No. 756,369. PATENTED APR. 5, 1904.

H. HURWITZ & A. SCHAPIRO.

BLUE BURNER.

APPLICATION FILED JUNE 10, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

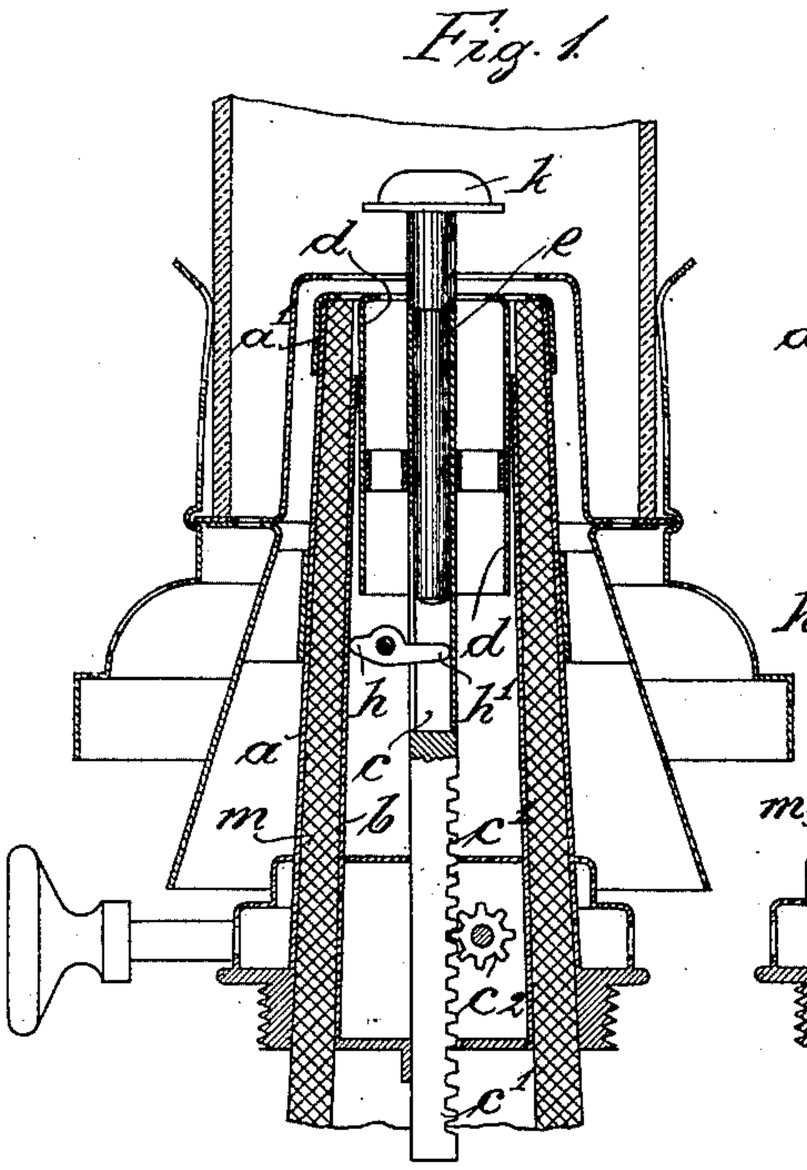


Fig. 2.

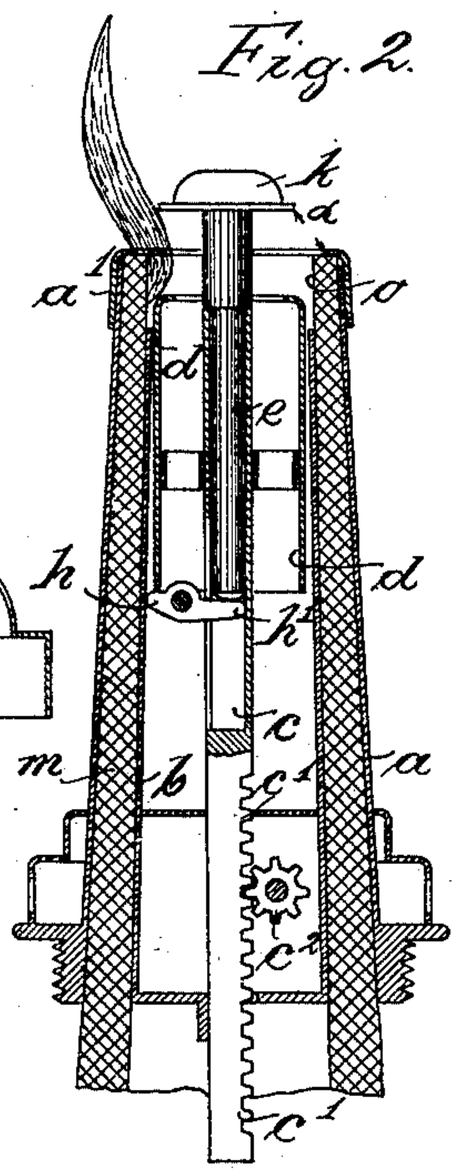


Fig. 3.

