

Oct. 9, 1928.

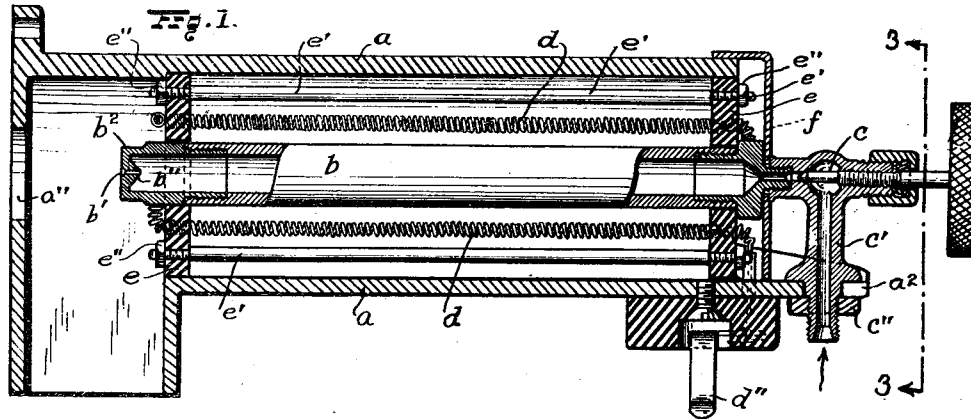
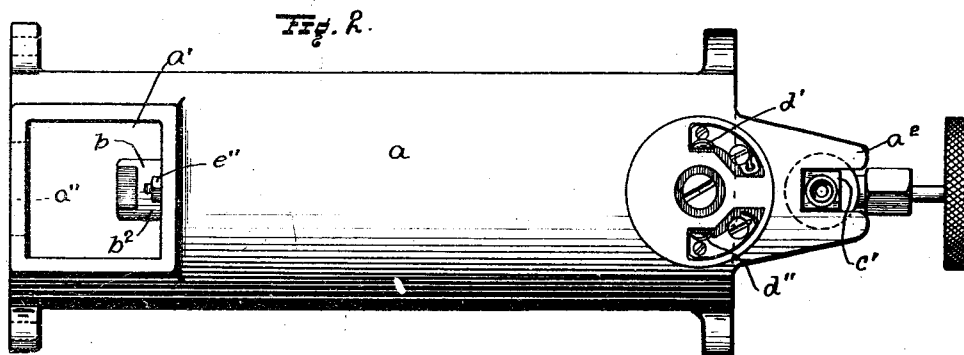
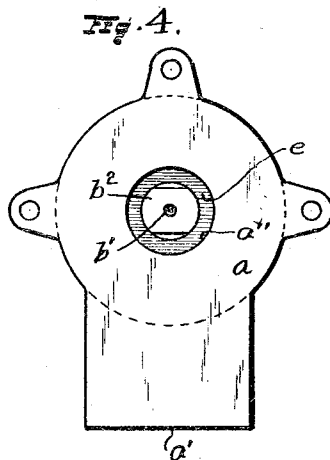
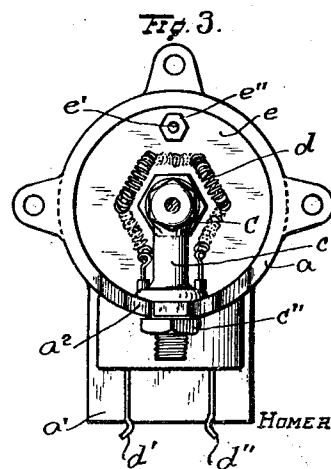
H. L. SCHNEIDER

1,687,148

GAS GENERATING APPLIANCE

Filed Oct. 21, 1921

2 Sheets-Sheet 1



Inventor
HOMER L. SCHNEIDER

By *Albert Eugene Dorence*
Attorney

Oct. 9, 1928.

