March 6, 1928. 1,661,322

T. G. CRANE

HEATER

Filed April 10, 1925 3 Sheets-Sheet 1

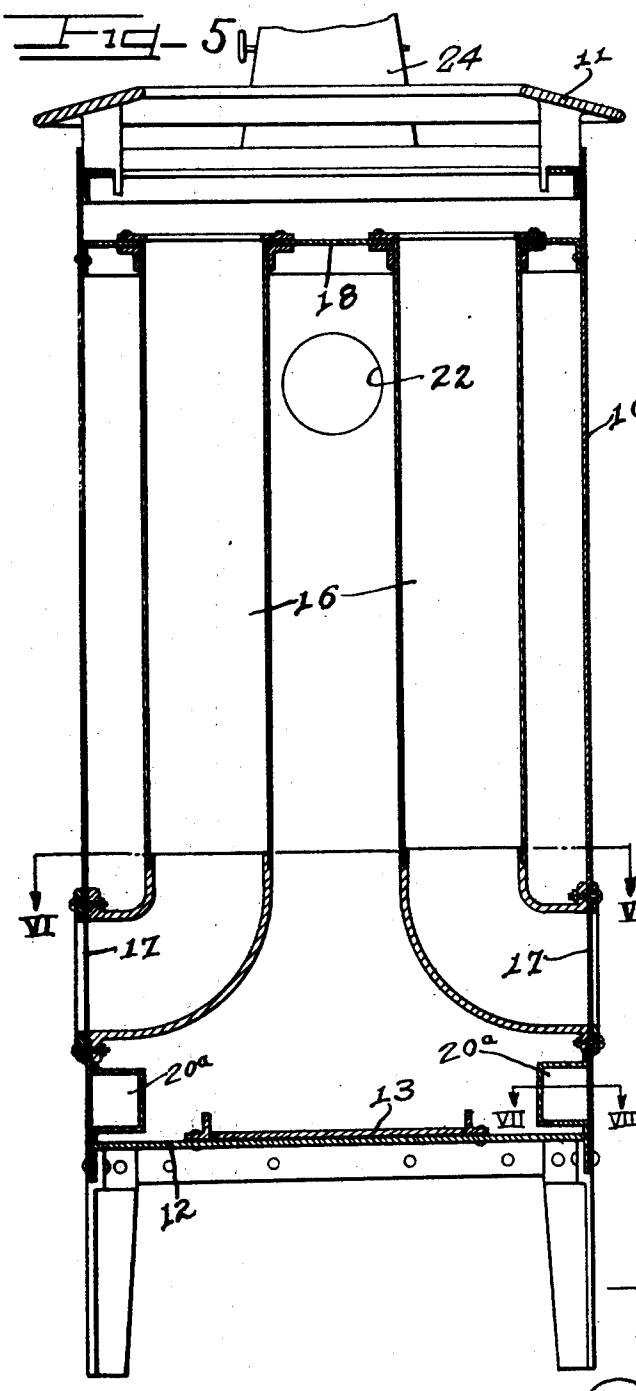
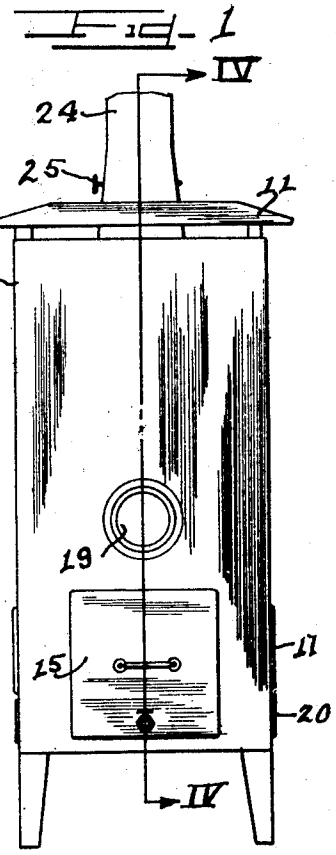


