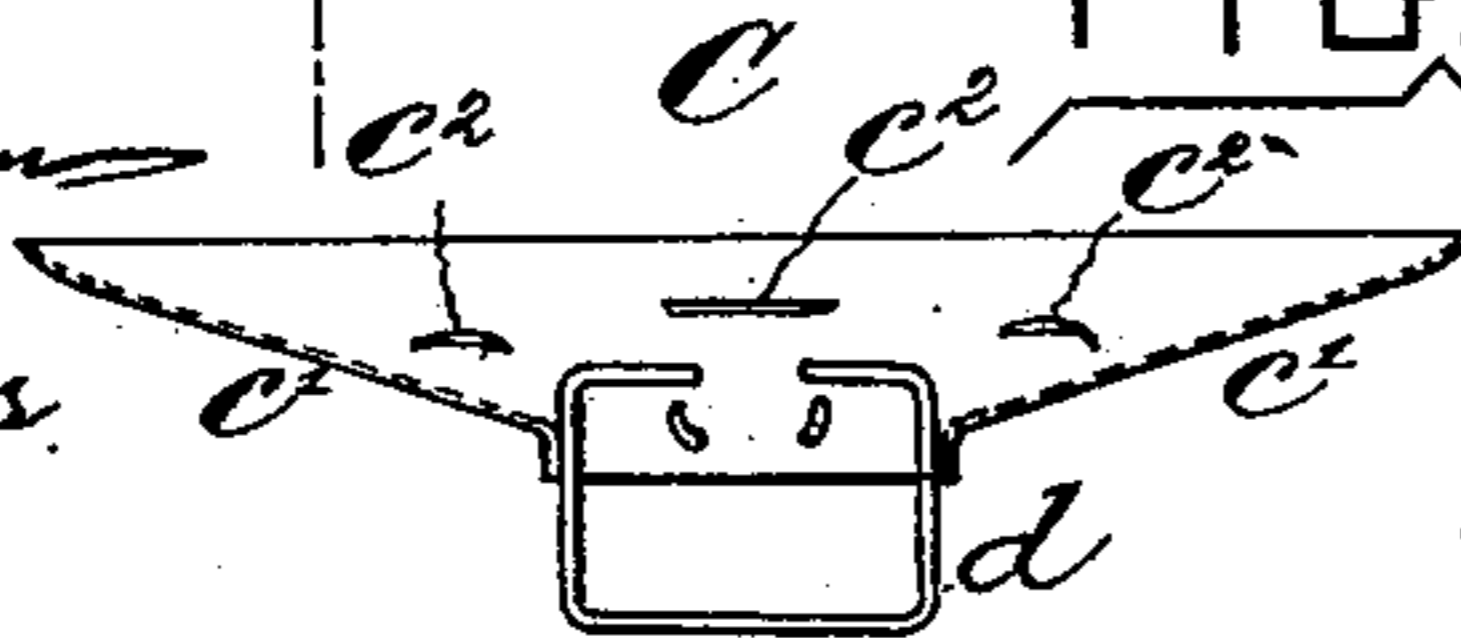
FIG. 4.



WITNESSES:

J. H. H. H. H.  
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FIG. 5.



INVENTOR

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# UNITED STATES PATENT OFFICE.

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## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 607,136, dated July 12, 1898.

Application filed August 2, 1897. Serial No. 646,720. (No model.)

*To all whom it may concern:*

Be it known that I, ANDERS P. A. ROSENSTAR, a subject of the King of Sweden and Norway, residing at Brooklyn, Kings county, New York, (but having declared my intention to become a citizen of the United States,) have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention relates to a burner for liquid hydrocarbons, such as ordinary kerosene-oil; and the object of the invention is to provide a burner for both lighting and heating purposes in which the liquid hydrocarbon or oil shall be converted into gas and burned without the production of any appreciable amount of free carbon, thereby producing a clear or white light. The construction of my burner permits of the production from an ordinary narrow wick of a broad flame which is in a good degree independent of the width of the wick and of its elevation above the top of the wick-tube.

