March 19, 1935. E. E. GOLLER 1,995,118

PLUMBER'S FURNACE

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Fig. 2

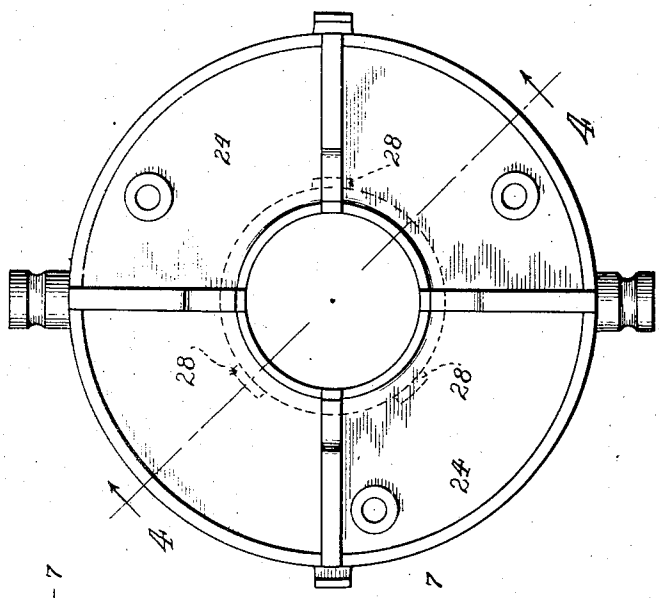
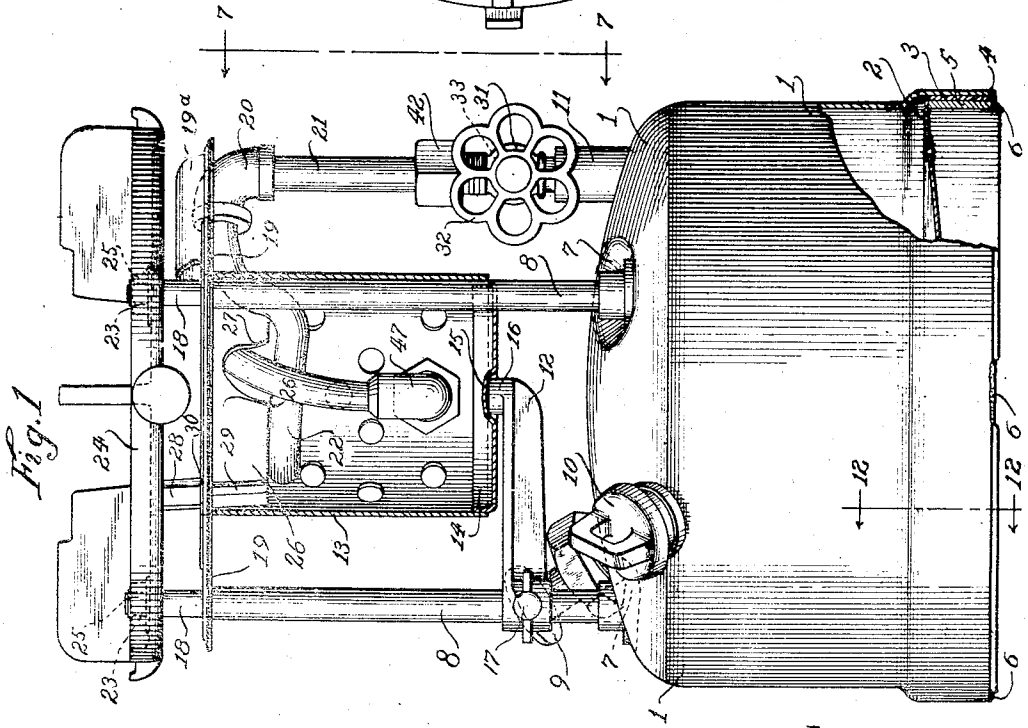


