June 21, 1932. M. H. KLEINFELD 1,864,072

COIN OPERATED SPARK PLUG CLEANER

Filed April 11, 1931

Fig. 2.

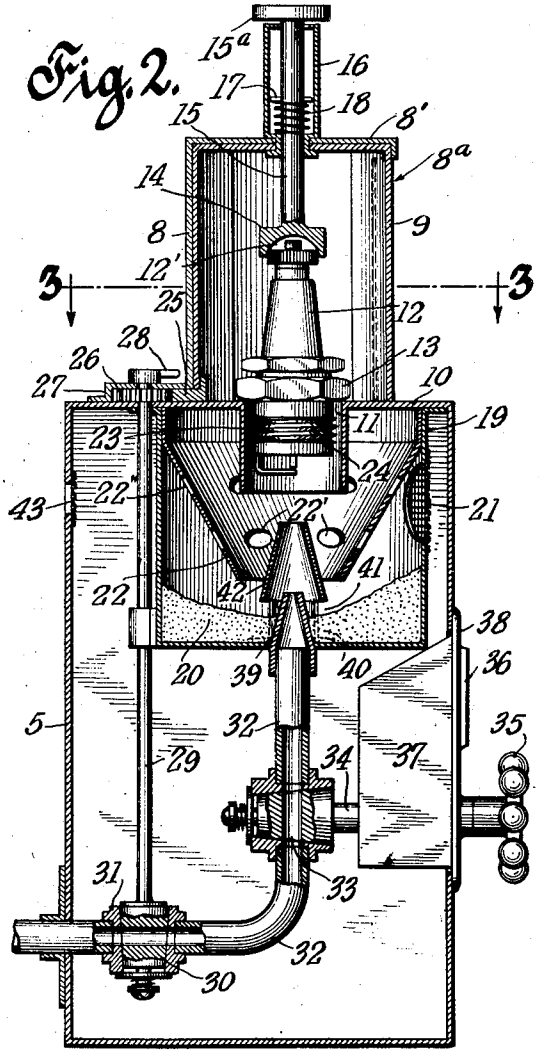


Fig. 1.

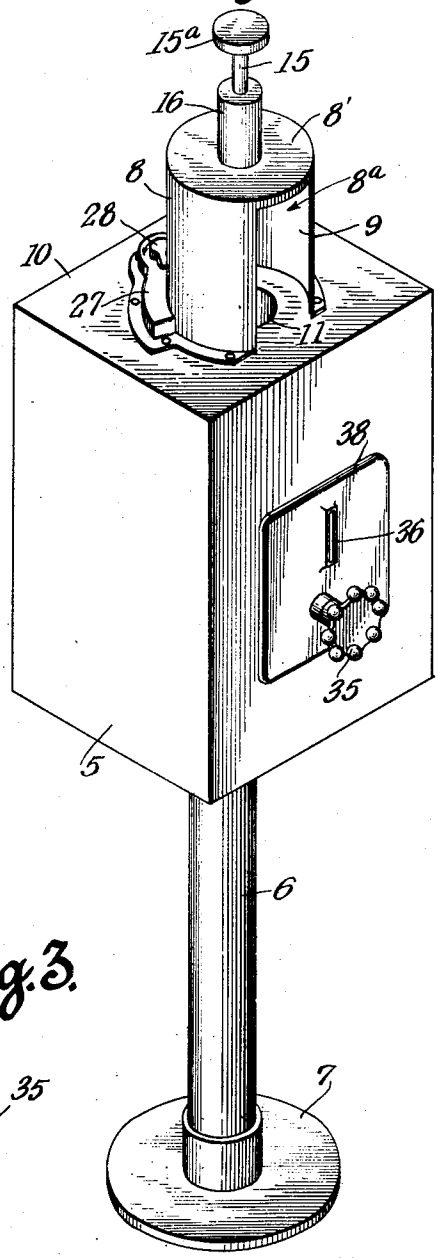
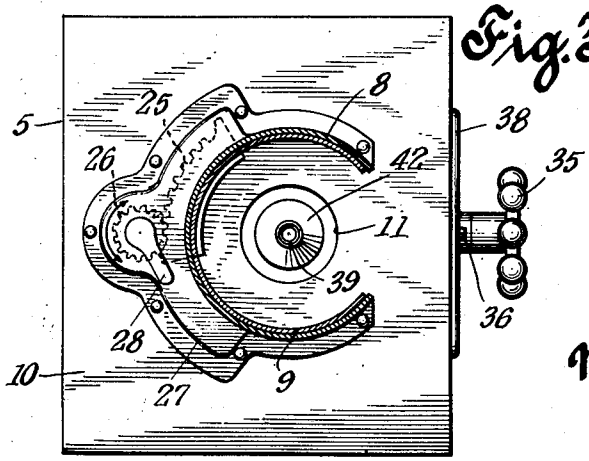


Fig. 3.



