July 31, 1951 E. H. MUELLER 2,562,505

GAS BURNER CAP AND BASE JOINED BY BAYONET-TYPE FASTENING MEANS

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FIG. 1

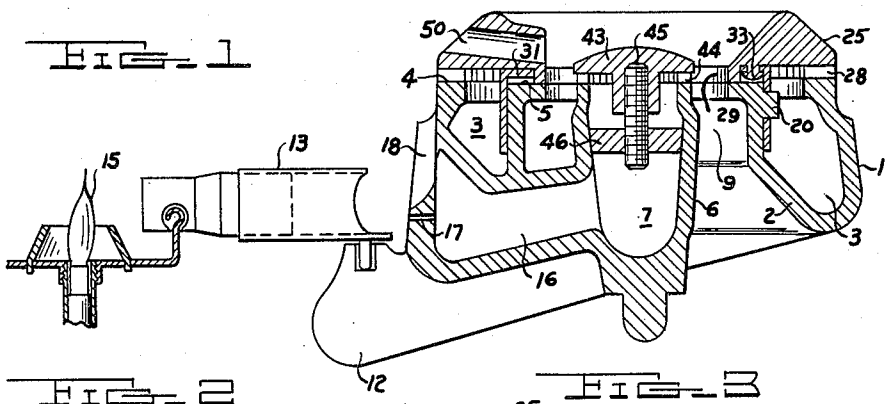


FIG. 2

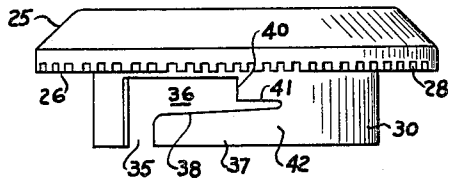


FIG. 3

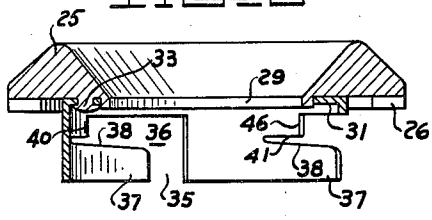


FIG. 4

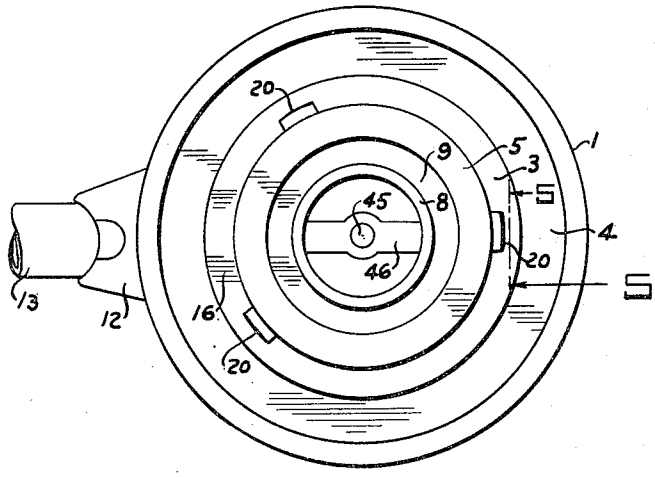
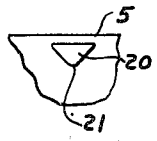


FIG. 5



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GAS BURNER CAP AND BASE JOINED BY BAYONET-TYPE FASTENING MEANS

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3 Claims. (Cl. 158—116)

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This invention relates to a gas burner and it has to do particularly with a burner construction where a cap or top member is applied to a burner body.

The object of the invention is to provide an improved construction for mounting a cap or top in a detachable manner to a burner body which is usually of cast metal such as cast steel or iron. In accordance with the invention the connection between the cap and the body is one which can be established and disestablished by relative rotary movement in which action projections or fingers are engageable with lugs. Some of the connecting elements are so arranged that they can be deflected in order to attain a proper or desirable tightness of fit between the body and cap. The cap is preferably of relatively inflexible metal, such as die cast metal, and the attaching element is preferably of a metal having more elasticity such as steel and the attaching element embodies a novel construction so that it may be connected to the cap.

The invention is disclosed in the accompanying drawings:

Fig. 1 is a cross sectional view of a burner constructed in accordance with the invention showing the cap applied to the body.

Fig. 2 is a side elevational view of the cap.

Fig. 3 is a cross sectional view through the cap and its attaching element.

Fig. 4 is a plan view of the body.

Fig. 5 is a detailed view of an attaching lug taken substantially on line 5—5 of Fig. 4.

The body of the burner, as shown in Fig. 1, is advantageously of cast iron having an outer wall 1 and an intermediate wall 2 which define an annular chamber 3. This chamber is open at the top and the walls 1 and 2 have upper surfaces 4 and 5. The burner has a circumferential inner wall 6 which defines an inner chamber 7. This chamber is open at the top and the circumferential wall 6 has a top surface 8. This construction provides an air passageway 9 between the intermediate and the inner walls.

