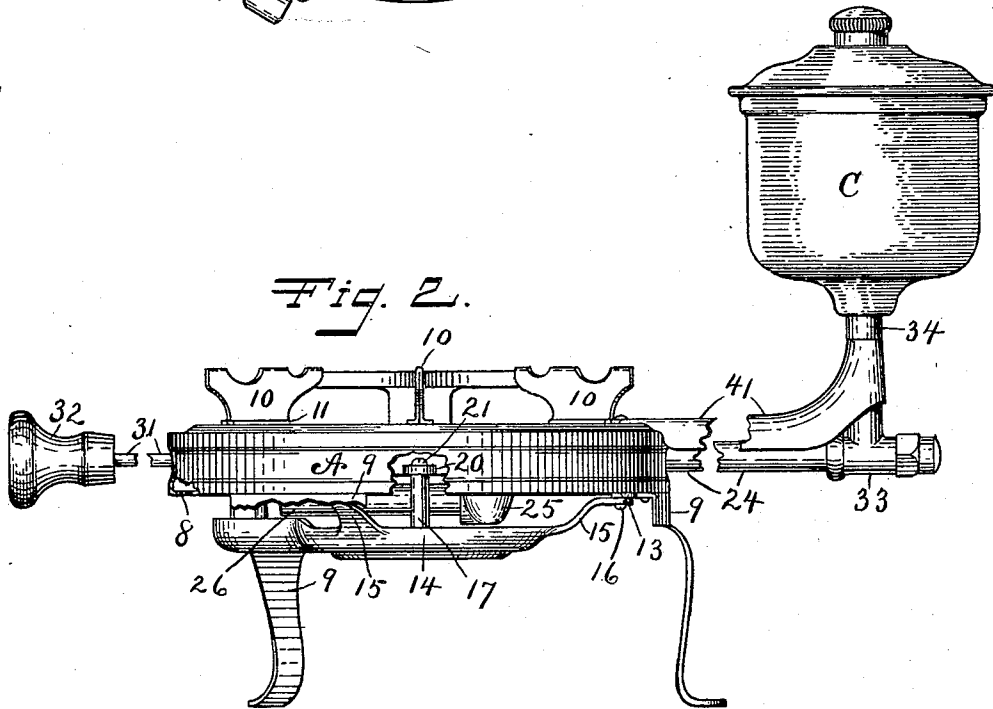
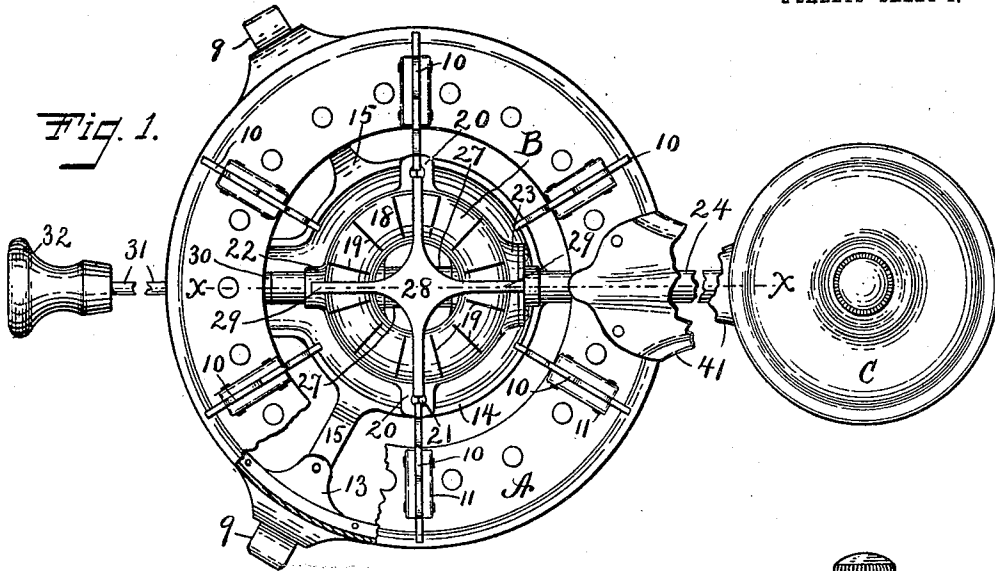


A. A. WARNER.
VAPOR STOVE.
APPLICATION FILED SEPT. 27, 1909.

968,435.

Patented Aug. 23, 1910.

