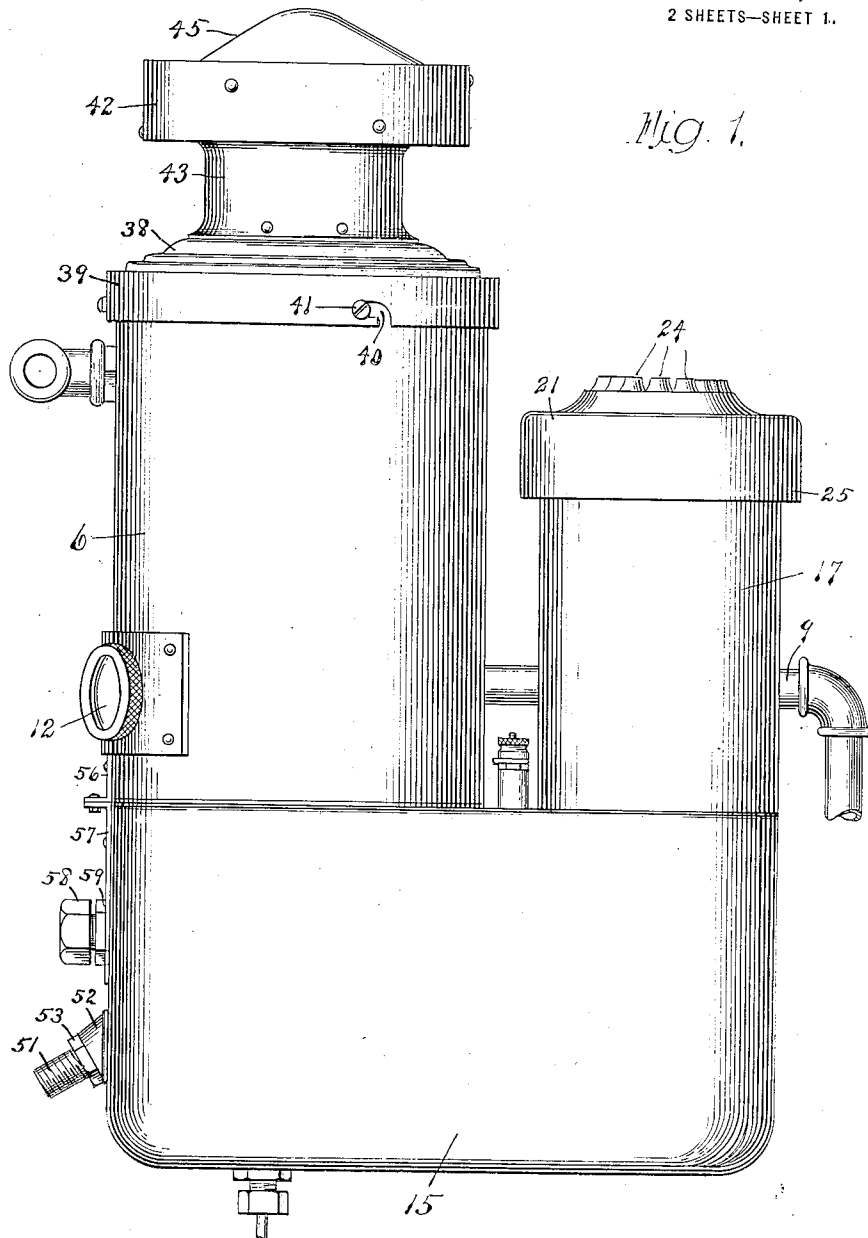


HEATER.

1,329,052.

2 SHEETS—SHEET 1.



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HEATER.
APPLICATION FILED FEB. 23, 1916.

1,329,052.

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2 SHEETS—SHEET 2.