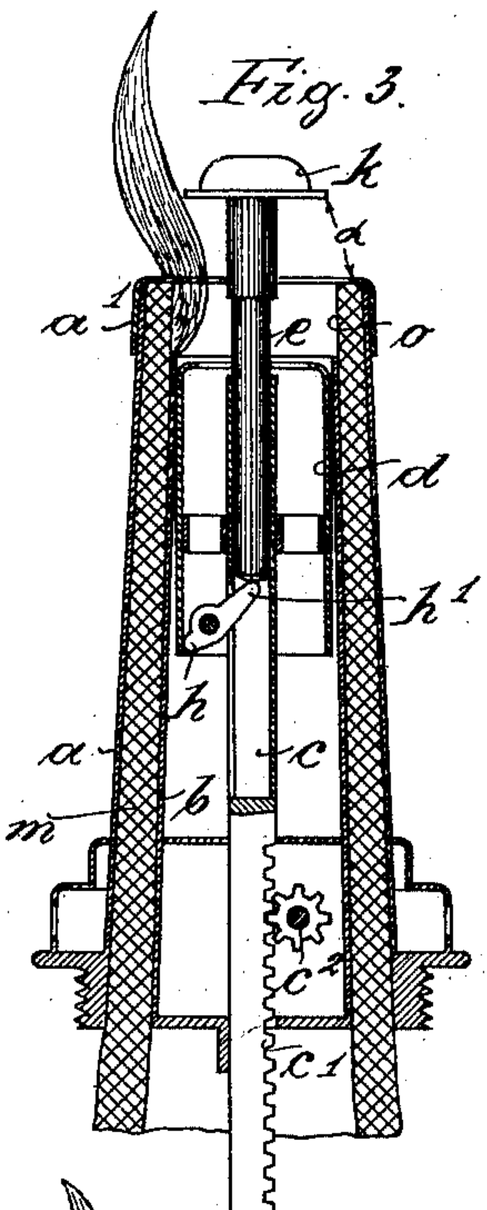


Fig. 4.

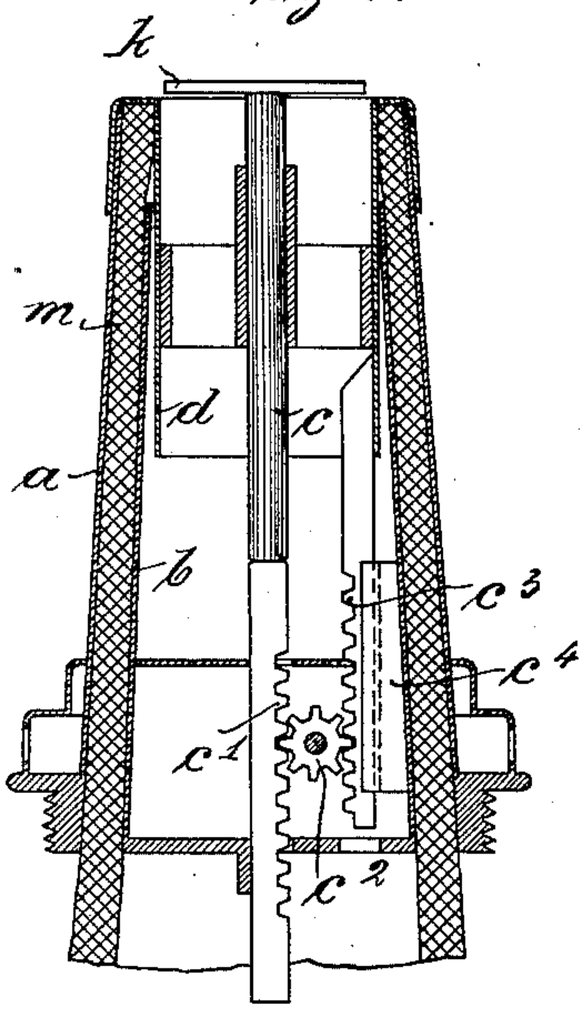
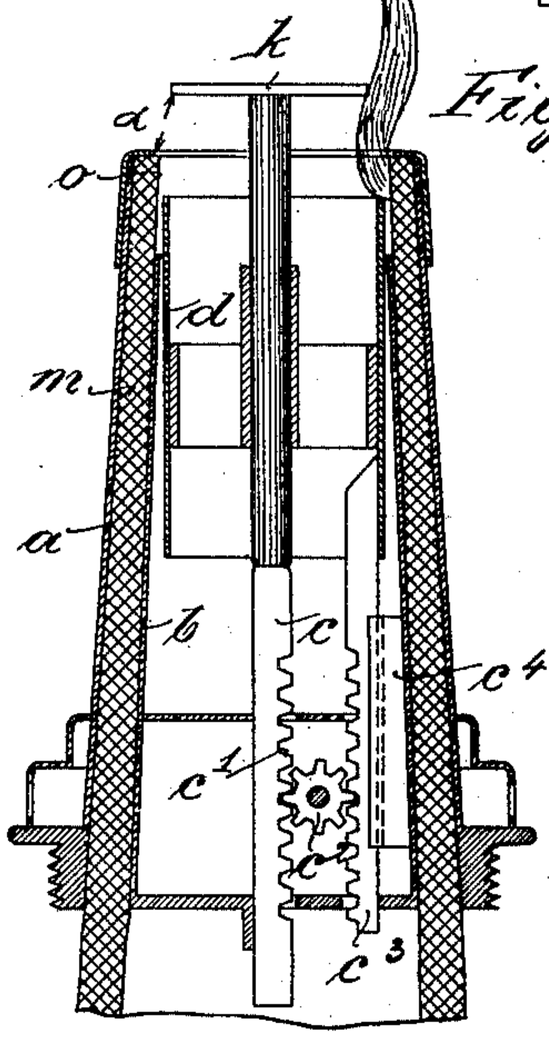


