Jan. 17, 1961 C. A. REICHELDERFER 2,968,349

OIL BURNER CONSTRUCTION

Filed Oct. 27, 1958 2 Sheets-Sheet 1

FIG. 1

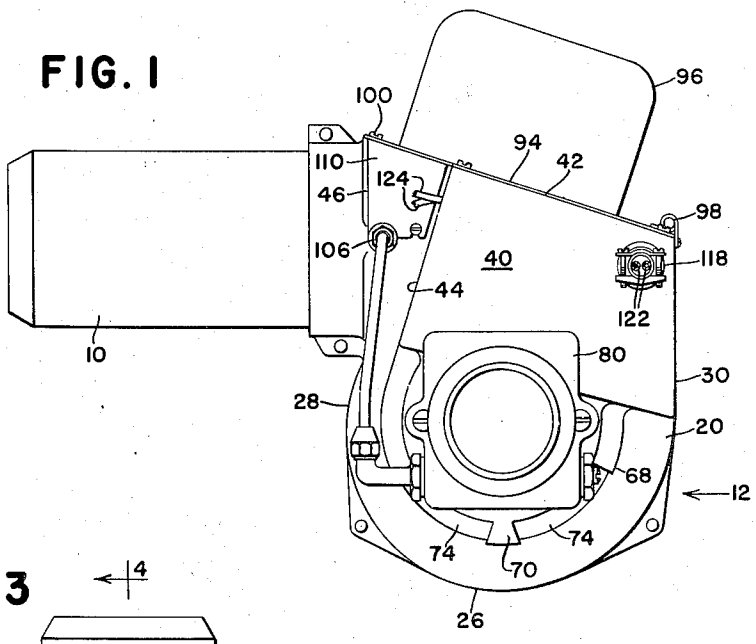


FIG. 3

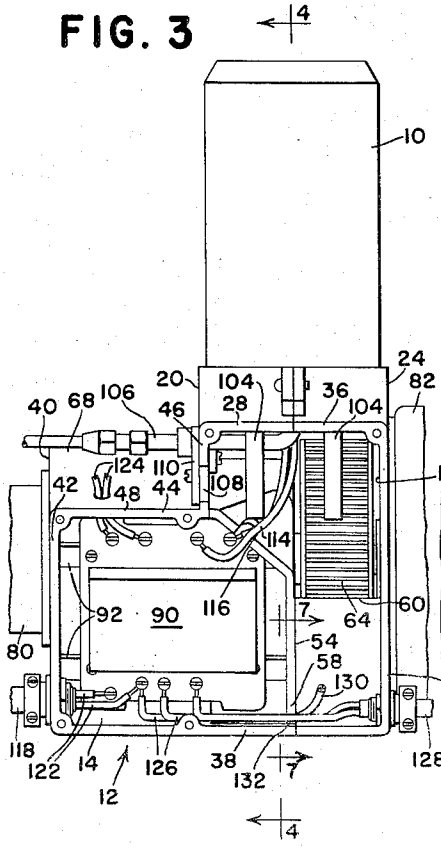
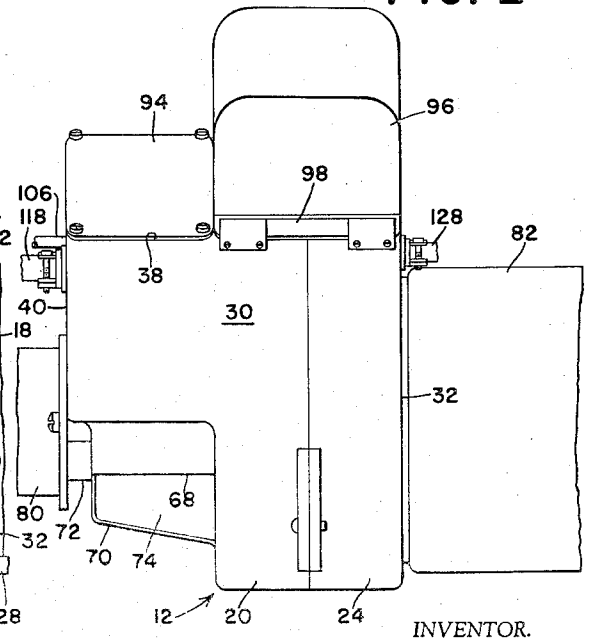


