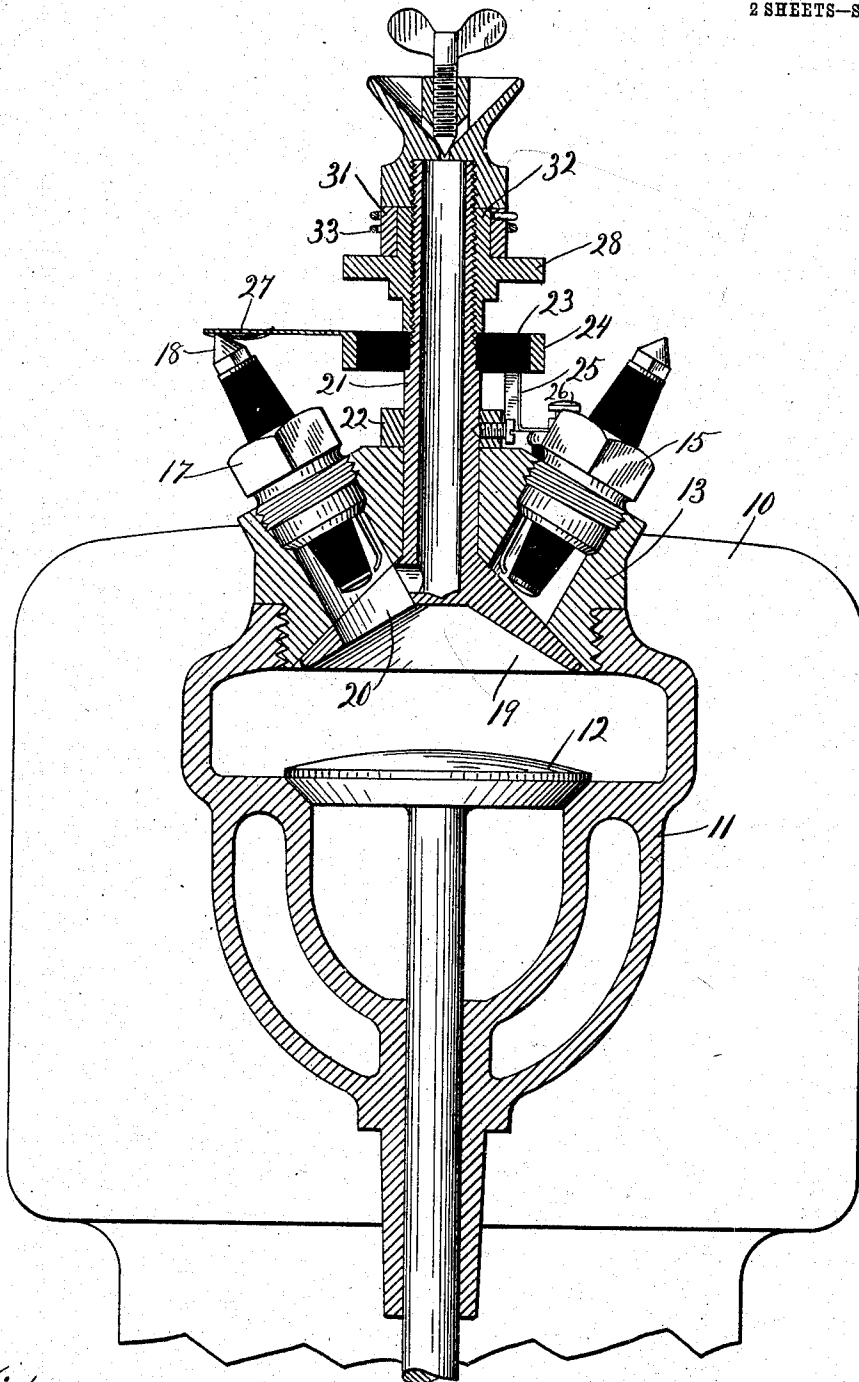


R. J. GIBBON.
IGNITING DEVICE FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED APR. 17, 1908.

950,228.

Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses:
W. H. Cotton
E. M. Klatcher

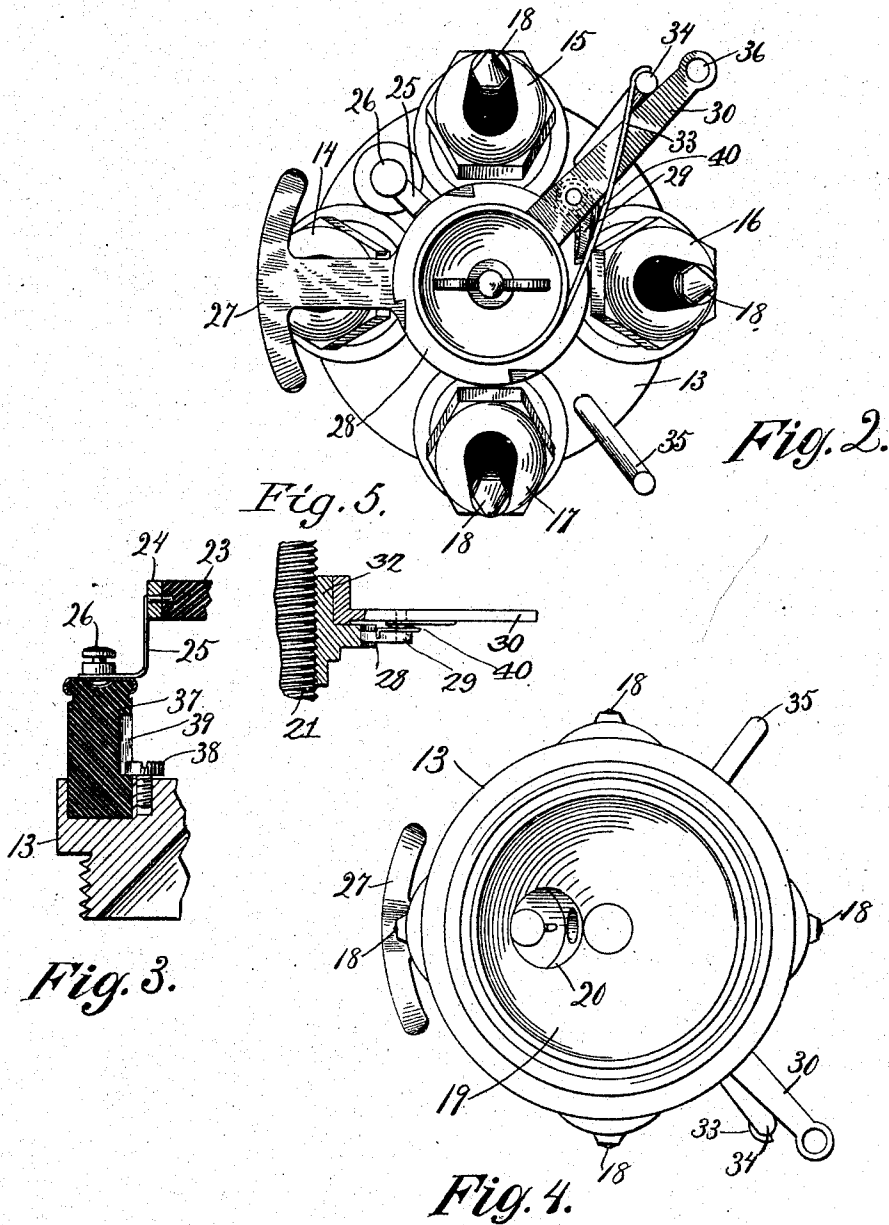
Fig. 1. Inventor.
Robert J. Gibbon
By Louis A. Gibson Atty.

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W. H. Cotton
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Inventor:
Robert J. Gibbon
By Louis A. Hecox, Atty.

