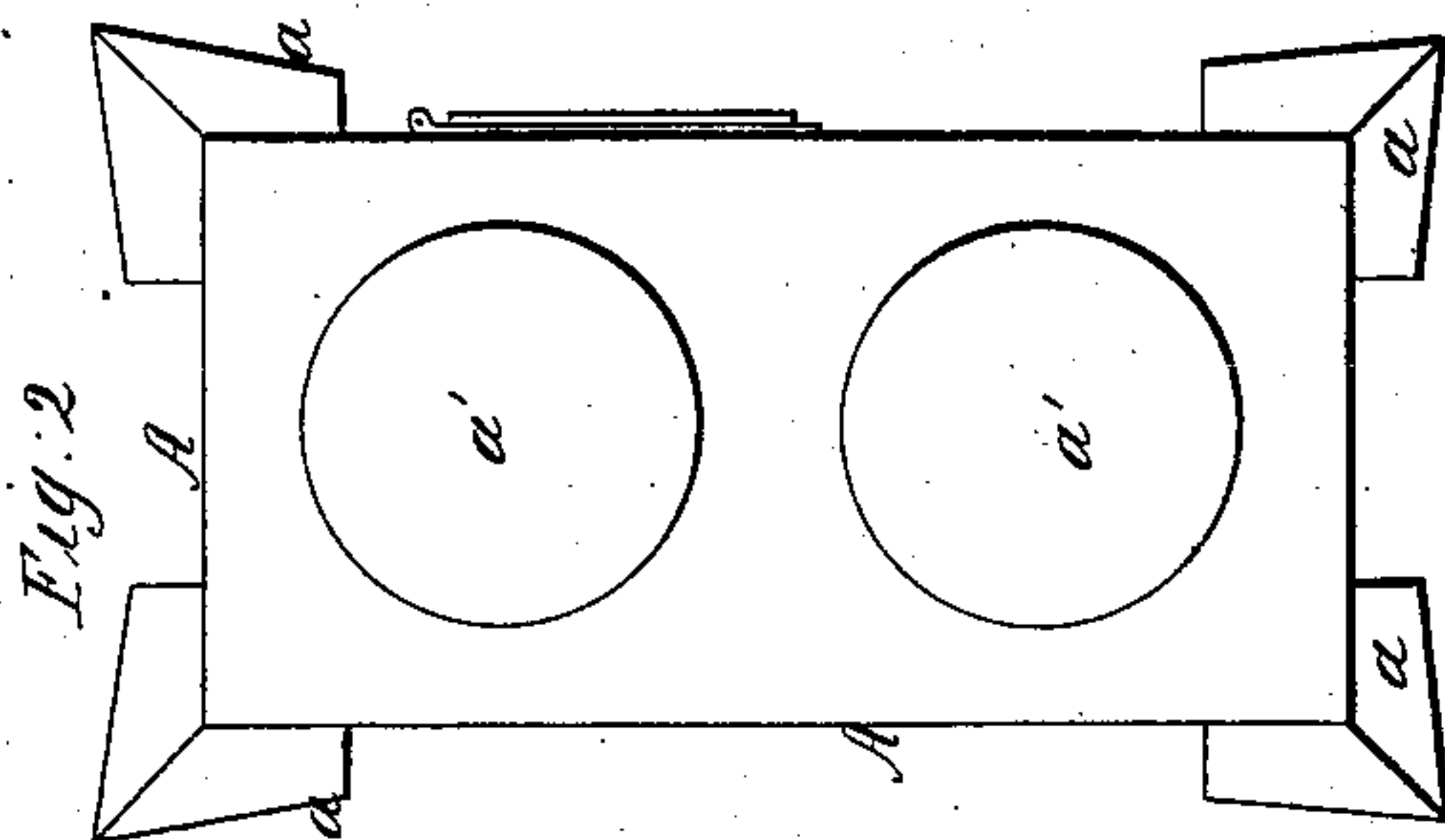


*Collins & Grover,*

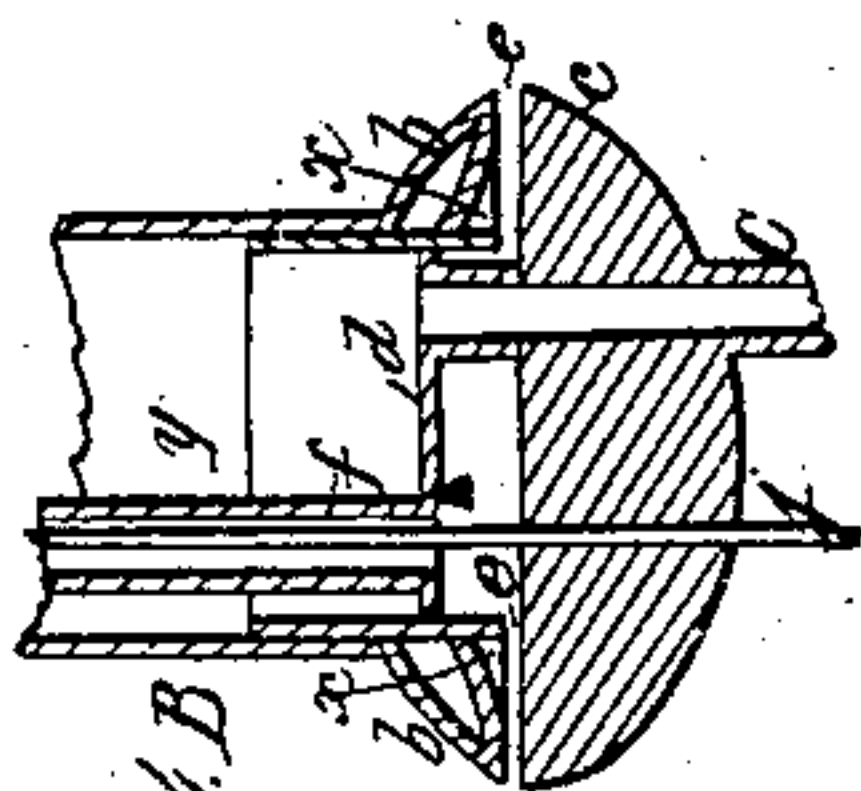
*Vapor Stove.*

*No. 60480.*

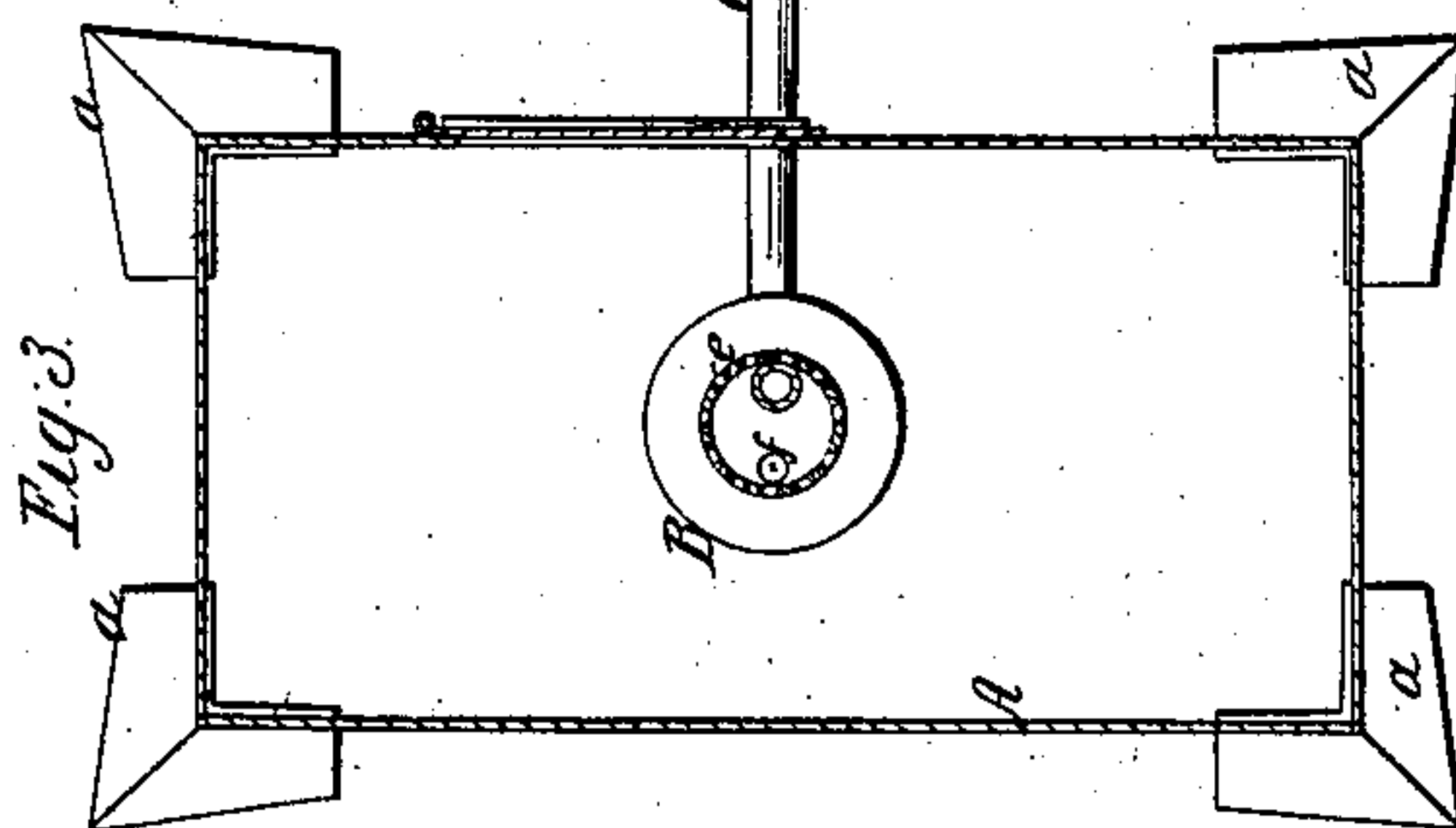
*Patented Dec. 18. 1866.*



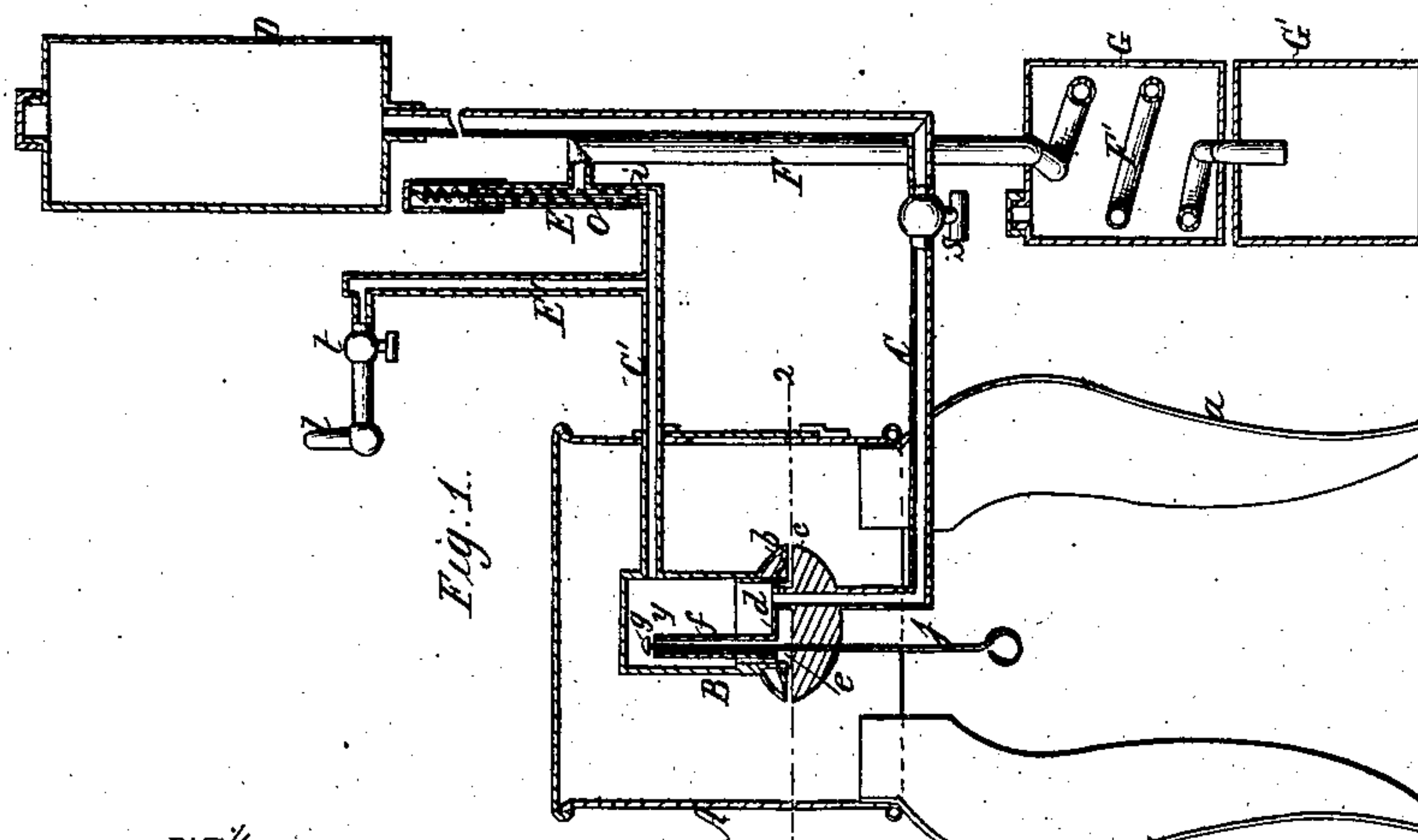
*Fig. 2.*



*Fig. 4, B.*



*Fig. 3.*



*Fig. 1.*

*Witnesses;*  
*Wm. Albert Smith*  
*S. B. Hoxsie Godwin*

*Inventors;*  
*O. R. Collins & W. B. Grover*  
*By this atty*  
*J. H. Howland*

# United States Patent Office.

## IMPROVEMENT IN VAPOR-BURNING STOVES.

O. K. COLLINS AND WILLIAM B. GROVER, OF WOODBURY, NEW JERSEY.

*Letters Patent No. 60,480, dated December 18, 1866.*

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, O. K. COLLINS and W. B. GROVER, of Woodbury, New Jersey, have invented an Improvement in Vapor-Burning Stoves; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Our invention consists of a burner, which communicates with a reservoir containing naphtha, or other burning fluid, and is constructed substantially as described hereafter, so that the fluid which passes to the burner shall be vaporized, and shall pass from the burner in the form of gas, the latter, on being ignited, producing a flame, which continues to vaporize the fluid as it passes into the burner.

