E. BOEKENKAMP.

BLUE FLAME WICK STOVE.

APPLICATION FILED NOV. 11, 1912.

1,074,688.

Patented Oct. 7, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

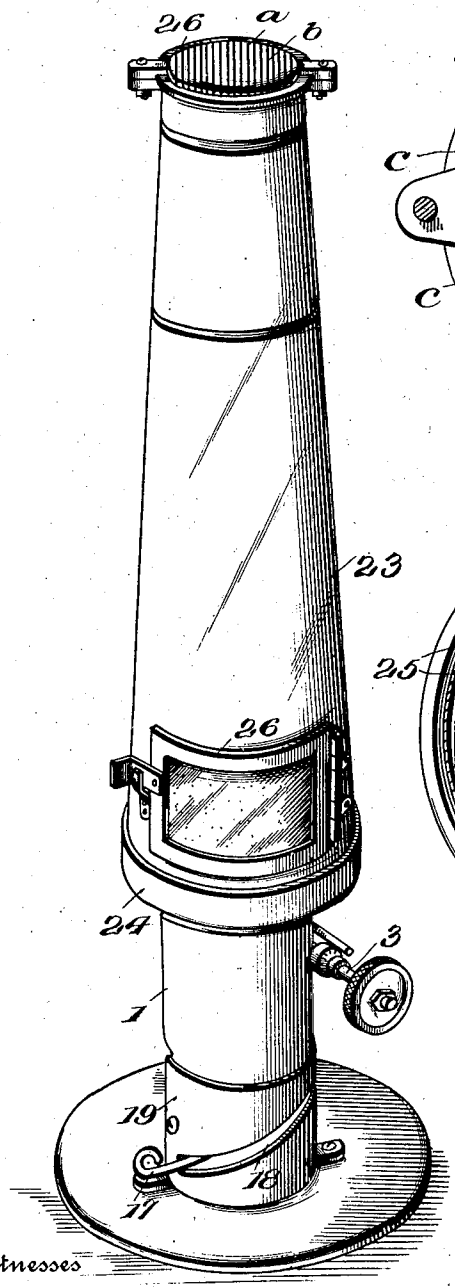
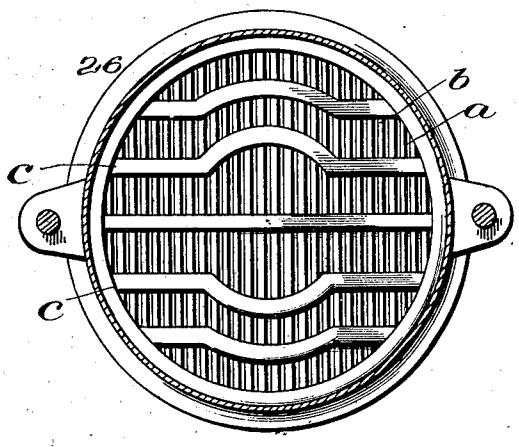


Fig. 4.



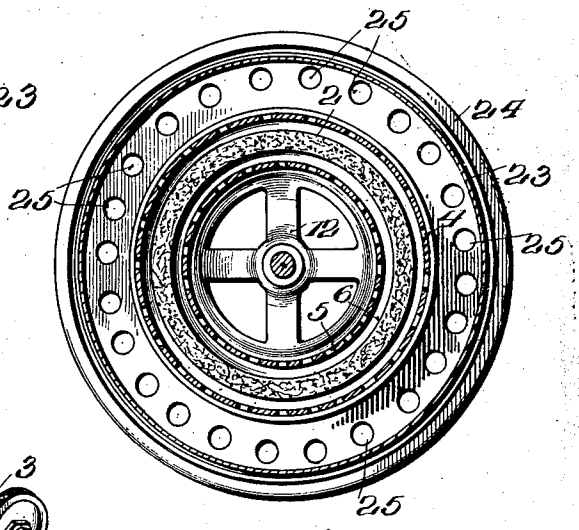


Fig. 5.

Witnesses

W. A. Williams.

H. A. Pattison.

Inventor

E. Boekenkamp,

By A. S. Pattison,

Attorney

E. BOEKENKAMP.

BLUE FLAME WICK STOVE.