FIG. 2



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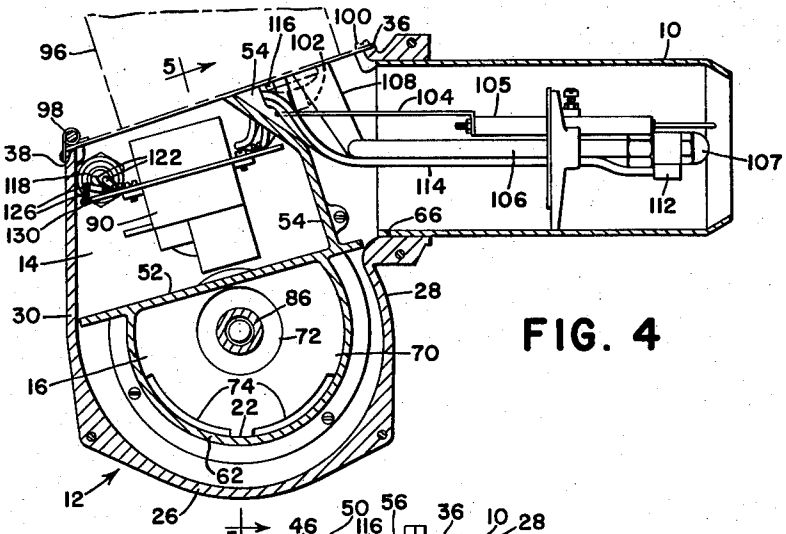