Our invention further consists of a gas-generating burner, in combination with certain pipes, a condenser, and a valve, so that when the gas is generated too rapidly in the burner it will raise the valve and pass to the condenser, where it is reduced to a fluid state.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation. On reference to the accompanying drawing, which forms a part of this specification—

Figure 1 is a sectional elevation of our improved coal-oil stove.

Figure 2, a plan view.

Figure 3, a sectional plan on the line 1 2, fig. 1; and

Figure 4, a detached sectional view, drawn to an enlarged scale.

A is an oblong box or casing of iron, open below and closed at the top, with the exception of the openings *a'* and *a'* for receiving culinary utensils, the whole being supported on suitable legs, *a a*. Within the box, A, and at or near the centre of the same, is secured a burner, B, consisting of a case enclosing a chamber, *y*, and having at its lower end an annular flange, *b*, a short distance below which is a disk, *c*, there being communications through a number of small holes, *e*, between the chamber, *y*, and the narrow space, *x*, between the flange, *b*, and disk, *c*. A pipe, C, communicates with the lower portion, and a pipe, C', with the upper portion, of the chamber, *y*; and to the bottom, *d*, of the chamber is secured a pipe, *f*, extending upwards and nearly to the top of the chamber, *y*, its upper end being closed by a valve, *g*, the spindle, *j*, of which extends