Oct. 20, 1925. 1,557,551

E. BERTONE

ADJUSTABLE ROTARY BRUSH MECHANISM

Filed Jan. 20, 1925

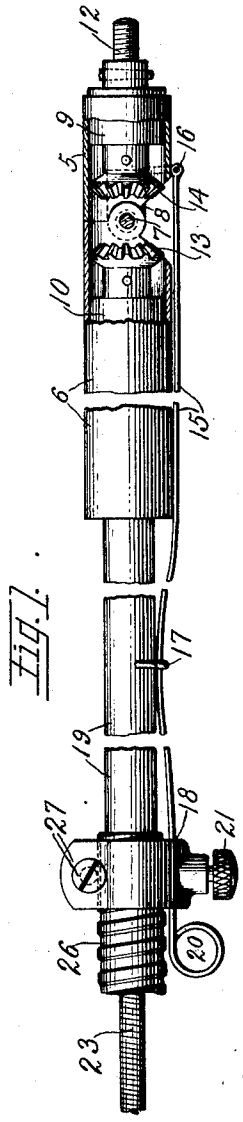


Fig. 1.

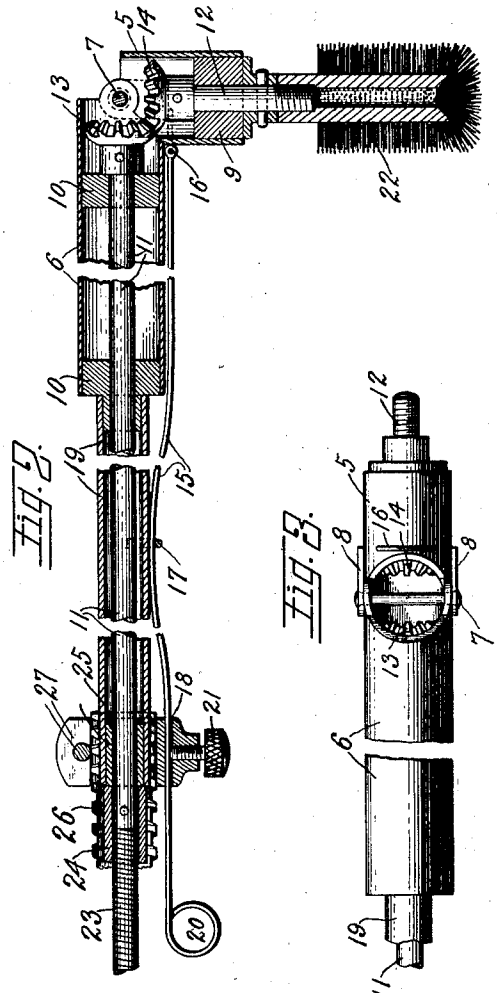


Fig. 2.

Fig. 3.

Inventor,

EUGENE BERTONE.

By Sterling P. Buck,

Attorney.

Patented Oct. 20, 1925. 1,557,551

UNITED STATES PATENT OFFICE.

EUGENE BERTONE, OF STEVENSON, MARYLAND.

ADJUSTABLE ROTARY-BRUSH MECHANISM.

Application filed January 20, 1925. Serial No. 3,601.

To all whom it may concern:

Be it known that I, EUGENE BERTONE, a citizen of the United States, residing at Stevenson, in the county of Baltimore, State of Maryland, have invented certain new and useful Improvements in Adjustable Rotary-Brush Mechanisms, of which the following is a specification.

This invention relates to scrubbing machines, and especially to an adjustable rotary brush mechanism.

One object of this invention is to provide a brush-actuating mechanism that is insertable into a combustion chamber or cylinder of an internal combustion engine, through the spark-plug-openings, after the spark-plugs are removed, and is angularly adjustable while so inserted, thereby enabling the brush to be moved into contact with various parts of the combustion chamber and the parts contained therein, while rotating, for removing deposits of carbon from such chamber and other parts.

Other objects and important features are pointed out or implied in the following details of description, in connection with the accompanyng drawngs in which—

Fig. 1 is a side view, partly in section, the brush omitted, the parts being adjusted for insertion into the spark-plug-openings.

Fig. 2 is a longitudinal sectional view, the parts being adjusted to the angular position for being operated to rotate the brush and to shift the brush about the axis of the primary driving shaft, by manually turning the device about said axis.

Fig. 3 is an assembly detail view of the jointed casing and parts therein, as viewed from the lower side of Fig. 1.

In each of these views, parts are broken out, showing that the broken parts may be of any proper and convenient length. The device, according to the cross-section here shown, can easily be inserted in a seven-eighths (7/8 inch diameter) spark-plug-opening; but larger or smaller sizes may be found preferable.