FIG. 4

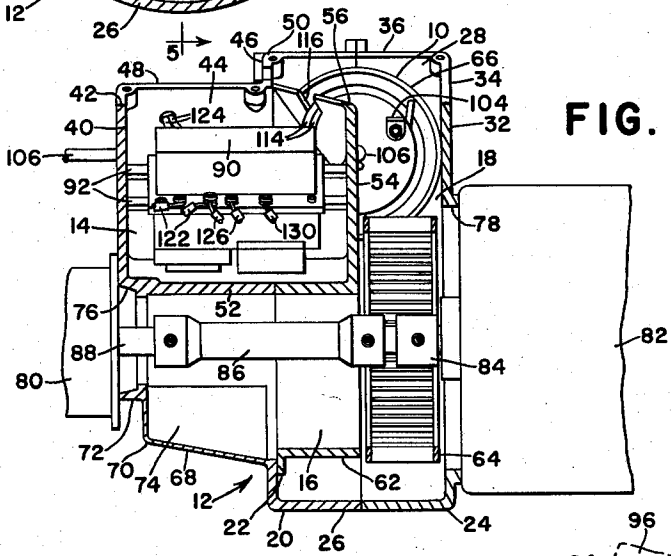


FIG. 5

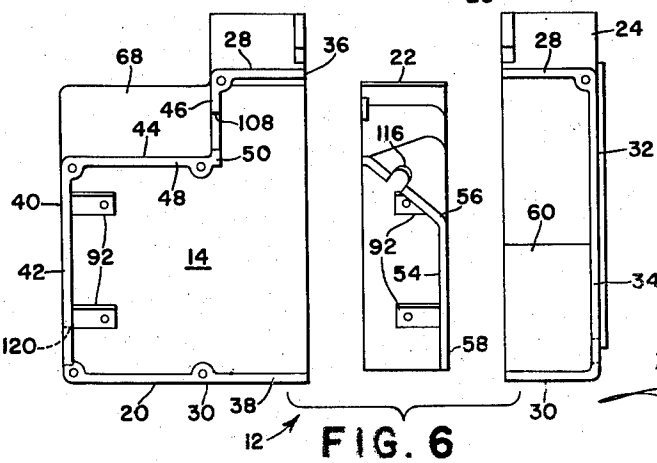


FIG. 6

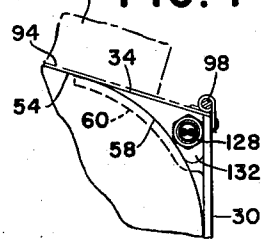


FIG. 7

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OIL BURNER CONSTRUCTION

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7 Claims. (Cl. 158—76)

This invention relates to a fuel burner construction and more particularly to an improved burner housing embodying a novel design which features economy, compactness and compartmentation for housing certain burner and allied components.

The invention finds its widest utility in oil or like fuel burners adapted for domestic and industrial heating and has for a principal object the reorganization of known components into a simple, efficient and compact grouping which lends itself to easy manufacture, assembly, installation and maintenance. An important feature of the invention is the provision of a housing having an internal compartment means for mounting electrical and like controls heretofore externally mounted on prior housings. The novel design features compartmentation of the housing to afford the aforesaid compartment plus but isolated structurally from an adjacent compartment or chamber which houses the blower for supplying air to the blast or burner tube; the provision of appropriate openings for receiving electrical leads to the various internal electrical components such as the motor relay, detector control, thermostat control etc. and to the various external components such as the room thermostat, line voltage, etc.

The foregoing and other important objects and desirable features inherent in and encompassed by the invention will become apparent as to preferred embodiment thereof is disclosed, by way of example, in the ensuing description and accompanying sheets of drawings, the several figures of which are described below.

Figure 1 is a side elevation of the assembled burner.

Figure 2 is a rear view.

Figure 3 is a plan with cover elements removed.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 4.

Figure 6 is an exploded plan of the housing parts.

Figure 7 is a fragmentary section on the line 7—7 of Figure 3.

In the following description, reference will be had to the structure as having front, rear, top, bottom and right and left hand sides etc., but it should be understood that such language is descriptive only and not limiting. The front end of the structure is that end represented by a blast tube 10, which may be of conventional design and which projects forwardly from the basic housing, designated in its entirety by the numeral 12. The expressions "right" and "left" are used with reference to the position of an observer standing behind the burner and looking forwardly.

As best seen in Figure 5, the housing has wall means—to be described in detail—effecting such compartmentation of the housing as to afford a first or upper compartment 14 and a second compartment or chamber made up of a lower portion 16 and a lateral portion 18. The housing may be made up of three castings 20, 22 and 24 (Figure 6); although, the broader aspects of the invention may be exploited in many other forms to secure the basic compartmentation referred to. Hence, the housing

will, for the present, be considered as having a generally semicircular bottom wall means 26, formed about a transverse axis and extended as upright front and rear extension walls 28 and 30 respectively. A right hand side wall 32 rigidly joins and rises from the bottom wall means to an upper terminal edge 34, which is here coplanar with upper terminal edges 36 and 38 for the front and rear walls 28 and 30 respectively. The upper edge 34 of the side wall 32 slopes rearwardly and downwardly, which is preferred but not necessary, and a left hand upper side wall 40 has a similarly sloping upper edge 42. The fore-and-aft extent of the side wall 40 is forwardly less than that of the other side wall 32 and this wall 40 is joined by a transverse forward wall 44 which extends to the right and meets a short fore-and-aft wall 46. The walls 44 and 46 have upper marginal edges 48 and 50 respectively which are here coplanar with the other upper edges.

