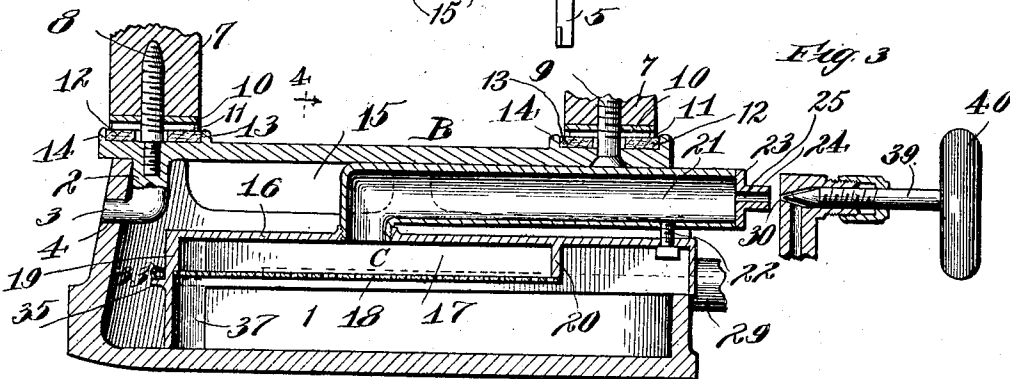
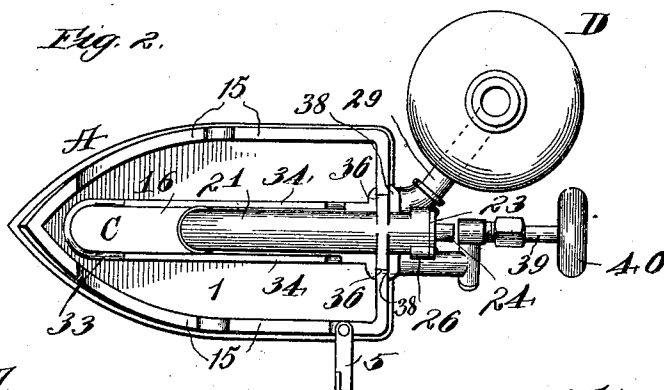
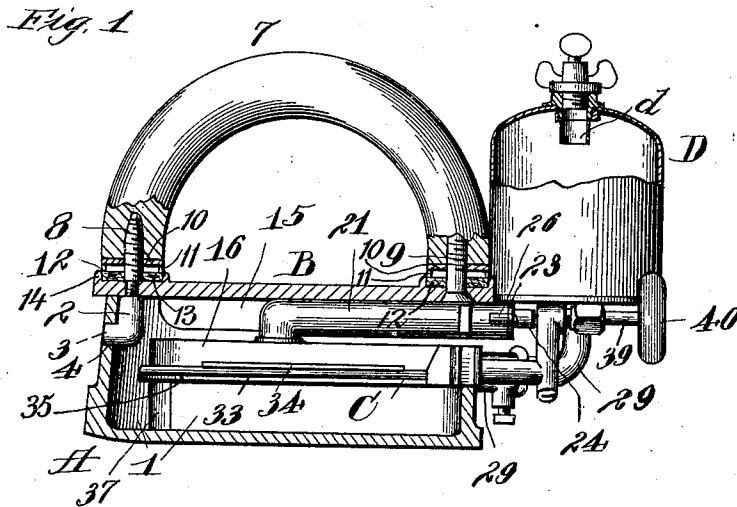


H. W. SCHOFF.
BURNER.
APPLICATION FILED JAN. 13, 1908.

938,902.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 1.



