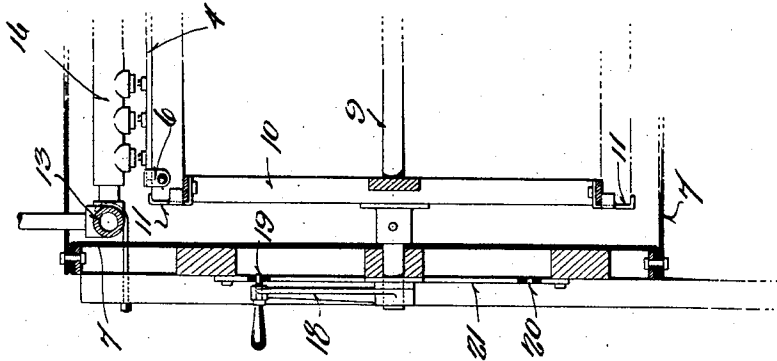
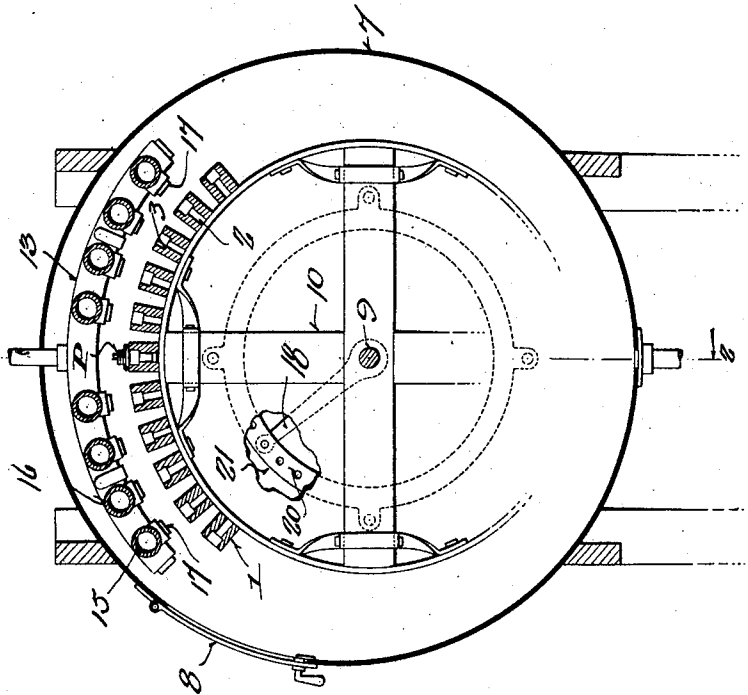


1,395,376.

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MACHINE FOR CLEANING SPARK PLUGS.
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2 SHEETS—SHEET 2.

Fig. 5.

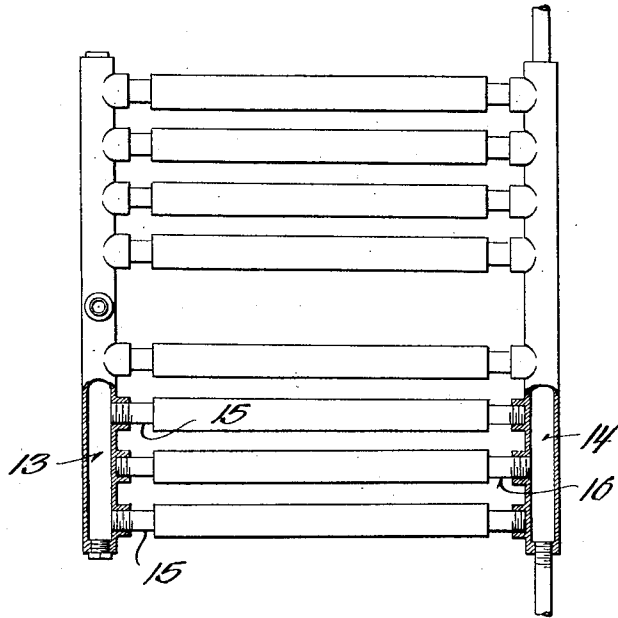
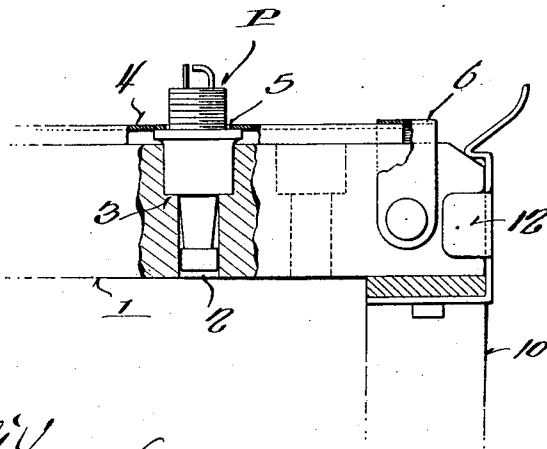


