

May 6, 1941.

J. B. OLSON ET AL

2,240,571

GAS BURNING FLOOR BROODING HOVER

Filed March 6, 1940

2 Sheets-Sheet 1

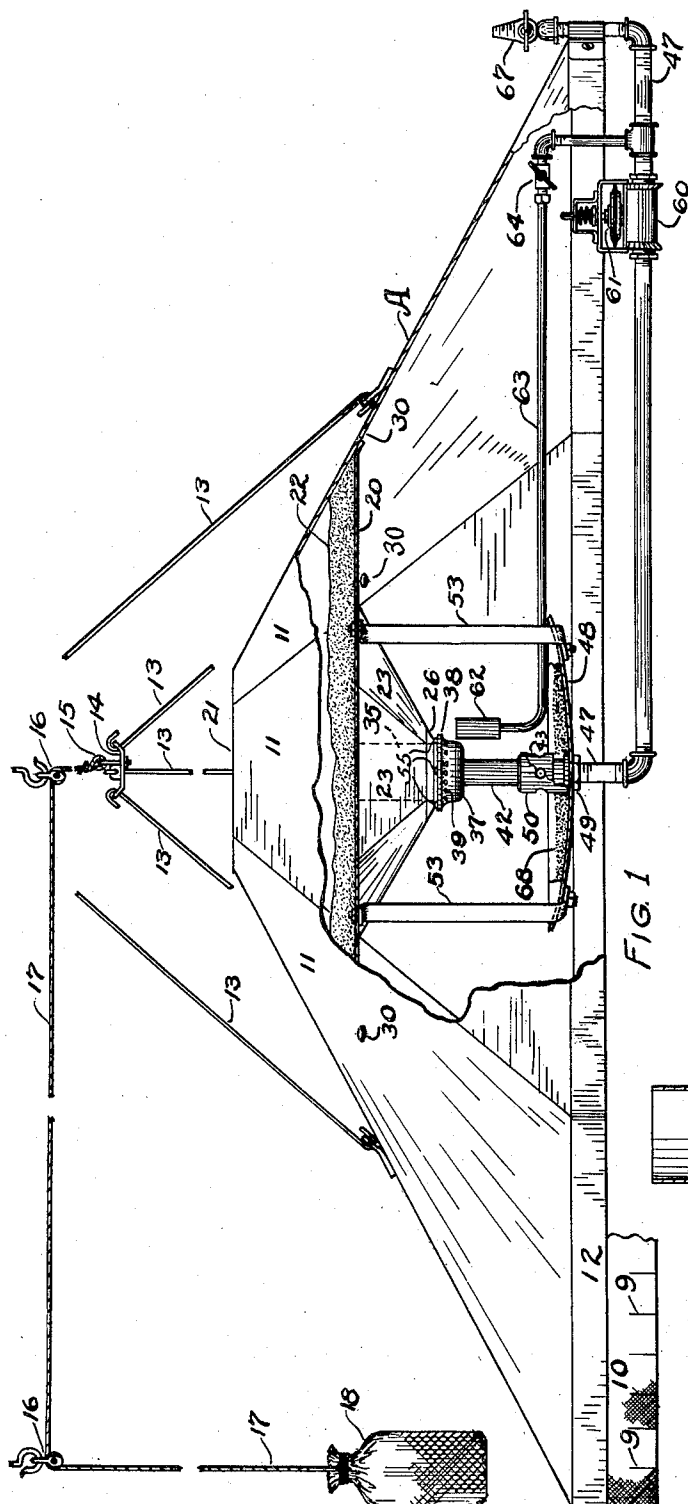


FIG. 1

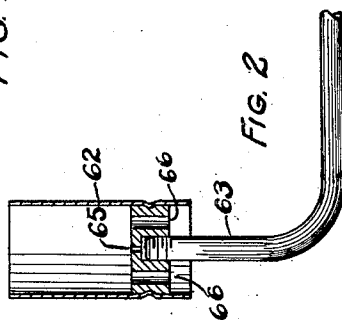


FIG. 2

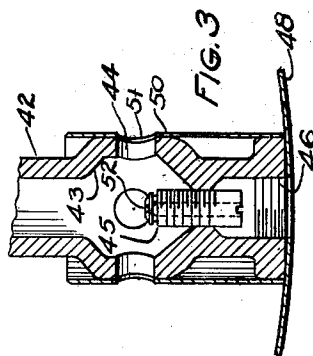


FIG. 3

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2 Sheets-Sheet 2

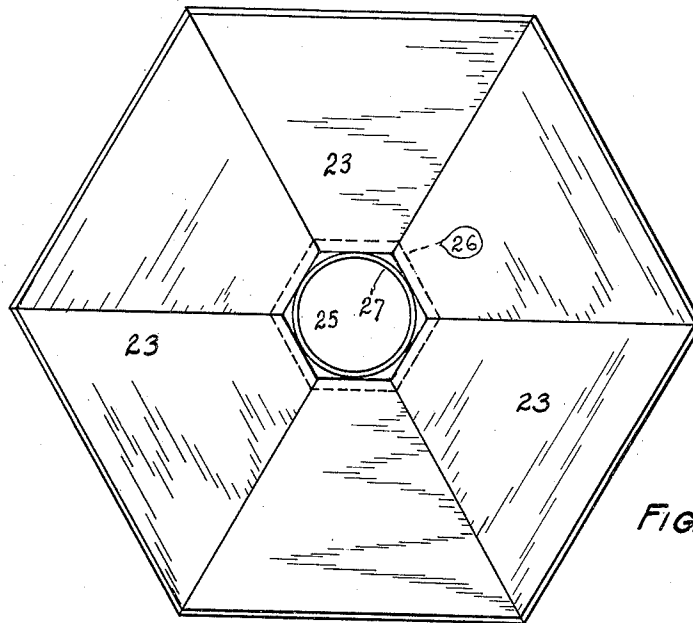


FIG. 4

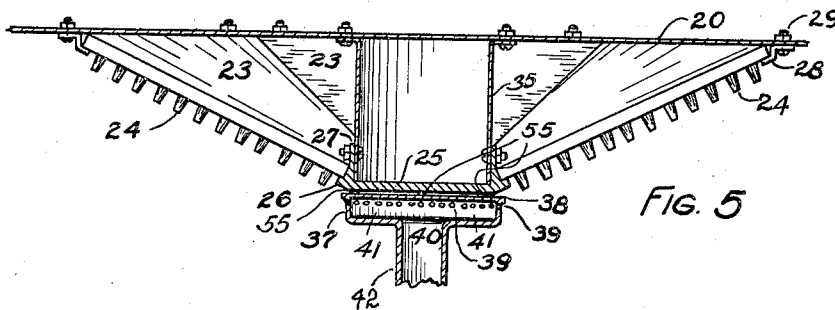


FIG. 5

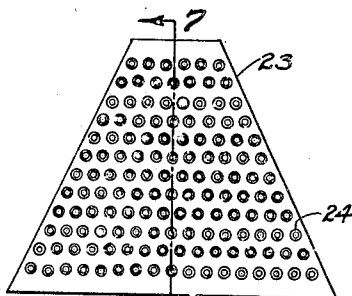


FIG. 6

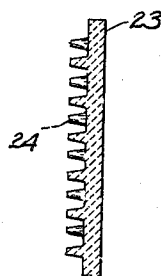


FIG. 7

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GAS BURNING FLOOR BROODING HOVER

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Application March 6, 1940, Serial No. 322,582

8 Claims. (Cl. 119—32)

The present invention relates to hovers having a centrally positioned burner therein and adapted to burn gas as a fuel.

The principal object of the present invention is to provide a hover which will be economical and efficient in operation.

A further object of the present invention is to provide a design which is easily manufactured, crated and assembled and easily understood by the operator.

To these and other useful ends, our invention consists of parts, combinations of parts, or their equivalents and mode of operation, as hereinafter set forth and claimed and shown in the accompanying drawings in which:

Fig. 1 is an elevational view of our improved hover being shown partially in vertical section.

Fig. 2 is a sectional view of the pilot light.

Fig. 3 is a sectional view of the gas mixing chamber and air regulating means.

Fig. 4 is a top view of the clay radiant sectors in their assembled position illustrating their central supporting means in position.

Fig. 5 is a transverse fractional section of the burner and clay radiants and a fraction of the supporting ceiling.

Fig. 6 is a plan view of the bottom of a clay radiant.

Fig. 7 is a sectional view of a clay radiant taken on line 7—7 of Figure 6.

