

Aug. 7, 1928.

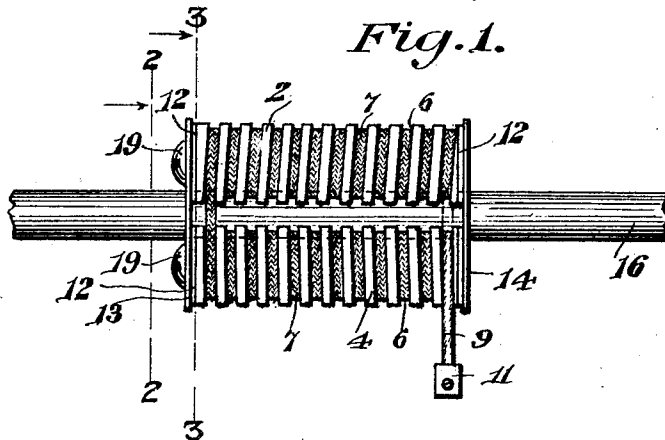
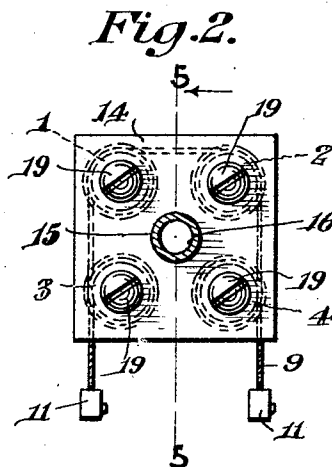
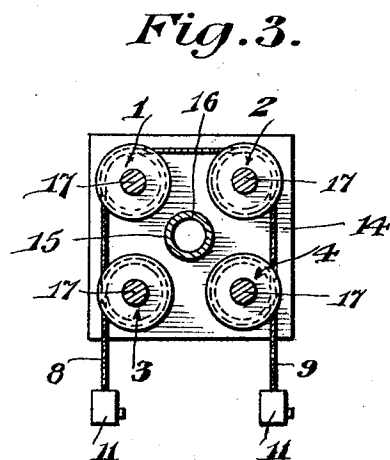
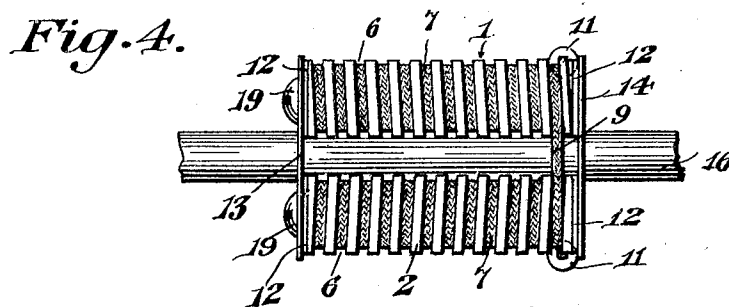
1,680,084

S. S. BOLSINGER

ELECTRIC HEATING ELEMENT

Filed Oct. 8, 1927

2 Sheets-Sheet 1



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Fig. 5.

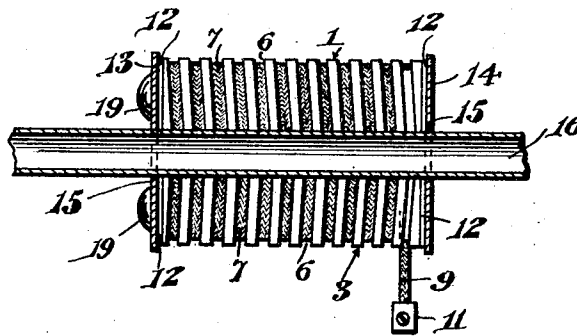


Fig. 6.

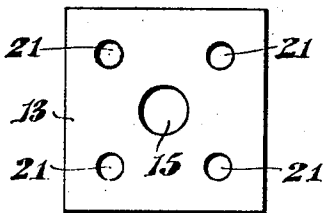


Fig. 7.