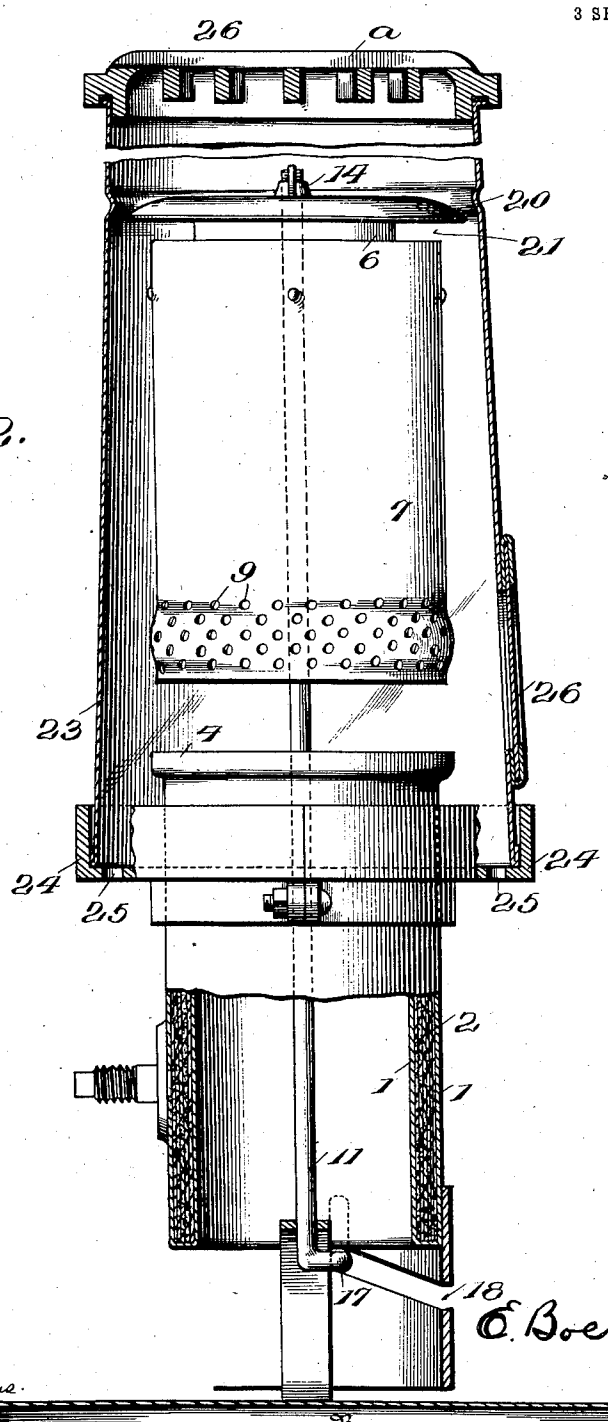
APPLICATION FILED NOV. 11, 1912.

1,074,688.

Patented Oct. 7, 1913.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

W. A. Williams.

H. A. Pattison.

Inventor

E. Boekenkamp,

By

A. S. Pattison

Attorney

E. BOEKENKAMP.

BLUE FLAME WICK STOVE.

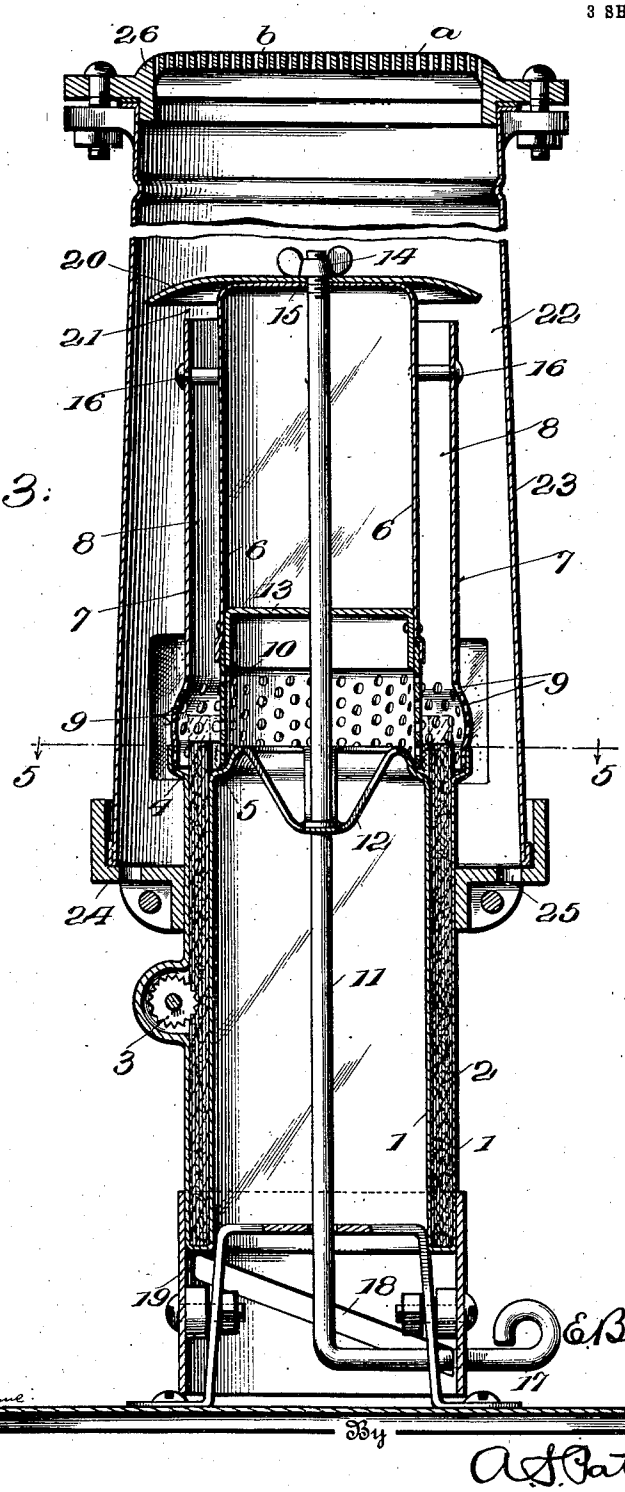
APPLICATION FILED NOV. 11, 1912.

