July 17, 1951 F. J. PORT ET AL 2,560,984

BURNER CAP STRUCTURE

Filed March 24, 1947

Fig. 1

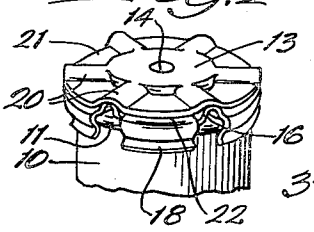


Fig. 2

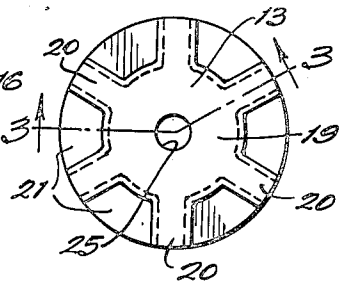


Fig. 3

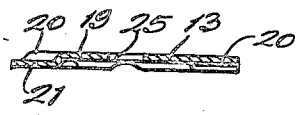


Fig. 4

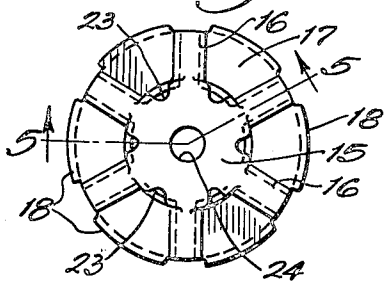


Fig. 5

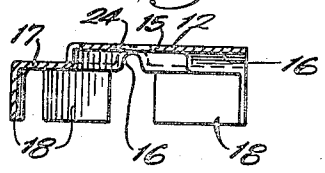


Fig. 6

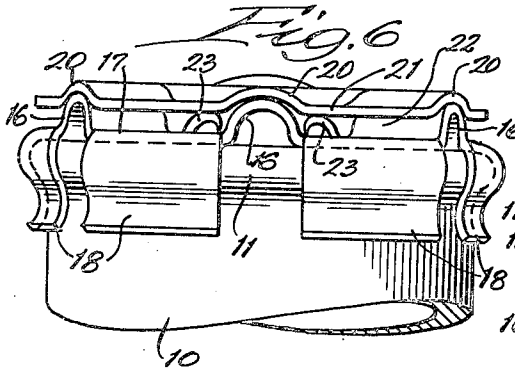
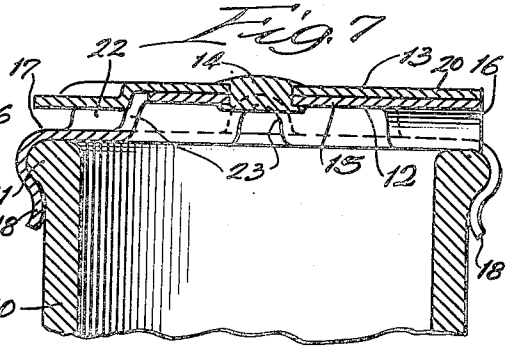


Fig. 7



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BURNER CAP STRUCTURE

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4 Claims. (Cl. 158—116)

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This invention relates to a burner structure and more particularly to a burner cap or cover employed with a burner pipe.

An object of the invention is to provide a burner cap or cover of unique and highly efficient construction providing burner ports and connecting ribbon flame. Yet another object is to provide a burner cover or cap formed of sheet metal parts and providing burner ports and narrow slots for a ribbon flame connecting the burner ports. Still another object is to provide a pair of stamped plates of a configuration spaced radial burner ports with fan-shaped narrow ports connecting them, the plates being formed of sheet metal and connected to provide an inexpensive but highly effective burner cap, the cap being useful as the cap of a main burner or as the cap of a simmer or small burner. Other objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawing, in which—

Fig. 1 is a broken perspective view of a burner cap or cover embodying our invention; Fig. 2, a top plan view; Fig. 3, a sectional view of the top plate employed, the section being taken as indicated at line 3 of Fig. 2; Fig. 4, a top plan view of the lower plate employed, the plate being shown with straight flanges prior to their attachment to the burner pipe; Fig. 5, a transverse sectional view of the lower plate, the second being taken as indicated at line 5 of Figure 4; Fig. 6, a side view in the elevation of the assembly cap or cover attached to the burner pipe; and Fig. 7, a transverse sectional view of the structure shown in Fig. 6.

In the illustration given 10 designates a burner pipe which may be of any suitable construction. The burner pipe may be provided with a bead 11 as shown best in Fig. 7.

The new burner cap or cover preferably comprises two plates, a lower plate 12 and an upper plate 13. The plates may be connected by a rivet 14, by spot welding or by any other suitable means.

Both of the plates 12 and 13 may be stamped from sheet metal such as steel or any other suitable metal.

The lower plate 12 is preferably upwardly dished centrally as indicated by the numeral 15 and is provided with radially extending channels 16 communicating with the central chamber provided by the upwardly dished wall 15. Between the radial channels 16, the wall of the plate 15 extends downwardly and provides fan-shaped depressions or areas 17. The walls 17 are preferably extended and form depending flanges 18 which may be pressed inwardly around the bead 11 to lock the cap upon the pipe 10, as shown best in Fig. 7.