UNITED STATES PATENT OFFICE.

ROBERT J. GIBBON, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
INTERNATIONAL DEVICE COMPANY, A CORPORATION OF SOUTH DAKOTA.

IGNITING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

950,228.

Specification of Letters Patent.

Patented Feb. 22, 1910.

Application filed April 17, 1908. Serial No. 427,605.

To all whom it may concern:

Be it known that I, ROBERT J. GIBBON, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Igniting Devices for Internal-Combustion Engines, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to igniting devices for internal combustion engines its object being to improve upon, simplify and increase the efficiency of igniting devices comprising a plurality of electrical igniters, arranged in a casing adapted for attachment to the engine.

The invention consists of the structure hereinafter described and which is illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of an engine valve casing and of the improved igniting device, a portion of the engine being shown in elevation, Fig. 2 is a plan view of the igniting device, Fig. 3 is a detail section showing the binding post and a part of the switch, Fig. 4 is a bottom plan view of the sparking device, and Fig. 5 is a sectional detail showing a spring pawl forming a part of the device.

A portion of an internal combustion engine, such as is commonly used in automobile practice is represented at 10 and at 11 there is shown a casing for the valve 12. This valve may be upon either the induction or exhaust side of the engine. Replacing the ordinary plug which closes the top of the valve casing is a casing 13 within which is housed a plurality of spark plugs, as shown four in number and marked respectively 14, 15, 16 and 17, the casing 13 being apertured in the usual way for their reception. These spark plugs are of ordinary construction except that the outer end of each is provided with a metallic contact tip 18 adapted for engagement by a brush form of switch as hereinafter described. The spark plugs are arranged in an annular series about the vertical axis of the casing 13.

The inner end of the casing forms a seat for a rotating valve 19, the face of the valve being preferably conical, and the seat being, of course, of complementary form. The valve 19 has a single aperture 20 adapted

to register successively with the several chambers within which the spark plugs are located. The stem 21 of the valve 19 projects through the casing 13 and carries a collar 22 having a bearing upon the outer face of the casing and serving to hold the valve to its seat. Upon the valve stem there is also mounted a switch comprising a disk 23 of insulating material, tightly fitted upon the valve stem and having a peripheral metallic band 24 the outer face of which is smooth for the engagement of a brush 25 fixed to a binding post 26 to which the electric circuit may lead.

The brush 25 and binding post 26 are mounted upon a block of insulating material 37 seated in a socket in the casing 13 and secured in place by means of a headed screw 38 set into the casing, the screw head projecting laterally into a recess 39 formed in the side of the block 37, and bearing upon the lower end of the slot.

A brush 27 projects radially from the band 24 and is so disposed as to make contact successively with the metallic tips 18 of the spark plugs as the valve stem is turned thereby completing the circuit from the binding post through the band 24 to the spark plug with which the brush makes contact.

A ratchet wheel 28 is fixed upon the valve stem 21 above the disk 23 and a pawl 29 advanced by a spring 40 coöperates with this ratchet wheel being carried by an arm 30 whose hub 31 is rotatably mounted upon the hub 32 of the wheel. A spring 33 is provided for retracting the arm 30. This spring is shown as attached to and coiled around the hub 31 of the arm, and having its opposite end in engagement with the stop arm 34 which limits the backward movement of the arm 30. An abutment 35 also rising from the casing 13 stops the arm 30 in its advance when the brush 27 is in engagement with one of the spark plugs, the number of teeth on the ratchet wheel being the same as the number of spark plugs. The arm 30 is preferably provided with an eye 36 for the attachment of a pull rod which may extend to the dash board of the automobile and be in convenient reach of the operator.

While there are shown four spark plugs it will be understood that the number may vary according to the judgment and desire of the designer of the engine, it being en-

tirely feasible to install a much larger number of plugs, thereby providing for the operation of the engine continuously during a long period.

