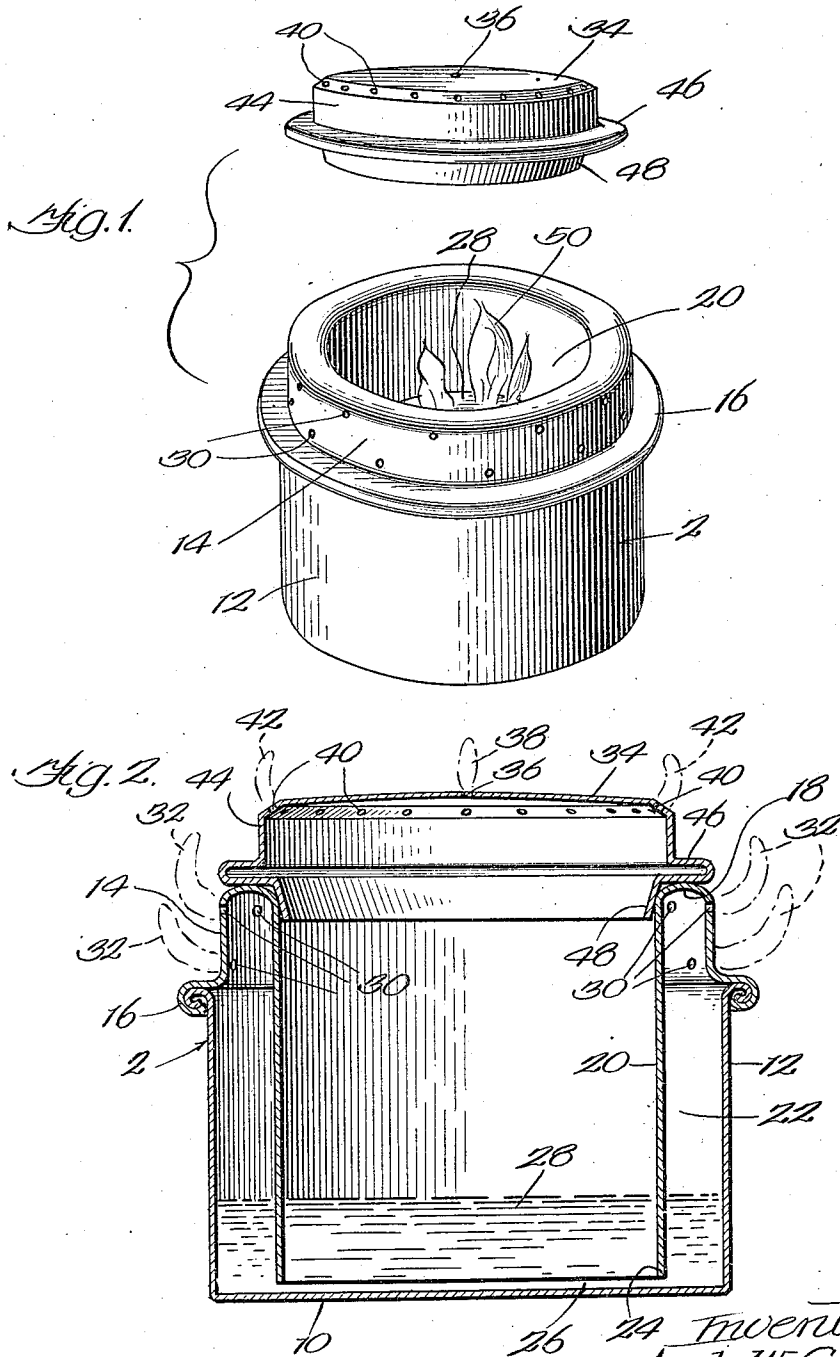


F. W. GEHRER.
 ALCOHOL HEATER.
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1,421,209.

Patented June 27, 1922.



Inventor:
 Fred W. Gehrer
 By *Cheverton* *Attys*

UNITED STATES PATENT OFFICE.

FRED W. GEHRER, OF CHICAGO, ILLINOIS.

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To all whom it may concern:

Be it known that I, FRED W. GEHRER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Alcohol Heaters, of which the following is a specification.

This invention relates to mechanism for burning alcohol for producing heat the same being of a convenient form so that it can be readily used by travelers on trains, campers and the like. The object of the invention is to provide a mechanism of this class which is neat and compact in construction, yet capable of burning the vapor of alcohol contained within it in the form of small blue flame jets suitably distributed over the device thereby securing much greater efficiency than has heretofore been possible with devices wherein a large area of alcohol is burned in one body.

The invention consists in means for attaining the foregoing objects which can be easily and cheaply made, which is satisfactory in use and is not readily liable to get out of order. More particularly the invention consists in many features and details of construction which will be hereafter more fully set forth in the specification and claims.

Referring to the drawings in which like numerals designate the same parts throughout the several views—

Figure 1 is a perspective view of mechanism of this invention separated into its component parts of cup and cover showing the operation of initially starting the device.

