

(No Model.)

J. H. KEYSER.
SINGLE CYLINDER STOVE.

No. 401,888.

Patented Apr. 23, 1889.

Fig1.

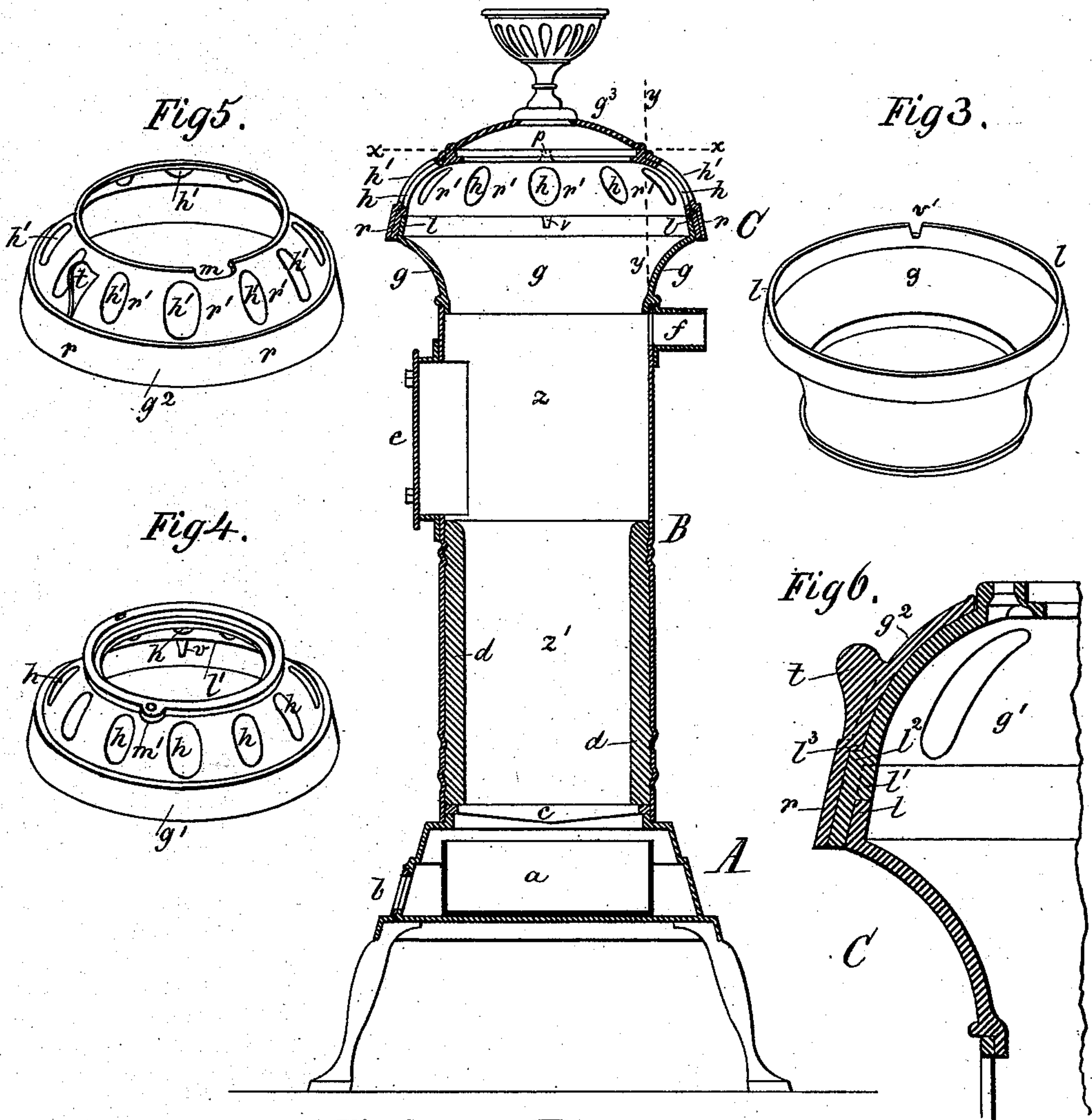


Fig5.