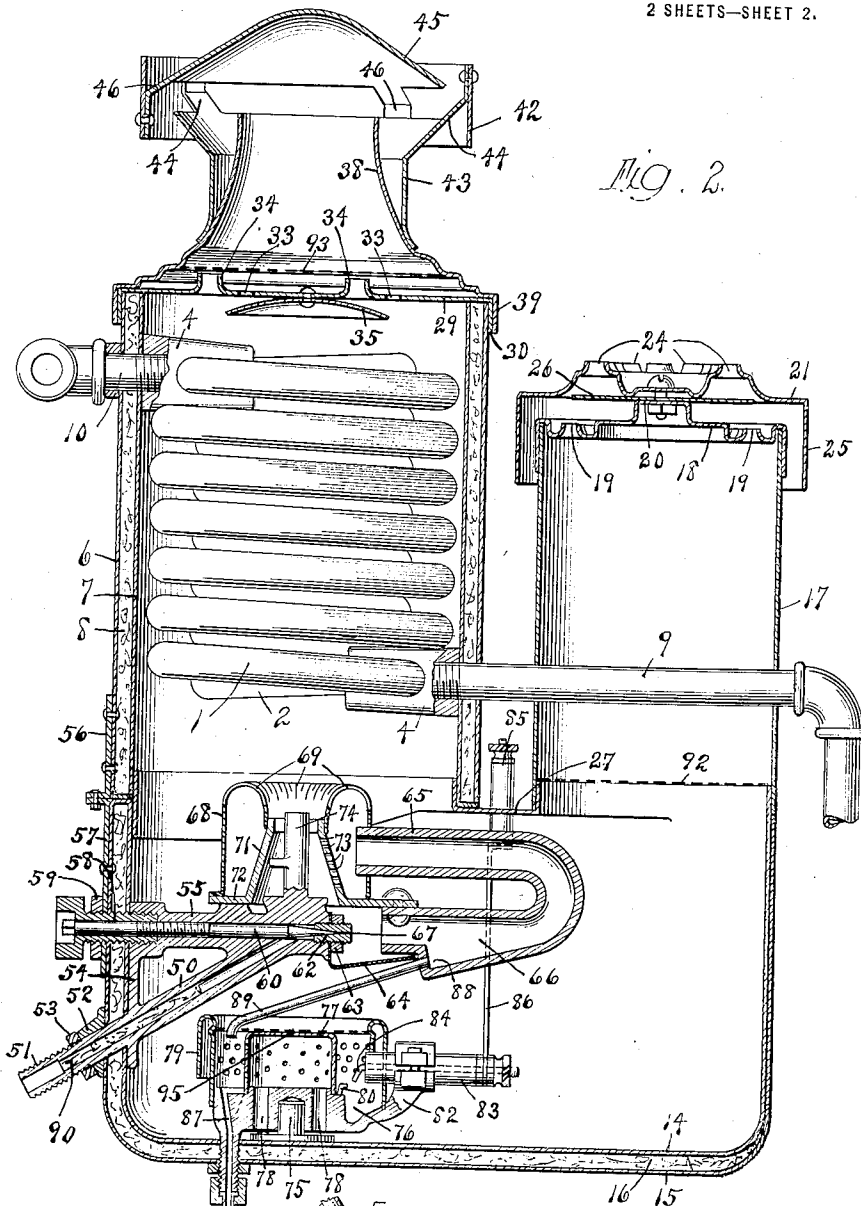


Fig. 2.

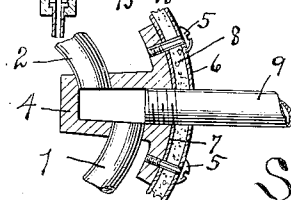


Fig. 3

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HEATER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, STANISLAW J. LUKASZEWSKI, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Heater, of which the following is a specification.

This invention relates to heaters in which liquid hydro-carbons, such as gasolene, may be used as fuel, and its particular object is to provide a heater which can be mounted on the chassis of an automobile at the location indicated in my prior Patent Number 1,007,710, dated November 7th, 1911, for the purpose of keeping the circulating liquid of the engine at a desired temperature, and whose burner will not be extinguished by the jarring of the vehicle when in motion nor by blasts of air.

This invention consists in the novel details of construction illustrated in the accompanying drawings and particularly pointed out in the claims.

In the accompanying drawings Figure 1 is an elevation of this improved heater. Fig. 2 is a vertical section thereof on a plane passing through the center of the air pipe and of the air chamber. Fig. 3 is a horizontal section of the connector between the circulating system of the engine and the heater coils.