As thus illustrated, reference character A designates in its entirety the canopy of the hover, this canopy being preferably formed in six sectors 11. We provide a downwardly extending flange 12 on the bottom edge of the sectors forming a stiffening means for this edge and a support for a short curtain 10 which is customarily attached to this part of the canopy which may be adjusted so the curtain reaches nearly to the floor thus to prevent drafts.

The curtain, a fraction only being shown, is slit at spaced intervals from the bottom up as at 9 so the chicks can easily pass the curtain from either side particularly when the curtain practically contacts the floor.

Devices of the kind are usually supported from the ceiling having means whereby they may be lifted a considerable distance from the floor when necessary for inspection. In Figure 1 I illustrate rods 13 which are secured to the canopy about as illustrated, the rods converging and being connected to a plate 14, the plate having a suitable connection to a cable, chain or rope 17 as at 15, member 17 passing through pulleys

16—16 which are secured to the ceiling by means of hooks or otherwise.

On the free end of member 17 we provide a suitable counterweight 18 which is designed to just balance the weight of the hover whereby the hover may be quickly adjusted to any desired height from the floor. Canopy A is provided with a ceiling 20 preferably made from sheet iron.

Sectors 11 are designed so an opening 21 is left in the top of the canopy through which insulating material 22 may be inserted. This material may be in any desired form preferably loose and easily handled sand and spread to a depth of say 2" or more on top of ceiling 20. Thus it will be seen that the hover ceiling is insulated against the passage of heat therethrough.

We provide preferably clay radiants 23 as illustrated in Figures 6 and 7 each being provided with closely spaced longitudinally staggered projections 24.

We provide a bottom anchor 25 having flanges 26 and 27 providing a support for the inner ends of members 23 as clearly illustrated in Figure 5. The upper ends of members 23 are anchored to ceiling 20 by means of Z-irons 28, which are secured to member 20 by means of spaced bolts 29.

It will be seen that we have provided the frustum of an inverted pyramid shaped deflector and heat radiating means having a multiplicity of staggered closely spaced projections which act to absorb and radiate heat and cause turbulence and slow down the products of combustion as they pass outwardly in contact with members 23 and their projections. Obviously members 23 will get quite hot but since on the upper side there is a dead air space and the ceiling is insulated by insulating material 22, very little heat will be permitted to pass through these members but it will be readily radiated into the air which will be caused to circulate upwardly and outwardly.

It will be seen by referring to Figure 1 that the products of combustion and heated air will be caused to spread outwardly under ceiling 20 and that since this ceiling is nearly one half the diameter of the canopy, it may be stated that practically one third the canopy area is insulated against the loss of heat.

Around the periphery of member 20 and in canopy sections 11 we provide a number of small apertures 30 thus allowing a small volume of the products of combustion to escape. The plan is to permit a volume to escape about equal to the increase in volume brought about by the

action of the burner and the air supplied thereto.

It will be seen that harmful gases will not be permitted to accumulate in the hover and that a vigorous circulation of air will be set up by the action of members 23. Clearly the clay radiants 23 may easily be removed and replaced. In the structure, it is necessary to hold member 25 in spaced relation to member 20. For this purpose, we provide a spacer 35 preferably being a tube having a few perforations (not shown), the lower end of the tube being rigidly attached to flanges 27 and the upper end being flanged and secured to the ceiling 20 as illustrated. Thus member 25 will be rigidly held in its central position.

We provide a gas burner 37 which may be of any known design except that the outer shell at its top is preferably flanged outwardly as at 38 and is of about the same diameter as flange 26, the burner having spaced openings 39 through which the mixture of gas and air escapes.

Burner 37 is provided with a downwardly extending tube 42 which is enlarged as at 43 having in its periphery a number of openings 44. We provide a gas jet 45 and a threaded opening 46 in the bottom of the burner for the reception of the gas supply pipe 47.

Pipe 47 is provided with a thread having considerable length and extends through an opening in cupped plate 48 which is held in position by a nut 49. We provide a sleeve 50 having apertures 51 which are spaced similar to apertures 44.

Sleeve 50 is snugly mounted on the bottom burner member 43 but may be turned so as to more or less close openings 44, thus the proper mixture of air and gas may be provided.

Gas jet 45 is provided with an orifice which is reduced in size as at 52 (see dotted lines) thus forming a suitable gas jet for the burner which will act to draw a suitable amount of air for perfect combustion in through openings 44. Plate 48 is supported on member 20 by means of standards 53. Thus it may be said that the burner and gas pipe fittings are supported on member 20 in fixed relation to member 26.