Fig. 1



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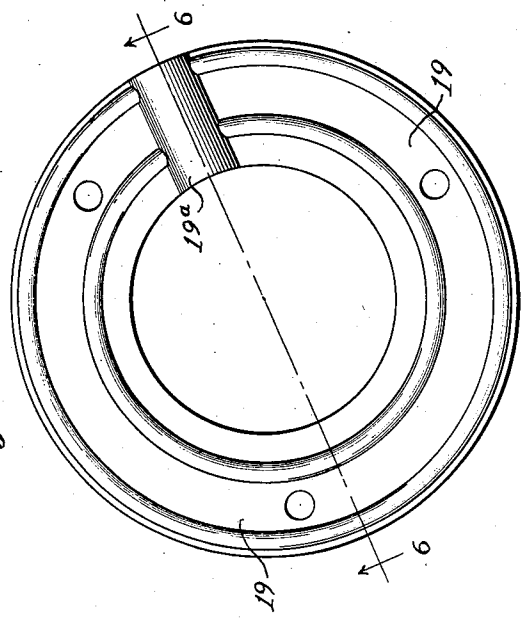


Fig. 5

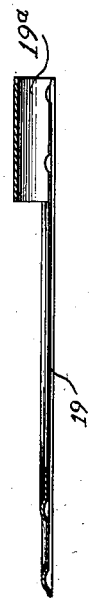


Fig. 6

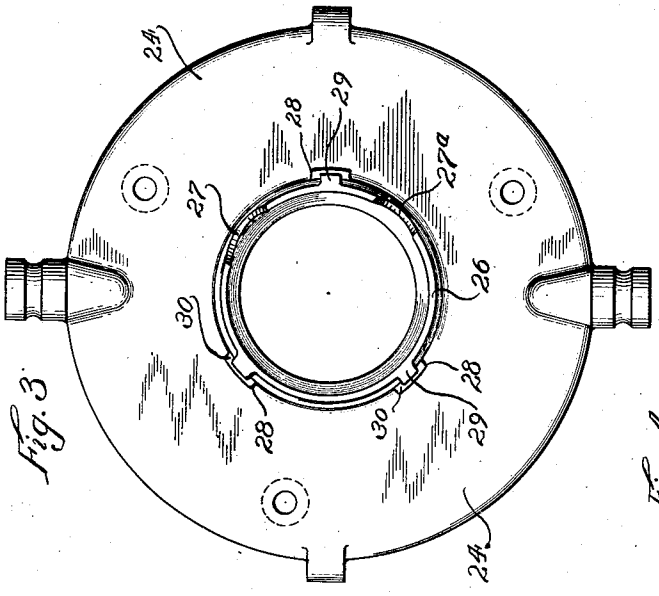


Fig. 3

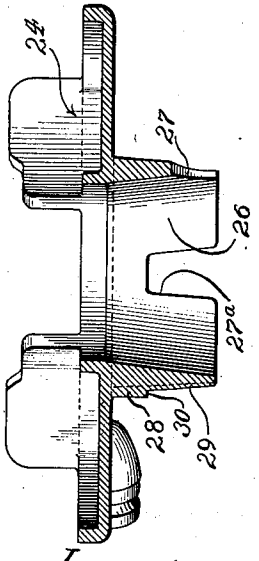


Fig. 4

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PLUMBER'S FURNACE

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Fig. 9

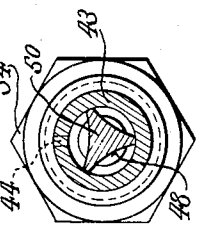


Fig. 10

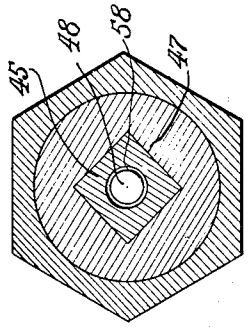


Fig. 8

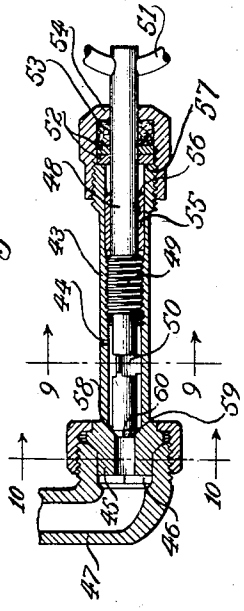


Fig. 11

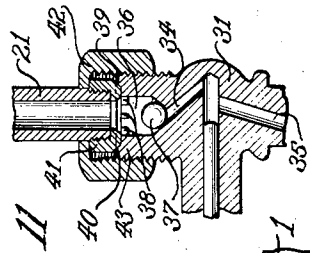


Fig. 12

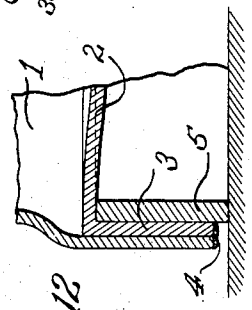
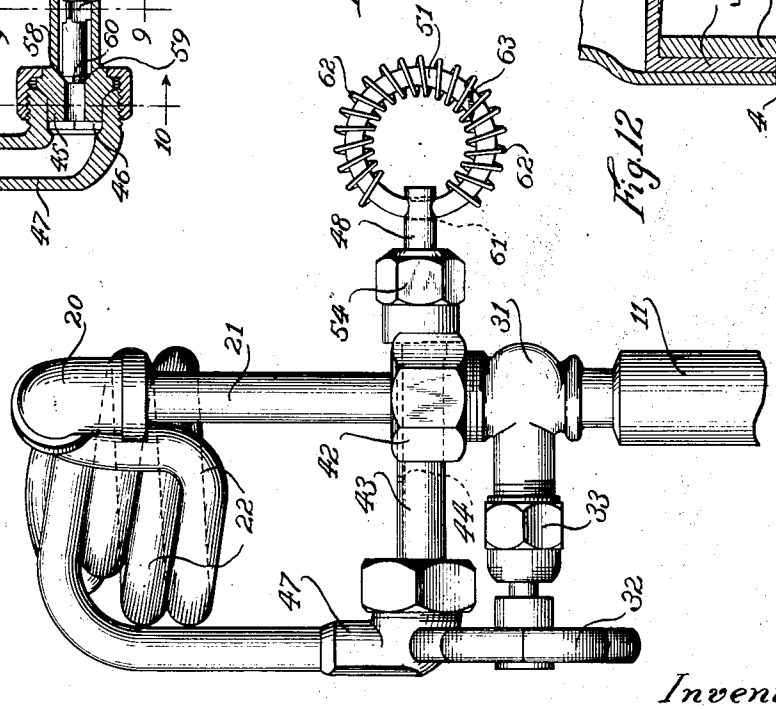


Fig. 7.



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Patented Mar. 19, 1935 1,995,118

UNITED STATES PATENT OFFICE

1,995,118

PLUMBER'S FURNACE

Eugene E. Goller, Chicago, Ill.

Application December 4, 1931, Serial No. 578,888

2 Claims. (Cl. 158—32)

My invention relates to plumbers' furnaces and to novel improvements in furnaces of this type to increase their efficiency and to prolong their useful period.

Numerous objections have been apparent in the furnaces thus far offered to the trade, among which has been the overheating of the fuel tank and controls, due to improper heat deflection, and the insufficient heating of the generator coil due to losses by convection and to the presence of air in motion about the coil. Heretofore, wear at the bottom of the tank and at the welded joint has caused considerable trouble and danger.

It is, therefore an object of my invention to provide a fuel tank construction which will be durable, safe, efficient and economical.

Another object is to provide a construction wherein the generator coil is protected from heat losses, thereby rendering it more efficient.

Another object is to provide protection against overheating of the furnace controls and fuel tank.

A further object is to provide a construction wherein the orifice body and generator coil will always remain in perfect alignment, regardless of the number of times they are dismounted from the furnace for cleaning or other purposes.

A still further object is to provide a secondary regulating valve, in combination with a novel orifice scraper, which will permit a more accurate heat control and provide a much more efficient orifice scraper.