Fig. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR WHITE, OF SHEBOYGAN FALLS, WISCONSIN.

MACHINE FOR CLEANING SPARK-PLUGS.

1,395,376.

Specification of Letters Patent.

Patented Nov. 1, 1921.

Application filed December 23, 1919. Serial No. 347,042.

To all whom it may concern:

Be it known that I, ARTHUR WHITE, a citizen of the United States, and resident of Sheboygan Falls, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Machines for Cleaning Spark-Plugs; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention pertains to new and useful improvements in mechanical means for cleaning spark plugs.

The primary object of the invention is to improve upon the usual cleaning methods now in vogue. At the present time it is customary to use a wire brush, gasoline and emery cloth to remove the incrustated carbon deposits.

The spark plug being fastened in a vise with the carbon coated end, from which the electrodes project upwardly, the wire brush is dipped in gasoline and forced back and forth across the electrode end. Inasmuch as the carbon adheres rather tenaciously to the wire electrodes, porcelain and metal parts of the plug, considerable brushing is required to remove it, and the reciprocation of the wire brush tends to loosen and sometimes break the electrodes.

After the carbon has been removed from the end of the plug, the latter is disassembled to permit the carbon to be removed from the interior thereof. As it is difficult to completely remove this interior coating, more or less of it usually remains even after a reasonably thorough cleaning. As repeated cleanings are necessary, the frequent clamping of the plugs in the jaws of a vise tends to mutilate them and to often crack the porcelain.

By my improved method a great number of spark plugs may be quickly and efficiently cleaned without possibility of any injury whatsoever, the use of wire brushes, emery cloth and the other cleansing adjuncts mentioned above being unnecessary. This method consists in soaking the plugs to be cleaned in kerosene or other solvent material to soften and loosen the carbon, after which steam or some other cleansing agent or both is forced under pressure onto and into the carbon coated ends of the plugs. The use of steam naturally heats the plugs to a relatively high degree so that when removed from a cleansing machine

they will quickly dry. Thus disassemblage of the spark plug is entirely unnecessary.

One type of this machine for carrying out this process is illustrated in the accompanying drawings, wherein:

Figure 1 represents a vertical transverse sectional view through a spark plug cleaning machine.

Fig. 2 is a fragmentary vertical sectional view of one end of the machine the section being taken on the plane of the line 2—2 of Fig. 1.

Fig. 3 is a plan view of the headers which supply the cleansing fluid under pressure, and

Fig. 4 is an enlarged detail sectional view of one of the spark plugs supporting frames.

Referring more particularly to the accompanying drawings, it will be seen that the spark plugs P are initially mounted in frames 1, each of which consists of a preferably wooden bar of appropriate length having a plurality of transversely extending alined spark plug sockets 2. Each of the sockets is shouldered as at 3 to seat the enlarged end of the spark plug so that the electrode end thereof will project as indicated most clearly in Fig. 4. When the required number of spark plugs are seated in one of the frames, an elongated retaining plate 4 having holes 5 is disposed over the electrode ends of the plugs. Swinging U-shaped retaining clips 6 snap over each end of the retaining plate 4.

