No. 798,359. PATENTED AUG. 29, 1905.

R. J. MINER.

STARTING TORCH FOR GASEOUS FUEL BURNERS.

APPLICATION FILED FEB. 16, 1905.

Fig. 4.

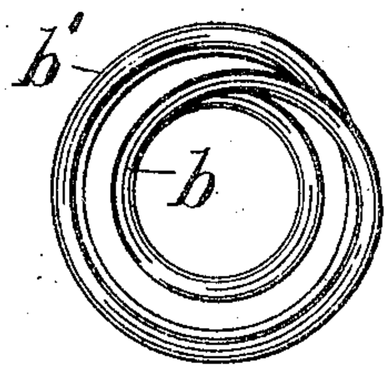


Fig. 5.

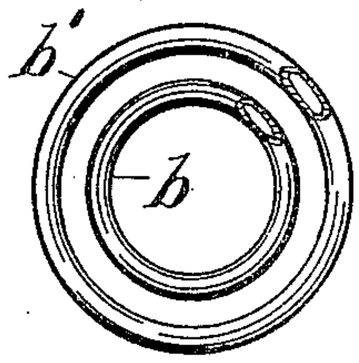


Fig. 6.

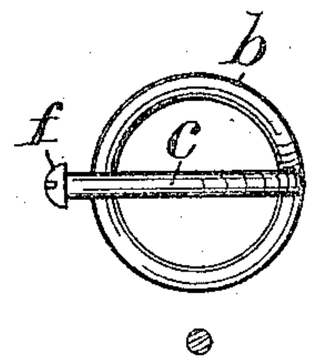


Fig. 1.

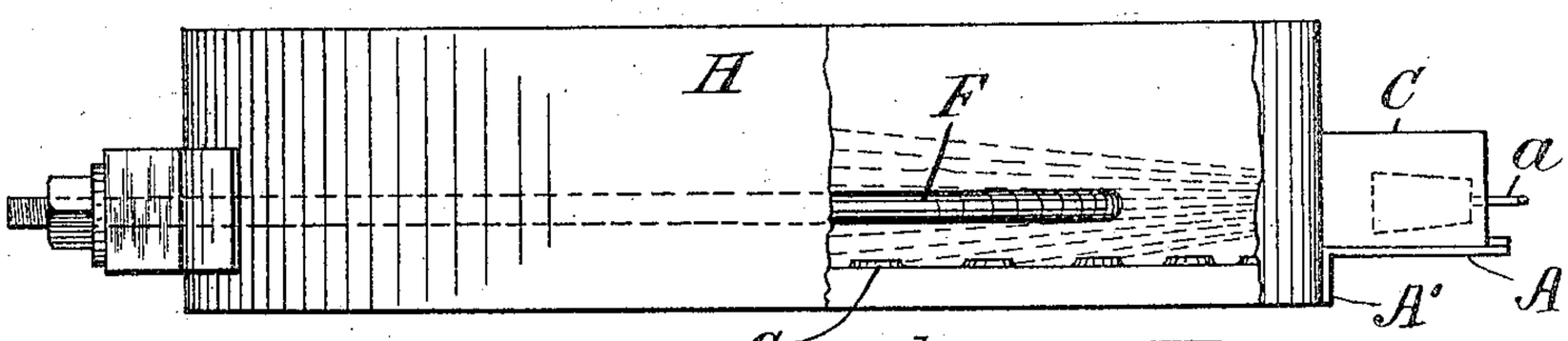


Fig. 3.