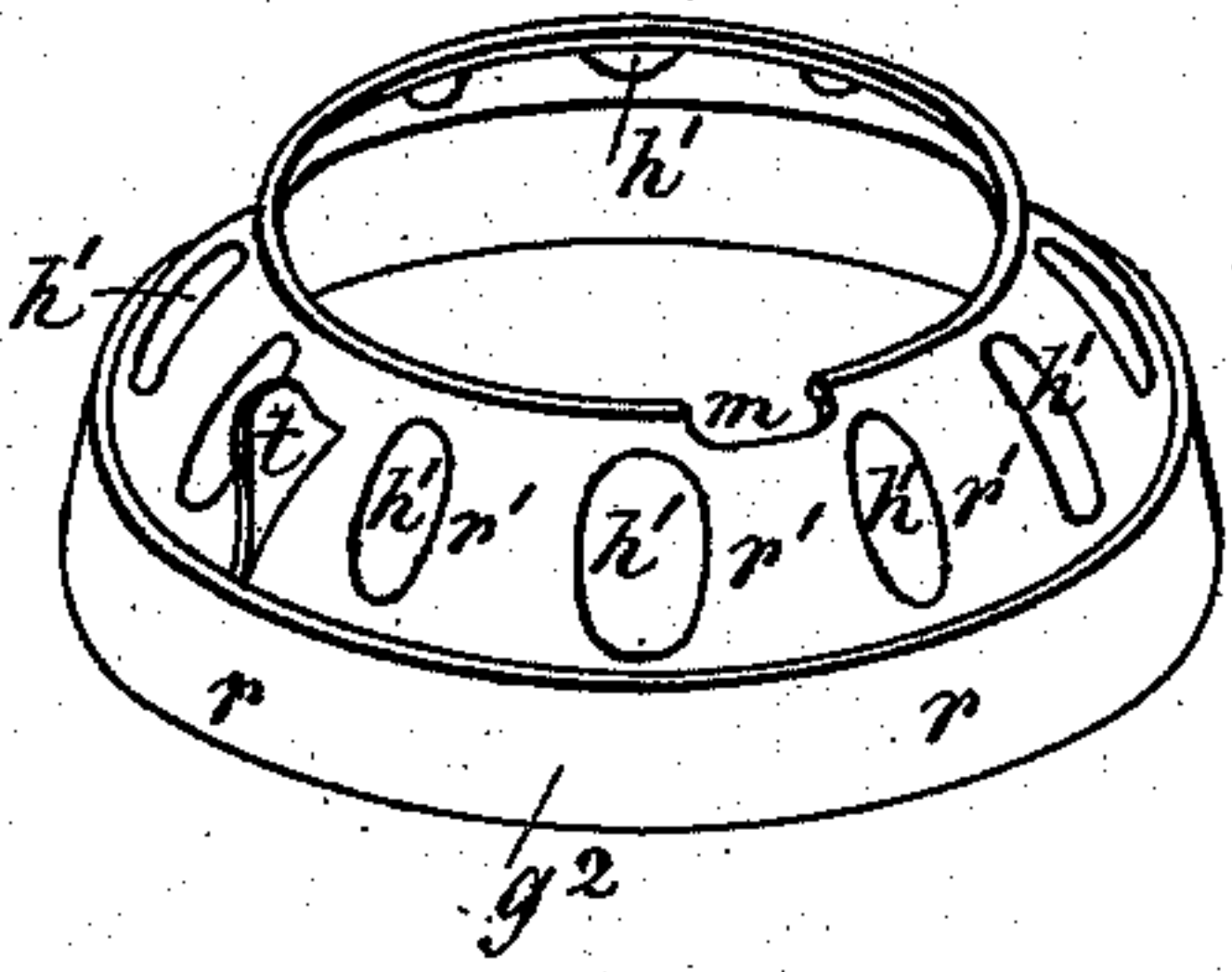


Fig4.