As will be understood by those versed in the art, gas may be supplied to the chamber 3 or the chamber 7 or both. A projecting part of the body is illustrated at 12 for supporting a flash tube 13 associated with a pilot flame 15. The inner passage 7 has a laterally extending part 16 provided with a port 17 and a slot 18 in its outer wall. It will be understood that the lateral extension 16 more or less cuts through the chamber 3 and ensmalls it at that location as indicated. The body is provided with engagement lugs preferably on the wall 2. Three of such lugs are shown at 20. As illustrated in Fig. 5, these lugs are formed to provide contact surfaces 21 of small area as will presently be seen.

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The cap is preferably a die casting and is in the form of a ring. The cap is generally illustrated at 25 and it may have a cross sectional shape substantially as illustrated. The outer underside of the cap is provided with radially extending spaced projections 26 with alternate recesses. The projections are adapted to seat upon the face 4 of the outer wall and the recesses provide ports 28. The inner circumferential edge of the ring is provided with a flange 29.

A securing element formed from sheet metal, such as sheet steel, has a circular ring-like body 30 with an inwardly extending flange 31 adapted to seat against the underface of the cap and is located by the flange 29. The flange and cap may be secured together as by means of lugs or small projections 33 integral with the body of the cap and which project through openings in the flange 31. The ends of the lugs are expanded or flattened, as shown, to thus, in effect, rivet the securing element to the cap.

The securing element which is of circular or sleeve-like form, as stated, is adapted to telescope over the wall 2, as shown in Fig. 1, and it is provided with fingers for engaging the lugs 20. Where three lugs are used, as shown in Fig. 4, the sleeve 30 is correspondingly arranged with bayonet-type slots for cooperation with the lugs 20. As shown in Fig. 2, the bayonet-type slots include an axially extending part 35 and a circumferential passage 36. This forms an L-shaped cut out portion. This structure forms an integral arm 37, the end of which defines one side of the slot 35 and the inner surface of which at 38 defines one side of the lateral slot 36. The surface 38 is preferably inclined. The arm 37 has a length greater than the length of the lateral slot 36; the slot 36 terminates at shoulder 40 but the metal is cut away or notched as at 41 so that the base of the arm 37, where it connects to the sleeve, is substantially as indicated at the location 42.

To apply the cap to the burner, the connecting sleeve is telescoped over the wall 2 with which it substantially fits, as shown in Fig. 1, and the lugs 20 pass through the slots 35. When the cap is seated on the body, it is turned and the inclined surfaces 38 of the arms 37 ride under the contact portions 21 of the lugs 20. The inclined surfaces cause the cap to be clamped tightly against the surfaces 4 and 5 of the burner

body. Inasmuch as the burner shown requires a precise position of the cap relative to the flash tube 13, the lugs 20 are not equally spaced apart, but to the contrary, have an unequal spacing so that the cap may be applied thereto in only one position. The slots 35 have the same unequal spacing. With the cap in this position, gas supplied to the chamber 3 is discharged through the ports 28 and may there be ignited. The flange 29 seats on the surface 5 to provide a gas seal.

A central burner is completed by a cap 43 formed with alternate projections and recesses with the projections seating on the surface 8 of the inner wall to provide outlet ports 44. The cap may be secured in position by means of a screw 45 threaded into a spider 46 which may be attached to or which may be integral with the body. Thus, gas entering chamber 7 may escape through ports 44 and be there ignited. The burner cap 25 is advantageously provided with a guard passage 50.

When the burner is assembled as shown in Fig. 1, gas may first be supplied to the chamber 7. Some of this gas escapes through ports 44; some of the gas is projected through port 17 into the flash tube 13 and when it flows through the flash tube it is ignited by the flame 15. There is a resultant flash-back or explosion which ignites the gas issuing from port 17 and gas issuing from the slot 18. Some of the gas issuing from a port 44 which faces the passage 50 flows through the passage and is ignited by the flame issuing from the slot 18. This ignition flashes back through the passage 50 and ignites the gas issuing from the ports 44. It will be seen therefore that the cap must be positioned so that the passage 50 is in general alignment with the port 17 and slot 18 of the body and the flash tube 13. This is the precise position above referred to, and the position is attained by applying the cap until the shoulders 40 of the slots stop against the lugs 20. If gas is now supplied to the chamber 3 so that the same escapes through the ports 28, some of the gas issuing from ports in close proximity to the slot 18 is ignited by the flame at the slot 18 and the ignition chains around the burner to ignite the gas issuing from all of the ports 28.