2 SHEETS—SHEET 1.



Witnesses:
S. H. Clarke
W. L. Lockwood

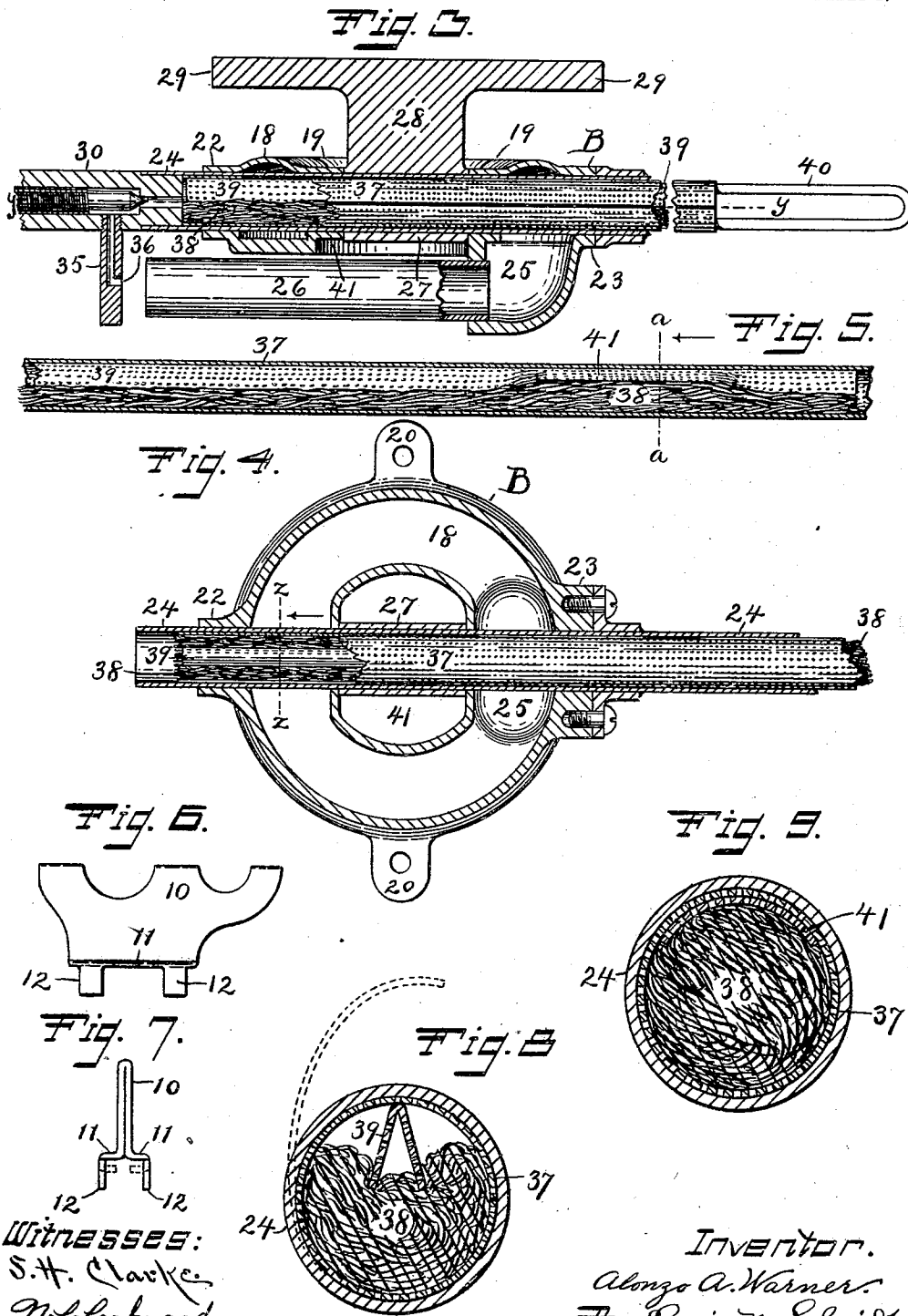
Inventor:
Alonso A. Warner.
By Louis M. Schmidt.

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 Alonzo A. Warner.
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UNITED STATES PATENT OFFICE.

ALONZO A. WARNER, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO LANDERS, FRARY
AND CLARK, OF NEW BRITAIN, CONNECTICUT, A CORPORATION.

VAPOR-STOVE.

968,435.

Specification of Letters Patent.

Patented Aug. 23, 1910.

Application filed September 27, 1909. Serial No. 519,803.

To all whom it may concern:

Be it known that I, ALONZO A. WARNER, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vapor-Stoves, of which the following is a specification.

My invention relates to improvements in vapor stoves and the objects of my invention are simplicity and economy in construction with convenience and efficiency in use, particularly so with reference to the vapor generating tube and connected parts.