A transverse horizontal wall 52 is disposed at a level intermediate the bottom wall 26 and the level of the upper marginal edges 34, 36, 38, 42, 48 and 50 and joins the side wall 40 and the front and rear walls 28 and 30 and thus forms the floor of the compartment 14 and at the same time is the roof of the lower compartment or chamber portion 16; or, in short, is a partition. It terminates short of the right hand side wall 32 and is thereat jointed by an upright fore-and-aft wall 54 which partitions the compartment 14 from the lateral compartment or chamber portion 18. The wall 54 has an upper marginal edge 56 in the plane of the edges described above. Hence, the housing has an upper box-like part affording the compartment 14, defined mainly by the partition walls 52 and 56, the short walls 44 and 46, the side wall 40 and the upper portions of the walls 28 and 30. As best seen in Figures 3 and 6, the wall 54 angles to the left and joins the wall 44. As best seen in Figure 7, the wall 54 curves downwardly and rearwardly at 58, and the housing part 24 has an arcuate concentric lip 60 which overlies a rear part of the lateral compartment or chamber portion 18. When the three housing parts are assembled, a depending part-ring portion 62 of the part 22, concentric with the bottom 26, gives the compartment portion 16 a reduced diameter as compared with the general diameter or radius of the bottom 26, for purposes of controlling the air inlet to a blower 64 disposed coaxially in the lateral compartment portion 18. Because of the lateral offset of the portion 18 relative to the compartment 14, the former may have an increased vertical dimension and hence overlaps the latter to some extent. The lip 60, described above, is generally concentric with and overlies a rear upper part of the blower so that air blast developed by the blower is directed forwardly into the blast tube 10, which is mounted in the front housing wall 28 via a front wall opening 66 that leads to the blower compartment or air chamber 18.

The upper compartment 14 laterally overhangs the lower compartment 16 to the left (Figure 5), and additional wall structure 68 includes a web portion 70 and a hub 72 directly below the overhanging part of the compartment 14, all of which may be considered as a depending extension of the left hand wall 40 for junction with the bottom 26. Air inlet openings 74 are provided in the web 70 for establishing the intake side of the blower compartment 18, the outlet side being established at the blast tube 10 by the front wall opening 66.

The hub 72 has a circular opening 76 and a larger circular opening 78 is provided in the right hand side wall 32, and these openings are coaxial on the axis of the blower 64. The hub externally mounts a typical fuel pump 80 and an electric motor 82 is coaxially mounted on and externally of the side wall 32. The blower is mounted on the motor shaft by a hub 84 and

a coupling 86 coaxially connects the motor shaft to an input shaft 88 for the pump 80.

From the description thus far it will be seen that the motor, pump, blower, coupling, blast tube etc. are all isolated from the compartment 14, thus reserving this compartment for the housing of an electric control unit 90 which may be of any conventional type, the feature being that it is mounted within the housing rather than outside the housing as in the prior art. When so removably mounted, as by suitable pads or brackets 92, the unit may be enclosed by a removable cover 94 which closes the open top of the unit compartment 14.

This leaves the open top of the lateral compartment 18 to be closed, but this closure is achieved by a typical ignition transformer unit 96, hinged to the housing at 98 and normally screwed down at 100 so that its terminals 102, as is conventional, contact bus bars 104 for typical electrodes 105 that extend into the blast tube 10 at opposite sides of a fuel tube 106 which has a nozzle 107 at its front end and which extends rearwardly and laterally through a slot 108 in the wall portion 46 for connection to the pump 80. A plate 110 mounts the fuel line over the slot and also closes the slot.

The ignition control here includes a conventional detector 112 (Figure 4) having leads 114 running through a notch 116 in the angled portion of the upright intermediate wall 54, and these leads are suitably connected to terminals on the unit 90 (Figure 3). A conduit 118 is received in a suitable opening 120 in the upper left hand rear corner of the wall 40 (Figure 6) and carries line leads 122 from a source of electrical potential, here 110–120 v. Additional terminals on the unit 90 may be connected by leads 124 to a room thermostat and still other terminals are connected by leads 126 to the motor 82 via a conduit 128 and by a lead 130 to the ignition transformer 96. As best seen in Figure 7, these leads are accommodated by a pocket 132 formed at the junction of the arcuate lip 60 with the rear wall 30 as augmented by the arcuate shape 58 of the intermediate wall 54.