The cut back arrangement of the arms 37 provide for flexibility. If the co-action between the arms and lugs 20 does not draw the cap sufficiently tightly against the body, the cap may be removed and the arms 37 may be tapped with an instrument, such as a hammer, to bend the arms upwardly, as Fig. 2 is viewed, substantially at the location 42 where the arms connect with the body of the sleeve. This cut back arrangement gives the arms 37 adequate length for this purpose. Conversely, if the co-action is too tight, the arms may be flexed downwardly, as Fig. 2 is viewed. Therefore, it will be seen that the adjustment of the arms must be made with due reference to the fact that the cap must be positioned with the passage 50 precisely located and this is attained when the shoulders 40 abut against the lugs 20. In fact, this is the basic reason for the elongated arms 37 formed by the slots 41 so the cap may be properly tightened in its precise position relative to the body. This adjustment may be made when the burner is initially installed or at any later time if conditions in use cause a change in the relationship of the cap and body.

The lugs 20 being cast integral with the body are shaped somewhat triangular as illustrated in Fig. 5, so as to provide the pointed or small surface 21 for contact with the inclined surfaces 38 of the fingers 37. With this arrangement, the lugs need not be machined or made more accurate after their forming. Any small burr which may remain on the pointed surface 21 is small and may be knocked off even by the action of the engagement of the surface 38 therewith. The adjustment of the arms 38 take care of such minor variations as may occur in the non-machined lugs.

I claim:

1. A double gas burner comprising, a body having an outer circumferential wall, an intermediate circumferential wall, said walls defining an outer gas supply chamber therebetween, an inner circumferential wall spaced from the intermediate wall and defining an inner gas supply chamber, said walls all having top surfaces, a relatively small cap attachable to the body to overlie the inner chamber and to define ports for the issuance, from said chamber, of flame supporting gas, a relatively large cap for engaging the top surface of the outer wall to provide ports for the issuance from the outer chamber of flame supporting gas, and having a portion for engaging the top surface of the intermediate wall, the intermediate wall having laterally projecting lugs which extend into the outer chamber, a sleeve attached to the large cap arranged to telescope over the intermediate wall, said sleeve having bayonet type openings for receiving the lugs, each opening being defined in part by an arm which has a free end adjacent the open end of the opening, a shoulder defining the opposite end of the opening, the arms being arranged to engage the lugs and the shoulders being arranged to engage the lugs to precisely position the cap relative to the body, said sleeve having relatively narrow slots extending from said shoulders in a direction opposite the direction of extent of the corresponding bayonet type opening, to thereby elongate the arms so that the base of each arm joins the body of the sleeve at a location removed from the shoulder of the corresponding bayonet type opening, whereby the arms have a length such that they may be bent in an axial direction to vary the tightness of engagement with the lugs.

2. A gas burner comprising, a body having an outer circumferential wall, a second circumferential wall within the first, said walls defining a gas supply chamber and having top surfaces, one of the walls having laterally projecting lugs thereon positioned below the top surface thereof, a cap for fitting on the body for closing the gas supply chamber and defining in part, ports for the issuance from the chamber, of flame supporting gas, a securing element in the form of a sleeve fastened at one of its ends to the cap and adapted to telescopingly fit the said wall with the lugs thereon, said sleeve having bayonet type openings for receiving the lugs, each opening being defined in part by an arm which has a free end adjacent the open end of the opening, a shoulder defining the opposite end of each opening, the arms being arranged to engage the lugs and at least one of the shoulders being arranged to engage a lug to precisely position the cap relative to the body, said sleeve having a relatively narrow slot extending from at least one shoulder in a direction opposite the direction of extent of the corresponding bayonet type opening, to thereby elongate the arm, so that the base of the arm joins the body of the sleeve at a location removed from the said shoulder, whereby the arm has a length such that it may be bent in

an axial direction to vary the tightness of engagement with a lug.

3. A gas burner comprising, a body having an outer circumferential wall, a second circumferential wall within the first, said walls defining a gas supply chamber and having top surfaces, the second wall having laterally projecting lugs thereon positioned below the top surface thereof, a cap for fitting on the body for closing the gas supply chamber and defining in part, ports for the issuance, from the chamber, of flame supporting gas, a securing element in the form of a sleeve fastened at one of its ends to the cap and adapted to telescopingly fit the second wall, said sleeve having bayonet type openings for receiving the lugs, each opening being defined in part by an arm which has a free end adjacent the open end of the opening, a shoulder adjacent the opposite end of each opening, the arms being arranged to engage the lugs and the said shoulders adapted to engage the lugs to precisely position the cap relative to the body, the sleeve having relatively narrow slots extending from said shoulders in a direction opposite the direction of extent of the bayonet type openings, to thereby elongate the arms so that the base of each arm joins the body of the sleeve at a location removed from the shoulder of the corresponding bayonet type opening, whereby the arms have a length such that they may be bent in an axial direction to vary the tightness of engagement with the lugs.

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