Similar reference characters refer to like parts throughout the several views.

The present structure consists generally of a pair of heating coils and the shell therefor, a burner and its igniter, a casing for the burner, which casing supports the shell and heating coil, and an air chamber connected to the casing. It is on the same general lines as that shown in my prior application, No. 42,083, filed July 26, 1915.

The heating coils 1 and 2 preferably have the same number of turns, and their ends are welded, brazed or otherwise connected into the fittings 4 which may be secured to the shell of the heater by means of screws 5, as shown in Fig. 3. The cylindrical shell inclosing the coils is preferably of two tubular sheet metal members 6 and 7, with a layer 8 of asbestos between them. A supply pipe 9 and a discharge pipe 10, preferably in the form of a nipple, may screw into these fittings. A window 12 of any desired character may be provided at any convenient location.

The casing that supports the shell will preferably be of two sheets 14 and 15 of metal with a sheet 16 of asbestos between these sheets around the burner. The ends of this casing will preferably be rounded and of a proper diameter to conform to the shell for the coils and to the air chamber 17. This air chamber is preferably cylindrical and provided with a cap 18 having air inlets 19 and a small tab 20 to which the hood 21 may be secured by means of a small bolt. This hood has short chimneys 24 formed by properly pressing of the metal and a circumferential flange 25. A baffle-plate 26 may extend between the head and hood. The casing is formed with a cover 27 to close the space between the shell and air chamber. This air chamber is so far from the shell for the heating coils that it will always remain cool, which results in the air therein always descending and forcing the hot air in the shell to ascend.

The upper end of the shell is closed by means of a head 29 having a circumferential flange 30 that fits around the shell. Holes 33 in the head permit the escape of the burnt gases, and small pedestals 34 may be formed on the head to support cooking pots or pans a sufficient distance from the head to prevent them from stopping the holes 33. A baffle 35 may be secured to the lower face of the head to restrain the flow of the hot gases.

A hood is detachably mounted on the shell and consists of a body 38 having a lower flange 39 adapted to fit around the flange 30 of the head 29, and this flange 39 is provided with a bayonet slot 40 to receive the screw 41 and thus secure the hood to the shell. A cylindrical band 42 is supported by the skirting 43 mounted on the body 38, by means of the ears 44. A cap 45 has downwardly extending ears 46 that are attached to the band 42. This hood prevents blasts of air from passing into and down within the shell while permitting all products of combustion to escape.

The burner and its igniter are mounted within the casing and are constructed as follows. An inclined tube 50 has its lower end threaded at 51 to connect to a supply pipe, and passes through a hole in the casing and receives a nut 53 and an inclined washer 52 by means of which the web 54 is drawn tightly against the casing to lock the

burner in position. A valve body 55 connects to this web 54 and to the tube 50. Small plates 56 and 57 are connected to the shell and casing and to each other. The plate 57 preferably extends down below the opening through which the hollow screw 58 extends, which screw engages in the threaded end of the valve body 55, being held from turning by the nut 59. A needle valve 60 is mounted in this body 55 and its seat 62 is preferably detachable, being held in position by means of a jam nut 63, which nut also holds the shield 64 in position. By having the fuel supply tube 50 at an incline and more nearly horizontal than vertical, no check valve in this tube is required as the fuel therein will flow constantly and will not pulsate as is the case with vertical supply tubes.

A U-shaped mixing tube has parallel arms 65 and 66, one above the other, the lower being in alinement with the fuel discharge passage 67 in the valve seat 62. The upper arm is fitted into an opening in the outer shell 68 of the burner, the upper portion of which is curved inwardly to form a burner ring provided with slits 69 through which the mixed air and volatilized fuel may pass. A frusto-conical thimble 71 fits within this ring at its upper end and has a flange 72 that extends across the lower end of the shell 68 to complete the fuel chamber. A few small holes 73 in this thimble 71, in line with the arm 65 of the mixing tube, permit a small amount of the fuel to pass into the space around the stem 74 so that this stem and the valve body may be heated.

