

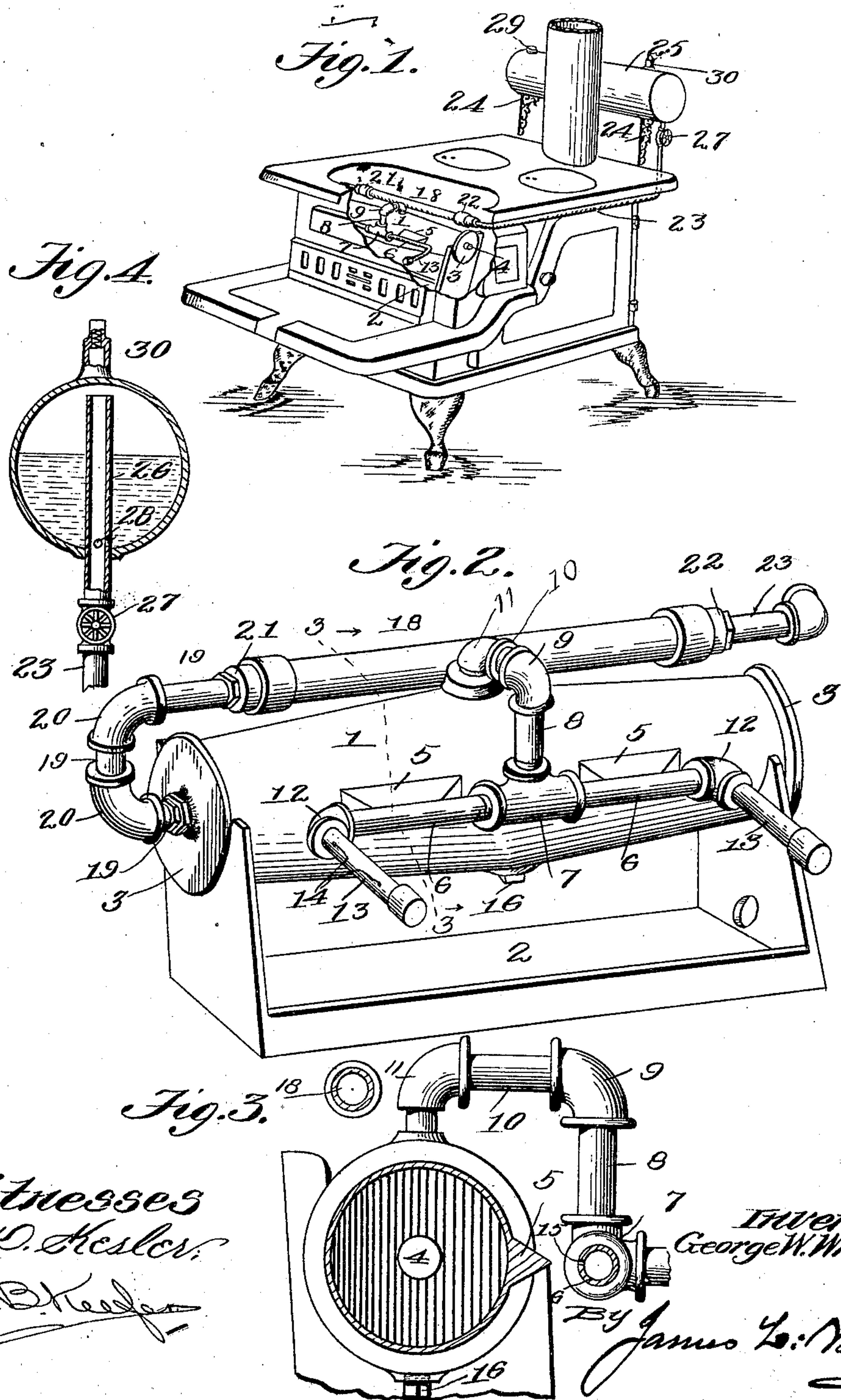
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G. W. WHITE.
VAPOR BURNING APPARATUS.