Thus, the compartment 14 is isolated from the air inlet side of the compartment 16—18 and the provision of the openings or notches 116, 120, 132 etc. do not leak air and yet readily accommodate the wires or leads. All electrical connections to the unit 90 are effected within the compartment 14 and provide for a clean-cut, compact design as well as insuring safety and enabling ready access for service. If desired, the cover 94 may be made a part of the base of the ignition transformer 96 and the open tops of both compartments 14 and 18 may be opened or closed at once. Various other modifications, as well as features and objects in addition to those set forth, will readily suggest themselves on the basis of the present disclosure, all without departure from the spirit and scope of the invention.

What is claimed is:

1. A fuel burner, comprising: a housing having an upper box-like part including walls defining an upper compartment having an open top, and a lower part having portions integral with the upper part and including opposite side walls, front and rear walls and a bottom defining a second compartment, one of the upper part walls being integral with both parts and serving as a partition between and separating said compartments, said side walls having openings coaxial on an axis below the upper compartment and said front wall having an opening in communication with said second compartment; a blower in the second compartment coaxial with the side wall openings; an electric motor coaxially mounted on one side wall over the opening therein; a fuel pump coaxially mounted on the other side wall over the opening therein; coaxial shaft means extending through the second compartment and interconnecting the motor, blower and pump; a blast tube mounted on the front wall in register with the front wall opening and including electrical ignition means; a fuel tube within the blast tube and extending into the second compartment via said front wall opening and terminating within the housing but excluded from the upper compartment; a fuel line by-passing the upper compartment and connected between the fuel pump and the fuel line; and electrical control means in the upper compartment and connected to the ignition means and accessible through the open top of said upper compartment.

2. The invention defined in claim 1, in which: the housing includes lateral extensions joined to the side wall mounting the motor so that said side wall is offset to one side of the upper compartment to provide the second compartment with a laterally offset compartment portion having an open top alongside the open top of the upper compartment; the blower is located at least in part in said offset compartment portion; and the front wall laterally overlaps said offset compartment portion and has its opening at least in part in communication with said offset compartment portion.

3. A fuel burner housing, comprising: bottom wall means of generally semicircular shape about a horizontal axis and including upright front and rear extension walls rising respectively to upper marginal edges, a first side wall portion joined to and extending fore-and-aft between the extension walls and having an upper marginal edge coplanar with the marginal edges of the extension walls, a second fore-and-aft side wall spaced laterally from the first side wall and extending between the extension walls and rising from the bottom wall means to an upper marginal edge coplanar with the aforesaid edges; a generally horizontal partition wall integral with the first side wall and with the extension walls disposed intermediate the bottom wall means and the level of said edges and extending between the front and rear extension walls and extending from the first side wall laterally to a fore-and-aft portion short of the second side wall, and an intermediate fore-and-aft wall rising from said partition wall portion to an upper edge coplanar with the aforesaid edges and extending between the front and rear extension walls whereby to provide the housing with an upper open-top compartment above said partition wall and a second, L-shaped compartment partly embracing the upper compartment and having a lower compartment portion below said partition wall and a lateral open-top compartment portion between the intermediate wall and the second side wall.

4. A fuel burner housing, comprising: an upper box-like part including walls defining an upper compartment having an open top, and a lower part having portions integral with the upper part and including opposite side walls, front and rear walls and a bottom defining a second compartment, one of the upper part walls being integral with both parts and serving as a partition between and separating said compartments, said side walls having openings coaxial on an axis below the upper compartment, one of said side walls being offset to one side of the upper compartment to provide the second compartment with an L-shape partly embracing the upper compartment and including a laterally offset compartment portion having an open top alongside the open top of the upper compartment, and said front wall being laterally extended to overlap said offset compartment portion and having an opening therein at least in part in communication with said offset compartment portion.