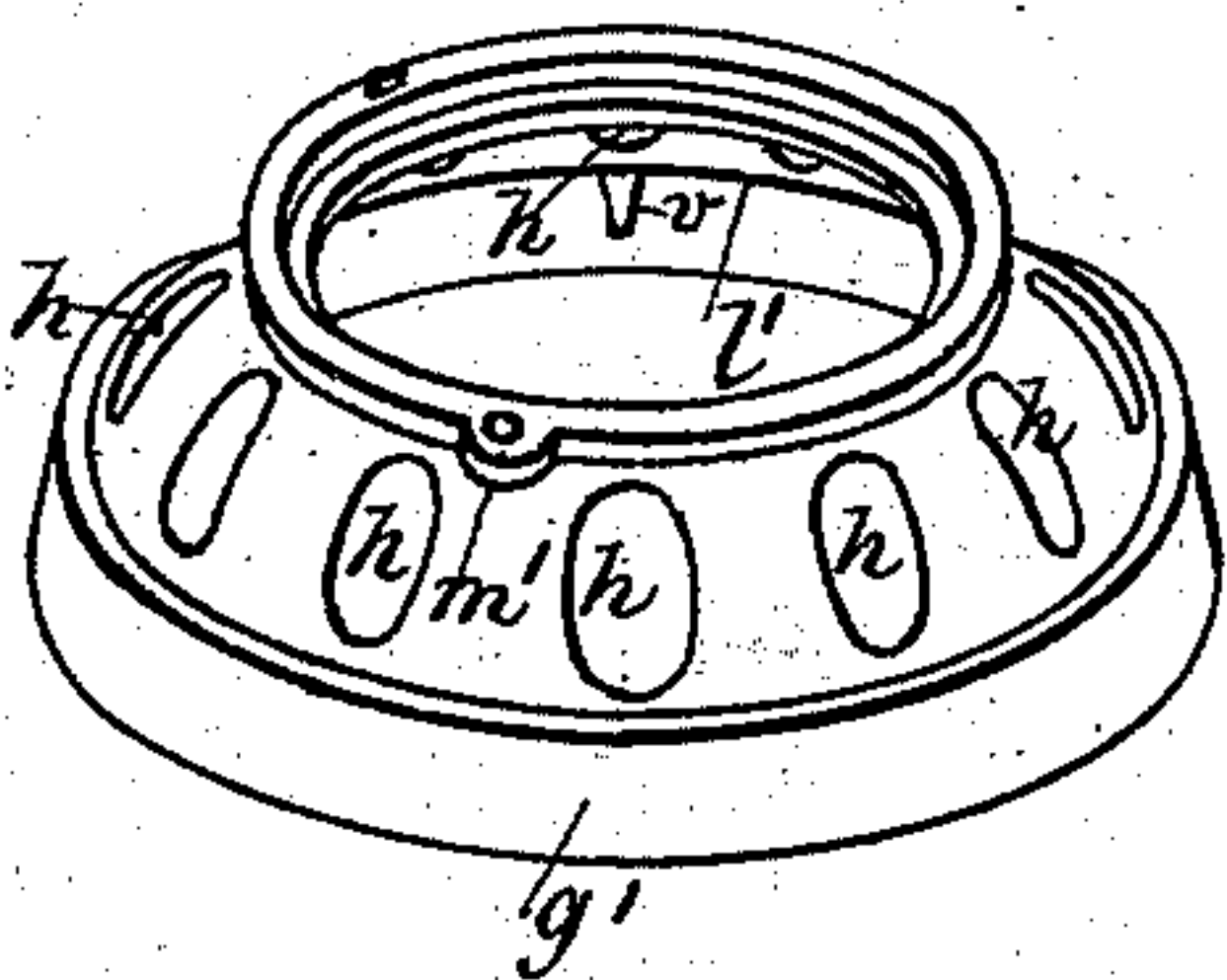


Fig3.