Witnesses: $\frac{1}{4}$ A

Inventor:

Henry W. Schoff,

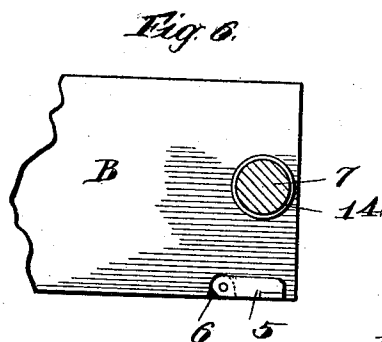
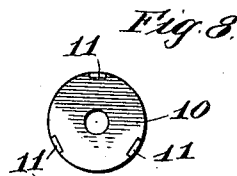
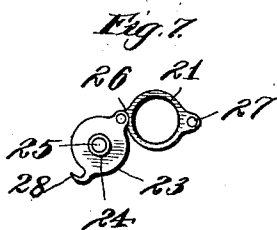
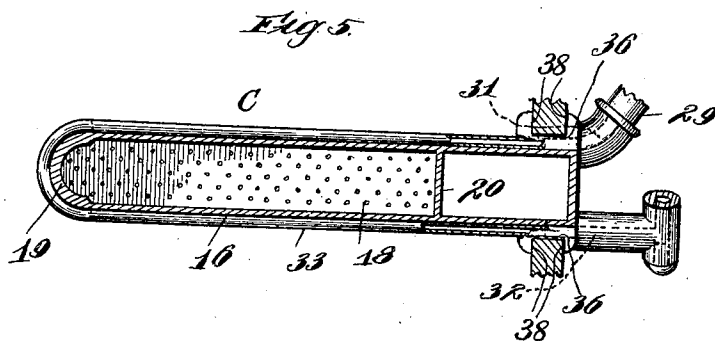
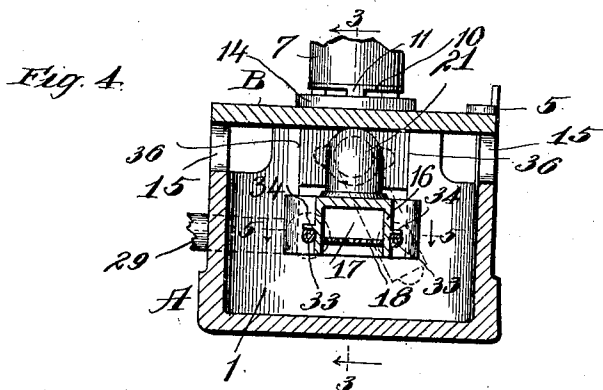
Charles B. Gilson.

By *Geo. E. Waldo,* Atty

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Witnesses.

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UNITED STATES PATENT OFFICE.

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BURNER.

938,902.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed January 13, 1908. Serial No. 410,480.

To all whom it may concern:

Be it known that I, HENRY W. SCHOFF, a citizen of the United States, and a resident of River Forest, Cook county, Illinois, have
5 invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates to burners and relates particularly to burners designed and
10 adapted for burning liquid fuel, as gasolene, alcohol, and the like.

The object of the invention is to provide an improved burner particularly designed and especially adapted for heating sad-irons
15 of the type comprising a hollow body portion, in which said burner is located.

A further object of the invention is to provide a burner of this type adapted for burning either gasolene or alcohol as a fuel,
20 which may be quickly and conveniently converted or changed to burn one or the other, as may be desired.

A burner of my invention comprises the various features, combinations of features
25 and details of construction hereinafter described and claimed.

In the accompanying drawings, in which my invention is fully illustrated,—Figure 1 is a sectional elevation of a sad-iron equipped
30 with a burner of my invention, shown in side elevation. Fig. 2 is a top plan view of a sad-iron equipped with my improved burner, the top of the sad-iron being removed in order to show the burner. Fig. 3 is an enlarged sectional view on the line 3—3 of Fig.
35 4. Fig. 4 is an enlarged sectional elevation on the line 4—4 of Fig. 3. Fig. 5 is an enlarged plan section of the burner on the line 5—5 of Fig. 4. Fig. 6 is a top plan view of the rear end of the sad-iron, showing the
40 means for securing the top to the body portion thereof at its rear end. Fig. 7 is an enlarged detail of the rear end of the induction tube of the burner; and Fig. 8 is a detail
45 view of one of the stools on which the ends of the handle of the sad-iron rest.

As my improved burner is particularly designed and adapted for heating sad-irons of the type comprising a hollow body portion
50 in which said burner is located, I have, in the drawings, shown my improved burner as applied for this purpose.

