H. M. SHEER.

HEATING SYSTEM FOR INCUBATORS, BROODERS, AND THE LIKE.

APPLICATION FILED JAN. 29, 1921.

1,432,574. Patented Oct. 17, 1922.

2 SHEETS—SHEET 1.

Fig. 5.

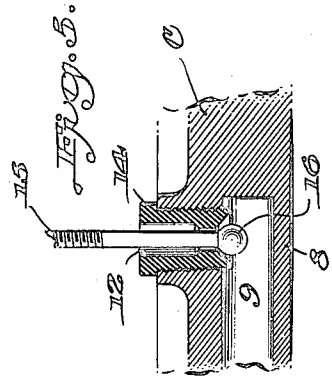


Fig. 4.

Inventor

Henry M. Sheer

By Vernon E. Hodges

his Attorney

H. M. SHEER.

HEATING SYSTEM FOR INCUBATORS, BROODERS, AND THE LIKE.

APPLICATION FILED JAN. 29, 1921.

1,432,574. Patented Oct. 17, 1922.

2 SHEETS—SHEET 2.

Fig. 2.

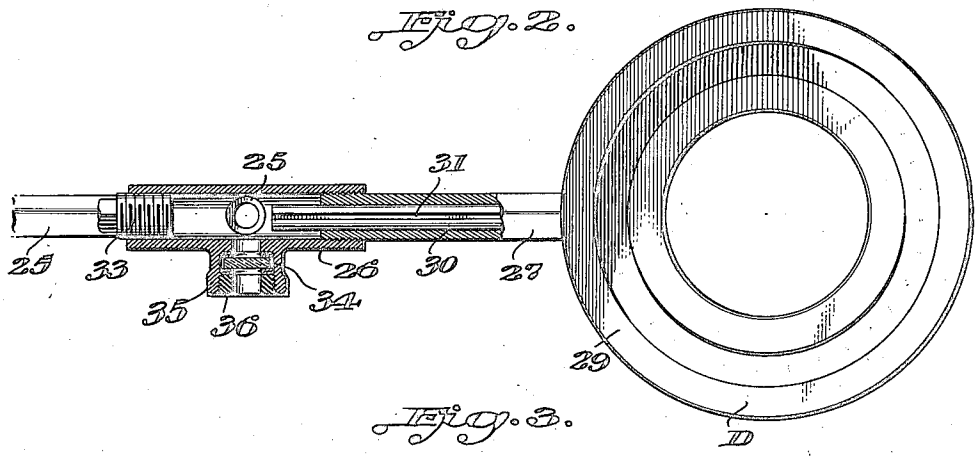


Fig. 3.

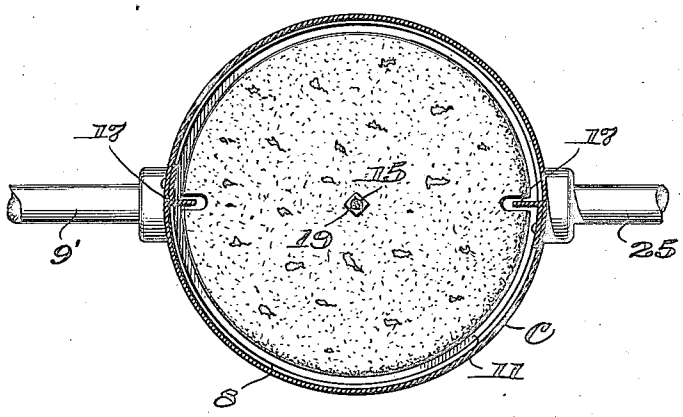
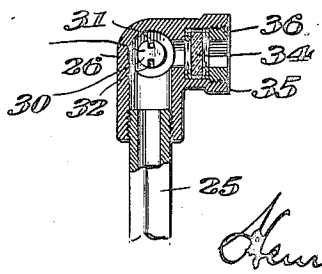


Fig. 4.



Inventor

Henry M. Sheer

By Vernon E. Hodges

his Attorney

Patented Oct. 17, 1922.

1,432,574

UNITED STATES PATENT OFFICE.

HENRY M. SHEER, OF QUINCY, ILLINOIS.

HEATING SYSTEM FOR INCUBATORS, BROODERS, AND THE LIKE.

Application filed January 29, 1921. Serial No. 440,965.

To all whom it may concern:

Be it known that I, HENRY M. SHEER, a resident of Quincy, Adams County, Illinois, a citizen of the United States, have invented certain new and useful Improvements in Heating Systems for Incubators, Brooders, and the like, of which the following is a specification.

This invention relates to heating systems for brooders, incubators, and the like.

The object of my invention is to maintain a constant, uniform, and unobstructed flow of oil to the burner.