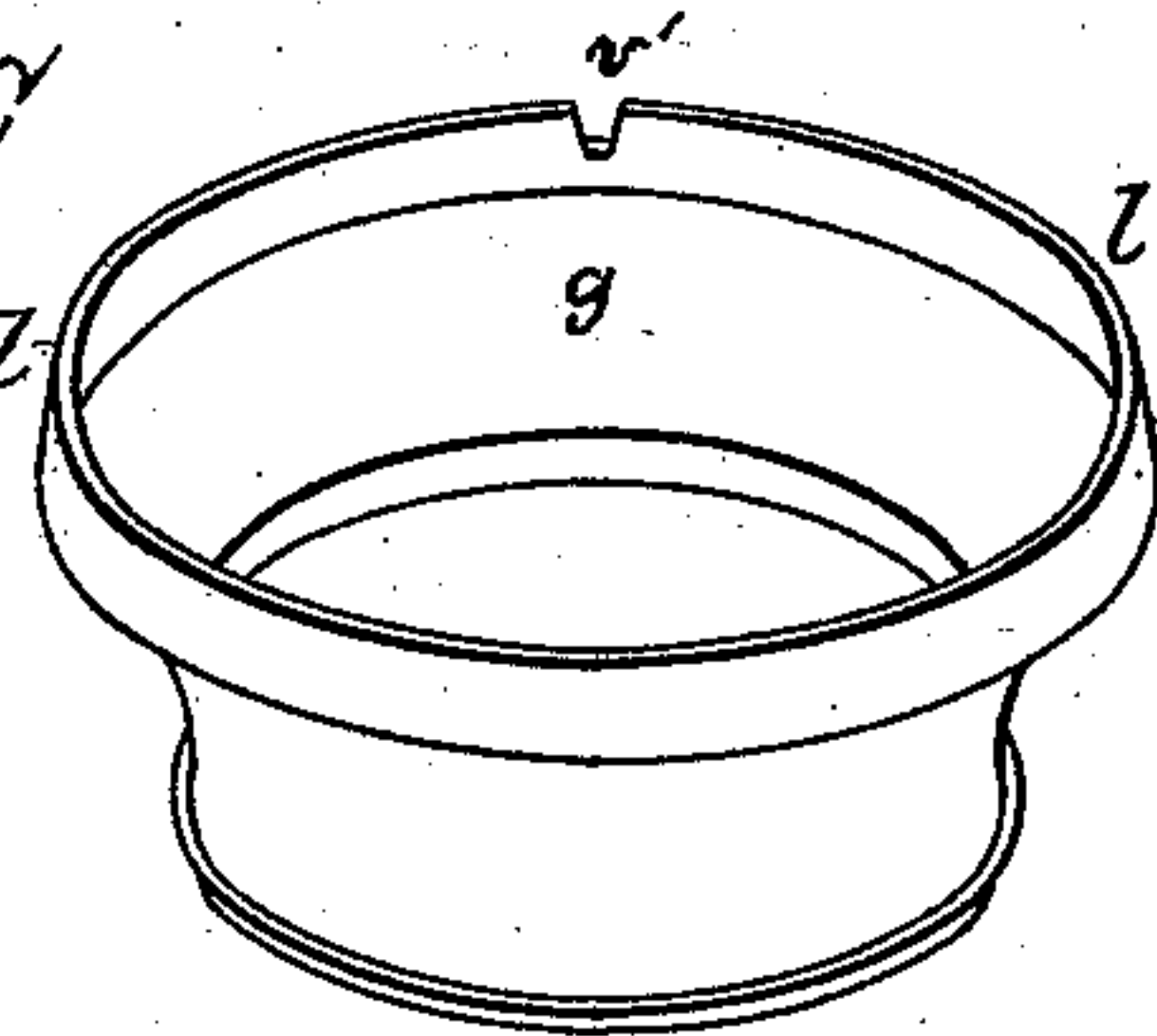


Fig6.