Fig. 5.



Witnesses:
Paul Wallenberg.
Paul Heinrich.

Inventors.
Hermann Hurwitz
Aisik Schapiro.
by Albert Reiselen
Attorney.

No. 756,369. PATENTED APR. 5, 1904.

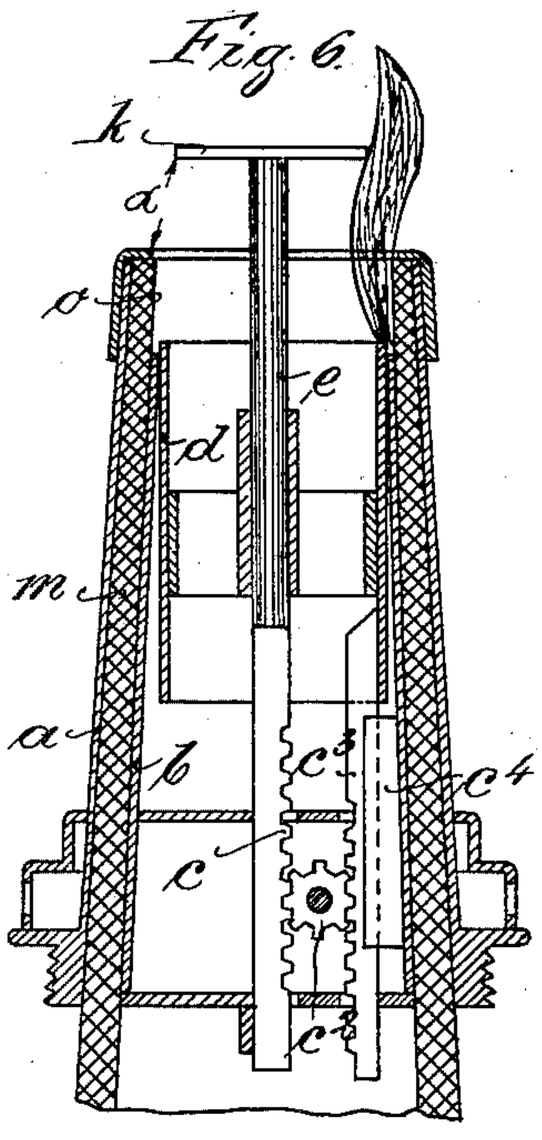
H. HURWITZ & A. SCHAPIRO.

BLUE BURNER.

APPLICATION FILED JUNE 10, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.



Witnesses:
Paul Heinrich.
Paul Wollenberg.

Inventors.
Herrmann Hurwitz.
Arsik Schapiro.
by Rummelsplu
Attorney.

No. 756,369. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

HERMANN HURWITZ AND AISIK SCHAPIRO, OF BERLIN, GERMANY.

BLUE-BURNER.

SPECIFICATION forming part of Letters Patent No. 756,369, dated April 5, 1904.

Application filed June 10, 1903. Serial No. 160,941. (No model.)

To all whom it may concern:

Be it known that we, HERMANN HURWITZ, a subject of the King of Prussia, German Emperor, and AISIK SCHAPIRO, a subject of the Emperor of Russia, both residents of 56 Stralauerstrasse, Berlin, Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Blue-Burners, of which the following is an exact specification.

Our invention relates to improvements in blue-burners for spirit, petroleum, and other liquid hydrocarbon stoves or incandescent lamps, and has for its purpose to provide a burner in which the burning-surface of the wick, as well as the passage for throttling the flame, can be adjusted simultaneously by means of one handle.