A further object of my invention is to construct a controlling device which is to be placed between the supply tank and the burner, which will maintain a constant oil level in the burner.

Another object of the invention is to so construct the controlling device that it may be readily adjusted to effect the different oil levels, thereby reducing or increasing the flame as desired.

A further object is to arrange a cut-off within the controlling device in order that the supply may be completely shut off when desired, and opened again, whereupon the oil will assume the original level.

A further object is to arrange the adjusting and cut-off devices externally of the controlling device.

A further object is to arrange the upright portion of the supply-pipe adjacent to the burner far enough away from the burner to prevent the oil from becoming vaporized.

In the accompanying drawings:—

Fig. 1 is an elevation, partly in section disclosing my improved heating system;

Fig. 2 is an enlarged view of the burner partly in section disclosing a structure of the feed-pipe adjacent thereto;

Fig. 3 is an enlarged transverse section on line 3—3 of Fig. 1, disclosing the controlling mechanism;

Fig. 4 is an enlarged transverse section on line 4—4 of Fig. 1;

Fig. 5 is an enlarged detail view of the valve mechanism as disclosed in Fig. 1.

A, indicates the main supply tank; B, indicates the auxiliary supply tank; C, the controlling device; and D, the burner. The auxiliary supply tank consists of a cylindrical receptacle 1 open at the top, as at 2, to receive the neck of the bottle or other main supply receptacle A. The base of the auxiliary supply tank B is recessed as at 3, having arranged immediately above a heavy netting or screening 4, which rests on flange 5 of the base. 6, indicates a heavy cloth placed immediately above the screening 4; and 7 indicates a filtering medium preferably consisting of cotton-batting or other similar material placed upon the cloth 6.

The oil controlling device C preferably consists of a base 8 formed into compartments 9 and 10, the compartment 9 being connected to the recess 3 of the auxiliary tank B by feed-pipe 9′. Arranged above the base 8 is a cylindrical chamber 11. An inlet port 12 communicates between chamber 11 and the chamber 9, and outlet port 13 communicates with the chamber 11 and the outlet chamber 10. The inlet port 12 is preferably provided with a removable valve-seat 14. 15, indicates a valve-stem carrying on the lower end thereof a ball-valve 16, which is adapted to normally seat against the movable valve 14. The cylindrical chamber 11 is provided along its walls with diametrically-opposed guide strips 17 arranged vertically thereof, which are adapted to receive the float 18 and prevent the latter from rotating. The float may be made of any suitable material, such as cork. A threaded collar or tube 19 is inserted centrally of the float 18, and is threaded so as to receive the valve-stem 15, the float serving to operate the valve 16 to close the port 12 when a certain predetermined amount of oil has been received in the chamber 11.

As a means for adjusting the height of the float, the valve-stem 15 is provided with a squared portion 20, which is received in a similarly squared opening 21 in the lower disk 22 of the cover, the cover preferably being constructed of spaced disks 22, 23, the upper disk 23 being provided with an opening to receive the valve-stem 15. When it is desired to cut off the flow to the burner, entirely, a knurled nut 24 received upon the valve-stem 15 is screwed down tightly against the upper disk 23 of the cover, thereby permanently closing the valve 16.

Thus it will be seen that by turning the cap or cover to the right, it will raise the float, increasing the oil level and correspondingly increasing the flame, and by turning

the cover to the left to lower the float, reducing the oil level and correspondingly reducing the flame. When lowering the float so as to reduce the flame, with the construction as shown in the accompanying drawings, the flame will temporarily be increased, but in just a few seconds it will consume the surplus oil and settle down to its normal size.

Leading from the base 8 of the control device is a feed-pipe 25 having an upturned end adapted to receive a T 26, one end of which is adapted to receive the horizontally arranged hollow tube 27, which communicates with the annular groove 28 in the burner 29 thereby providing a vaporizing chamber in the horizontal portion of the pipe, where it enters the burner.

As a means for restricting the flow of oil from the feed pipe 25 to the burner 29, the tube 27 is provided with a plug 30 having oppositely-disposed slots 31 and 32, the slot 32 serving to check the flow of oil so that a higher level may be maintained where the oil enters the slot than in the burner itself. As a consequence there is always a little pressure of oil against this slot, and this gives the float some latitude to work on, the slot 31 serving as an air-vent to prevent possible syphoning of the feed-pipe 25.

As a means for cleaning the slots 31 and 32 of the plug 30, the opposite end of the T 26 is provided with a movable plug 33, whereby the proper cleaning instrument may be run through the slots or the plug 30 entirely removed for cleaning. It is obvious that the plug may be provided with merely one slot, preferably the lower one, made deep enough to perform the double function of acting as a feed and vent. As indicated in dotted lines, the burner proper is placed at such an elevation with respect to the float 18 in the controlling device as to maintain the proper oil level in the annular groove of the burner.