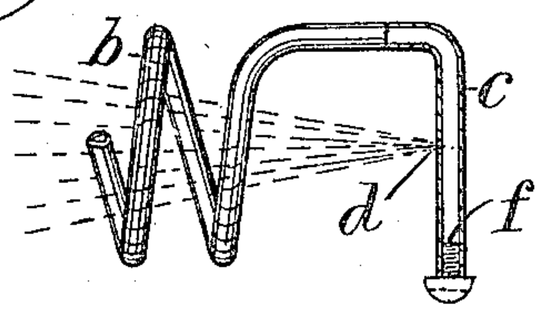
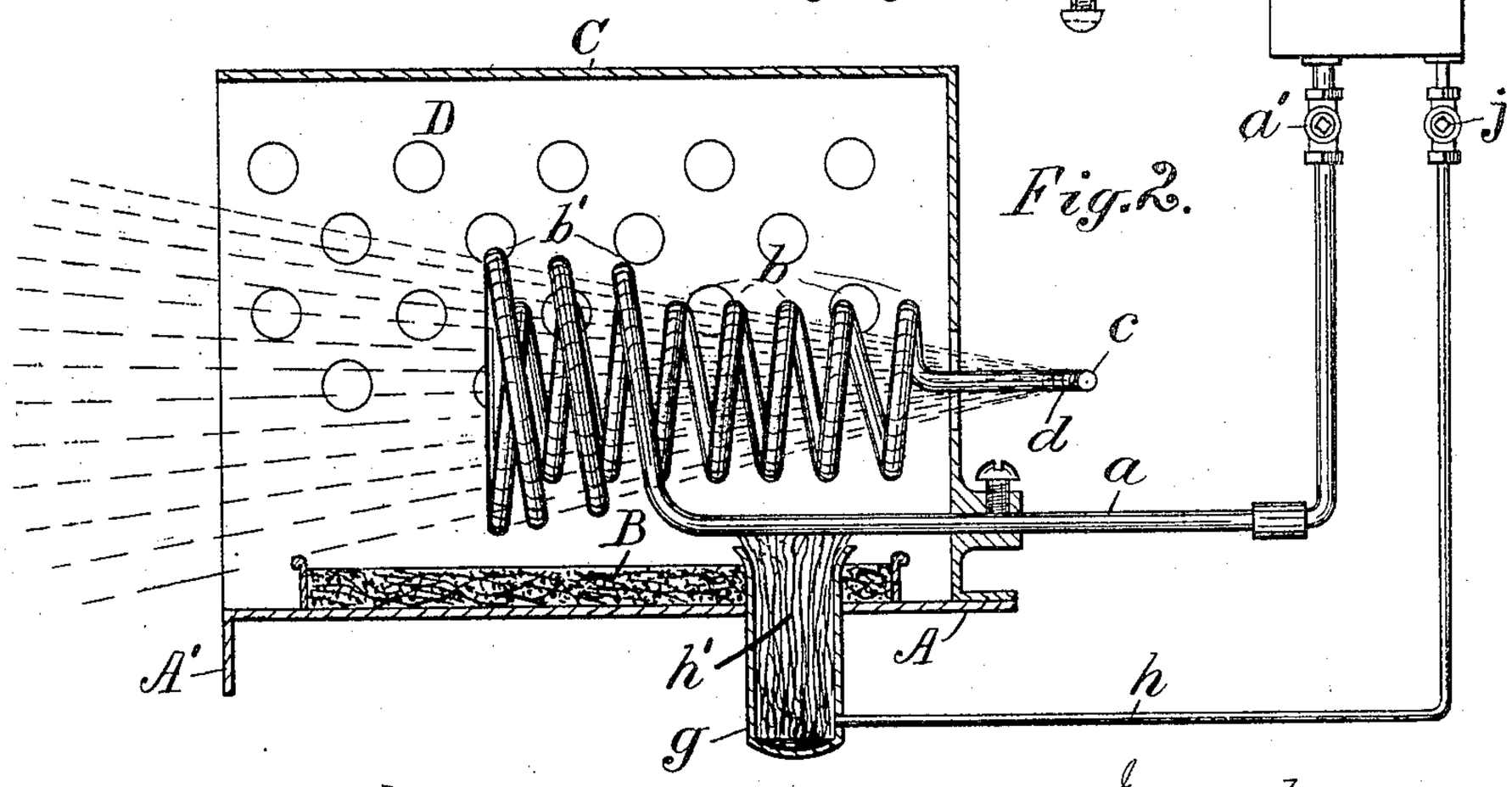


Fig. 2.