The invention is embodied in the burner and chimney illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a lamp provided with my improved burner and chimney, a part of the chimney base and gallery being broken away; and Fig. 2 is a vertical section of the same on the line  $x^2$  in Fig. 1. Fig. 3 is a vertical sectional view on line  $x^3$  in Fig. 4; and Fig. 4 is a similar section on line  $x^4$  in Fig. 3, illustrating the application of the burner to a heating apparatus. Fig. 5 comprises a side elevation and a transverse section of a very elongated form of the generator for producing a wide flame.

X may be any oil-reservoir, here represented by an ordinary lamp-body partly broken away, and  $x$  a lamp-top having the usual wick-tube  $y$ , wick-raiser  $z$ , and wick  $w$ . Mounted on the lamp-top  $x$ , Figs. 1 and 2, is a chimney holder or gallery A, on which is removably mounted the glass chimney B, which will be hereinafter more specifically described, and a hollow metal shell forming a gas-generator C. The chimney-holder A is a flat rectangular sheet of perforated metal having elevated flanges  $a$  at its opposite sides, one flange

having an inturned lip  $a'$  to take over the flanged base of the chimney B and the other having a spring-clip  $a^2$ , which snaps over the base of the chimney at the opposite side. In the center of the holder A there is a depressed portion  $a^3$ , forming a sort of tray about the wick-tube  $y$ .

A most important feature of the burner is the generator C. This device is a hollow metal shell of oval or cordate cross-section having a relatively long slot  $c$ , Fig. 2, in its top and a slot or aperture in its bottom which receives the wick-tube  $y$ , the latter projecting up into the hollow of the shell at the center of the latter. The preferred form of the generator or shell C is clearly shown. It may be level or straight on its top, as in Fig. 5, or slightly convex, as in Fig. 1. It slopes upward at its ends  $c'$ , and at its sides it swells out convex from the bottom and slopes upward and inward to the slot  $c$  along its top.

In the sides of the generator and also in its sloping ends  $c'$  are perforations or slots  $c^2$ . (Seen in Figs. 1, 2, and 5.) Measured lengthwise on top the shell C may be from three to four times the width of the wick, and the slopes  $c'$  at the ends (seen in Figs. 1 and 5) extend from the extreme ends of the slot  $c$  at the top of the shell down to the opening or slot in the bottom of the shell where the wick-tube enters.

At each side the generator or shell C has means for hinging it to the chimney-holder A. This device comprises a wire bail  $d$ , fixed to the shell. One of these bails (seen at the right in Fig. 2) is hinged to the chimney-holder and the other is adapted to engage a spring-catch  $e$  on the holder and secure the shell when in position over the wick-tube by releasing the catch  $e$ . The shell C may be swung over to one side, so as to afford access to the wick.

The operation is as follows: The wick is turned up until it can be conveniently ignited at the slot  $c$ , and then slowly turned down again. The shell C acts as a generator to convert the oil from the wick into gas, which burns above the slot  $c$  and extends the entire length of the said slot, producing a clear flame several times as wide as the wick.

The apertures  $c^2$  furnish the necessary oxygen to combine with the gas for complete combustion.

A chimney is not really needed for the purpose of producing practically perfect combustion, but it protects the flame against air-currents and steadies it. In the construction of Figs. 1 and 2, where illumination is the object sought, the glass chimney B is employed. This chimney will have by preference substantially the form shown—that is to say, it will be substantially rectangular in cross-section at all points, will be sharply contracted at  $b$  a little above the top of the shell C, swelled out or enlarged above at  $b'$ , and contracted again at  $b^2$  near its flared top. The leading feature of the chimney is its oblong rectangular cross-section at all points, which specially adapts it to the abnormally wide flame produced by the shell or generator.