In the accompanying drawings:—Figure 1 is a broken out plan view of my vapor stove with a portion of the base ring in horizontal section. Fig. 2 is a broken out side elevation of the same, partly in vertical section. Fig. 3 is mainly an enlarged vertical section of parts connected with the burner taken on the line *x x* of Fig. 1, some of the parts being broken away and some of them shown partly or wholly in side elevation. Fig. 4 is mainly a horizontal section of the same on the line *y y* of Fig. 3. Fig. 5 is a longitudinal section of the inner tube together with a side elevation of the wicking and its combined clamp and spacer. Fig. 6 is a side elevation of one of the supporting brackets. Fig. 7 is an end view of the same. Fig. 8 is a transverse section of the vapor generating tube on the line *z z* of Fig. 4. Fig. 9 is a like view of the same on the line *a a* of Fig. 5.

A, designates the base ring which forms the main body of the stove and which is provided with an inturned flange 8, at its lower edge to which flange the legs 9 may be secured in any proper manner, as for example by rivets or screws. The top of the said ring is provided with a number of upwardly projecting supporting brackets 10, upon which to rest vessels or other articles for heating. I prefer to make these brackets of sheet metal and in order to so construct them and at the same time give them the proper rigidity, I double the metal upon itself at the top, the two thicknesses thereof resting closely together until the base ring is reached where the two thicknesses are spread out laterally in the form of feet 11 from the outer edge of which feet downwardly extended lugs 12 project, the said lugs being passed through holes in the top of the base ring and are clenched upon the underside

thereof as indicated by broken lines in Fig. 7. Each of the legs 9 is provided near its upper end with an inwardly projecting wing 13, and the centrally arranged priming pan 14 is provided with as many arms 15 as there are legs 9, so that the said pan may be secured in place through these arms and wings by means of rivets or screws 16. The said pan is also provided with two posts 17, upon which the burner and connected parts are mounted, as hereinafter described.

The main body or frame B of the ring shaped burner may be cast in one piece and is provided with a central opening 41, surrounding which opening is an annular chamber 18, rounded in cross section at its top and provided with a suitable number of openings 19. It is also provided on two sides with laterally extended brackets or wings 20, for resting on the top of the posts 17, to which the burner may be secured by means of screws 21. The burner ring or frame is provided with tubular bosses 22 and 23 on diametrically opposite sides for the reception of the vapor generating tube 24. Underneath the boss 23 is a hollow elbow 25 to which the horizontal mixing tube 26 is attached. The vapor generating tube 24 extends diametrically through the burner body and in the center of the said body there is a tubular hub 27 of a center upright 28, from the upper end of which upright four arms 29 project laterally about as far or farther than the annular chamber of the burner. The front end of the vapor generating tube 24 is provided with any ordinary form of valve 30, the stem 31 of which may extend through the base ring so as to bring its handle 32 at the front as shown. The valve 30 is provided with a downwardly projecting jet piece 35, the passage 36 through which opens horizontally directly in front of the open end of the mixing tube 26, through which tube and elbow 25 the vapor may pass from the valve 30 to the burner ring 18. The rear end of the vapor generating tube may also extend outwardly through the base ring and is connected with a suitable reservoir or font C in any ordinary manner, as for example by means of the T fitting 33 and upright 34. An additional support and finish is made by the bracket like member 41 which is connected by one end to the base ring and by its other end to the upright.

Vapor generating chambers and tubes have been supplied with asbestos and other fillings for distributing the fuel. Asbestos is one of the best fillings for such purpose but it is very difficult to keep in place without filling the tube so full as to prevent the free passage of vapor therethrough. I fill my vapor generating tube in the following novel manner. I form an inner tube 37 of finely perforated sheet metal and within this tube I place the asbestos 38 or whatever wicking I may desire to use. The tube 37 is a rolled sheet disconnected at its longitudinal edges (although the said edges are brought together.) Instead of inserting the wicking 38 endwise into the inner tube I insert it laterally therein when the tube is partially unrolled as indicated by broken lines in Fig. 8. I also employ a combined clamp and space former 39, which is preferably made of perforated sheet metal doubled upon itself into the form of a V as seen in end view or cross section, and I place this piece 39 with the two legs of the V or edges of the metal bearing on the wick and then I bend down or roll the metal of the inner tube into proper form as best shown in Fig. 8, whereby the wicking is firmly held in place and at the same time a free open space is formed that extends longitudinally through the vapor generating tube. As shown however the said free open space does not extend the entire length of the inner tube 37, nor to the extreme rear end of the vapor generating tube 24. If the wicking is allowed to practically fill the tube at the rear of the burner or the point where there is not heat enough to vaporize the fuel, the combined liquid fuel and wicking will prevent the vapor from working rearwardly and upwardly into the font. In order to permit the wicking to spread out and substantially fill the inner tube I leave a portion of the clamp and spacer of a circular form as at 41, Figs. 5 and 9, and preferably with a V shaped portion at both ends of the said curved portion 41, the change from one form to the other being gradual, as shown in Fig. 5. If the large free open space along the apex of the V shaped portion extended the whole length of the wicking vapor would be liable to work rearwardly through the vapor generating tube and up into the liquid receptacle or font C but when the wicking substantially fills the said tube toward the rear, the spaces therethrough are so fine or small that with the liquid therein the vapor will not move rearwardly and up into the font. The short V shaped portion at the rear end serves to hold the rear end of the wicking firmly in place the same as it is held in the main portion of the vapor generating tube. The inner tube and wicking may extend rearwardly from the valve 30, to the rear of