1,074,688.

Patented Oct. 7, 1913.

3 SHEETS—SHEET 3.

Fig. 3.



Witnesses

W. A. Williams.

H. A. Pattison.

Inventor

E. Boekenkamp.

By

A. S. Pattison

Attorney

UNITED STATES PATENT OFFICE.

EDWARD BOEKENKAMP, OF ST. LOUIS, MISSOURI, ASSIGNOR TO AMERICAN STOVE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

BLUE-FLAME WICK-STOVE.

1,074,688. Specification of Letters Patent. Patented Oct. 7, 1913.

Application filed November 11, 1912. Serial No. 730,694.

To all whom it may concern:

Be it known that I, EDWARD BOEKENKAMP, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Blue-Flame Wick-Stoves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in blue flame wick stoves, and pertains to a burner particularly intended for use in cooking stoves.

The primary object of my invention is to produce a burner so constructed as to maintain a blue vapor generating flame at the lower end of the burner, which blue generating flame generates more vapor from the wick than is consumed by the generator flame, that is, generates an excess or surplus amount of vapor from the wick, and to mix with this surplus vapor air in proper quantities and convey this mixture or gas to and through a burner-cap at the top of the device where it is lighted and maintains a blue flame of considerable area and of maximum heating efficiency.

Another object of my present invention is to combine with the features above mentioned a form of burner-cap which coöperates with these features to produce a blue flame of considerable area and of maximum heating efficiency and yet prevents the lighting or firing back of the flame through the burner-cap to the mixed vapor and air in the chimney below the burner-cap.

The accompanying drawing is one mechanical expression of the inventive idea and in which—

Figure 1 is a perspective view of the burner which embodies the invention. Fig. 2 is a relatively enlarged vertical central sectional view of a burner embodying the invention, the generating section being shown lifted for the initial lighting of the wick. Fig. 3 is a central vertical sectional view of the burner with the generating section lowered and in position for the initial lighting. Fig. 4 is an inverted plan view of the top burner-cap. Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 3.

The accompanying drawings are intended to show a construction of a burner which embodies one of the mechanical expressions of the inventive idea, which is the subject-matter of this application and for which I seek a patent.

Referring now particularly to the drawings, 1 is a wick-tube of the usual construction, and which contains a wick 2, adapted to be raised and lowered by any suitable wick-raising device 3. The inner and outer walls of these wick-tubes are bulged respectively outwardly and inwardly, as illustrated at 4 and 5, to form an annular space into which the wick 2 is caused to project. The bulged portions 4 and 5 form supports and seats for the lower ends of the walls 6 and 7 of an annular chamber 8. The lower ends of these walls 6 and 7 are perforated, as shown at 9 and 10, that portion of the walls above these perforations being imperforated as shown. A centrally arranged bar 11 passes through the wick tube 1, a supporting spider 12 and a diaphragm 13, and has its upper end 14 attached in any suitable manner to the upper closed end 15 of the inner wall or tube 6, the diaphragm 13 serves to close the inner tube 6, just a little above the perforations 10. The outer wall or tube 7 is suitably attached to the inner wall 6, by rivets or rods 16, and the lower end 17 of the bar 11 passes outward through a spiral slot 18 in a base 19. By moving the bent end 17 of the rod around in this spiral slot, the rod may be either raised or lowered and the annular chamber 8 will be raised and lowered with the rod, the object of which will be explained presently.