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UNITED STATES PATENT OFFICE

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COIN-OPERATED SPARK-PLUG CLEANER

Application filed April 11, 1931. Serial No. 529,383.

This invention relates to a coin operated spark plug cleaning machine, but more particularly to a machine of this character to be located in public places such as gasoline filling stations, service stations, repair shops and other places where automobiles frequently stop for service.

The object of this invention is to provide a machine of this kind that is practical in operation, sturdy and efficient.

Another object is to provide a machine that is operated by air pressure and controlled by two valves, one auxiliary to the other, as will be described in detail hereinafter.

Another object is to provide a novel means of holding a spark plug during the operation of cleaning and to easily and quickly place the spark plug in normal position for said operation and to facilitate its removal when properly cleaned.

A further object is to provide a protecting means for the operator to prevent the loose abrasive material from escaping while the spark plug is being cleaned.

And further, to provide a machine of this character that is inexpensive in manufacture, simple in construction and convenient in transportation.

Other objects and novel features will be apparent from the following specification taken in connection with the accompanying drawing forming a material part of this disclosure and in which:—

Figure 1 is a perspective view of a machine embodying this invention.

Figure 2 is a cross-sectional view of same with pedestal and base removed.

Figure 3 is a section taken on line 3—3 of Fig. 2 but showing the remaining parts in top elevation.

The numeral 5 designates a housing supported by pedestal 6 resting on base 7. A dome 8 is superimposed on housing 5 with an opening 8a therein for the purpose of placing the spark plug in normal position for cleaning, while a shutter 9 registers with the inner circumference of said dome for the purpose of closing opening 8a during the operation of cleaning and to be moved back within the dome when so required.

The top 10 of housing 5 has an aperture 11 to receive spark plug 12, the nut 13 of which shoulders on the upper surface of top 10 of housing 5 and is held in such position by means of an inverted cup 14 attached to plunger 15 which passes upwardly from the cup and into cylinder 16 which is affixed to and superimposed on dome 8. A washer 17 is attached to plunger 15 to register with the inner circumference of said cylinder and serves as a means to hold helical spring 18 intermediate the under side of said washer and the upper side of top 8′ of dome 8. This spring when expanded moves plunger 15 into its normal upward position as shown in Fig. 1, and when compressed as shown in Fig. 2 it forces said plunger downwardly until cup 14 registers with top 12′ of spark plug 12.

Attached to and depending from top 10 of housing 5 is a receptacle 19 which contains loose abrasive material 20, while there is placed at a convenient location on said receptacle a screen 21 which serves as an exhaust for air but constructed of such fine mesh that it will allow but a minimum of small particles of the abrasive material to escape therethrough.

A hopper 22 is attached within receptacle 19 and tapers downwardly for the purpose of guiding the abrasive material toward the bottom of said receptacle. A plurality of apertures 22′—22″ pass through the walls of the receptacle which serve as exhausts through which air passes into receptacle 19.

Suspended also from top 10 of housing 5 and passing into hopper 22 is a tube 23 which surrounds the contact portion 24 of spark plug 12 in order to hold the abrasive material in close proximity to the surface that is being cleaned.

Affixed to shutter 9 and resting intermediate top 10 of housing 5 is a segment rack 25 which meshes with pinion 26, both rack and pinion being encased by gear guard 27 atop which is placed a lever 28 to which is fastened a valve stem 29 which passes downwardly into housing 5 and connecting with valve 30 of valve body 31. It will be noted that slide 9 closes simultaneously with the opening of valve 30 to allow the flow of air

from a compressor into pipe 32. These simultaneous movements form a salient feature of this invention for the reason that the operator cannot be personally injured from flying particles of the abrasive material while operating this machine.