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Robert J. Miner, per
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UNITED STATES PATENT OFFICE.

ROBERT J. MINER, OF GREENWICH, CONNECTICUT, ASSIGNOR OF ONE-HALF TO WINTHROP WAITE, OF EAST ORANGE, NEW JERSEY.

STARTING-TORCH FOR GASEOUS-FUEL BURNERS.

No. 798,359. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed February 16, 1905. Serial No. 245,979.

To all whom it may concern:

Be it known that I, ROBERT J. MINER, of Greenwich, county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Starting-Torches for Gaseous-Fuel Burners, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates particularly to that class of starting-torches which is used for heating the vaporizing-coil or generator in the main burner of automobiles, whether using gasolene or kerosene; but the construction may be used for other purposes where a starting-torch is required.

The object of the invention is to furnish improvements in the torch whereby it may be economically constructed, the jet-aperture readily cleaned, the coil furnished with a primary heater, which when desired may be supplied continuously with an "inflammable," so as to maintain the vaporization in the torch-coil when started, and to protect the flame of the primary heater, and the torch protected from extinguishment by wind.

These objects are accomplished by the means shown in the annexed drawings, in which—

Figure 1 is a side view of a torch with part of a main burner in section. Fig. 2 shows the torch with the casing, the porous pad, and the lamp-wick in section. Fig. 3 is a plan, partly in section, of the smaller end of the coil and the jet-pipe. Fig. 4 shows the larger end of the coil; Fig. 5, a cross-section of the coils *b* and *b'* at the point where the letter *b'* is applied to the outer coils in Fig. 2, and Fig. 6 the inner end of the coil.

A designates the bed of the torch supporting the porous pad B and the torch-coil, which is preferably formed of a single piece of steel tubing, the coils of which are supported by the feed-pipe *a*. The torch-pipe is formed with an inner coil *b*, the inner end *c* of which is bent at right angles to the coil and is formed with jet-aperture *d* opposite the center of the coil to discharge a jet of vapor therein. The tube is shown extended in a straight line beyond the jet-aperture sufficiently to receive a screw-plug *f*, which permits the interior of the tube at the jet to be readily cleaned. The outer end of the coil *b* is reflexed and wound into several larger encircling coils *b'*, the end of which extends along beneath the coil *b* and connects with the feed-pipe *a*. The jet discharged from the aperture *d* is ignited and expands rapidly as it moves forward through the coil *b*, and the enlarged coils *b'* are provided to intercept the expanded portion of the flame and utilize the heat thereof near the forward end of the coil *b*, so as to warm the oil which is supplied to the larger coils by the feed-pipe *a*. The oil passes from such larger coils into the small coil *b* and is vaporized in its passage to the jet-aperture *d*, such vaporization being very rapid and perfect, owing to the heating of the oil in the larger coils *b'*.

A casing C is fixed removably upon the bed A and the feed-pipe *a* is supported in the rear end of the casing, and thus sustains the coils above the pad B. The casing is constructed with closed top, bottom, sides, and outer end and open only upon the inner end where the flame is discharged against the vaporizing-tube of the vapor-burner. The sides of the casing have perforations D, which supply air for the combustion of the vapor-jet. An aperture is shown extending through the bed and the pad for a tubular receptacle *g*, which is supplied with oil by a feed-pipe *h* and contains a wick *h'*, located beneath the feed-pipe *a* and the coil *b*. The feed-pipes *a* and *h* are extended to an oil-tank E, which is shown in diagrammatic form only, and cocks *a'* and *j* are supplied, respectively, to these pipes to cut off the flow of oil from the tank.