through the bottom of the burner. The pipe C communicates with an oil reservoir, D, situated above the box, A, and with the pipe C' communicate two pipes, E E', the latter having at its upper end an ordinary gas burner, *l*. With the pipe E communicates a pipe, F, the lower end of which extends, in the form of a coil, F', through a tank, G, and into a lower tank or reservoir, G'. The pipe C' has a valve, *i*, which is maintained in contact with its seat by a spiral spring, *o*. The pipes C E' are provided with cocks, *s* and *t*, the former intervening between the burner, B, and reservoir, D, and the latter between the two burners, B and *l*. Naphtha or other burning fluid is introduced into the reservoir D, from which it flows through the pipe C into the chamber *y*; the tank G is filled with water, and the valve *g* is raised, after which the burner is heated by a pan of ignited alcohol, or in any other suitable manner. As the fluid in the chamber, *y*, is heated, a gas is generated, which passes down the pipe *f*, and through the openings *e*, into the narrow annular space *x*, from which it passes in the form of an annular flame, the latter maintaining the burner at such a heat as to vaporize the contents of the chamber *y*. The amount of fluid introduced into the chamber *y* may be regulated by means of the cock *s*, and the extent of the flame by adjusting the valve *g*. Should there be an excessive pressure of gas, in consequence of its too rapid generation within the burner, the valve *i* will be elevated, and the superfluous gas will escape through the pipe C' to the pipe F and coil F', where it will be condensed, and will flow in a liquid form into the tank G', from which it may be again transferred to the reservoir D. If a light is required, the cock *t* is turned so as to permit the gas to flow to the burner *l*, where it is ignited. The flame of the burner B may be at any time extinguished by depressing the valve *g* to its seat at the upper end of pipe *f*.

Without confining ourselves to the precise construction and arrangement of parts herein described, we claim as our invention, and desire to secure by Letters Patent—

1. The burner B, consisting of the chamber *y*, communicating with an elevated reservoir, the flange *b*, and



disk *c*, with the intervening annular space *x*, communicating with the said chamber *y*, the whole being arranged substantially as and for the purpose described.

2. The combination of the above with the pipe *f* and valve *g*.

3. The gas-generating burner *B*, in combination with a pipe *F*, water tank *G*, and valve *i*, and pipes *C'* and *E*.

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

O. K. COLLINS,  
WM. B. GROVER.

Witnesses:

CHARLES E. FOSTER,  
W. J. R. DELANY.

MAY 29 1911