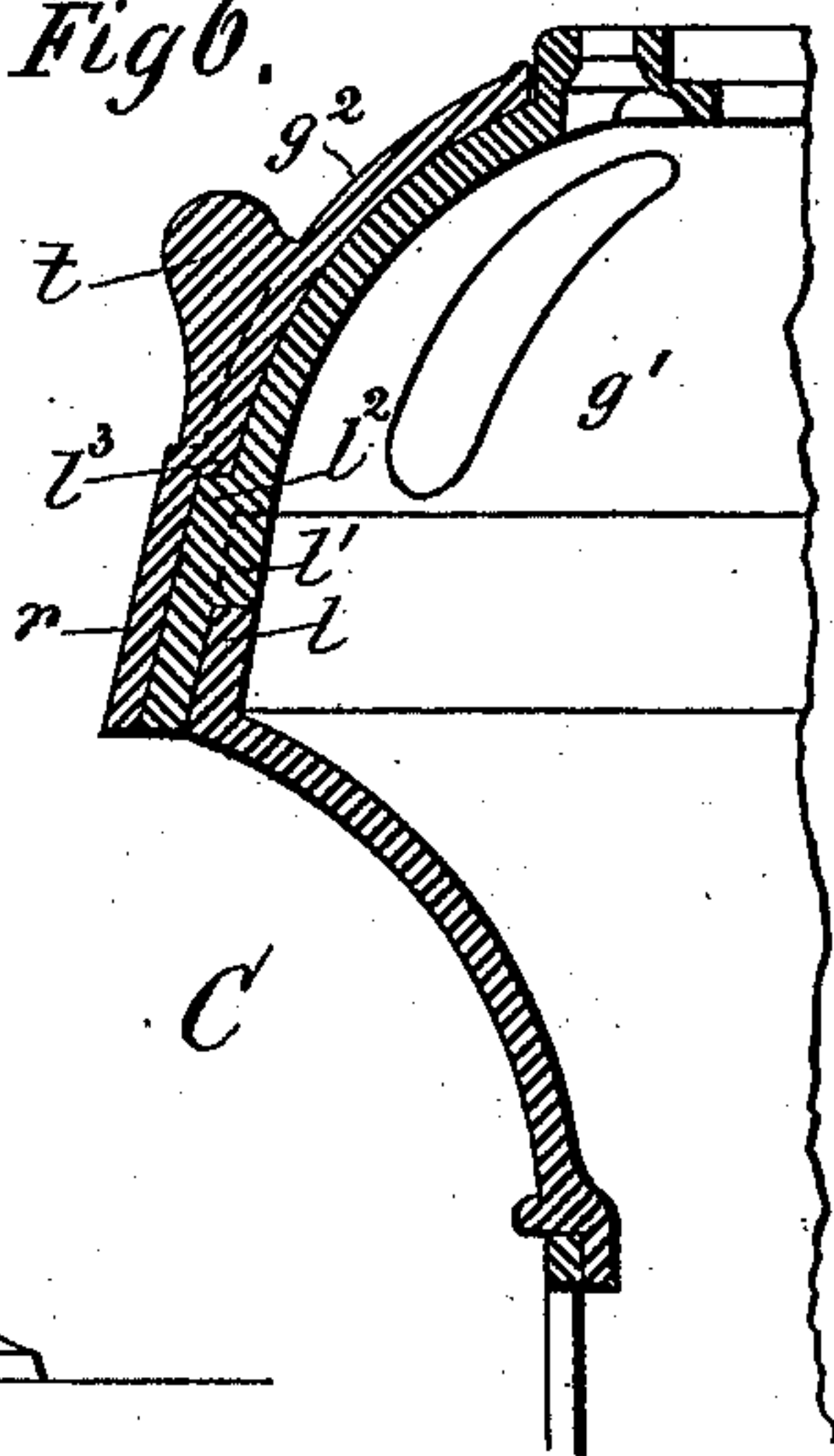
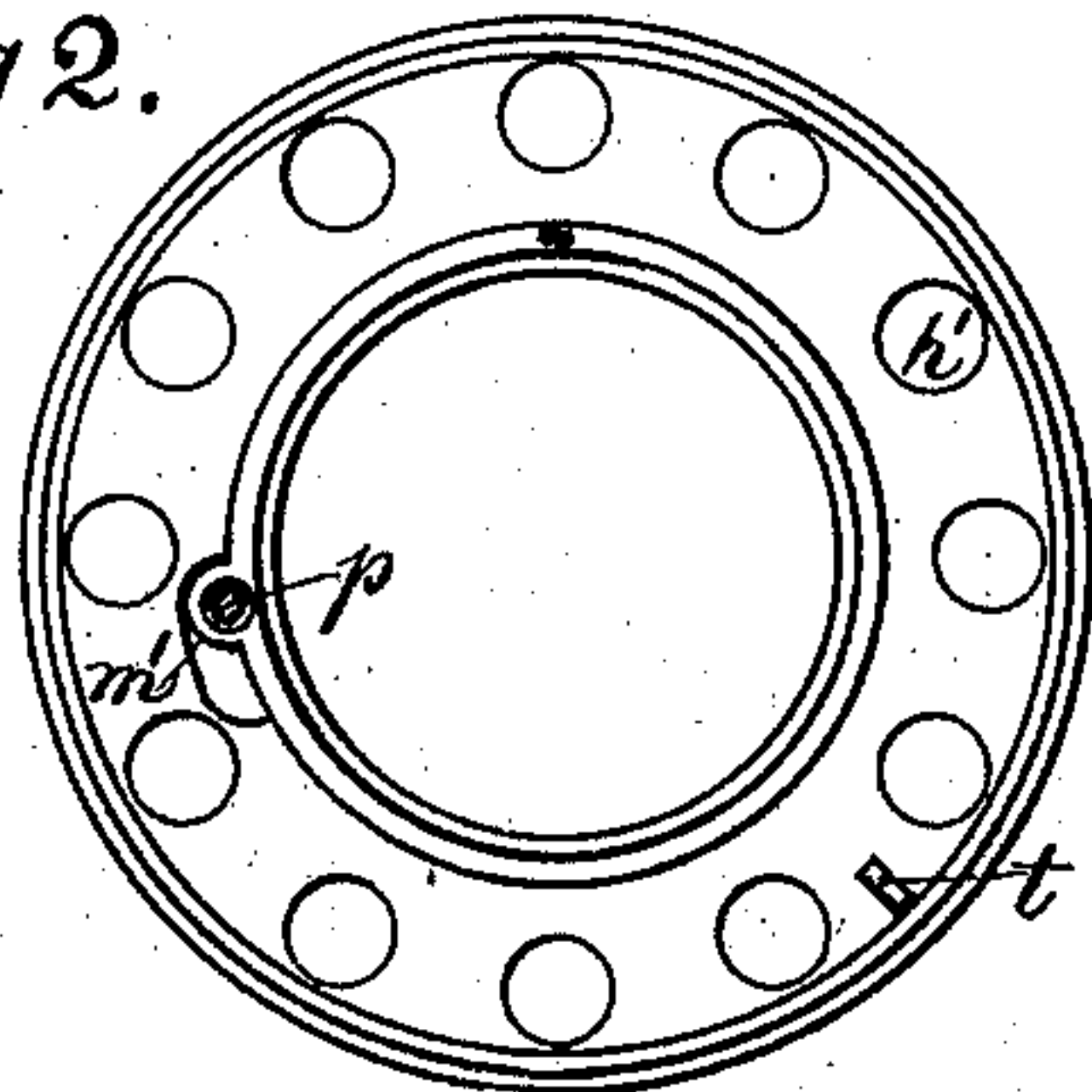


