No. 692,476. Patented Feb. 4, 1902.

F. RICHARDSON.

TOOL HEATER.

(Application filed June 27, 1901.)

(No Model.)

Fig. 1.

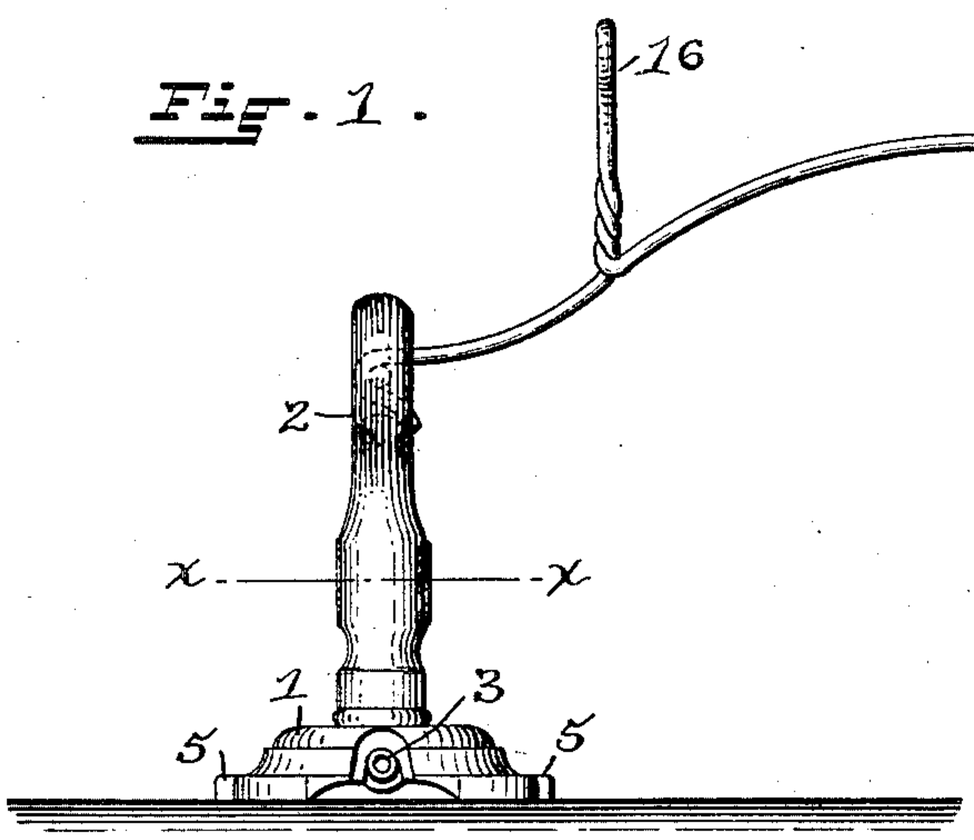


Fig. 2.

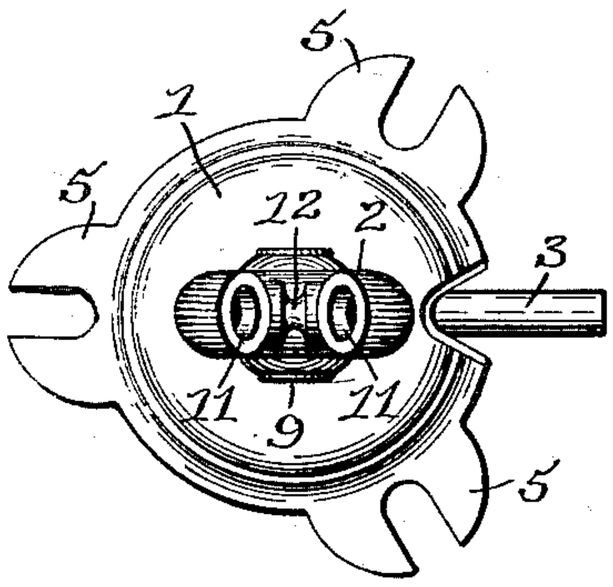


Fig. 3.