Referring now to the drawings, A designates, as a whole, the body portion of my
55 improved sad iron, B the removable top

thereof, C the burner, and D the fuel supply tank.

The body portion A of my improved sad iron is hollow, forming a combustion chamber 1 adapted to contain the burner C, the
60 top of said combustion chamber being open to provide for inserting the burner C therein and being adapted to be closed by means of the top B, all in the usual manner.

As shown, the top B is adapted to be removably secured to the body portion A by
65 means of a hook 2, depending from a point adjacent to the front end of said top, the end 3 of which extends forwardly substantially at right angles to the shank thereof and is
70 adapted to engage a hole 4 formed in the front end of the body portion A of the sad iron, and a clip 5 pivoted to the upper edge of a side wall of the body portion A of the
75 said iron, or to a boss formed thereon, said clip 5 being so positioned that it may be turned pivotally to closely engage the upper surface of the top B when the same is ad-
80 justed to the body portion A in its designed position. A notch 6, Fig. 6, formed in the top B affords a passageway for the clip 5 in adjusting and removing the top B.

As shown, the handle 7, which is preferably made of wood or other suitable non-conductor of heat, is connected to the top
85 B in the following manner:—At its forward end the top B is provided with a wood screw 8, which is adapted to engage a suitable hole or opening formed in the front end of the handle 7. As shown, the wood screw
90 8 is secured in the top B by screw threading its rear or head end into a suitable hole or opening in said top. The rear end of said handle is attached to the top B by means of
95 a screw 9 which extends upwardly through the top B and is threaded into the rear end of said handle 7. To prevent the handle 7 becoming charred at its ends or too hot to be comfortably grasped in use, due to induction
100 of heat from the top B, the ends of said handle are preferably insulated from said top. As shown, the means for insulating said handle from the top B, are as follows:—Inserted between the ends of said
105 handle 7 and the top B are what may be termed stools shown in detail in Fig. 8, consisting of plates 10 formed on the under sides of which, preferably adjacent to their edges, are downward projections 11 adapted
110 to rest upon the top B. Said stools will thus

form skeleton structures, which will allow a free circulation of air beneath said plates 10, which will operate, in an obvious manner, to prevent the same from becoming excessively hot. Also, to more thoroughly insulate the handle 7, I insert asbestos pads 12 beneath said stools, said pads being preferably confined in recesses 13 formed in the upper surface of the top B, as shown, by raised flanges 14, preferably formed integral with said top B.

To provide for the escape of the products of combustion from the chamber 1, holes or openings are formed in the side walls of the body portion A, preferably adjacent to the upper edges thereof, as shown, by cutting away the upper edges of the side walls therebetween their ends, as shown at 15.

The burner C consists of an elongated body portion 16, formed in the under surface of which is a recess 17, the open side of which is closed by means of a perforated plate 18, said recess thus forming a chamber. As shown, the position of the plate 18 is defined by means of a shoulder 19 at the front end of said recess and a web 20 which closes the rear end thereof. The plate 18 is preferably secured in position by compressing the side walls of the body portion 16 of the burner upon the edges of said plate, so that they will firmly grip or pinch the edges thereof. In order to save metal, the body portion 16 of the burner may also be cut out or recessed in the rear of the web 20.

Communicating with the chamber 17 in the body portion 16 of the burner, is a tube 21, which extends rearwardly along the top of the burner. Said tube 21 is preferably made separate from the body portion 16 of the burner and is detachably connected thereto by screw threading the front end thereof into a hole or opening in the top of the burner body through which said tube communicates with the chamber 17 and by a screw 22 threaded through the top of the body portion 16 of the burner and into said tube 21. The screw 22 being in screw threaded engagement with both the body portion 16 of the burner and the induction tube 21, also affords convenient means for adjusting the height of the rear end of said tube 22 to effect register of the bore thereof with the jet orifice of the burner. This end may be accomplished by screwing said screw 22 a greater or less distance through the body portion 16 of the burner before engaging the same with the induction tube.