The several frames 1 located with spark plugs, after being allowed to soak in kerosene or the like for an hour or more, are placed in a cylindrical housing 7 through a door 8. Located within this housing 7 and mounted adjacent the opposite ends of a shaft 9 are circular frame bar supports 10. The shaft 9 is journaled in the opposite end walls of the housing 7 and is adapted to be rotated from the exterior thereof.

The frame bar supports 10 are provided with a plurality of outwardly radially extending spring metal socket members 11 and 12 which removably hold the frames 1 thereon. From the drawings it will be appreciated that one end of each frame is inserted in the sockets 11 carried by one of the supports 10 and the other ends of the frames are engaged in the socket members 12 which are constructed as indicated in Fig. 4. As a result of this arrangement of

the frame 1, it will be seen that the sockets 2, and consequently the spark plugs P will be extended radially.

In the upper portion of the housing 7 is hung a pair of headers 13 and 14, these headers being connected by spray pipes 15 and 16, from each of which depend jet nozzles 17. The headers 13 and 14 being arcuate, the nozzles 17 are positioned radially. One of the headers, for instance, the header 13 supplies steam under pressure to the nozzles of its spray pipes, which do not communicate with the header 14, while the latter header supplies a solvent or cleansing solution under pressure to the nozzles of the spray pipes 16; these pipes are only in communication with the header 14 as indicated in Fig. 3.

As a result of this construction each alternate row of spark plugs will be acted upon by the jets of steam and the intermediate rows by jets of cleansing or solvent liquid from the header 14. Therefore means is provided for successively moving the rows of spark plugs out of alinement with one series of jets and into alinement with the next series of jets, such movement being accomplished by the rotation of the frame bar supports 10 and shaft 9. In other words the shaft is provided with a crank handle 18 having a spring pressed detent for engagement in any one of a series of holes 20 formed in a circular plate 21. The number of holes 20 preferably corresponds with the number of frames 1 on the supports 10 so that the several rows of plugs may be locked in alinement with the series of jet nozzles 17.

The cleansing solution after being thrown against the spark plugs drains to the bottom of the housing 7 where it may be drawn off or otherwise disposed of, but ordinarily is of a level above the bottoms of the supports 10 so that the frames 1 held by these portions of the supports will pass through the solution. After the spark plugs have been acted upon for a period of ten minutes or more, the frames 1 containing the same are removed from the housing 7 and placed in suitable racks for redistribution. The steam heats the plugs so that they dry almost immediately upon being removed from the housing. If desired only steam may be sprayed against the plugs, or only cleansing solution or solvent material instead of the combination of the two as hereinbefore described.

Various minor changes may be made in the illustrated embodiment of this machine without departing from or sacrificing any

of the principles of the invention as set forth in the claims.

What is claimed is:

1. A machine of the class described comprising a rotary holder support, a plurality of holders for spark plugs and the like, detachably mounted on the support, a spraying device including two arcuate supply pipes spaced apart above said holders and concentric with the holder support, two series of spray pipes extending between the supply pipes and alternating with each other, each series being in communication with a different one of the supply pipes, each spray pipe having a series of jet openings, and means for rotating the support for successively bringing the holders into alinement with the jets of the spray head.

2. A machine of the class described comprising a movable holder for spark plugs and the like, a spraying device including two supply pipes spaced apart above said holders, two series of spray pipes extending between the supply pipes and alternating with each other, each series being in communication with a different one of the supply pipes, each spray pipe having a series of jet openings, and means for moving the holder for successively bringing the article held thereby into the play of the jets.

3. A machine of the class described comprising a rotary holder support including circular end members, and a plurality of holder sockets carried by each end member, a plurality of holder bars for spark plugs and the like, each of said bars being detachably held by corresponding holder sockets, a spray head, and means for moving the holder support to successively aline the holder bars with the spray head.

4. A machine of the class described comprising a rotary holder support including circular end members, and a plurality of holder sockets carried by each end member, a plurality of holder bars for spark plugs and the like, each of said bars being detachably held by corresponding holder sockets, means carried by each of said holder bars for detachably securing spark plugs thereon, a spray head, and means for rotating the holder support to successively bringing the spark plug in alinement with the spray head.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

ARTHUR WHITE,