5. A fuel burner, comprising: a housing having an upper box-like part including upright front and rear walls, first and second opposite side walls and a floor defining an upper compartment having an open top bordered by coplanar top edges, and a lower part having portions integral with portions of the upper part and including front and rear walls and a first side wall depending from the floor and having a bottom defining a lower compartment directly beneath the upper compartment and open-

ing laterally beneath the floor in the plane of the upper part second side wall, said lower part front and rear walls and bottom respectively including extension portions projecting laterally beyond said plane and said lower part having a second wall joined to said extension portions and spaced laterally from said plane to define a lateral compartment communicating beneath said floor with the lower compartment, said lower part front and rear wall extension portions and said lower part second wall rising beyond the floor to substantially the level of the upper compartment open top to define a second open top providing access to said lateral compartment, said upper part second side wall serving as a partition between said open tops, and said lower part side walls respectively having side openings therein coaxial on a transverse horizontal axis below said floor, and said lower part front wall extension portion having a front opening therein leading to said lateral compartment in laterally offset relation to the upper compartment; a blast tube secured to the housing coaxially with said front opening and including a fuel tube and electrical ignition means having rear parts projecting rearwardly into said lateral compartment; a fuel pump coaxially mounted on the lower part first side wall over the opening therein and having a fuel line leading to the fuel tube in by-passing relationship to the upper compartment; an electric motor coaxially mounted on the lower part second side wall over the opening therein; an air blower in the lateral compartment coaxial on the aforesaid axis and in fore-an-aft alinement with and for supplying air to the blast tube via said front opening; shaft means extending through the lower and lateral compartments on said axis and interconnecting the motor and pump; and electrical control means mounted in said upper compartment below said top edges and structurally separated from the rear parts of the fuel tube and ignition means by the aforesaid partition and including electrical connections to the ignition means and to the motor.

6. A fuel burner housing, comprising: an upper box-like part including upright front and rear walls, first and second opposite side walls and a floor integral with certain of said walls and defining with said walls an upper compartment having an open top, and a lower part having front and rear walls and a first side wall depending from the floor and having a bottom defining a lower compartment directly beneath the upper compartment and opening laterally beneath the floor in the plane of the upper part second side wall, said lower part front and rear walls and bottom respectively including extension portions projecting laterally beyond said plane and said lower part having a second wall joined to said extension portions and spaced laterally from said plane to define a lateral compartment communicating beneath said floor with the lower compartment, said lower part front and rear wall extension portions and said lower part second wall rising beyond the floor to substantially the level of the upper compartment open top to define a second open top providing access to said lateral compartment, said upper part second side wall serving as a partition between said open tops, and said lower part side walls respectively having side openings therein coaxial on a transverse horizontal axis below said floor, and said lower part front wall extension portion having a front opening therein leading to said lateral compartment exclusively of the upper compartment.

7. A fuel burner housing, comprising: a first housing part having a U-shaped bottom wall, front and rear upright walls forming integral extensions of said bottom wall, a side wall joined to said front, rear and bottom walls to leave said part open at the opposite side, said front, rear and side walls respectively having upper terminal edges lying generally in the same plane, and a partition wall integral with and extending from the side wall to the open side of said part and integral with and extending between the front and rear walls at a level spaced below said terminal edges; a second housing part separate from but complementing the first part at said open side and including integral front, rear and bottom walls similar to and respectively providing lateral extensions of those on the first part and further having an integral outer side wall spaced laterally from the first-mentioned side wall to combine with the first part walls below the partition wall in defining a lower compartment; and a third part separate from and rigidly mounted intermediate the first and second parts and including an upright divider wall disposed parallel to and intermediately of the side walls and adjoining and rising from the partition wall and extending between the front and rear walls of the first part to combine with the first part walls above said partition wall in defining an upper open-top compartment and to combine with the second part front, side and rear walls in defining an upper opening for the lower compartment.

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