An auxiliary valve 33 is affixed to pipe 32 which is opened by valve stem 34 when the operator turns handle 35 which he is enabled to do after he drops a coin into slot 36 of receiver 37, said coin receiver being affixed to housing 5 by means of flange 38.

A nozzle 39 to concentrate the air is attached to the upward end of pipe 32 and extends through a larger pipe 40 with apertures 41 passing therethrough to permit the abrasive material to pass into a larger nozzle 42 affixed to pipe 40. Said nozzle 42 serves to concentrate the abrasive material into a spray when air passes through nozzle 39 by causing a partial vacuum within nozzle 42 and drawing said abrasive material upwardly through apertures 41 and forcing the abrasive material against the surface of the spark plug to be cleaned when the air valves are opened.

In order to operate this invention the spark plug is inserted through opening 8*a* of dome 8 with the contact end of said spark plug passed downwardly through aperture 11 until nut 13 shoulders on top 10 of housing 5. The operator then presses plunger 15 downwardly by manual contact with knob 15*a* until cup 14 registers with top 12*a* of the spark plug 12. The shutter 9 is then rotated to close opening 8*a* of dome 8 and simultaneously open valve 30 by actuating the rack 25 and pinion 26 and the valve stem 29 through the medium of lever 28. A coin is then dropped into slot 36 which rests in coin receiver 37 in any conventional manner and causes valve 33 to open by the means of rotating valve stem 34 upon actuation of the handle 35 which is affixed to said valve stem 34.

When the valves are both opened as aforesaid the air from a compressor remote from the machine but to which pipe 32 connects, rushes into said pipe, thence upwardly through nozzle 39 and into nozzle 42 causing a partial vacuum in said nozzle 32 and the abrasive material rushes into nozzle 42 through apertures 41 of pipe 40 thus forcing such abrasive against the contact end of the spark plug to remove carbon or other foreign matter which could break the contact of said spark plug and prevent the proper functioning of same.

When the abrasive material leaves the spark plug it falls downwardly into hopper 22 and into receptacle 19 for future use.

While the air pressure is applied it exhausts through apertures 22′—22″, thence outwardly through the openings in screen 21 into the housing from whence it passes into the open air through mesh 43 which is attached to housing 5 remote from the operator.

Although the improvements have been described with considerable detail and with respect to certain particular forms of the invention it is not desired to be limited to such details since many changes and modifications may well be made without departing from the spirit and scope of the invention in its broadest aspect.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent, is:—

1. In a spark plug cleaner, a housing having a controllable air admission member, a dome affixed to said housing, said dome having an opening, a shutter slidable to control the opening, means to hold a spark plug in a predetermined position within said dome and housing, means to close said shutter and simultaneously open said air admission member, and means to clean the base of the spark plug while held in such predetermined position.

2. In a spark plug cleaner, a housing, a dome affixed to said housing, an air inlet to said housing, a valve controlling said inlet, means to hold a spark plug in a predetermined position with relation to said dome and housing, said dome having a lateral opening, a shutter controlling the opening, means to simultaneously open said shutter and close said valve by manual operation, and means to clean the contact end of said spark plug while held in such predetermined position.

3. In a spark plug cleaner, a housing having a valve controlled air inlet, a dome superimposed on said housing and adapted to receive a spark plug, means to hold said spark plug in a predetermined position for cleaning purposes attached to said dome and housing, means to enclose the spark plug within the dome and simultaneously open the air valve, and means to clean said spark plug by means of abrasion.

4. In a spark plug cleaner, a housing having a valve controlled air inlet, a dome superimposed on said housing, a cylinder affixed to said dome, a seat on which to rest a spark plug, means within the cylinder to hold a spark plug in predetermined relation to the housing and dome, a movable member to enclose the spark plug, means to operate said movable member and open the air valve simultaneously, and means to clean the spark plug while held in said predetermined position.

5. In a spark plug cleaner, a housing having a valve controlled air inlet, a dome superimposed on said housing, a cylinder affixed to said dome, a seat on which to rest a spark plug, means operable within the cylinder to hold the spark plug in a predetermined position, a rotary member to enclose the spark

plug, means to operate said rotary member and open the air inlet valve simultaneously to allow the flow of air a predetermined distance, an auxiliary valve to complete the flow of air, coin operated means to actuate said auxiliary valve, and abrasive material to clean the spark plug actuated by pressure from the air.

In testimony whereof I affix my signature.

MOSES H. KLEINFELD.