The chimney  $B^x$  (shown in Figs. 3 and 4) is of sheet metal, this construction being designed especially for the heating. This chimney may have on its top a wire support  $b^x$  for holding an article to be heated, such as a shoemaker's burnishing-tool, for example. The construction in Figs. 3 and 4 other than the chimney is substantially the same as in Figs. 1 and 2. I have, however, shown the generator or shell C in Fig. 3 without the slopes  $c'$  at its ends. This construction will operate, but the slopes are preferable, especially where the shell is quite long.

The glass chimney B adds to the luminous effect of the flame and reduces, proportionately, the consumption of oil.

The shell or generator C may be constructed in any manner desired—that is, integrally or from parts secured together in a manner to resist heat. The slits or perforations  $c^2$  not only supply air to mix with the gases generated inside, but they keep down the temperature of the shell to a considerable extent.

In the construction shown the slot or aperture in the bottom of the shell or generator whereat the wick-tube enters is made of such dimensions that it fits over said tube rather loosely, so that the generator may be turned to one side on its hinge; but it may fit snugly or tightly on the wick-tube or be fixed to the latter, so as to form a part of it without in any way impairing the functions of the generator. I prefer, however, to have the generator removable. The wick-tube need not project up into the chamber of the generator to any appreciable extent.

I am well aware that vapor-burners are not new and I do not claim such a burner broadly; but so far as I am aware these are complex, usually having one cone or shell within another and not adapted by their form to give good results. My generator, which has nearly a cordate form or heart shape in transverse section, is simple and adapted for convenient removal from the tip of the wick-tube by the long hinge-bail  $d$ .

Having thus described my invention, I claim—

1. A generator for a hydrocarbon-burner, consisting of a simple metal shell, laterally elongated in one direction and of a substantially oval or cordate transverse section in the opposite direction, as shown, said shell having a long and narrow slot along its top for the escape of the gases, a central slot in its broader bottom for the wick-tube, and contracted perforations in its sides to admit air, substantially as set forth.

2. A generator for a hydrocarbon-burner, consisting of a laterally-elongated, simple metal shell of substantially oval or cordate cross-section, having a slot along its top for the escape of the gases, a central slot or aperture in its broader bottom to receive the wick, upwardly-sloping, flat ends  $c'$ , and apertures  $c^2$  in its sides to admit air, substantially as set forth.

3. A generator C for a hydrocarbon-burner, consisting of a shell of metal of elongated form, and of substantially oval or cordate cross-section with its narrower edge uppermost, said shell having a long slot  $c$  in its top extending longitudinally, a shorter slot or aperture in its bottom, at the middle of its length, to receive the wick, apertures  $c^2$  in its sides to admit air, and perforated sloping ends  $c'$ , whereby the oil from the wick is converted into gas and a flame is produced which much exceeds the width of the wick, substantially as set forth.

4. The combination with an oil-holder having a wick-tube, and means for raising and lowering the wick therein, of a gas-generator on said wick-tube, said generator comprising a shell of metal, the lateral elongation of which greatly exceeds the width of the wick-tube, said shell being substantially oval or cordate in cross-section, with an opening in its bottom to receive and fit about the wick-tube, a long slot  $c$  along its top for the escape of the gases, sloping ends  $c'$ , and apertures  $c^2$ , in its sides and ends to admit air, substantially as set forth.

5. The combination with an oil-holder, having a wick-tube, means for raising and lowering a wick therein, and a support for the generator, of the said generator, consisting of an elongated shell of metal having a slot  $c$ , along its top, an aperture in its bottom to receive the wick-tube, and apertures in its sides to admit air, and the bails  $d$ , rigidly fixed to the generator at its respective sides, and one of said bails hinged to the generator-support, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ANDERS P. A. ROSENSTAR.

Witnesses:

HENRY CONNETT,  
PETER A. ROSS.