Fig. 1



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HEATER

Filed April 10, 1925 3 Sheets-Sheet 2

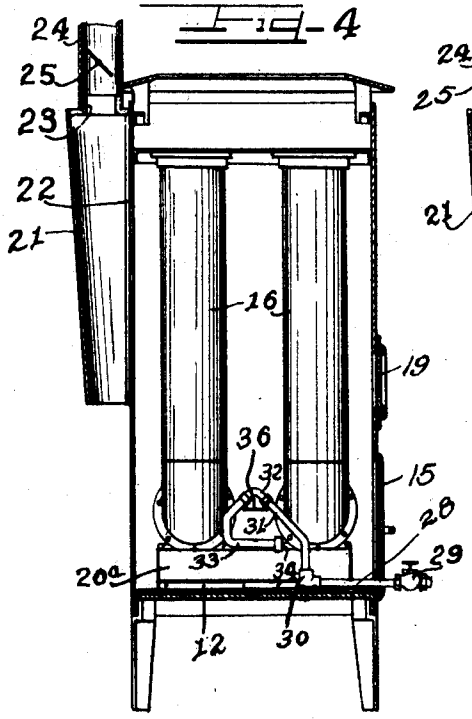


FIG. 4

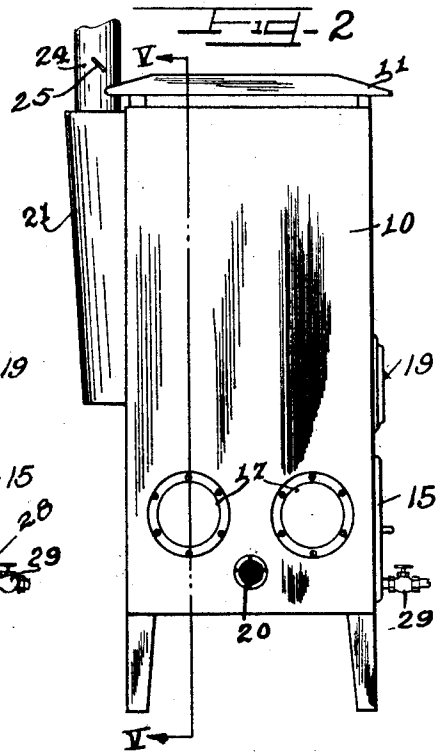


FIG. 2

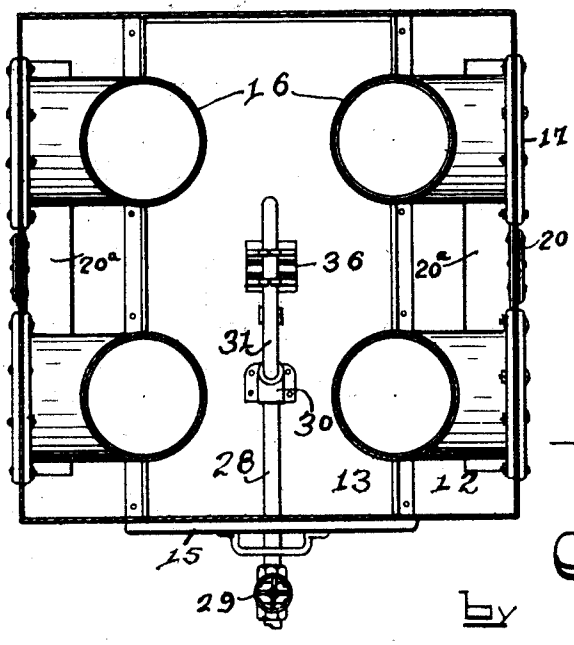


FIG. 6

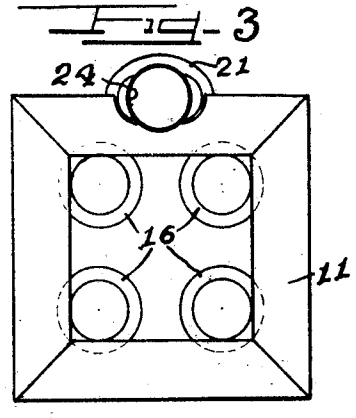


FIG. 3

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March 6, 1928. 1,661,322

T. G. CRANE

HEATER

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Fig. 9

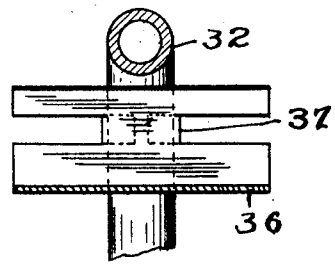


Fig. 7

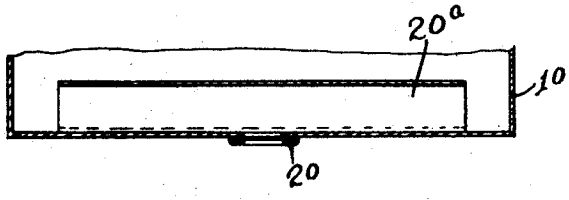
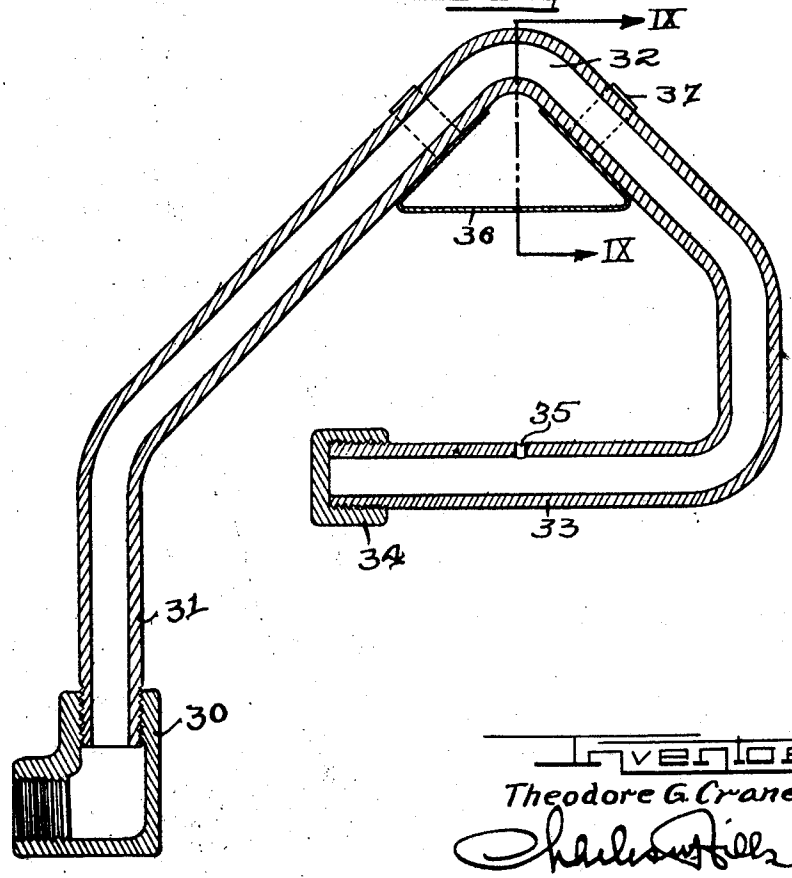


Fig. 8



Inventor

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by Attys.

Patented Mar. 6, 1928. 1,661,322

UNITED STATES PATENT OFFICE.

THEODORE G. CRANE, OF CHICAGO, ILLINOIS.

HEATER.

Application filed April 10, 1925. Serial No. 22,045.

This invention relates to portable oil heaters for rooms, garages, vehicles, and the like wherein the heater is self-contained except for the fuel and flue connections.

It is an object of this invention to provide an improved oil heater of the class described.

It is also an object of this invention to provide a heater having an improved vaporizing burner unaffected by motion or swaying of the heater. With the rectangular type of vaporizing burner heretofore in use the inflowing cold oil fed to the horizontal vaporizing section above the flame has been liable to become air bound and subject to surges of the liquid in the pipe if the heater is mounted on a moving vehicle such as rail cars, boats, and vehicles. This surging of the liquid resulted in uneven vaporization, a smoky flame and occasionally extinguished the flame. With the improved triangular vaporizing section forming an element of this invention, surging is nullified by the inclined sections which function as the vaporizing sections, and it has been found that the heater may be tilted until either branch is nearly horizontal, without materially affecting the flame.

It is another object of this invention to provide an improved baffle or combustion locating surface adapted to increase the vaporizing effect of the flame on the inflowing oil and to spread out the flame into contact with the air heating flues.

Other and further important objects of this invention will be apparent from the disclosures in the accompanying drawings and specification.

This invention in a preferred form, is illustrated on the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a front elevation of a heater embodying the features of this invention.

Figure 2 is a side view thereof.