A still further object is to provide a locking means to prevent the accidental blowing out of the combination valve and scraper stem when in use.

Yet another object is to provide a valve handle which will remain cool, regardless of how long the furnace has been in continuous operation.

Other objects and advantages of the invention will be apparent from the specification and claims.

Referring to the drawings:

Figure 1 is a side view showing the several elements of my construction in elevation, with the exception of the coil cup which is cylindrical and is shown in central, vertical section;

Fig. 2 is a top plan view of the top plate member;

Fig. 3 is a bottom plan view of the top plate;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a top plan view of the heat shield or heat deflector which serves to keep the various furnace controls cool;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is a somewhat enlarged view of the generator coil, fuel regulating valve, and combination secondary valve and orifice scraper, this view being taken in the direction of the arrows 7—7 adjacent Fig. 1;

Fig. 8 is a central longitudinal section through the combination secondary valve and orifice scraper;

Fig. 9 is a further enlarged section on the line 9—9 of Fig. 8;

Fig. 10 is a section on the line 10—10 of Fig. 8 on the same scale as Fig. 9;

Fig. 11 is a central vertical section through the fuel regulating valve, showing also the check valve for preventing excessive pressure in the generator coil from backing into the fuel tank;

Fig. 12 is a somewhat enlarged fragmentary section on the line 12—12 of Fig. 1.

Referring to the drawings in detail, and particularly to Figs. 1 and 12, the construction shown comprises a fuel tank body 1 having a bottom member 2 which has a downwardly extending annular flange 3. To form a gas and fluid-tight seal between the lower edges of the tank body 1 and the flange 3, a welded joint 4 is provided which extends entirely around the lower edges of both the tank body 1 and the flange 3. To protect the weld 4 from any wear whatever, a hardened steel ring 5 is forced inside the flange 3 and is welded at 6.

In the upper portion of the tank body 1 suitable depressions 7 are provided to receive for brazing the upright supporting posts 8. In this portion of the tank is also provided a pressure pump 9, the filler opening having a cap 10, and the tank being provided with a discharge pipe 11.

Mounted on one of the posts 8 (shown to the left in Fig. 1) is a supporting arm 12 to retain in position the coil cup or shield 13, which serves the purpose of protecting the burner flame against extreme drafts likely to blow out the flame, said cup 13 having in its bottom 14 a stamped-up portion 15 to receive the boss 16 of the arm 12. The arm 12 is provided with a thumb screw 17 so that it may be properly adjusted. When the coil cup 13 is to be removed, the arm 12 may be rotated entirely out of the way.

Each post 8 has near its upper extremity a portion 18 of reduced diameter so that where the portion 18 adjoins the post proper a ledge is formed to support the heat deflector 19, said heat deflector having an arcuately up-raised portion 19a to accommodate the elbow 20 which unites the upper valve pipe 21 and the generator coil 22. Above the post portion 18 is a further reduced portion 23 forming a shoulder on which the top

plate 24 may rest. The portions 23 are screw threaded to receive nuts 25 by means of which the top plate 24 is secured in position. Cast integrally with the top plate 24 is a cylindrical downwardly extending portion 26 (Figs. 1 and 4) having an arcuately shaped slotted portion 27 and another slotted portion 27*a*, to provide clearance for the generator coil 22. The downwardly extending portion 26 serves as a protector for the generator coil 22, to prevent air from moving about it. This permits the coil to become heated to a greater degree than would otherwise be possible, thus materially increasing its efficiency. The portion 26 is provided with ribs 28 and 29, the ribs 29 being considerably smaller in width and thickness than the ribs 28, to form a shoulder 30 which abuts the upper edge of the heat deflector 19, thus retaining it positively in position. This cylindrical portion 26 extends through the opening in the deflector 19 and telescopes into the cylindrical shield 13 to position it, as shown in Fig. 1.