Fig2.



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UNITED STATES PATENT OFFICE.

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SINGLE-CYLINDER STOVE.

SPECIFICATION forming part of Letters Patent No. 401,888, dated April 23, 1889.

Application filed November 21, 1888. Serial No. 291,467. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. KEYSER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Single-Cylinder Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to "single-cylinder stoves," (which have no magazine,) and which, in their construction, embrace a straight cylinder with a fire-door and brick lining for the fire-pot, but which in this instance, by embracing my improvement thereon, are constructed with an overhanging air-vent ring which surmounts the straight cylinder, and through which ring currents of air are supplied to the interior of the stove uninterruptedly and in volumes as great as the area of the vents in the ring, allowed to pass down upon and through the mass of coal upon the grate, and compelled to rise from the mass of coal and pass off at the draft-passage and through the same cylinder, and thereby effect the complete combustion of the gas immediately upon its being released from the burning coal on a grate having its top surface below the draft-passage to the chimney.

It has heretofore been deemed impracticable to supply in this class of stoves the air necessary for complete combustion of the gases escaping from the burning coal through the top of the stove directly, undividedly, and uninterruptedly down into the cylinder and upon and among the mass of burning coal contained therein, such supply of air being from a point above the draft-passage of the chimney and its circulation being downward through the burning coal and upward to said draft-passage in the single cylinder.

In the drawings, Figure 1 is a vertical central longitudinal section of my improved single-cylinder stove. Fig. 2 is a sectional view in the line $x x$ of Fig. 1. Fig. 3 is a base portion of the dome of the stove, adapted to receive thereon a stationary vent-ring. (Shown at Fig. 4.) Fig. 5 is the movable vent-ring;

and Fig. 6 a broken sectional enlarged view of Fig. 1, and taken at right angles thereto.