Figure 2 is a vertical sectional detail view of the device of this invention in assembled form in final operation.

In carrying out this invention a relatively large open top cup is provided comprising a bottom 10; an external conventionally cylindrical wall 12, having an upper portion 14 of inverted U-shaped cross section 18, and finally the downwardly extending internal wall 20 terminating at 24 a distance 26 above the bottom 10 of the cup. In the particular case here illustrated the parts 12 and 14 are in two parts connected in the roll 16. The bottom end 24 of the tubular member 20 does not touch the bottom 10 of the cup but is separated therefrom by a suitable liquid flow passage 26 through which alcohol 28 in the bottom of the cup can pass as shown

into the bottom of annular space 22 formed between walls 12 and 20.

The outer wall portion 14 of the cup above the ring 16 is provided around its circumference with staggered perforations 30 through which alcohol vapor present in chamber 22 may pass and be burned in independent flames 32 as indicated in Figure 2.

The device is provided with a cover member 34 of the peculiar form shown in the drawing consisting of a top plate having in its center a perforation 36 for the escape of alcohol vapor and its burning in a flame 38. The cover also has a plurality of alcohol vapor burning perforations 40 extending around the upper edge of the cover from which small flames 42 of alcohol vapor may burn. From the edge where these perforations 40 are located the cover is provided with a downwardly extending cylindrical wall 44 carrying a horizontal flange 46 adapted to rest upon the upper edge of the cup and also provided with an inwardly pointed downwardly extending flange 48 adapted to enter the inside of the cup and fit against the upper portion of the wall 20 and make a close joint to prevent the escape of alcohol vapor.

In the operation of the device the user first removes the cover 44 as indicated in Fig. 1 places in the cup a quantity of alcohol 28. This alcohol immediately flows through passage 26 into the bottom of annular recess 22 thereby sealing it so that flames in this central body portion of the cup do not have access to this chamber 22. The operator now lights the alcohol in the central portion of the cup producing the flames 50 indicated in Fig. 1. The heat from these alcohol flames 50 heats the entire cup including the now enclosed chamber 22 and after sufficient heat has developed, the portion of alcohol in the bottom of the cup within the chamber 22 is vaporized and the vapor flows out through the perforations 30 heretofore referred to and is lighted either by the application of a match or merely by the general heat of the device to form the flames 32. As soon as the operator has these flames 32 going he applies the cover 34 in the position shown in Fig. 2 thereby excluding air from the center of the cup and extinguishing the flame 50 but the device being hot the alcohol in the center of the device is vaporized and the alcohol vapor flows out

through the perforations 36 and 40 and is there automatically or artificially lighted to produce the flames 38 and 42. In this condition the device continues to burn as a lamp or heater until all the alcohol 28 in the cup has been vaporized and consumed or the operator by means not entering into this invention extinguishes the lamp thus putting out all the flames described.

10 The device thus constructed and operated furnishes a set of blue alcohol flames 32, 42, 38 over the device which produce a very satisfactory heat and a much more efficient heat than would be possible were the flames 15 50 allowed to continue in large volume as has heretofore been the practice in devices of this kind.

Actual test has demonstrated that a single flame perforation 36 in the center of the cover and a plurality of perforations 20 40 around its edge is important as preventing the entire flame converging in the center of the device as would be the case were more perforations used at the center.

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

1. A cup open at the top and adapted to receive burnable and vaporizable liquid 30 there being formed in the cup and adjacent to the wall thereof an annular recess into which said vaporizable liquid in the bottom of the cup may flow and close access to said recess from the cup, there being 35 in the external wall of the cup near its top perforations through which vapor coming from said internal recess may pass and be thereafter lighted, and a cover adapted to close the top of said chamber or cup,

said cover itself being provided with small 40 perforations for the escape and burning of combustible material in vaporized form delivered from the cup.

2. A cup open at the top and adapted to receive burnable and vaporizable liquid 45 there being formed in the cup and adjacent to the wall thereof an annular recess into which said vaporizable liquid in the bottom of the cup may flow and close access to said recess from the cup, there being in the 50 external wall of the cup near its top perforations through which vapor coming from said internal recess may pass and be thereafter lighted, and a cover adapted to close the top of said chamber or cup, said cover itself being provided with small perforations 55 for the escape and burning of combustible material in vaporized form delivered from the cup, said perforations in the cover being arranged, a larger number around the 60 outer edge of the cup and a very small proportionate number adjacent to the center of the cover.

3. A cover burner for a cup of the class described, having a generally flat top, a 65 downwardly extending cylindrical member carrying a horizontal flange and a downwardly inwardly turned flange, the cover at its upper corner being provided with a plurality of vapor escape perforations extending 70 around it for the purposes set forth.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

FRED W. GEHRER.

Witnesses:

DWIGHT B. CHEEVER,
MIGNON K. STROBEL.