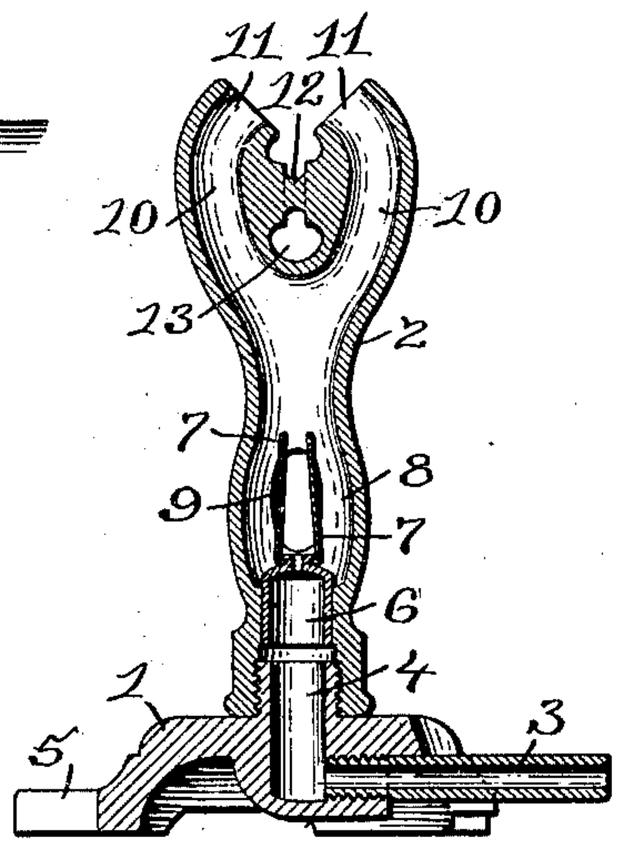


Fig. 4.

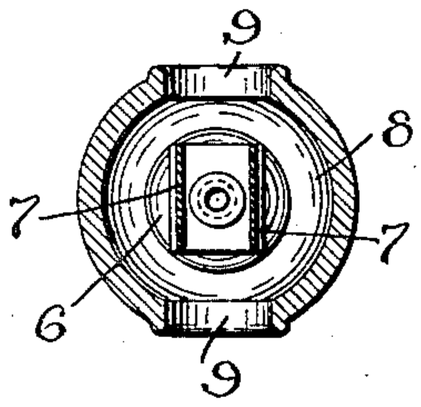


Fig. 5.

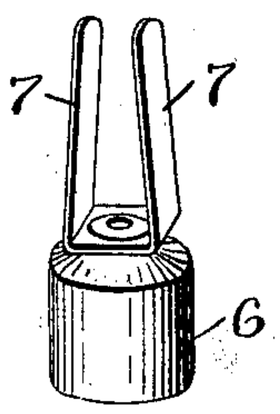
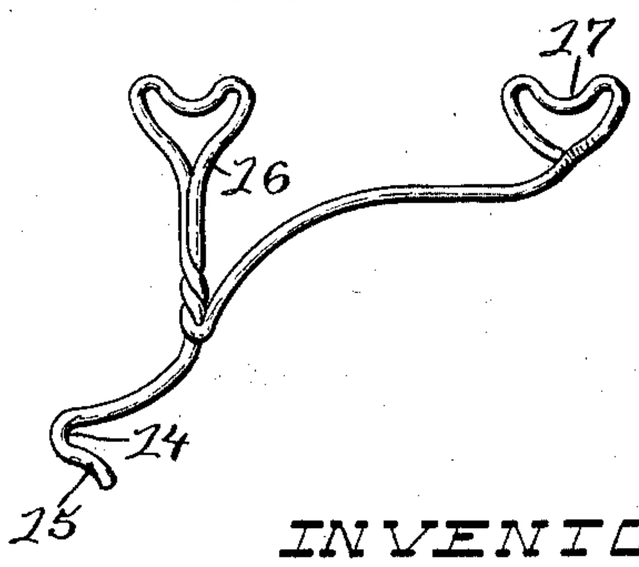


Fig. 6.



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FREDERICK RICHARDSON, OF PROVIDENCE, RHODE ISLAND.

TOOL-HEATER.

SPECIFICATION forming part of Letters Patent No. 692,476, dated February 4, 1902.

Application filed June 27, 1901. Serial No. 66,201. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK RICHARDSON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Tool-Heaters, of which the following is a specification.

This invention has reference to a device for heating soldering-irons and other tools. The improved gas-burner used in this device is also applicable for other heat-producing purposes.