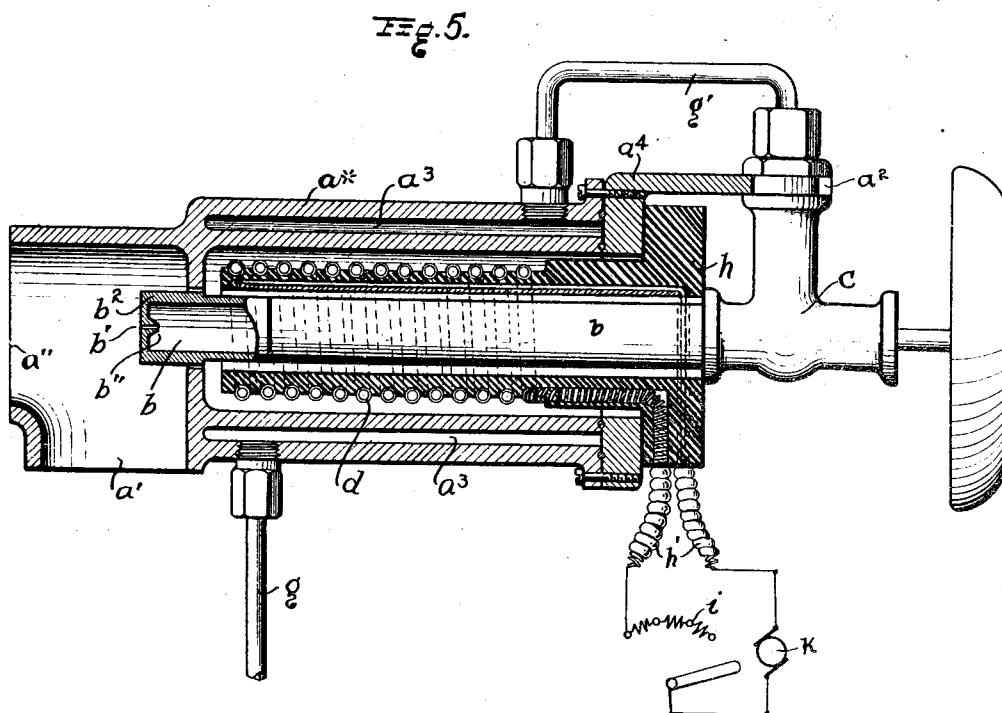
H. L. SCHNEIDER

1,687,148

GAS GENERATING APPLIANCE

Filed Oct. 21, 1921

2 Sheets-Sheet 2



Inventor
HOMER L. SCHNEIDER.

Albert E. Conner
Attorney

UNITED STATES PATENT OFFICE.

HOMER L. SCHNEIDER, OF CLEVELAND, OHIO.

GAS-GENERATING APPLIANCE.

Application filed October 21, 1921. Serial No. 509,305.

My invention relates to improvements in gas generating appliances, and has for its object the provision of a simple and compact apparatus for association with each burner, if
 5 so desired, which is adapted to convert a fluid fuel into gaseous or vaporous form immediately prior to ignition. A further object of my invention is the economical conversion of hydrocarbon fluids into a highly combustible
 10 gas for increasing the efficiency as fuel, while insuring much more convenient and accurate control of combustion.

It is necessary with all gas-generating burners, so far as I am advised, to associate
 15 suitable preheating or self-heating means therewith in order to convert hydrocarbon fuels into gaseous or vaporous form, and such means are not adapted for close regulation, nor for instantaneous or intermittent
 20 use.

Accordingly, I have provided suitable apparatus, preferably electrically heated, for direct or intimate association with any suitable gas burner or group of gas burners of
 25 compact, non-regenerative type, which will convert the fluid fuel into gaseous or vaporous form just as it is fed to the burner. Moreover, the independent means provided for heating the fluid fuel are adapted for immediate and intermittent use, while affording
 30 the closest possible regulation. This apparatus is simple and cheap in construction, coupled with a low cost of operation.

Briefly describing the embodiment of my invention herein shown, I may state that it comprises an elongated feeding chamber to which the fluid fuel is fed and about which is
 35 disposed an electrical heating unit which is adapted to maintain the feeding chamber at a sufficiently high temperature to volatilize or render vaporous any suitable hydrocarbon fuel supplied to said chamber. The details of the preferred constructions may more readily be explained by making reference to
 40 the accompanying drawings, wherein:

Figure 1 is a view in vertical section showing the simplest form of gas-generating appliance embodying my improvements.

Fig. 2 is a bottom view thereof.

Fig. 3 is a rear elevation, partially in section on line 3—3, Fig. 1.

Fig. 4 is a front elevation thereof, and

Fig. 5 is a longitudinal sectional view of a modified appliance adapted to preheat the
 65 fluid fuel.

Throughout the several figures of the drawings I have employed the same character of reference to indicate similar parts.

