

July 27, 1926.

1,593,725

W. A. SHARPE
SELF CONTAINED HEATER UNIT

Filed Jan. 6, 1926



Fig. 1.

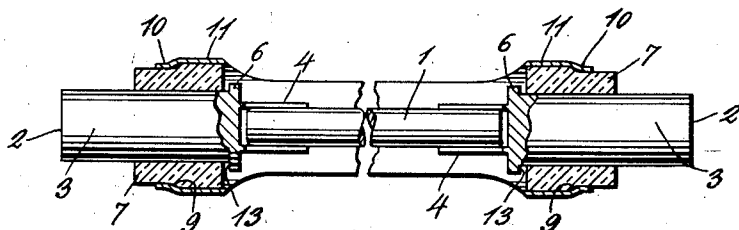


Fig. 3.

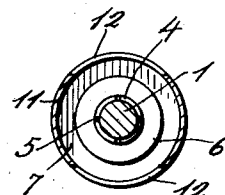


Fig. 2.

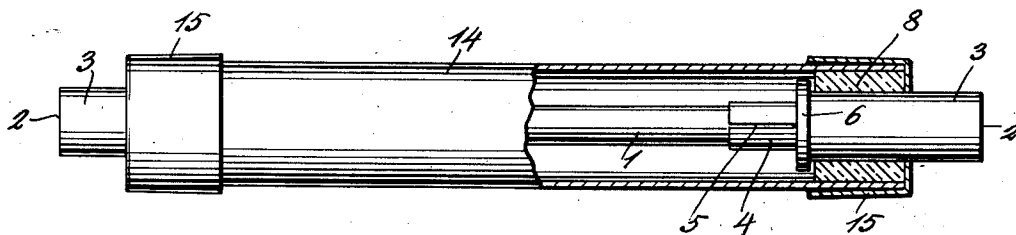


Fig. 4.

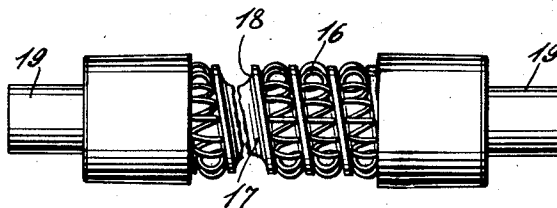


Fig. 5.

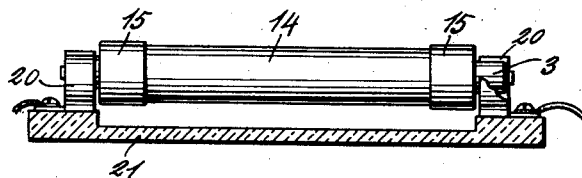


Fig. 6.

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UNITED STATES PATENT OFFICE.

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SELF-CONTAINED HEATER UNIT.

Application filed January 9, 1926. Serial No. 80,366.

This invention relates to improvements in resistance elements of the type used in the generation of heat.

As our economical development continues, we will gradually abandon our present uneconomical method of heating our homes by individual coal-burning furnaces and substitute electric heaters. The electricity will be generated at the mines or be derived from waterfalls. At present no serious efforts have been made in this direction, as the present cost of electric energy precludes its extensive use for heating.

It is the object of this invention to produce a cheap and exceedingly efficient heating element that can be applied and removed from the heaters as conveniently as an electric lamp or a cartridge fuse, and which shall be capable of producing very high temperatures when these are needed, as they sometimes are in ovens of various kinds.

My invention in its broadest aspect consists of a resistance element provided at each of its ends with a terminal which can be inserted into properly spaced contact clips in the same manner as a cartridge fuse is connected into a circuit.

A heater element constructed in this manner can be made an independent unit like an electric lamp that can be used wherever an electric heater is desired.

In order to describe my invention with the greatest clearness possible and so that its construction and manner of use can be readily understood, reference will now be had to the accompanying drawing in which the invention has been illustrated and in which:

Fig. 1 is a top plan view of a heater element showing the preferred construction;

Fig. 2 is a transverse section taken on line 2-2, Fig. 1;

Fig. 3 is a longitudinal section taken on line 3-3, Fig. 1;

Fig. 4 is a plan view of a slightly modified form, parts being broken away so as to better disclose the construction;

Fig. 5 is a view, with parts broken away, showing my invention embodied in a heater element of a slightly different type; and,

Fig. 6 is a view showing how the units are applied to a supporting base, the base being shown in section.

Numeral 1 designates a resistance element which consists of a bar of refractory material having sufficient resistance to limit

the flow of current to a predetermined maximum. The material employed in the construction of the bar 1 may be of any suitable kind as this invention relates to the construction and not to the composition of the resistance element. Secured to opposite ends of the bar 1 are electric terminals 2, each of which consists of a cylindrical part 3 from one end of which a socket 4 projects. The cylindrical socket 4 has two or more longitudinal slots 5 which permit the walls of the socket to move outwardly when the ends of the bar 1 are inserted whereby a good, firm, contact is obtained. Each terminal is also provided with an outwardly extending flange 6 which forms stops for the ferrules 7 and 8. The ferrules 7 are made of refractory insulating material, such as porcelain and have their outer surfaces of different diameters so as to provide an inclined shoulder 9 against which the ends 10 of the guard member 11 are crimped. The guard member 11 is made of metal and is preferably formed from a piece of drawn steel tubing from diametrically opposite sides of which openings 12 have been cut. The space between the adjacent end surfaces of the ferrules 7 is somewhat greater than the distance between the shoulders 13 (Fig. 3) so that the parts may move with respect to each other so as to compensate for unequal expansion. The guard member 11 serves to relieve the resistance bar 1 of strains tending to break it and also guards it against destructive blows which might otherwise destroy it. A heater unit like that described and which is shown in Figs. 1 to 3 can be safely shipped and handled and is therefore adapted to be employed for a great variety of different uses. The slots 12 permit air to circulate and to come into contact with the bar 1.

In Figure 4 I have shown a modification in which the guard member 11 has been replaced by a quartz tube 14 that is secured at its ends to the ferrules 8 and held in place by means of caps 15. Heat units of the type shown in Fig. 4 are useful in many places, as, for example, for fireplaces where they present a fine appearance and in chemical laboratories where the quartz tube protects the parts against damage from acid fumes, etc.

In Fig. 5 I have illustrated a heater in which the resistance element is formed by

a wire 16 that has been wound into the form of a helix and which is coiled onto the insulating member 17 whose outer surface is provided with spiral groove 18. End terminals 19 are secured to the ends of the member 17 and serve to make connections with spring clips like those indicated by numeral 20 in Fig. 6 where a pair of such clips have been shown secured to a base 21. The several units may be connected in series or parallel so as to obtain any capacity desired.

It is evident that by means of heater units like those described, heaters may readily be constructed for any desired purpose and since the units may be readily removed and replaced, burned out or broken units may quickly be replaced by new ones.

Having now described my invention, what is claimed as new is:

A heater unit comprising, in combination, a bar of refractory resistance material, an electric terminal secured to each end of said bar, said terminals having a socket in one end, for receiving an end of the resistance bar, the other end of each terminal being solid and adapted to be secured to a spring clip, each terminal having also an annular outwardly extending rib intermediate its ends, a ferrule of refractory insulating material surrounding each terminal and a tubular guard member enclosing the bar and secured to its ends to the ferrules.

In testimony whereof I affix my signature.

WILLIAM A. SHARPE.