A pin 75 may be secured to the bottom of the casing and on it may be mounted a trough 76. A perforated thimble 77 is mounted on the trough and passages 78 supply air to the interior of this thimble. An annular plate 79, substantially U shaped in cross-section, confines the flame and also supplies the flame with air. An ignition point 80 is mounted on this trough while an arm 82 supports a spark plug 83 having an ignition point 84. A binding post 85 is mounted on the cover 27 of the casing and connects to the first by means of a wire 86. By placing the binding post 85 between the shell and air chamber there is little danger of it being broken.

In the trough 76 is a vertical drain passage 87 that determines the height of the liquid fuel in the trough. The bottom of the arm 66 of the mixing tube is formed with a pocket 88 from which the fuel is drained to the trough 76 by means of a short pipe 89. The tube 50 may be filled with filter gauze 90 if desired. The plate 64 prevents the flame from the fuel in the trough 76 from igniting the fuel that flows from the opening 67.

The heater coils 1 and 2 are always full

of the liquid to be heated. To ignite the fuel at the burner, the valve 60 is turned back to slightly open the passage 67 which will permit fuel to be forced from this passage across into the lower arm 66 of the mixing tube. The fuel flows down the pipe 89 into the trough 76, where its vapors may be ignited by a spark between the points 80 and 84. The flame from this liquid passes up around the body 55 and tube 50 and soon volatilizes the liquid fuel. When volatilized, this fuel will mix with air in the mixing tube and pass into the ring 68 and out through the small holes 73 and the slits 69. The flame from the trough 76 will ignite this fuel vapor, which will burn at these holes and slits, the flame at the holes 73 heating the stem 74 and thereby the body 55 after the flame in the trough 76 is extinguished because of lack of fuel.

Should the fuel in the trough 76 accumulate too rapidly, it will flow off through the passage 87. An open mesh screen 95 placed above the perforated thimble 77 causes the flame above the liquid fuel in the trough 76 to be of substantially even height throughout and to be very hot and blue and to give off substantially no smoke.

It is often desirable to keep the heater in operation while the automobile is moving from place to place, especially when the vehicle is used by a physician, or for delivering goods and soliciting orders. In such cases, and even when the vehicle is stationary on very windy days, strong blasts of air may pass around the heater which would affect the flame unless proper means are employed to protect it. This protection is secured by the use of an air chamber of large diameter and of considerable height, having restricted and shielded air inlets. A blast of air from below will partly pass out through the openings 24 while a blast from above will partly pass out between the flange 25 and the air chamber. At all events, the flow of air downward in the air chamber will be substantially constant and quite slow. The baffle-plate 26 assists substantially in thus regulating the flow of air through the openings 19 in the cap. In order to prevent a flame from passing from this heater and igniting any gas which might be present in the air surrounding the heater, screens 92 and 93 may be placed in the air chamber and in the hood of the heater shell.

Many changes in the details and proportions of my construction may be made by those skilled in the art without departing from the spirit of my invention as set forth in the annexed claims.

I claim:—

1. In a heater, the combination of a casing having a flat top, a shell mounted on one end of the casing, a burner within the

casing, an air chamber mounted on the other end of the casing and provided with a perforated top, and means to retard the flow of air into said air chamber through the perforations in said top comprising a hood having a downwardly extending flange and a perforated top

2. In a heater, the combination of a casing; a shell mounted on one end and an air chamber mounted on the other end of the casing, a flat plate for closing the casing between the shell and air chamber, a burner within the casing, a top for the air chamber having a series of perforations, a baffle plate supported above the top, and a hood mounted above the baffle plate and top and having a circumferential flange extending below the top of said chamber, the top of said air

chamber having a series of perforations below the baffle plate.

3. In a heater, the combination of a casing, a cylindrical shell mounted thereon, a burner within the shell, the air in said shell being caused to rise by the heat from the burner, a cylindrical air chamber mounted on the casing parallel to the shell, a cap therefor provided with a series of air inlets and a table, a baffle plate mounted on said table, and a hood supported by said table and having a cylindrical flange extending down below the top of said air chamber and also provided with a series of perforations above and within the edge of said baffle plate.

STANISLAW J. LUKASZEWSKI.