Referring first to Figure 1, the casing *a* is provided with a rectangular air inlet *a'* and an opening *a''* opposite the extended end of the feeding chamber *b*. This feeding chamber is of elongated tubular form and rearwardly connects with a controlling valve *c*, while forwardly it is provided with a small opening or perforation *b'* interiorly guarded by the protruding nipple *b''*. 60

The purpose of the nipple *b''* is to afford a free exit for the generated gas within the feeding and heating chamber *b*, since the opening thus guarded is not likely to be clogged by the slight accumulation of carbon within the chamber. Instead, this carbon will deposit in small quantities about the base of the nipple until the chamber is opened
 75 and cleaned.

It will be noted that the chamber *b* is surrounded by coils of resistance wire *d* which are supported longitudinally within the tubular section of the casing by the spaced lava
 80 members *e* which are suitably perforated to accommodate the coiled wire and are held rigidly by means of the threaded rods *e'* and nuts *e''*.

The combined feeding and heating chamber *b* with its controlling valve *c* is mounted as a unit rearwardly of the casing by means of the angularly extending stem *c'* and its nut *c''* which is clamped down upon the slotted extension *a²* for the purpose of holding the valve and chamber in place. A centrally perforated cover *f* normally protects the exposed portions of the resistance wire which terminate at the contacts *d'*, *d''* through which current is supplied thereto, as desired. 90

From the foregoing it will be readily understood how the heating chamber may be inserted and removed from the casing in order to inspect or clean the same. This is accomplished simply by removing the nut *c''* and the connected feed pipe (not shown) whereupon the cap *b²* may be unscrewed and any accumulated carbon or other deposit will be readily removable therefrom. 100

Referring further to the modified construction as shown in Fig. 5, the details already explained are essentially duplicated therein. However, the casing *a** is suitably cored to provide a surrounding annular chamber *a³* 110

for the fluid fuel, whereby it may be heated from the enclosed electrical heating unit; connection being made from the feed pipe *g* and through the preheating chamber *a*³ and pipe *g'* to the controlling valve *c*. The preheating chamber is rearwardly closed by the annular member *a*⁴.

The electric heating unit, although of equivalent construction, varies somewhat in detail; comprising a hollow lava core *h* suitably recessed and grooved to accommodate the coiled resistance wire *d*. The terminals of this wire are shown to be suitably insulated by lava beads *h'*; with which wire are diagrammatically associated a combined switch and resistance coil or rheostat *i* and source of current *k*.

The fluid fuel, either at normal or preheated temperature, upon being supplied under pressure to the combined feeding and heating chamber of my improved device, is immediately converted into a gaseous or vaporous form and discharged through the orifice *b'* and on to an associated burner (not shown) carrying with it the supply of air for complete combustion. Obviously the temperature of the chamber *b* may be maintained at the requisite degree for converting the fluid hydrocarbon into gaseous form by regulating the flow of current through the electrical heating element. The current consumption, of course, will generally correspond to the volume of fluid fuel under treatment from time to time, depending upon the needs of the associated burner or burners.

It is clear that a generator of this type may be almost instantly put into service, without the necessity for delay involved in the use of self-heating generators, while incurring only a slight cost for electric current merely during the periods of use. The apparatus is extremely simple in construction and is capable of association with a large range of gas burners for various uses.

Moreover, the current may be readily regulated so that the temperature of the feeding and vaporizing chamber shall not exceed the carbonizing temperature of the particular fuel employed, whether crude or refined oils; all entirely independent of the rate at which the fuel is being burned from time to time.

The embodiments of my invention, as shown herein intimately associated with what I may term a non-regenerative burner of the simplest and most compact type, permit the burning of the liquid fuel in vaporous form and at a low temperature, which would be impracticable if the vaporized fuel were conducted to a relatively distant burner and thereby subjected to cooling or condensation. Again, the self-heating or regenerative adjuncts of the burner are lacking and permit my device to be used in positions where the space available for the burner is restricted.

Having now described the preferred embodiment of my invention, I claim as new and desire to secure by Letters Patent, the following:

1. In apparatus of the class described, the combination with a supporting casing, of a removable electrical heating element, and an associated removable vaporizing chamber, both adapted to be inserted within said casing in operative relation, and a controllable fuel supply connection for the vaporizing chamber, substantially as set forth.

2. In apparatus of the class described, the combination with a cored casing affording a central and an enclosing chamber respectively, of a removable electric heating element and an associated vaporizing chamber adapted to be inserted within the central chamber of the casing, and a duct connecting the enclosing chamber with the vaporizing chamber, substantially as set forth.

In testimony whereof I do now affix my signature.

HOMER L. SCHNEIDER.