5 The device is especially adapted for use in connection with the firing indicator forming the subject of my concurrently pending application for Letters Patent filed April 17, 1908, Serial No. 427,606, although it is not
10 necessarily dependent thereupon.

I do not broadly claim an igniting device comprising a plurality of igniters adapted to be successively brought into communication with the combustion chamber of a gas engine, and an electric switch for directing the current to the particular igniter in communication with such chamber; nor do I claim
15 such a device having the several igniters housed in a single piece adapted to be connected with the combustion chamber; nor
20 do I claim such a device wherein the several igniters are housed in independent pockets in such a piece, and means mounted upon such piece are provided for exposing or isolating any one of such pockets.

I claim as my invention:—

1. An igniting device for internal combustion engines comprising in combination a chambered casing adapted for attachment
30 to the engine, an annularly arranged series of electrical igniters occupying separate cells in the casing, a rotative valve covering the inner ends of the cells and having an aperture adapted to register with them in
35 succession, an outwardly projecting stem for the valve, a brush carried by and insulated from the stem and arranged to make contact successively with outer terminals carried by the igniters, means for connecting
40 the brush with an electric circuit and means for moving the brush step by step into engagement with the various igniters successively.

2. An igniting device for internal combustion engines comprising in combination a chambered casing adapted for attachment
45 to the engine, an annularly arranged series of electrical igniters occupying separate cells in the casing, a rotative valve covering the inner ends of the cells and having an
50 aperture adapted to register with them in succession, an outwardly projecting stem for the valve, a brush carried by and insulated from the stem and arranged to make contact successively with outer terminals carried
55 by the igniters, means for connecting the brush with an electrical circuit, a ratchet wheel fixed upon the valve stem, a spring retracted arm loosely mounted on the valve
60 stem, and a spring pawl carried by the arm and engaging the ratchet wheel.

3. An igniting device for internal combustion engines comprising in combination a chambered casing adapted for attachment

to the engine, an annularly arranged series
65 of electrical igniters occupying separate cells in the casing, a rotative valve covering the inner ends of the cells and having an aperture adapted to register with them
70 in succession, an outwardly projecting stem for the valve, a brush carried by and insulated from the stem and arranged to make contact successively with outer terminals
75 carried by the igniters, means for connecting the brush with an electric circuit, a ratchet wheel carried by the valve stem, its teeth corresponding in number with the igniters, and a spring retracted arm loosely
80 mounted on the valve stem and carrying a spring pawl for engaging the ratchet wheel.

4. An igniting device for internal combustion engines comprising in combination a chambered casing adapted for attachment
85 to the engine, an annularly arranged series of electrical igniters occupying separate cells in the casing, a rotative valve covering the inner ends of the cells and having an aperture adapted to register with them
90 in succession, an outwardly projecting stem for the valve, a brush carried by and insulated from the stem and arranged to make contact successively with outer terminals
95 carried by the igniters, means for connecting the brush with an electric circuit, a ratchet wheel carried by the valve stem, its teeth corresponding in number with the igniters, a spring retracted arm loosely mounted
100 in the valve stem and carrying a spring pawl for engaging the ratchet wheel, and a positive stop for limiting the range of movement of the arm, all so disposed that at each movement of the arm the brush is shifted from one sparking device into engagement with the next in order.

5. An igniting device for internal combustion engines comprising, in combination,
105 a plurality of electric igniters, an electric terminal movable successively into engagement with the igniters, and means for moving such terminal step by step.

6. An igniting device for internal combustion engines comprising, in combination,
110 a chambered casing adapted for attachment to an engine, a plurality of igniters each occupying a separate cell in the casing, a valve for controlling the cells and adapted
115 to uncover them successively, a stem for controlling the valve, an electric terminal mounted on the stem and engageable successively with the igniters and simultaneously with the opening of the valve, and
120 means for moving the valve and terminal step by step.

ROBERT J. GIBBON.

Witnesses:

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