(Application filed Oct. 15, 1900.)

(No Model.)



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GEORGE W. WHITE, OF OKLAHOMA CITY, OKLAHOMA TERRITORY.

VAPOR-BURNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 688,765, dated December 10, 1901.

Application filed October 15, 1900. Serial No. 33,154. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WHITE, a citizen of the United States, residing at Oklahoma City, in the county of Oklahoma and Territory of Oklahoma, have invented new and useful Improvements in Vapor-Burning Apparatus, of which the following is a specification.

This invention relates to vapor-burning apparatus, and especially to a vapor-burner adapted to be arranged in the combustion-chamber of a stove, furnace, or the like or in an open fireplace, and has for its object to provide an improved burner of simple and inexpensive construction and efficient in operation, wherein oil and gas fed to the burner are first converted into vapor and the vapor is then superheated before issuing from the jet-orifices of the burner-tube.

It also has for its object to provide such a burner with improved means for deadening the noise occasioned by the impact of the jets with the superheating-retort and for dispersing the flames about the latter.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a view of a cook-stove, showing my improved apparatus applied thereto. Fig. 2 is an enlarged perspective view of the burner. Fig. 3 is a transverse sectional view of the burner, taken on the line 3 3 of Fig. 2; and Fig. 4 is a transverse sectional view of the reservoir, taken through the oil and air feed tube.

Referring to the drawings, the numeral 1 indicates a superheating-retort consisting of a hollow metallic casting circular in cross-section and gradually tapering from its center toward its opposite ends. The ends of the retort are supported in seats formed in the ends of a pan 2 and are closed by heads 3, each of which is provided with a threaded aperture, one of which has screwed therein a threaded plug 4, closing said aperture. Cast integrally with the retort 1 and on the front of the same intermediate its enlarged central

portion and its ends are two elongated projections or flanges 5, V-shaped in cross-section, as most clearly shown in Fig. 3 of the drawings, and for the purpose hereinafter described.

Disposed in front of the retort 1 is the burner-tube 6. Said tube may conveniently consist of two sections of pipe united at their adjacent ends by a T-coupling 7, and screwed into said T-coupling is a short pipe-section 8, provided with an elbow 9, and the elbow 9 is connected by a short pipe-section 10 to a corresponding elbow 11, that is connected with the interior of the retort 1 at the upper central enlarged portion of the latter. On the ends of the burner-tube are screwed two elbows 12, in which are fitted short pipe-sections 13, closed at their outer ends and provided on their outer sides with small jet-openings 14. As shown, the pipe-sections 13 project forward horizontally or away from the retort, and each of the pipe-sections comprising the burner-tube is provided with a small jet-opening 15, (one or more,) disposed opposite the knife-edges of the V-shaped flanges or projections 5 on the retort. Formed on the under side of the retort centrally between its ends is a threaded aperture closed by a threaded plug 16. Being formed in the enlarged portion of the retort, said aperture is in the lowermost part thereof, and hence all liquid deposits that collect in the retort, such as the heavier unvaporized parts of the hydrocarbon, settle over said aperture, and by removing the plug 16 may be readily withdrawn and the retort thoroughly cleansed.

Disposed immediately over the superheating-retort 1 is a vapor-generating tube 18, consisting of a pipe of relatively large diameter and nearly or approximately of the same length as the retort. Said generator-tube is connected to one end of the retort by means of short pipe-sections 19 and two elbows 20, coupled to the generator-tube by a reducer 21, and the opposite end of said generator-tube has screwed thereon a reducer 22, which is connected with a feed-pipe 23, leading to the feed tank or reservoir.

