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R. R. BEEZLEY

DECARBONIZING TORCH

Filed April 5, 1921

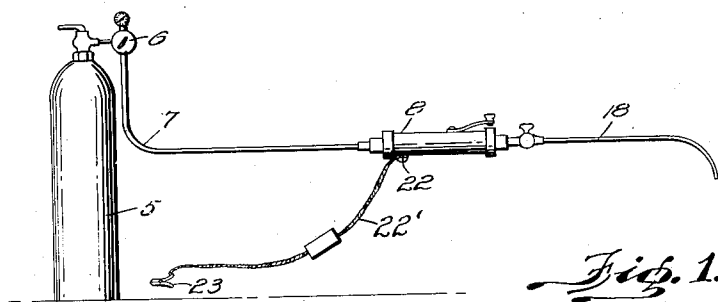


Fig. 1.

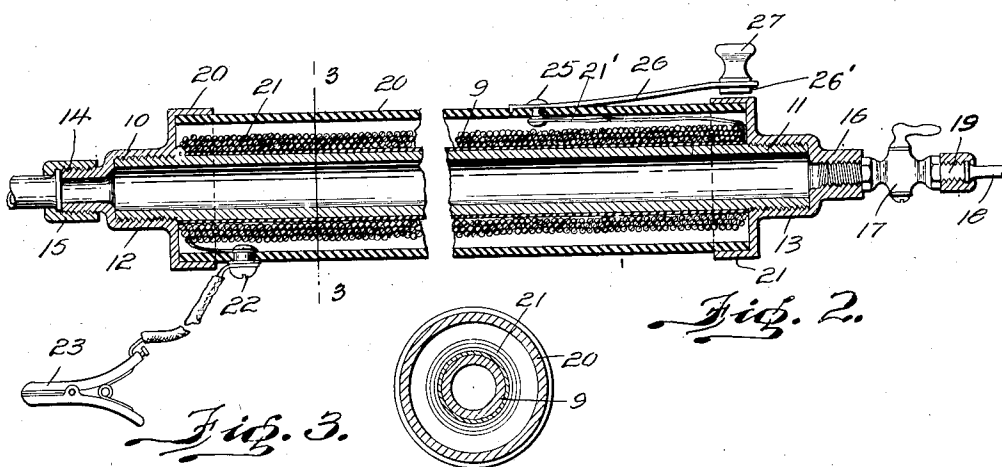


Fig. 2.



Fig. 3.

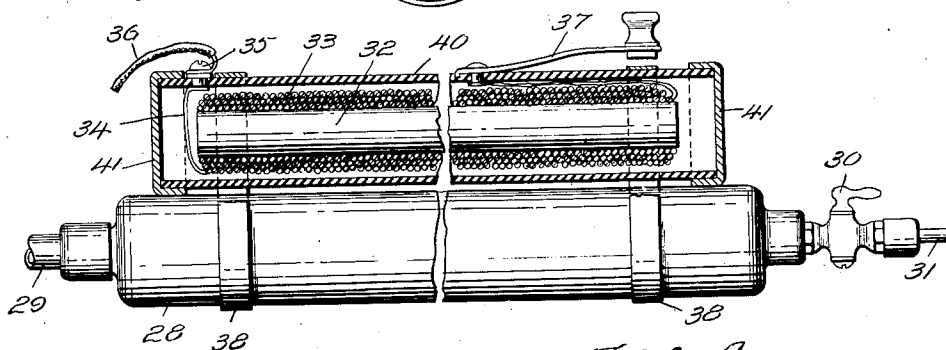


Fig. 4.

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UNITED STATES PATENT OFFICE.

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DECARBONIZING TORCH.

Application filed April 5, 1921. Serial No. 458,754.

To all whom it may concern:

Be it known that I, REGNOLD R. BEEZLEY, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Decarbonizing Torches, of which the following is a specification.

This invention relates to torches, more particularly to that class of oxygen carbon burning torches or tools adapted for use for removing carbon deposits from engine cylinders and the like, and has for its object to provide a torch of such class in a manner as hereinafter set forth with means whereby a combustible mixture formed by the oxygen supplied to the combustion chamber mixing with the hydrogen particles in the carbon, will be fired or combustion created until the carbon is completely burnt out, thereby overcoming the employment of the use of matches for combustion purposes thus avoiding the damage of fire both to the car and to the operator of the torch.