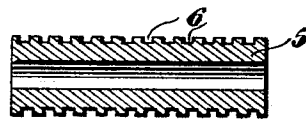


Fig. 8.

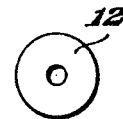
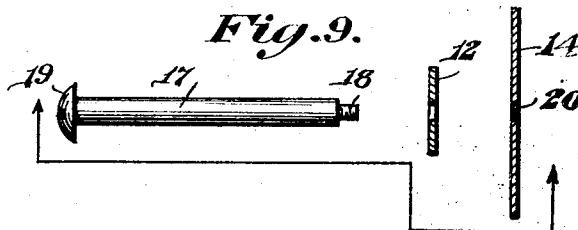


Fig. 9.



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ELECTRIC HEATING ELEMENT.

Application filed October 8, 1927. Serial No. 224,911.

This invention relates to an electric heater, and has for its object to provide, in a manner as hereinafter set forth, a device of such class for use in connection with hydrocarbon generators or vaporizers to overcome the fire hazard, delay any objectionable features present due to priming, by gasoline or alcohol, to cause the lighting of the burner element of the generator.

Further objects of the invention are to provide, in a manner as hereinafter set forth, an electric heater which is simple in its construction and arrangement, strong, durable, compact, readily installed with respect to the fuel feed line leading to the burner of a hydrocarbon generator, thoroughly efficient in its use to enable the quick vaporizing of the hydrocarbon whereby the burner of the generator can be ignited without delay, and inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a side elevation of an electric heater, in accordance with this invention, showing the adaptation thereof with respect to the fuel feed line of a hydrocarbon generator or vaporizer.

Figure 2 is a section on line 2—2 Figure 1.

Figure 3 is a section on line 3—3 Figure 1.

Figure 4 is a top plan view of the heater showing the adaptation thereof with respect to a hydrocarbon or fuel feed line.

Figure 5 is a section on line 5—5 Figure 2.

Figure 6 is an elevation of one of the end supporting plates.

Figure 7 is a longitudinal sectional view of one of the cores of the heating element.

Figure 8 is an end view of a core.

Figure 9 is a disassembled view illustrating the means for anchoring a core of a heating element in position with respect to the end plates.

Referring to Figures 1 to 9 of the drawings, an electric heater, in accordance with this invention, includes a plurality of heat-

ing elements, preferably four in number and which are indicated generally at 1, 2, 3 and 4. Each of said elements comprises a tubular core 5 of porcelain and which has its periphery formed throughout with squared threads 6. The threads of the core of the element 1 are right, the threads of the core of the element 2 are left, the threads of the core of the element 3 are left and the threads of the core of the element 4 are right. Preferably the threads are one-sixteenth of an inch deep. Wound upon each core throughout the threads thereof is an electrical conductor of flat nichrome wire, indicated at 7. A single length of wire is employed and one end thereof depends from the element 3, as at 8 and the other end depends from the element 4 as at 9. The flat threads are provided so that the coils of the wire will not crowd together when the wire is expanded by heat. The wire is first wound on the core of the element 3 then extended upwardly and wound upon the core of the element 1 and extended from the latter to the element 2 and wound on the core thereof and extends from the core of the element 2 and is wound on the core of the element 4. The ends of the wire 7 are provided with sockets 11 for coupling the wire, which is termed a heating member, to a source of electrical energy. Positioned against each end of a core is an insulator 12 and preferably it is in the form of a mica washer.

The elements 1 to 4 are arranged between a pair of end or supporting plates 13, 14 and which have openings 15, at the centers thereof for the purpose of mounting the heater upon the hydrocarbon feed line 16 to the burner whereby the heating elements 1 to 4 will surround and heat said line, when the heating member is active, thereby vaporizing the hydrocarbon so that the burner can be lighted without any delay or objection.