As disclosed in Figs. 2 and 4, I preferably provide means for determining the exact height of oil in the pipe where it enters the burner, which consists of a glass disk 34 inserted in the opening 35 of the T 26, the disk being held therein by a suitable hollow plug 36, this construction permitting the operator to ascertain the exact level in the feed-pipe adjacent the burner. It is obvious that a drain-cock or other regulated outlet at this point would suffice for the same purpose, and therefore I do not wish to be limited to the exact details of such an arrangement.

By this construction I eliminate the possibility of the oil being vaporized in the operation of the pipe adjacent to the burner, thereby reducing the possibility of the flame going out in case the pipe is exposed to the cold. Furthermore, by my construction, the supply can be cut off at the float chamber, the flame, of course, will soon go out, and the burner can then be primed with gasoline and lighted, whereupon the chimney is placed in position, the oil turned on at the float, and the burner left to operate, knowing that it will settle down to identically the same flame at which it was previously burning, as the shutting off of the oil with this construction does not change the adjustment of the float or the oil level.

Thus it will be seen that with the co-operation of the several features disclosed I have produced a purely automatic burner, which is reliable in every respect, and one which needs little, if any, attention after once properly adjusted.

I claim:—

1. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, an automatic controlling means interposed between the burner and reservoir comprising a main chamber, an inlet and outlet chamber arranged therebeneath, port communication between said chambers, a valve controlling the port between the inlet and main chamber, a float arranged in said chamber connected to said valve-stem, means for preventing the rotation of said float, means for rotating said valve-stem to effect a vertical adjustment of said float, and means for locking said valve closed independent of the float.

2. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, an automatic controlling means interposed between the burner and reservoir comprising a main chamber, an inlet and outlet chamber arranged therebeneath, port communication between said chambers, a valve controlling the port between the inlet and main chamber, a float arranged in said chamber connected to said valve-stem, means for preventing the rotation of said float, said valve-stem being provided with a squared portion, a cover for said main chamber consisting of spaced disks, one of which is provided with a squared opening to engage the square portion of said valve-stem, whereby the valve-stem may be rotated for the vertical adjustment of the float.

3. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, an automatic controlling means interposed between the burner and reservoir comprising a main chamber, an inlet and outlet chamber arranged therebeneath, ports communicating between said chambers, a valve controlling the port between the inlet and main chamber, a float arranged in said chamber connected to said valve-stem, means for preventing the rotation of said float, said valve-stem being provided with a squared portion, a cover for said main chamber consisting of spaced disks, one of which is provided with a squared opening

to engage the square portion of said valve-stem, whereby the valve-stem may be rotated for the vertical adjustment of the float, and a knurled nut arranged on said valve-stem adapted to be screwed down against the upper spaced disk of the cover, whereby the valve is held in a locked position.

4. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, and an automatic control, means interposed between the burner and the reservoir for regulating the supply of fuel to the burner, and means interposed between the burner and the controlling device for restricting the flow of fuel to the burner, comprising a hollow tube and plug therein, said plug having a slot longitudinally thereof, said slot of sufficient depth to properly vent the supply tube adjacent the burner.

5. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, and an automatic control, means interposed between the burner and the reservoir for regulating the supply of fuel to the burner, and means interposed between the burner and the control device for regulating the supply of fuel to the burner, consisting of a T, a hollow tube extending laterally in one direction, a removable plug received in said tube provided with upper and lower slots adapted to feed and vent said tube, and a removable plug aligned with said hollow tube, whereby the slotted plug may be removed, or the slots cleaned.

6. A heater comprising a burner adapted to burn a liquid fuel, a reservoir for the liquid, and an automatic controlling means interposed between the burner and reservoir for regulating the supply of fuel to the burner, and means arranged adjacent the burner for determining the height of the oil within the feed-pipe.

7. A heater including a burner adapted to burn a liquid fuel, a reservoir for the liquid, a horizontally arranged tube which communicates horizontally with the groove of the burner, thereby providing a vaporizing chamber in the horizontal portion of the pipe where it enters the burner, and a plug in said tube having oppositely-disposed slots extending longitudinally thereof.

8. A heater including a burner, a reservoir, an oil controlling device interposed between the burner and reservoir, a valve for controlling the passage of oil through the oil controlling device to the burner, a float within said device, means controllable from the exterior of said device for varying the position of the float to regulate the flame in the burner, a valve-stem, and means thereon for positively closing the valve.

In testimony whereof I hereunto affix my signature.

HENRY M. SHEER.