The bore of the tube 21 is of such size and the rear end thereof so spaced from the jet orifice 30 of the burner, that, normally, the burner will be adapted for burning gasoline or other desired hydrocarbon, the jet of gasoline discharged into said tube operating, under normal conditions, to draw a sufficient

quantity of air into said tube to form a proper mixture to secure perfect combustion.

To adapt the burner for using alcohol, which requires a much smaller proportional amount of air, I provide means for reducing the size of the opening at the rear end of the tube 21 and for extending the same rearwardly into close proximity to the jet orifice. This can be conveniently effected, see particularly Fig. 7, by means of a plate 23 adapted to be removably adjusted to the rear end of the tube 21, a boss 24 on which extends rearwardly into desired proximity to the jet orifice, a hole or opening 25, preferably in axial alinement with the bore of the tube 21, being formed through the plate 23 and boss 24. In the preferable construction shown, the plate 23 is pivoted to the rear end of the tube 21, as shown, to a boss 26 thereon, so that the pivotal point of said plate will be outside of the bore of said tube 21, a suitable stop operating to define the adjustment of said plate to bring the hole 25 in proper relation to the bore of the tube 21. As shown, said stop consists of a headed pin or screw 27 secured in the rear end of the tube at the opposite side of the bore thereof from the pivot of said plate and which is adapted for engagement by a hook 28 on said plate 23. The size of the opening 25 and the proximity of the open end thereof to the jet orifice, are such that, when alcohol is being burned, the correct proportion of air will be drawn into said tube to secure perfect combustion.

The fuel tank D is supported at the end of a tube 29 which communicates with a passageway formed around the burner and which terminates in the jet orifice 30 located in the rear of the tube 21 and adapted to discharge a jet of gas or vapor lengthwise into said tube. The tube 29 extends rearwardly and laterally from the burner so that, when the burner is inserted into the body portion A of the said iron, said tank will be in the rear and to one side of said body portion A, in which position it will not obstruct a view of the work on which the iron is being used. Said tank D is provided with the usual opening for supplying fuel, gasoline or alcohol, thereto, which is adapted to be closed by means of a suitable closure and with a controlled passageway, preferably formed in the closure of the supply opening, for supplying air under pressure to said tank, all in a familiar manner. The high level of the liquid in the tank D is defined by a filling tube *d*, which extends downward from the supply opening, leaving an air space of desired size above the lower end thereof when said tank is full to the lower end of said tube.

The passageway with which the supply tube 29 communicates, comprises two end sections 31 and 32, see particularly Fig.

5, formed directly in the body 16 of the burner, of which the section 31 communicates directly with the tube 29 and the section 32 leads to the jet orifice 30. Between the sections 31 and 32, said passageway is formed by a tube 33 ends of which are connected into the ends of said sections 31 and 32 and are in open communication therewith and which passes lengthwise entirely around the body portion 16 of the burner, adjacent to its lower edge, its position being defined by means of longitudinal ribs 34 on the sides of said burner above said tube and a flange 35 at the front end of said burner below said tube. The flanges 34 and 35 are made of such width that they will extend substantially flush with the outer edge of the tube 33 and thus protect the same from being jammed by being accidentally struck by other objects in handling. Owing to the length and position of the passageway connecting the fuel supply tank 29 with the jet orifice 30, the contents thereof will, in use, be heated to a very high degree, thus insuring that the liquid fuel passing through the same will be converted and delivered into the induction tube 21 in the form of gas.

To provide for inserting the burner C into the compartment 1 within the body portion A of the sad iron, a suitable opening 36 is formed in the rear end of said body portion A, the position of the burner C within the compartment being defined by contact of the lower side of said burner C with the bottom of the opening 36 and being held in position by the top B of the sad iron which, when adjusted to the body portion A, bears upon the tube 21. At its front end, the burner C is supported by means of a downward projection 37 thereon, the lower end of which is adapted to rest upon the bottom of the body portion A of the sad iron. Longitudinally, the position of the burner C within the body portion A of the sad iron, is defined by means of vertical grooves 38 in the sides of the burner adapted to engage corresponding tongues formed on the body portion A of the sad iron, as shown at the edges of the side walls of the sad iron at the sides of the opening 36 through which said burner projects. The jet orifice 30 is controlled by a needle valve 39 provided with a handle 40 for operating the same, in a usual manner.