Supported on brackets 24, preferably attached to the rear of the stove, is the feed tank or reservoir 25, shown in the

present instance as consisting of a horizontal cylindrical vessel; but the shape of the tank or reservoir is not material. Fitted in said tank is a vertical tube 26, open at its upper
 5 end and projecting at its lower end through the bottom of the tank. Interposed between the bottom of the said tube and the upper end of the feed-pipe 23 is a regulating-valve 27, of ordinary construction. The upper end of the
 10 tube 26 projects up within the tank to within a short distance of the top of the latter—say, for example, within one inch thereof—and is provided with small perforations 28 (one or more) just above the bottom of the tank. An
 15 aperture closed tight by a plug 29 is provided for filling the tank, and an inwardly-opening check-valve 30, of ordinary and well-known construction, is fitted in the top of the tank for the introduction of air under pressure.

20 The feed-tank forms no part of the present invention and is merely shown as the preferred means for feeding oil and air to the burner.

Constructed as above described the operation of my improved apparatus is as follows:
 25 The tank or reservoir 25 is filled to about one-half its height with oil, and compressed air is then pumped or introduced into the tank by any suitable means through the air-valve 30.
 30 To start the burner, a small quantity of oil is poured into the bottom of the pan 2 and is ignited and permitted to burn, thus heating the retort 1. The valve 27 is then opened, thus permitting the oil to slowly trickle through
 35 the small perforations 28 into the tube 26. At the same time the compressed air flows into the upper open end of said tube, and the oil and compressed air mingle and pass into the generator-tube 18, which, being heated, con-
 40 verts the air and oil into vapor, which then passes into the heated retort and is superheated. The superheated vapor passes into the burner-tube and from the latter issues through the small perforations 14 and 15 in
 45 the form of jets of flame. The jets issuing from the openings 15 impinge against the knife-edges of the V-shaped flanges or projections 5 on the retort and are thereby divided and dispersed both above and below the retort,
 50 thus passing entirely around the latter, heating both the retort and the generator-tube disposed above it. By dividing the burning-jets in the manner described the flanges or projections prevent the jets from impinging directly
 55 against the retort, thereby deadening the noise and dispersing the flames in such manner that they are caused to pass around the retort on both the upper and lower sides of the latter and about the regenerator-tube and

fill the combustion-chamber of the stove, the
 60 heat and products of combustion passing through the stove to the stovepipe in the usual manner. The flanges also serve as mediums for absorbing and transmitting the heat to the retort. By removing the plug 4
 65 access may be had to the interior of the retort for cleaning the latter, and it also enables the feed-pipe to be connected up to either end of the retort that may be found most desirable in particular or individual cases, the
 70 plug being always inserted in the end of the retort opposite to the end to which the generator-tube is connected.

Having described my invention, what I claim is—

75 1. In a vapor-burning apparatus, the combination with a horizontal superheating-retort, of a burner arranged in front of said retort, a pipe leading centrally from the upper
 80 side of the retort to the burner-tube intermediate the ends of the latter, said burner-tube being provided with jet-openings arranged to direct the flames against the side of the retort, horizontal supplemental burner-
 85 tubes respectively connected to the ends of said burner-tube and provided with lateral jet-openings, said supplemental burner-tubes projecting at right angles to and rearwardly from the superheating-retort, a vapor-gener-
 90 ator tube arranged above the retort and communicating with the latter, and means for feeding oil and air to the generator-tube, substantially as described.

2. In a vapor-burning apparatus, the combination with a tubular superheating-retort
 95 provided externally with solid longitudinal V-shaped projections or flanges, of a burner-tube connected with the retort and provided with jet-openings arranged to direct the flames against the knife-edges of said projec-
 100 tions or flanges, substantially as described.

3. In a vapor-burning apparatus, the combination with a tubular superheating-retort
 105 provided externally with solid longitudinal V-shaped projections or flanges formed integrally with the retort and projecting laterally from the periphery thereof, of a burner-tube connected with the retort and provided with jet-openings arranged to direct the flames against the knife-edges of said projections or
 110 flanges, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE W. WHITE.

Witnesses:

W. H. MCCARTNEY,
 J. P. HODGE.