The invention is especially applicable to petroleum-lamps, and it gives a surety that during the adjusting of the flame it is impossible that the blue flame changes into a white flame and that the burner begins to soot. We attain this purpose by the construction shown in the accompanying drawings, in which—

Figure 1 is a vertical section of a burner constructed according to our invention in the position in which the flame is extinguished. Fig. 2 shows the same in this position in which after the lighting of the flame the white flame changes into a blue flame. Fig. 3 shows the same in the position in which the best effect is attained. Figs. 4, 5, and 6 show a modified construction of the burner in the same positions.

In the drawings, *a* is the outer wick-tube, *b* is the inner wick-tube, and *m* is the wick situated between these tubes. As may be seen from the drawings, the invention is applied to burners in which only the inner surface of the wick burns.

In the construction shown in Figs. 1 to 3 and 4 to 6 the burning inner surface *o* of the wick is adjusted by means of a cylinder *d*, movable in the inner wick-tube, the wick itself being unmovable.

In the construction shown in Figs. 1 to 3 the wick is covered by means of a cap *a'*. The cylinder *d*, movable in the inner wick-tube *b*, is fixed to a pipe *c*, which can be moved by means of a toothed bar *c'*, gearing with the toothed wheel c^2. This toothed wheel can be turned by means of a handle situated outside the burner. *k* is the burner-cap, which in all blue-burners of the type described serves the purpose of throttling the gases. The burner-cap *k* is therefore in the constructions hitherto used situated so that the passage *d* between the cap *a'* of the outer wick-tube and the burner-cap *k* is relatively small. The burner-cap *k* is fixed to a pin *e*, which fits into the pipe *c*, so that by moving this pipe *c* and the cylinder *d*, fixed to the same, the burner-cap *k* is also moved. *h h'* is a doubled-arm lever situated within the inner wick-tube, one arm, *h'*, of which lever projects through a vertical slot into the tube *c*. *e* is a pin situated within the tube *c* and resting upon the arm *h'* of the doubled-arm lever.

The effect of the burner is as follows: If the burner is in the position shown in Fig. 1 and the cylinder *d* is moved downward, (by moving the toothed wheel c^2,) the inner surface *o* of the wick is laid free and the burner can be lighted. The burner-cap *k* naturally follows the downward movement of the cylinder *d*. If the cylinder *d* and burner-cap *k* have arrived in the position shown in Fig. 2, in which position the flame begins to get blue, the pin *e* of the burner-cap touches the pin *e*—*i. e.*, the double-armed lever. If now the effect of the burner shall still be augmented, the cylinder *d* is further lowered, hereby enlarging the burning inner surface of the wick. In consequence hereof a greater quantity of gases escapes from the wick and will have to pass the annular passage *a*. Now in order to avoid that during the further downward movement of the cylinder *b* the passage *a* gets smaller and to attain that this space enlarges according to the enlargement of the burning-surface *o* the lever *h h'* is provided. After the burner having arrived in the position shown in Fig. 2, in which the blue flame begins to develop, the cylinder *d* pushes against the arm *h* of the double-armed lever and presses this arm downward, hereby raising the arm *h'*. The pin *e*, situated upon this arm *h'*, pushes then against the pin *e* of the burner-cap and raises the

burner-cap, as may be seen from Fig. 3, hereby enlarging the annular passage α.

In the modification shown in Figs. 4 to 6 the burner-cap k does not follow the movement of the cylinder d, but moves always in the direction opposite to the direction in which the cylinder d moves. This is attained by the cylinder d not being fixed to the tube or bar c. The cylinder is in this construction fixed to a toothed bar c^3, guided in a slide c^4, which toothed bar gears with a toothed wheel c^2, which, as described above, serves for moving the bar or tube c. By turning the toothed wheel c^2 the burner-cap k is moved in the direction opposite to the direction in which the cylinder d is moved. The effect of this modification is the same as in the construction first described.

Having thus fully described the nature of our invention, what we desire to secure by Letters Patent of the United States is—

1. In a blue-burner for liquid fuel, the combination of an outer and inner wick-tube, with a burner-cap, a cylinder sliding in the inner wick-tube, means for lowering the cylinder and means for raising the burner-cap before the cylinder has perfectly entered into the inner wick-tube, and one handle for simultaneously actuating both means, substantially as described and for the purpose set forth.

2. In a blue-burner for liquid fuel, the combination of an outer and inner wick-tube, with a cylinder sliding in the inner wick-tube, a burner-cap, means for lowering the cylinder, a double-armed lever, one arm of which is situated so as to be pressed down by the downward movement of the cylinder, the other arm of this lever being situated underneath the burner-cap, so as to raise the same during the downward movement of the cylinder, substantially as described and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HERMANN HURWITZ.
AISIK SCHAPIRO.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.