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The upper plate 12 is also provided with an upwardly dished central portion 19 and with laterally extending channels 20. Between the channels 20 extend the downwardly spaced and fan-shaped webs 21. The recess formed by the upwardly dished wall 19 is slightly greater than the recess formed by the upwardly dished wall 15 of the lower plate so that it will receive the dished portion 15, as shown best in Fig. 7. The channel portion 20 rests upon the channel 16 of the lower plate, as illustrated in Fig. 6, and the depressed web 21 of the upper plate extends downwardly over the wall 17 of the lower plate to form a narrow chamber 22 between the two plates. The fan-shaped chamber 22 provided between each of the channels 16 communicates with the inner chamber of the lower plate by means of a small aperture 23 extending through the downwardly inclined portion of the lower plate which joins the plateau 15 and the lower stepped portions 17.

The fan-shaped chamber 22 formed between each of the channels 16 provides a relatively thin or narrow chamber or slot through which a ribbon of flame will be projected so as to connect the main burner channels 16. With the structure shown, the fan-shaped chambers 22 are aligned with the central portion of the burner ports 16 so that the flame discharged therefrom will be in alignment with the center of the flame projected through the channel ports 16.

The plates 12 and 13 are shown provided with aligned openings 24 and 25 and may be connected by a rivet 14, as illustrated in Fig. 7. If desired, the plates may be imperforate and may be secured centrally by spot welding, etc.

Operation

In the operation of the device, the cap or cover is assembled by bringing the two plates 12 and 13 together and securing them by the rivet 14 or by other means. In the assembling operation the upper plate 13 receives the raised portion of the lower plate 12 and with the channels 20 of the upper plate resting upon the channels 16 of the lower plate. The webs 21 and 17 of the two plates provide a narrow slot or chamber 22 which is arcuate and which is connected to the central chamber of the lower plate by the apertures 23. The depending flanges 18 of the lower plate 12

are crimped around the bead 11 of the burner pipe 10.

The air and gas mixture passing through the pipe 10 is discharged laterally through the main burner ports 16 to form the burner flames. A ribbon flame connecting the channel flames is provided by each of the fan-shaped chambers 22 to which the gaseous mixture is supplied through ports 23. The ribbon flame from the arcuate chambers 22 serves to keep the main channel ports 16 always ignited and for this purpose they are highly effective because of the alignment of the ribbon flames with the central portion of the channels 16.

While in the description given, we have shown two sheet metal members, it will be understood that a single sheet metal plate may be employed, the plate being spaced from the burner pipe to provide the thin slot between the channel ports. The plate structure may be secured upon the pipe not only by the means described, but also by securing the plate or plates to the central portion of the pipe. Essentially, it is desired to provide a burner structure having laterally-extending burner ports, with at least one sheet metal member providing with the structure thin ribbon flame outlets extending between the burner ports.

The new structure is extremely simple, inexpensive, and highly efficient. It is useful as a simmer cap burner or as a main burner.

While in the foregoing specification we have set forth one embodiment of the invention in great detail for the purpose of illustrating the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. In combination with a burner pipe, a burner pipe cover comprising a lower plate having an upwardly-dished central portion surrounded by an edge portion in which upwardly-pressed radial channels are formed, said plate providing also fan-shaped spaces between the said channels, an upper plate extending over said second plate and providing walls above said fan-shaped spaces to form chambers therebetween aligned in a horizontal plane with said channels, said lower plate having spaced openings therethrough in said dished central portion for providing communication between the interior of said dished central portion with said chambers, and means connecting said upper and lower plates.

2. In combination, a burner pipe cover, comprising a lower plate having an upwardly-dished central portion surrounded by an edge portion in which upwardly-pressed radial channels are formed, said plate providing between said channels fan-shaped upper spaces, said plate having openings extending through its dished central portion and communicating with said fan-shaped upper spaces, an upper plate extending over said lower plate and having walls above said fan-shaped spaces to form chambers therewith, said chambers being horizontally aligned with said channels, and means securing said plates together.

3. A burner cap adapted to be secured upon a burner pipe, and comprising a pair of sheet metal plates secured together, the lower of said plates having an upwardly-dished central portion surrounded by an edge portion in which upwardly-pressed radial channels are formed, said plate also providing fan-shaped spaces between said channels and having openings through its dished central portion to provide communication with said spaces and the interior of said dished central portion, the upper of said plates having radial channels resting upon the channels of said lower plate and having also a depending wall portion extending above the fan-shaped wall spaces of said lower plate to provide chambers there-between, and means extending through central portions of said plates for securing them together.

4. A burner cap adapted to be secured upon a burner pipe and comprising a pair of sheet metal plates secured together, the lower of said plates having an upwardly-dished central portion surrounded by an edge portion in which upwardly-pressed radial channels are formed, said plate also providing fan-shaped spaces between said channels and having openings through its dished central portion to provide communication with said spaces and the interior of said dished central portion, the upper of said plates having radial channels resting upon the channels of said lower plate and having also a depending wall portion extending above the fan-shaped wall spaces of said lower plate to provide chambers there-between, and means extending through central portions of said plates for securing them together, said lower plate having a depending skirt portion adapted to telescopically engage a burner pipe.

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