Having reference to the drawings, A indicates the base of my improved single-cylinder stove, the same being of ordinary construction, as shown, and provided with an ash-pan, a , the usual register, b , for the admission of air, grate-bars, as indicated at c , being placed upon the top of the base portion A, as shown, to support the fuel or coal when supplied within the cylinder of the stove.

B indicates the straight cylinder of my improved single-cylinder stove, and is lined in the usual manner with fire-brick, d , and provided with a feed-door, e , and exit-flue, as f , the latter being located at the top of the cylinder B, as shown, and immediately beneath the top section, C, of the stove, which I will now describe. This section C forms an auxiliary gas expansion, combustion, and free reverberatory and heating and illumination chamber above the draft-pipe f , and it is in the form of a dome, and in the main is composed of an imperforated ring base portion, g , a perforated stationary air-vent ring portion, g' , and a perforated movable air-vent ring portion, g'' , which, when in place, the one upon the other, as indicated in Figs. 1 and 6, and surmounted with a removable or swinging urn portion, g^3 , as in Fig. 1, constitutes the enlarged dome-shaped top section, C, of my said improved stove. This dome-section, as clearly indicated in Fig. 1, rests upon the cylinder B, and with its periphery overhanging the periphery preferably of cylinder B and outside of a vertical line, $y y$, drawn coincident with the inner longitudinal surface of the cylinder B. By thus constructing the dome-section C with nearly a semi-spherical form the severe simplicity of the straight cylinder B is relieved by an ornate construction at its top, which frees the structure from the criticism of repulsive plainness; but while this is the case the main object of such dome-like overhanging construction is to provide the above-mentioned auxiliary gas expansion, combustion, and free reverberatory and heating and illumination chamber above the draft-passage f , which chamber is provided with air vent or entrance perforations in its bulged side por-

tions, through which air is allowed to pass unobstructedly down to the burning coal on the grate through the single chamber formed by the said cylinder B and top section, C, as well as mingle with the smoke and gases which rise in the top chamber, and thereby insure perfect combustion both below and above the draft-pipe *f*, and while this is so the illumination within the stove is enhanced, and the flame can be seen whether the eye of the observer is on a plane with or above the perforations, and subserves the principle of operation of my improved stove.

As shown in Fig. 4, the stationary vent-ring *g'* is provided with a circular series of vent-holes, as *h*, while in the movable vent-ring *g²* (shown in Fig. 5) corresponding vent-holes, as *h'*, are provided, so that when these rings are in place in juxtaposition upon the stove, as in Fig. 1, said holes may be made to more or less register with each other by moving either to the right or left hand the movable ring *g²*, and so limit or enlarge the air-vent opening through which air is admitted into the cylinder B. To effect said movement of the ring *g'*, a projection or thumb-rest, *t*, is provided upon the movable ring *g²*, as shown, while the limit of throw of said ring is effected by a slot or cut-out portion, as at *m*, therein, into which a projection, as *m'*, on the stationary ring *g'* enters when the two rings are in working position, as in Figs. 1 and 6. The air-vent ring *g'* is cast with a tapering projection, *v*, which engages with a corresponding tapering opening, *v'*, cut out of the rim *l* of the base-rim portion *g*, and thus the air-vent ring *g'* is held stationary when in working position, as in Fig. 1.

The base-ring portion *g* at its upper edge, *l*, is made to abut against a shoulder, *l'*, of the air-vent ring *g'*, and the air-vent ring *g'* is constructed with a shoulder, *l²*, to abut against a shoulder, *l³*, in the movable air-vent ring *g²* when in working position, as indicated in Figs. 1 and 6, and thus the several parts are retained in the working position shown in said figures. At top the swinging urn portion *g³* of the dome C is made to turn, when desired, on its pivot, as *p*, which enters the projection *m'* on the stationary ring *g'*, and the same may be swung aside either to feed in coal at the top of the stove, instead of through the door *e*, or when it is desired to set a vessel in the opening made by swinging aside said urn portion.