Figure 3 is a top view thereof.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is an enlarged section on the line 5—5 of Figure 2.

Figure 6 is a section on the line 6—6 of Figure 5.

Figure 7 is a fragmentary section on the line 7—7 of Figure 5 showing the air inlet boxes.

Figure 8 is an enlarged section of the oil burner alone.

Figure 9 is section on the line 9—9 of Figure 8.

As shown on the drawings:

An open topped casing is indicated by the numeral 10, an open centered shield or cover 11 being spaced thereabove, the surface thereof forming a frustrum of a pyramid which resembles the overhanging eaves of a house; the purpose of this structure being to induce room air to enter under the eaves and mix with the highly heated air leaving the top of the casing. The casing is closed by a bottom 12 having a slide plate 13 therein supporting a portion of the pipe of the oil burner to be hereinafter described. The casing is provided with a wall opening and the slide plate 13 with a corresponding front or door 15 adapted to cover the casing door opening. The casing 10 is provided with air heating flues 16 having intake openings 17 in the sides of the casing. These flues terminate in a partition 18 near the top of the casing, which serves to maintain complete separation of the circulating air from the products of combustion.

An inspection window 19 is provided in the casing 10 to allow observation of the burner operation. Suitable air inlets 20 opening into boxes 20^a which lead the air to the corners of the casing are provided to support combustion within the casing, these inlets being preferably covered with wire mesh as a safety precaution against the possibility of back-firing within the casing. A tapered box 21 is mounted on the rear wall of the casing and a vent 22 opens thereinto to provide a flue outlet. The upper end of this box has a mounting 23 to receive a stove pipe 24 which may be provided with a damper 25. The lower end of the box is of restricted cross-section because of the taper in the box walls and is open to the room, forming a check draft for the flue outlet and also providing an induced ventilation outlet from the room.

The burner of the present invention comprises a feeding pipe 28 extending through the door 15 and on the slide plate 13 and having a regulating valve 29 therein, the pipe terminating in an elbow 30 supporting a bent pipe 31 which is shaped like a triangle, the apex 32 of which forms the vaporizing section and the horizontal por-

tion 33 or base of the triangle, being capped at 34 and apertured to form the burner orifice 35 from which the gasified fuel issues. A combustion locating surface is provided by a sheet metal plate 36 bent into a triangular form to fit into the apex 32 of the vaporizing burner, lugs 37 being struck therefrom to be bent around the pipe and thereby secure the plate in place. This combustion locating surface also conducts a considerable quantity of heat to assist the vaporizing action of the apex of the burner. This plate also serves to distribute the flame from the burner directly to the hot air flues.

The provision of a cover or shield for the casing serves to induce a circulation of the air in the room into contact with the hot air from the flues and to thereby temper a large volume of air instead of delivering a concentrated volume of highly heated air.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. In a heater of the class described, a casing having inlets for air and a flue connection, air flues leading into said casing near the bottom thereof and emerging from the top, a vaporizing burner within the casing adapted to heat said flues, and a cover for said casing centrally apertured and spaced above said casing whereby an additional quantity of air is mixed with that from the hot air flues to temper the same.

2. In a heater, an open topped casing, an overhanging open centered shield spaced thereabove, and means for heating air within said casing out of contact with the products of combustion, said shield adapted to mix additional surrounding air with the highly heated air before delivery through the aperture in said shield.

3. In a heater, a casing having a combustion chamber and air inlets and a flue connection in communication with said combustion chamber, a burner within the combustion chamber, air flues leading through the combustion chamber and outletting through the top of the casing, and a shield at the top of the casing having a central opening opposite to the outlet ends of the air flues for the passage of heated air upwardly therethrough, said shield being of ring-shape and spaced from the top of the casing to permit surrounding air to be drawn between the same and the top of the casing for mixture with the heated air rising from the air flues.

4. In a heater of the class described, a casing having a combustion chamber therein and having air inlets and a flue connection opening into said combustion chamber, a series of air flues within the combustion chamber having their lower ends opening through the lower side portions of the casing and having their upper ends opening through the top of the casing in a cluster, and a ring-shaped shield connected to the top of the casing and spaced above the same, the said shield forming an air passage between the same and the top of the casing entirely around the casing and presenting a central opening above the upper ends of the air flues.

In testimony whereof I have hereunto subscribed by name.

THEODORE G. CRANE.