Mounted above the pipe 11 is a valve 31 having a valve handle 32 and the usual packing nut 33. Referring now to Fig. 11, in which a vertical section of the valve 31 is shown, it will be noted that the passageways 34 and 35 are offset to reduce the pulsating effect of gas pressure from the fuel tank. In the upper portion of the valve 31 is a check valve 36 having a ball check 37 and lugs 38, to prevent the ball 37 from being discharged into the pipe 21. This check valve 36 prevents heated gas from reentering the fuel tank when the pressure in the generator coil exceeds that within the tank. It will thus be seen that the check valve helps to maintain the fuel tank cool, thus preventing the formation of excessive pressure therein. In the upper portion of the valve 31 is a ground and faced depression 39 to receive the ground, faced portion 40 of the nut 41 at the lower end of the pipe 21. This construction permits a gas-tight seal without the use of tapered threads on the nut 42 and the portion 43 of the valve 31. It is well known that parallel threads are much more readily disengaged than tapered threads and it is apparent that the method of union shown and described permits the use of parallel threads as well as eliminates the necessity of washers or gaskets of any kind.

Referring now to Figs. 7, 8, 9 and 10, it will be noted that the orifice body 43 has drilled into it an orifice 44. It is essential that this orifice be properly positioned relative to the generator coil above it. Considerable difficulty has heretofore been experienced in accomplishing this after the furnace has left the factory. To overcome this, I provide the orifice body 43 with a squared end 45 fitting into a similarly squared female portion 46 in the elbow union 47 (Fig. 10), which obviously facilitates the proper positioning of the orifice 44 with respect to the generator coil.

Mounted within the body 43 is a valve stem 48 having an enlarged screw-threaded portion 49 and scraper portion 50. By rotating the stem 48 by means of the handle 51, the stem may be withdrawn until the scraper 50 is contacting the internal wall of the body 43 in the portion wherein is located the orifice 44. It will be evident by reference to Fig. 9 that rotating the scraper in this region will remove any soot or other foreign matter that may have gathered at the internal opening of the orifice in a much more efficient manner than has heretofore been possible.

To eliminate the danger of the valve stem 48 being blown out through the packing washers 52, the packing 53 and the packing nut 54, a sleeve 55 is provided as a safety lock. It will be evident that the stem 48 can be brought back only until the edge 56 of the sleeve 55 abuts the surface 57 of the first of the washers 52.

At the inner end of the stem 48 is a faced, beveled portion 58, which can be seated against the faced shoulder 59 within the orifice body. This forms a secondary control valve which permits accurate control of the flame issuing from the orifice 44 and which is not possible through the use of a single fuel control valve. It will be noted that a minute groove 60 is cut into the beveled portion 58. This is done so that under no circumstances can the secondary control valve be used as a complete shut-off and so permit residual gas and carbon to remain in the generator coil.

Heretofore it has been difficult to handle the control valve, due to the uncomfortably high temperature developed in this region. In the construction shown in Fig. 7, a means is provided whereby the valve handle may be comfortably handled. A hole 61 is drilled in the end of the stem 48 to receive the substantially circular steel ring 51, at which time the steel ring is open. An ordinary helical spring 62 of suitable size is placed over the steel ring 51 and the ring is then welded together as shown at 63.

The above described construction provides a handle which cannot be damaged by ordinary wear, which always remains cool enough to be comfortably handled, and which is very economical from the manufacturing standpoint.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that my invention be limited only by the prior art and the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A furnace construction comprising a fuel tank, supports extending upwardly therefrom, a generator coil above said fuel tank, a cylindrical shield surrounding said coil, a support for the material to be heated mounted above said coil and having a cylindrical downwardly-extending portion telescopically engaging said shield to position it.

2. A furnace construction comprising a fuel tank, a generator coil mounted above said fuel tank, a shield surrounding said generator coil, a baffle plate having a central opening therethrough mounted above said shield, and a support for the material to be heated mounted above said baffle plate and having an annular portion extending downwardly therefrom through the opening in the baffle plate and telescopically engaging the shield to position it.

EUGENE E. GOLLER.