As shown, the upper end of the inner tube 6 preferably provided with a flange 20, which projects over the upper end of the annular space or chamber 8, but above or apart from the said tube or wall 7 to form a passage 21, which places the chamber 8 in communication with the surrounding space or chamber 22, formed by the surrrounding burner chimney 23. This burner chimney 23 is seated in an annular cup-shaped member 24, and this member is provided with a plurality of openings 25 to establish communication between the surrounding atmosphere and the space or chamber 22 between the chimney 23 and the chamber 8. This chimney 23 can be lifted from the supporting member 24 if desired, but it is preferably provided with a mica door 26, through which

access may be had to the interior of the chimney and to the wick 2, when the chamber 8 is lifted, as above described.

Surmounting and spanning the top of the chimney 23 is a burner-cap 26. This burner-cap has a plurality of elongated slots *a*, which are narrower than the thickness of the metal *b*, which forms the cap proper. This cap is preferably provided with several integral ribs *c* as shown in Fig. 4.

The operation of my improved burner is as follows: With the wick 2 in the position shown in solid lines, Fig. 3, the door 26 is opened and the chamber 8 elevated to expose the wick. The wick is then lighted through the door 26 and the chamber 8 lowered to position, as shown in Fig. 3, and there is then produced an initial heating blue flame. This heating flame is maintained until the tubes 6, 7, chimney 23 and burner-cap *b* have become heated. This initial heating flame is maintained by a supply of air thereto through the perforations 9 and 10, and which maintains a blue-flame in a manner well understood by those skilled in this art, the wick at this time being just high enough to generate the proper amount of vapor to supply the initial heating flame. After the parts have become heated, the wick is elevated to about the height shown in dotted lines Fig. 3, which exposes a relatively large portion of the wick, but the size of the flame is not materially affected, because the supply of air being only at the lower ends of the tubes 6 and 7, there is only sufficient air to maintain a small blue flame. With the wick in this elevated position there is an excess or surplus amount of vapor generated from the wick by this flame which then becomes a vapor generator flame, and the surplus vapor passes up between the tubes 6 and 7 through the passage 21 and enters the chamber 22 and out through the burner 26. The vapor after it enters the chamber 22 is supplied with a quantity of air through the passage 25 and thus creates a draft in the space of chamber 22, which causes the air to mix with the vapor and causes the mixed air and vapor and gas to be carried by this draft through the narrow slots *a* of the burner 26 and being lighted at the outside of the burner, produces a perfect blue flame of considerable area and with a maximum heating efficiency, and particularly adapted for cooking purposes.

The object of having the initial heating is twofold. First, to heat up the parts of the burner to subsequently enable the carrying on or continuation of the generation of a surplus amount of vapor for the burner above, and, secondly, to heat the burner-cap 26, for it is found that this vapor cannot be lighted if the burner-cap is cold, and hence it is necessary to first heat the burner-cap 26 before the combustible mixture or gas is fed thereto. I find that this type of burner requires a burner-cap which will afford the least possible obstruction to the flow of vapor and yet will not light back or fire back through the burner-cap. I find that the perforated plate will not produce the desired result, but that a burner-cap having elongated slits which are narrow than the thickness of the metal in which the slits are formed will produce the desired result and will not light or fire back into the chimney. Also after a long time of experimental work and devising and changing of parts, I find to produce a blue-flame at the burner-cap in a burner of this type that the generating flame must be a blue flame and I conceive that the essential features of this invention are the combining of means for producing a generating blue flame which produces an excess amount of vapor, mixing air with this excess vapor and feeding it through a blue flame burner-cap.

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

1. A burner of the type described comprising a chimney, a blue flame vapor generating burner within and at the lower end of the chimney, the said blue flame burner comprising vertically arranged inner and outer tubes having the perforations at their lower ends only, a wick extending between the perforated walls, the chimney having air passages, and the top of the chimney provided with a blue flame burner-cap.

2. A burner of the type described, comprising a chimney, a blue flame vapor generating burner within the lower end of the chimney and comprising concentrically arranged tubes spaced apart to receive a wick between their lower ends, the lower portion of the tubes being perforated, the upper end of the space between the tubes in communication with the interior of the chimney, a deflector flange projecting over this space between the tubes and a blue flame burner cap at the upper end of the chimney.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

EDWARD BOEKENKAMP.

Witnesses:

L. STOCKHOM,

O. H. GULTHER.