In Fig. 1 the edge of a vapor-burner is shown, partly in section, of the kind used under steam-boilers in automobiles, the vaporizing-pipe F of the burner G being in a line with the axis of the torch-coils, so that the jet of flame may be projected against such pipe. The bed A is shown secured by flange A' to the side of the vapor-burner G, and the torch thus operates to heat the vaporizer F either while starting the main burner or during the operation.

The wick *h'* or pad B forms a primary heater for the torch-coils, and the flame of such primary heater is very liable to be extinguished by wind, and difficulty in starting the burner has heretofore been frequently experienced from this cause.

The casing C operates in my construction to wholly inclose the primary heater and the

torch, and thus protects them from drafts which might extinguish the primary heater or the flame of the torch.

The operation of the apparatus is as follows: The torch-coils are first heated by pouring a charge of combustible, as alcohol or oil, upon the porous pad B, which is preferably made of non-combustible asbestos fiber. This is readily done by any ordinary squirt oil-can, the nozzle of which can readily be inserted within the casing through the perforations D. When lighted, such combustible heats the coils *b* and *b'* of the torch, so that when the oil is turned on by cock *a'* vapor is generated in the torch and the jet of flame is projected through the torch-coils and upon the vaporizing-tube F of the burner under the boiler. When the use of a boiler is suspended temporarily, as is common when an automobile is left standing, the torch-coil may be kept hot (although the oil-feed to the torch be cut off by closing the cock *a'*) by opening the cock *j* and supplying oil to the wick *h'*. Such heating of the torch-coil enables it to immediately vaporize oil when it is desired to again start up the boiler, as the opening of the cock *a'* produces vaporization of oil in the torch and immediately commences the heating of the vaporizing-tube F of the burner under the boiler. If desired, the wick *h'* may be supplied with alcohol instead of oil by a tank separate from the tank which supplies the oil to the torch, and thus avoid the deposition of soot upon the coils *b* and *b'*.

My invention differs from others in having the vaporizing-coil of the torch constructed with an inner coil, an outer coil connected to one end of the same and extended backwardly over the inner coil, and the pipe then extended along the lower side of the coil, so as to be heated simultaneously with the coil by a primary heater, and it also differs in having a bed-plate to support the primary heater and a casing sustained by the bed-plate and closed at the top, sides, and one end, leaving one end only open for the projection of the flame and wholly protecting the coil and primary heater from drafts.

Having thus set forth the nature of the invention, what is claimed herein is—

1. The starting-torch herein described, consisting of the base A, the casing attached to the base and closed at the sides, top and rear end, the vaporizing-coil having the inner coil *b* with the jet-aperture *d* upon one end opposite the center of the coil, the outer coil *b'* connected with the opposite end and encircling one end of the inner coil and extended backwardly over the same, the feed-pipe connected therewith and extended to the lower side of the coil and fitted through the casing and supported thereby, and a primary heater for heating the feed-pipe and the coil, the whole inclosed within the casing to protect the parts from drafts, and the casing having air-inlet holes for supplying the flame.

2. The starting-torch having the coil formed of the tube *b* with an integral inner end *c* bent at right angles to the coil and having the jet-aperture *d* opposite the center of the coil and the integral end of the tube extended in a straight line beyond the jet-aperture and provided with a screw-plug *f* to permit the cleansing of the tube at the jet, the opposite end of the coil having the outer coil *b'* extended therefrom and continued in the feed-pipe *a* at the lower side of the inner coil *b*, and means for grasping the feed-pipe to support the coil, substantially as herein set forth.

3. The starting-torch herein described, consisting of the base A, the casing attached to the base, the vaporizing-coil having feed-pipe extended along the lower side of the coil, and fitted through the casing to support the coil, the wick-tube *g* supporting the wick below the feed-pipe and the coil, and connected by pipe and cock with a tank of combustible to form a continuously-operating primary heater, and the casing constructed to wholly inclose the primary heater and the coil to protect them from drafts, and provided with air-inlet holes for supplying the flame.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT J. MINER.

Witnesses:
KATHARINE EISELER,
GEO. F. CHURCHILL.