A still further object of the invention will be found to consist in a decarbonizing torch which is extremely simple in construction, consisting of comparatively few parts therefor inexpensive to manufacture, practical and highly efficient in operation, and designed for universal use in various arts thus constituting an important and highly desirable instrument or tool.

With these objects in view and others which will be manifest and suggested as the purpose and nature of my invention are revealed in the following specification and drawing wherein I have shown a preferred embodiment thereof,

Figure 1 is a perspective view showing the invention as connected to a stationary gas tank.

Fig. 2 is a longitudinal sectional view of the igniter as applied to the torch.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, and

Fig. 4 is a sectional elevation of a modified form of torch.

Referring now to the drawings, wherein like parts designate corresponding parts throughout the specification, 5 designates a stationary gas tank preferably for receiving oxygen under pressure being provided with the usual gage 6 and conduit 7 which may be of rubber tubing connected to a torch designated in its entirety by numeral 8.

A central iron gas chamber 9 which is threaded at its respective ends 10, 11 has threaded thereon end caps 12, 13 which may be made of brass or similar material as is well understood. The cap 12 is provided with a reduced neck 14 to receive the end of the tubing or conduit 7, said neck being threaded to receive a nipple 15 as clearly shown by Fig. 2 of the drawing. The cap 13 above referred to is also provided with a reduced threaded neck 16 for receiving a torch valve 17 for controlling the passage of gas to the tubing or nozzle 18 which may be also threaded as at 19 to the said torch valve. The caps 12 and 13 are provided with flanges 20, to confine and retain a fiber housing 20' preferably constructed of insulating material and spaced somewhat from the chamber 9, a choke coil 21 being wound about said chamber substantially throughout its length, one end of said coil being connected to a terminal screw 22, from which leads an electrical conductor 22' provided with a spring clamp terminal 23 for connection with the positive side of either the storage battery or the starter switch (not shown), of the motor vehicle, or, any other positive terminal (not shown) that is accessible. The opposite end of the coil 21, as at 21', is connected to a binding screw 25, which is carried by the fiber housing 20'. Mounted on the housing 20' and associated with the metallic cap 13 is a switch element, consisting of a metallic resilient member 26 in electrical contact with and connected to the binding screw 25. The forward end of the member 26 has a depending contact 26', as well as an upwardly projecting finger grip 27 to provide for the convenient shifting of the switch element to contact with the cap 13 for the purpose of closing an electrical circuit for a purpose to be presently referred to. The gas or oxygen after it leaves the chamber 9 and is fed into the engine cylinder, mixes with the hydrogen particles in the carbon under such conditions providing a combustible mixture, which when fired or when combustion is created or formed, will burn out the carbon from the engine cylinder and after the carbon has been completely burned out combustion will cease. The firing of the combustible mixture, or the creating of combustion of the said mixture, is had by closing the circuit through the medium of the contact 26 engaging the metallic cap 13. In this connection, it will be pointed out that the current

flows from the positive terminal through the spring clamp 23, conductor 22', terminal screw 22, coil 21, coil end 21', switch element which is depressed to bring the contact 26' against the cap 13 through the switch element, cap 13 to nozzle 18. The nozzle 18 is positioned against the piston (not shown), within the engine cylinder and as the nozzle is moved on the piston to make a good contact, will produce a white arc, under such conditions firing the combustible mixture and the combustion will be continued until the carbon is completely burned out. The current being grounded through the piston, or if the nozzle 18 is moved in contact with the cylindrical wall of the engine, the current will be grounded through said wall.

It will be readily observed that the torch is such as to be carried in the hand of the operator and manipulated at will, the spring switch being so positioned as to be actuated by the thumb or finger to make contact and complete the circuit for the purpose intended. By this construction, danger of fire is eliminated since the novel and improved device dispenses with the use of matches and otherwise constitutes a safe and very convenient tool or instrument for use in proximity to inflammable material or gasoline for instance in automobile work especially in the removing of carbon deposits from engine cylinders and the like.