Suitable spaced projections 55 may be provided on the top of burner 37 and standards 53 made of a length whereby these projections are held tightly against member 25 thus to insure uniform spacing of the burner from this member.

We mount a thermally controlled valve 60 in gas pipe 47 as illustrated, the valve having ether wafers 61 and other appurtenances which cooperate with the valve whereby the heat under the canopy is thermally controlled.

We provide a pilot light 62 having a gas pipe connection 63 to pipe 47 through a regulating valve 64. Pilot light 62 is provided with a gas jet 65 and air inlets 66, the design being such as will provide a flame which extends to near the spaced openings 39 so as to act as a lighter for the main burner after it has been extinguished by the thermally controlled valve 60.

Member 48 is cup shaped as illustrated and will act to moderate the temperature on the floor directly under this member as follows:

When it is desired to maintain a slightly lower temperature on the floor under this member, then a quantity of loose insulating material 68 may be placed in the cup and by varying the quantity of this insulating material, the desired temperature under member 48 may be maintained.

We supply a valve 67 to which a flexible hose connection may be made from the source of gas supply.

Thus it will be seen that our improved hover is unitarily formed and supported by a balance counterweight so it may be raised or lowered at will; that our canopy is simple and partially insulated against the loss of heat; that our burner and clay radiants are insulated from the ceiling of the canopy by means of a dead air space and that the entire device is simple, easily understood, efficient and reliable.

Clearly many minor detail changes may be made without departing from the spirit and scope of the present invention, as recited in the appended claims.

Having thus shown and described our invention, we claim:

1. A floor hover of the class described, comprising a canopy having an opening in its top and a ceiling forming upper and lower chambers, a V-shaped heat deflector shell supported on the under side of said ceiling and contacting the ceiling to thereby form a dead air space therebetween, a relatively small in diameter gas burner positioned near the bottom of said deflector and having openings in its periphery for the passage of the air and gas mixture, and a pan having a diameter about equal to the diameter of said deflector and being secured to said ceiling by means of a number of spaced posts, said burner being secured to said pan and held thereby in its working position.

2. A device as recited in claim 1 including; a number of spaced apertures in said canopy positioned below and adjacent said ceiling.

3. A device as recited in claim 1 including; a narrow curtain secured to and depending from the bottom edge of said canopy, said pan being positioned whereby when said canopy is in its operating position, said pan will be a considerable distance above the floor to thereby provide room thereunder for the chicks.

4. A floor hover of the class described, comprising a canopy having an opening in its top and a ceiling forming upper and lower chambers, a V-shaped heat deflector shell supported on the under side of said ceiling and contacting the ceiling to thereby form a dead air space therebetween, a relatively small in diameter gas burner positioned near the bottom of said deflector and having outlet openings in its periphery for the passage of the gas and air mixture from the burner, and a pan having a diameter about equal to the diameter of said deflector and being secured to said ceiling by means of a number of spaced posts, said burner being secured to said pan and held thereby in its working position, said deflector comprising a base having a ledge on its periphery and being about the same diameter as said burner, and a number of segments having their edges contacting and their lower ends resting on said ledge, the upper ends of said segments being detachably secured to said ceiling.

5. A device as recited in claim 4 including; said segments having on their lower sides a multiplicity of closely spaced longitudinally staggered projections.

6. A device as recited in claim 4 including; said segments having projections on their under sides adapted to cause turbulence of the products of combustion as they pass upwardly and outwardly thereunder.

7. A device as recited in claim 4 including; spaced lugs on the top of said burner flange adapted to engage said deflector and hold said burner into position and in spaced relation therewith.

8. A device of the class described, comprising a canopy having a ceiling forming upper and lower compartments, a burner secured to the bottom side of said ceiling comprising a downwardly extending deflector, the bottom being flat for a relatively small diameter and the sides extending upwardly at an obtuse angle, a gas burner having a diameter about equal to the diameter of said flat portion and positioned thereunder and having means whereby a narrow annular outlet is formed for the passage of the flame or products of

combustion from said outlet to the angled portion of said deflector, a pan having a diameter about equal to the diameter of said deflector and positioned a distance below said flat member and being secured to said ceiling by means of spaced posts, said burner being secured to said pan and held thereby in a fixed position relative to said flat portion.

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