It will be seen that the dome C, with its top vent-opening, *h h'*, spans the entire horizontal area of the cylinder B, and that provision is made for air from above to enter all around the dome through said openings and without any violent deflection from a direct vertical line to pass down into the chamber *z* of the cylinder above the fire-pot *z'*, as well as amid the burning coal in the fire-pot *z'* when the stove is in operation. I have found that after a coal fire has fairly been established in the pot *z'* by a draft from below the opened

ash-pit damper *b* may then be closed and the perforations *h h'* of the dome-section C opened. This being done, air-currents will pass down through the several openings *h h'* and meeting the released gases of the burning coal in the pot *z'*, which have risen into the chamber *z*, will force said gases downwardly and pass along with them into the fire in the pot *z'* and there be consumed, the products of such combustion only passing off through the exit-pipe *f*. This principle of operation of my said improved stove I believe to be the result of a displacement of gases in the mass of the coal itself during the process of combustion of the coal, and toward which all the said currents tend, and that if there is a greater volume of smoke or flame than can be consumed by the downward currents of air and the gases when ignited the excess will pass off through the pipe *f*, but that with the fire once established and the smoke burned off these downward atmospheric currents will supply the released gases with oxygen sufficient to practically effect their complete consumption, the slight residuum passing off through the exit-pipe *f*. Moreover, by this principle of operation if the cinders and ashes become clogged at the grate *c*, the fire will nevertheless continue to burn freely from the top surface of the coal, owing to the effect of the downward currents precipitated upon the fire, while another advantage is that the burning coal will not flux or make clinkers, which has always proved an insuperable difficulty in the common single-cylinder stove, which depends for its main draft from below. Finally, it will be seen that the openings *h h'* being at the top of the stove are in the best position for affording illumination to the room in which the stove is used, while the downwardly-projecting and overhanging skirting *r* of the movable air-vent ring *g²* and the intermediate surfaces, *r'*, between its opening *h'*, afford readily-observable surfaces well adapted for ornamental design.

I claim—

1. In a single-cylinder stove, in combination, a base-section, A, of ordinary suitable construction, a single cylinder, B, having a feed-opening, draft-passage to the chimney-flue, a fire-chamber and a grate, and an enlarged dome-shaped top section forming a gas-chamber above the said draft-passage, provided with air vent or entrance perforations *h h'* in its bulged portion, through which air is allowed to enter and pass unobstructedly down to the burning coal on the grate through the chamber formed by the said cylinder and top section, and at the same time the flame can be seen, whether the eye is on a plane with or above the perforations, substantially as and for the purpose described.

2. In a single-cylinder stove, in combination, an ordinary suitable base-section, A; a single cylinder, B, having a feed-supply opening, draft-passage to the chimney, a fire-chamber and a grate, and an enlarged dome-

shaped top section, C, above the draft-passage which spans the horizontal area of the cylinder which it surmounts and overhangs, and is provided with air-vents or entrance-passages h h' , through which, while air is entering, the flame is exposed to a side-wise as well as a downward view, substantially as described.

3. In a single-cylinder stove, in combination, an ordinary suitable base-section, A, a cylinder, B, having a feed-supply opening, a draft-passage to the chimney, a fire-chamber and a grate, and an enlarged dome-shaped top section, C, comprising a movable perforated air-vent ring, g^2 , having a skirting, r , and a stationary air-vent ring, g' , substantially as and for the purpose described.

4. In a single-cylinder stove, in combination, an ordinary suitable base-section, A, a cylinder, B, having a feed-supply opening, a draft-passage to the chimney, a fire-chamber and a grate, and an enlarged dome-shaped top section, C, above the draft-passage, com-

prising the base-portion g , bulged stationary perforated air-vent ring g' , and the bulged movable perforated air-vent ring g^2 , said rings having overhanging skirtings as encircling peripheries, and their openings adapted for exposing the flame to view while air is entering through them, substantially as and for the purpose described.

5. The combination of the imperforated ring-base portion g , a perforated stationary air-vent ring portion, g' , and a perforated movable air-vent ring portion, g^2 , the ring g' being provided with a projection, m' , and the ring g^2 with a slot, m , and the ring g' provided with a tapering projection, v , and the base-rim portion g having an opening, v' , substantially as and for the purpose described.

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

JOHN H. KEYSER.

Witnesses:

WILLIAM TURTON,
WM. SHELLEY.