the burner and near to the T which leads to the font. For convenience of removing it for cleaning or other purpose, I provide the rear end of the inner tube with a wire bail or loop 40.

The general operation is the same as other vapor stoves of the same class. The perforated inner tube, the wicking and combined clamp and space former, give a large amount of generating surface and a free passage for gas in various directions throughout the length of the generating portion of the tube 24. The upright 28 with its hub surrounding the tube and its arms 29, extending out into the flame tend to conduct the heat of the flame to the vapor generating tube, thereby increasing the generating capacity of the burner. The top of the arms 29 may be in or near the plane of the tops of the supporting brackets and thus furnish additional dish support. The annular jet chamber is entirely cut off from communication with the generating tube, except through the valve and mixing tube, thereby giving a free circulating chamber so that a steady and even flame issues from the whole circle of openings. The vapor may pass freely in various directions at all points within the vapor generating tube as far as the V shaped portion of the part 39 extends. The construction is simple and inexpensive and the parts are conveniently assembled and are firm and substantial when assembled.

I claim as my invention:—

1. In a vapor stove, a burner having an annular chamber surrounding a central opening and provided with flame openings in its upper side, a vapor generating tube passing diametrically through the said chamber and opening, and an armed upright connected with the said generating tube within the said central opening and having at its upper end laterally extended heat conducting arms in a substantially higher plane than the summit of the said annular chamber.

2. In a vapor stove, a burner having an annular chamber surrounding a central opening and provided with flame openings in its upper side, an armed upright having laterally extended arms at its upper end and a tubular hub at its lower end within the said central opening, and a vapor generating tube extended diametrically through the said annular chamber, central opening and the said tubular hub and by means of which tube the said burner and upright are rigidly held together.

3. In a vapor stove, a burner having an annular chamber surrounding a central opening and provided with flame openings, a vapor generating tube, a sheet metal inner tube fitted within the said vapor generating tube, said inner tube being open at each end

and finely perforated at its sides, and a longitudinally extended wicking held within the said inner tube, the said vapor generating tube, inner tube and inclosed wicking together passing diametrically through the said annular chamber and central opening.

4. In a vapor stove, a vapor generating tube, an inner tube consisting of a rolled sheet, a wicking and a combined clamp and spacer inside of the said rolled sheet, whereby the wicking may be inserted laterally and clamped in place by closing the said rolled sheet.

5. In a vapor stove, a vapor generating tube, an inner tube, a wicking, and a combined clamp and spacer formed of sheet metal bent into a V shape, the said wicking and spacer being arranged within the said inner tube substantially as described.

6. In a vapor stove, a vapor generating tube, an inner tube, a wicking within the said inner tube and a combined clamp and spacer comprising a sheet of perforated sheet metal doubled upon itself and confined within the said inner tube with its two longi-

tudinal edges resting on the wicking and the doubled portion between the said edges bearing against the inner wall of the said inner tube.

7. In a vapor stove, a burner, a vapor generating tube in connection therewith, an inner tube, a wicking within the said inner tube and a combined clamp and spacer inside of the said inner tube for the main portion of the length of the said vapor generating tube, while a portion of the wicking in rear of the burner is allowed to expand and substantially fill the said inner tube.

8. In a vapor stove, a burner, a vapor generating tube in connection therewith, an inner tube, a wicking and combined clamp and spacer within the said inner tube, the said spacer being V shaped for the main portion of its length while a part in rear of the burner is curved to let the wick expand and substantially fill the said inner tube.

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Witnesses:

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