In the form of the invention shown by Fig. 4, I have provided a torch 28 connected by a tubing or conduit 29 to an oxygen tank and provided also with a torch valve 30 for controlling the passage of oxygen to the tubing or nozzle 31 in the same manner as above illustrated. In this instance, there is provided an iron core 32 having a coil 33 wound about the same throughout its length, one end 34 of said coil being connected to a screw post 35, the conductor 36 being provided with a clamp terminal (not shown) for the obvious purpose. The opposite terminal of the coil 33 is also connected to a spring switch 37 which is also manually operated to make contact with one of the metallic straps 38 which retains the fabric housing 40 on the torch. In this form of the invention, the fiber housing 40 which is preferably of insulating material is provided with end flanged caps 41 secured thereto in any well known manner thus constituting a housing for the core and coil above referred to. In this form of the invention, the current will flow from the spring terminal (not shown) through the coil and to the switch which when closed makes contact with one of the straps 38, the gas will pass through the tubing and torch valve 30 so that when the tubing makes contact with the wall of the combustion chamber, for instance of an engine, will produce an arc and the desired fusing or

the creating of combustion of the combustible mixture, as hereinafter set forth, within the said combustion chamber. It will of course be understood that the openings at each end communicating with the pipe 20 are of reduced diameter limiting the flow of gas through the tubing 18.

In the practical use and operation of the torch, when it is desired for instance to remove the carbon deposits from the cylinder of an automobile, the operator will first remove the torch plugs or spark plugs and introduce the nozzle 18 into the combustion engine of the pressure adjusting valve in its proper position. The torch valve is then opened allowing the oxygen to pass into the combustion chamber to admix with the hydrogen particles of the carbon forming thereby a combustible mixture, and at the same time that the switch is actuated by the operator closing the circuit and the current will flow through the switch and to the oxygen nozzle which when coming in contact with the piston or wall of the combustion chamber will make an arc and fire or create the combustion of said mixture thereby burning out the carbon from the cylinder.

In the accompanying drawings, I have illustrated my invention embodied in one form by way of example, and which in practice has been found to be highly satisfactory in obtaining the desired results. It will be obvious however that other embodiments may be adopted and that various changes in the details of construction may be resorted to by those skilled in the art without departing from the spirit and scope of the invention. It is furthermore understood that the invention is not necessarily limited or restricted to the precise elements shown except in so far as such limitations are specified in the subject matter being claimed.

Having shown and described my invention, what I now claim as new and desire to secure by Letters Patent of the U. S. is:—

1. A decarbonizing torch comprising a gas chamber adapted to communicate with the source of supply, a valve for controlling the gas from said chamber, a torch nozzle communicating with said chamber and controlled by said valve and adapted to abut against the wall of an engine cylinder, or the piston within such cylinder, and an electrical connection between said nozzle and the source of electrical supply and including a choke coil.

2. A decarbonizing torch comprising a gas chamber adapted to communicate with the source of supply, a valve for controlling the gas from said chamber, a torch nozzle communicating with said chamber and controlled by said valve and adapted to abut against the wall of an engine cylinder or the piston within such cylinder, an electrical

connection between said nozzle and the source of electrical supply, a coil surrounding said chamber and interposed in said connections, and a switch interposed in said
5 connections and arranged at the forward end of said chamber.

3. A decarbonizing torch comprising a tubular gas receiving chamber adapted to communicate with the source of gas supply,
10 removable end caps secured on the ends of said chamber and provided with reduced openings, a nozzle connected with one of said caps and having interposed between it
15 to which the nozzle is connected and said valve formed of conducting material and electrical connections leading from the source of electrical supply and including a
20 switch for electrically connecting that cap to which the nozzle is attached.

4. A decarbonizing torch comprising a tubular gas receiving chamber adapted to communicate with the source of gas supply, removable end caps secured on the ends of said chamber and provided with reduced
25 openings, a nozzle connected with one of said caps and having interposed between it and said cap a controlling valve, that cap to which the nozzle is connected and said
30 valve formed of conducting material and electrical connections leading from the source of electrical supply and including a switch for electrically connecting that cap
35 to which the nozzle is attached, said electrical connections having interposed therein a choke coil.

In testimony whereof, I affix my signature hereto.

REGNARD R. BEEZLEY.