The invention consists in the peculiar and novel construction of the burner and the combination of the parts, whereby the combustion of the gas is improved and tools or parts to be heated may be supported, as will be more fully set forth hereinafter.

Figure 1 is a side view showing the improved burner provided with a tool-rest. Fig. 2 is a top view of the burner. Fig. 3 is a vertical sectional view of the burner. Fig. 4 is a transverse sectional view of the burner on the line X X of Fig. 1. Fig. 5 is a perspective view of the gas-inlet tip, showing the adjustable deflectors. Fig. 6 is a perspective view of the detachable tool-support.

In the drawings, 1 is the base, forming the support for the gas-burner 2. The base is perforated and provided with the inlet 3 and the screw-threaded nipple 4. In the preferred form the base 1 is provided with the flanges 5 5, by which the base may be secured when the tool-support is used. The burner 2 is provided at its lower end with a socket screw-threaded internally, so as to connect with the nipple 4. The cup-shaped tip 6, inserted in the base of the burner, is perforated and has the metal around the perforation drawn out into a short tube. The sheet-metal deflectors 7 7 have the connecting part perforated and set over the short tube of the tip 6 and then by upsetting the short tube secured to the tip, as is shown in Fig. 5. The chamber 8, of ovoid form, surrounds the deflector and has on the opposite sides the air-inlet openings 9 9. The chamber contracts above the air-inlet openings and is then bifurcated, forming the two curved ducts 10 10, the outlets 11 11 of which are preferably oblique to each other. As shown in the drawings, the outlets 11 11 are each at an angle of about forty-five degrees to the perpendicular central axis and both on the same plane. The inside walls of the ducts 10 10 are united to form the bearing 12 and the opening 13.

The tool-support is preferably formed of a length of wire bent to form the hook 14, engaging with the bearing 12 and the bearing 15, which extends through the opening 13 and bears on the side of the burner. The post 16 is formed by twisting a loop of the wire, and the end support 17 by bending the wire into the form shown in Fig. 6.

By the peculiar and novel construction of the burner, as far as I am aware, the air supplied through the openings 9 is more thoroughly mixed with the gas than was heretofore done. The flat deflector-plates 7 7 serve to guide the jet of gas through the chamber 8, into which the air freely enters. The contraction above the chamber 8 facilitates the indraft of the air and the mixing of the air with the gas. The central body forming the inner walls of the curved ducts 10 10 materially assists the mixing of the air and gas, and the two outlets 11 11 cause the two jets to impinge against each other to complete the mixing of the air and gas in the flame. In practice the eye can detect by the appearance of the flame at the outlets 11 11 which of the two outlets supplies the better mixture. A slight excess of gas shows a brighter flame than an excess of air. By adjusting the deflectors to one side or the other the color of the flame can be changed and perfect combustion secured. By the adjustment of the deflector-plates 7 7 the flame may be controlled so as to extend vertically centrally between the two outlets. The deflector-plates 7 7 will readily yield to any kind of wire or tool that can be inserted into one of the openings 9.

In the arts many forms of material or tools require to be partially heated. With my improved device such heating can be done with the least loss of gas or time. My improved burner is applicable for all purposes where gas is used to produce heat.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a heater-burner, the combination with the gas and air inlets, a mixing-chamber and

bifurcated ducts discharging the product toward a common center, of deflector-plates on opposite sides of the gas-inlet directing the flow of the gas through the mixing-chamber, as described.

2. In a heating-burner, the combination with a chamber having air-inlets and the gas-inlet and provided with the curved ducts, of the deflector-plates 7 7 placed on opposite sides of the gas-inlet, as described.

3. The combination with a heater-burner provided with two oppositely-disposed ducts 10 10 and the bearing 12, of a tool-support provided with a hook engaging with the bearing and a part of the burner, as described.

4. In combination with a heating-burner having two oppositely-disposed ducts, of a central bearing and a tool-support connected with the bearing and sustained by the burner, as described.

5. In a heater-burner, the combination with the base 1, the inlet-pipe and the nipple 4, of a burner having the tip 6, the deflectors 7 on the tip, the mixing-chamber 8 provided with the air-openings 9 in the wall of the same, the bifurcated ducts 10, a central body forming the inner walls of the ducts 10 10 and obliquely-disposed outlets, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK RICHARDSON.

In presence of—
B. M. SIMMS,
JOSEPH A. MILLER.