I claim:

1. A burner comprising an induction tube, a passageway adapted to communicate with a source of fuel supply and which terminates in a jet orifice adapted to discharge into the bore of said induction tube, and means for varying the size of the open end of the induction tube into which said jet orifice discharges and its proximity to said jet orifice, said means comprising a plate adapted to be removably adjusted to the open end of the induction tube, and a boss

on said plate, said plate and boss being provided with a longitudinal opening extending longitudinally through the same, the relation being such that when said plate is adjusted to the open end of the induction tube, said opening through said plate and boss will be in substantial alinement with the jet orifice of the burner.

2. A burner comprising an induction tube, a passageway adapted to communicate with a source of fuel supply and which terminates in a jet orifice adapted to discharge into the bore of said induction tube, means for varying the size of the open end of said induction tube into which the jet orifice discharges, and its proximity to said jet orifice, said means comprising a plate pivoted to the rear end of said induction tube at one side of the bore thereof, a rearwardly extending boss on said plate, said boss and plate being provided with a longitudinal opening, a stop on said induction tube and a catch on said plate adapted to engage said stop, said catch and stop being adapted to define a position of said plate over the open end of said induction tube to bring the hole through said plate and the boss thereon in alinement with the jet orifice of the burner.

3. A burner comprising a body portion provided with an open sided recess, a perforated plate secured in the open side of said recess, said burner being provided with a passageway adapted to communicate with a source of fuel supply and which terminates in a jet orifice, said passageway comprising sections at the rear end of said burner formed directly in the walls thereof and an intermediate section formed by a tube the ends of which are secured in and which communicate with said rearward sections of said passageway and which passes around the body of said burner.

4. A burner comprising a body portion provided with an open sided recess, a perforated plate secured in the open side of said recess, said burner being provided with a passageway adapted to communicate with a source of fuel supply and which terminates in a jet orifice, said passageway comprising sections at the rear end of said burner formed directly in the walls thereof, and an intermediate section formed by a tube the ends of which are secured in and which communicate with the sections of said passageway formed directly in the burner and which extends around the body of the burner, and flanges on said burner which define the position of said tube.

5. A burner comprising a body portion provided with an open sided recess, a perforated plate secured in the open side of said recess, said burner being provided with a passageway adapted to engage with a source of fuel supply and which terminates in a jet orifice, said passageway comprising sections

at the rear end of said burner formed directly in the walls thereof, and an intermediate section formed by a tube the ends of which are secured in and which communicate
5 with the sections of said passageway formed directly in the burner and which extends around the body of the burner, and flanges which define the position of said tube the width of which is substantially equal to the
10 diameter of said tube.

6. A burner comprising an elongated body portion provided with an open sided recess, a perforated plate secured in the open side of said recess, said burner being provided
15 with a passageway adapted to communicate with a source of fuel supply and which terminates in a jet orifice, said passageway comprising sections at the rearward end of said burner formed directly in the walls thereof
20 and an intermediate section formed by a tube the ends of which are secured in and which communicate with said rearward sections of said passageway, and which extends lengthwise around the front end of said

burner, longitudinal flanges on said burner 25 above said tube and a flange at the front end of said burner below said tube, said flanges operating to define the position of said tube.

7. A burner comprising a body portion provided with a passageway adapted to com- 30 municate with a source of fuel supply and terminating in a jet orifice, a separate induction tube and means for securing said induction tube to the body portion of said burner, said means comprising a screw in 35 screw-threaded engagement with holes in the walls of both said burner and induction tube, thus providing for adjusting the rear end of said induction tube to effect register thereof with the jet orifice of said burner. 40

In testimony, that I claim the foregoing as my invention, I affix my signature in presence of two subscribing witnesses, this 6th day of Jany, A. D. 1908.

HENRY W. SCHOFF.

Witnesses:

CHARLES McNELLIS,
WILLIAM G. NOYES.