Referring to the drawings in detail, in which similar reference characters correspond to similar parts throughout the several views; but first explaining that such drawings show only one of many forms embraced in the principles and inventive ideas, this form will now be described as follows:

Two cylindrical casings 5 and 6 are hinged together at 7, by means of a hinge-mechanism of any appropriate form. These elements are herein referred to as the hinged casing. Suitable bearings 9 and 10 are provided in the hinged casing, and a primary or driving shaft 11 is journalled in the bearings 10, while a secondary or driven shaft 12 is journalled in the bearing 9. Bevel gear-wheels 13 and 14 are carried on the shafts 11 and 12, respectively, in such relation to the hinge-joint 7 that they are in mesh with one another when the hinged casing is adjusted angularly as shown in Fig. 2, that is, when the casings 5 and 6 hold their shafts 12 and 11 with their axes at right angles to one another. For adjusting the hinged casing, a preferably flexible and springy wire 15, of steel for instance, is pivotally connected at 16 to the casing 5 and extends thence through guides 17 and 18 on a tubular extension 19 of the casing 6. This extension is of considerably smaller diameter than the casings 5 and 6, and permits the device to be deflected in all directions while inserted in the spark-plug-opening. A loop or other form of handle 20 may be grasped for pulling the wire 15, to bring the device to the adjustment shown in Fig. 2; or for pushing the wire, to bring the device to the adjustment shown in Fig. 1. A set screw 21 or other securing means may be provided to hold the wire 15 in its different adjustments.

The brush 22 is provided with a threaded socket which fits on the threaded outer end of the shaft 12, and any appropriate form of brush may be thus attached to and detached from the shaft 12. In practice, a steel wire brush is found very effective for removing carbon, from combustion chambers, with this device.

The shaft 11 may be rotated by any appropriate means, for instance, by a flexible extension 23 which may be connected to any form of motor or rotor which is suitable for the purpose of rotating this shaft at the desired speed. The flexible shaft 23 is secured (by any appropriate means) in a sleeve 24 in which the rigid shaft 11 is also secured by a pin extending through it and through the sleeve 24, and this sleeve may also constitute a thrust bearing, acting in conjunction with a journal-bearing 25 which is secured in the tubular extension 19. A flexible tube 26 may enclose the flexible shaft 23, and a clamp may be employed to secure the flexible tube on the tubular extension 19. The

guide 18 may be formed integrally with the main part of this clamp.

Any appropriate lubricating material may be inserted in the casing 6 and extension 19, by any appropriate means, through normally plugged or closed openings (not shown), and the shaft 12 and its bearing are easily accessible for lubricating.

The device must be adjusted to the position shown in Fig. 1, for the purpose of inserting it in a spark-plug-opening, and after it is inserted far enough for the hinge-joint to be entirely inside the combustion chamber, the wire 15 may be pulled for adjusting the device angularly, as in Fig. 2, and when so adjusted, the rotation of the shaft 11 will cause the shaft 12 to rotate; so, if the brush is now on the shaft 12, it can be moved against all sides of the combustion chamber for dislodging the carbon therefrom. The dislodged carbon can then be blown or otherwise ejected from the combustion chamber.

What I claim as my invention, and desire to protect by a patent, is:

1. The combination of a pair of bevel gear-wheels, shafts on which said gear-wheels are carried respectively, bearings in which said shafts are mounted to rotate, means on one of the shafts for securing a brush or the like thereon, two members hinged to one another and carrying said bearings and adjustable for alternately moving these shafts into axial alinement and into such position that their axes are at an angle to one another and the gear-wheels are in mesh with one another, and a manipulative adjusting member for effecting these adjustments, for the purpose specified.

2. The combination of a pair of bevel gear-wheels, a shaft for rotating one of these gear-wheels, a shaft carrying the other gear-wheel and rotatable thereby and adapted to carry a brush or the like, bearings for these shafts, two casings hinged to one another and having the bearings for the respective shafts secured therein, and a manipulative adjusting member pivoted to one of said casings and operable to move these casings on the hinge thereof in such relation that the shafts are thereby moved from axial alinement to axial angularity and the gear-wheels are moved from a non-meshing to a meshing relation with one another.

3. The structure defined by claim 2, said casings being cylindrical and of a size to be inserted in a spark-plug-opening, said manipulative adjusting member being a small wire extending along the casing that carries the first said shaft and contiguous to the latter so it can be inserted with this casing into the spark-plug-opening.

4. In an adjustable brushing mechanism for any applicable purpose, the combination of a pair of bevel gear-wheels, a shaft for rotatiing one of these gear wheels, a shaft carrying the other gear-wheel and rotatable thereby and carrying a suitable brush, bearings for these shafts, and two casings hinged to one another on a pivot positioned to space said gear-wheels when in axial alinement, said casings carrying the bearings of the respective shafts therein, said casings being provided with any suitable means to swing them on their hinge-connection and to hold their shafts at different angular adjustments with respect to one another.

In testimony whereof I affix my signature.

EUGENE BERTONE.