The heating elements 1 to 4 are secured to and between the plates 13, 14 by holdfast devices, one for each heater element, and each holdfast device consists of a bolt 17 provided at one end with a reduced peripherally threaded portion 18 and at its other end with a head 19. The plate 13 is formed with openings for the passage of the shank of the bolt 17 and the reduced end 19 extends through a washer 13 and has threaded engagement with the threaded wall of an opening 20 formed in the plate 14. The

heads 19 of the bolts abut against the outer face of the plate 13. The manner of connecting the heating elements to the end plates, permits of conveniently dismantling the heater when desired and also permits of the same to be expeditiously attached in position with respect to the fuel supply or feed line 16. The openings for the passage of the shanks of the bolts 17, which are formed in the plate 13, are indicated at 21. The bolts 17 extend through the cores 5, as these latter are tubular. Each heater element not only includes a core 5, but a portion of the length of the wire 7.

The heater, when properly installed, will greatly reduce the time in generating, and will also eliminate all possibility of accident from fire while generating. The heaters consume but little power, as they can be turned off immediately after the burner is lit, as the burners then act to automatically heat the generator.

It is thought the many advantages of an electric heater, in accordance with this invention, and for the purpose set forth, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which fall within the scope of the invention as claimed.

What I claim is:

1. An electric heater comprising a plurality of heating elements consisting of tubular cores of non-conducting material and a single conductor common to the cores and adapted to have its ends connected with an electrical source, said conductor having a length thereof spirally wound on each of said cores, said cores being formed in their outer faces with squared, spiral threads to receive said conductor therein to permit expansion of said conductor and to prevent the convolutions thereof from crowding together, and supporting means connected to and maintaining said elements in spaced relation, said supporting means provided with openings for the mounting thereof on a fuel feed line to position said elements to surround the latter.

2. An electric heater comprising a plurality of heating elements consisting of tubular cores of non-conducting material and a single conductor wound on and common to the cores and adapted to have its ends connected with an electrical source, said cores being formed with spiral threads to provide a seat for said conductor and to prevent the convolutions thereof from crowding together upon the expansion of the conductor, supporting means connected to and main-

taining said elements in spaced relation, said supporting means provided with openings for the mounting thereof on a fuel feed line to position said elements to surround the latter, and insulators interposed between the ends of the cores and said supporting means.

3. An electric heater comprising a plurality of heating elements consisting of tubular cores of non-conducting material and a single conductor common to the cores and adapted to have its ends connected with an electrical source, said conductor having a length thereof spirally wound on each of said cores, said cores being formed in their outer faces with squared, spiral threads of greater depth than the diameter of said conductor to receive the conductor therein to permit expansion of the conductor and to prevent the convolutions thereof from crowding together, and supporting means connected to and maintaining said elements in spaced relation, said supporting means provided with openings for the mounting thereof on a fuel feed line to position said elements to surround the latter, certain of said cores having right threads and the others left threads.

4. An electric heater comprising a plurality of heating elements consisting of peripherally threaded, tubular cores of non-conducting material and a single conductor mounted in the threads of and common to the cores and adapted to have its ends connected with an electrical source said peripheral threads providing expansion grooves for said conductor and also providing spacing means for the convolutions thereof, plates positioned at the ends of the cores and having openings for mounting the plates on a fuel feed line, and means for securing the cores to the plates in circumferential relation to said line.

5. An electrical heater comprising a plurality of heating elements consisting of peripherally threaded, tubular cores of non-conducting material and a single conductor mounted in the threads of and common to the cores and adapted to have its ends connected with an electrical source, plates positioned at the ends of the cores and having openings for mounting the plates on a fuel feed line, insulating washers interposed between the cores and plates, said plates being further provided with openings disposed in circumferential relation to the first mentioned openings, and bolts extending through the last mentioned openings and through said washers and through the cores.

In testimony whereof, I affix my signature hereto.

SAMUEL S. BOLSINGER.