

Aug. 2, 1949.

H. E. PETERS
UNIT IGNITION SYSTEM

2,478,128

Filed March 16, 1945

3 Sheets-Sheet 1

FIG. 1.

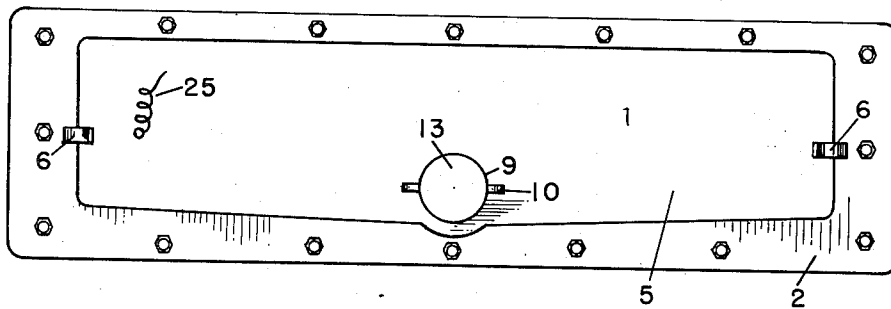


FIG. 2.

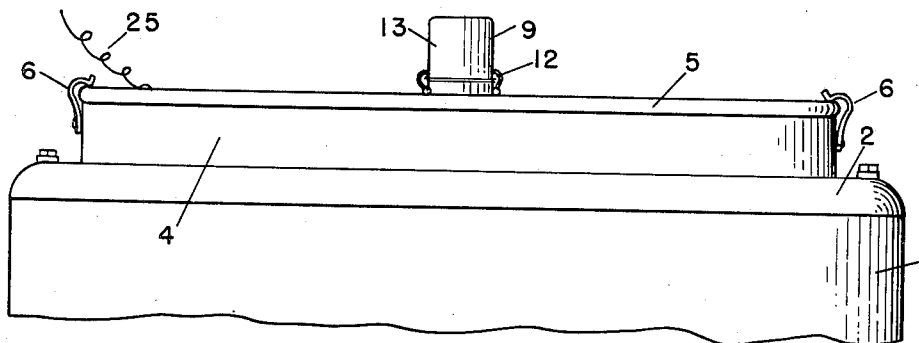


FIG. 3.

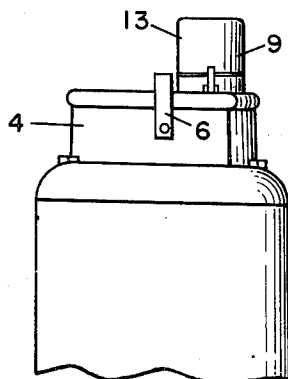
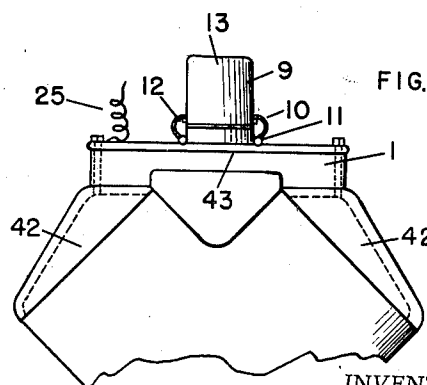


FIG. 4.



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FIG. 5.

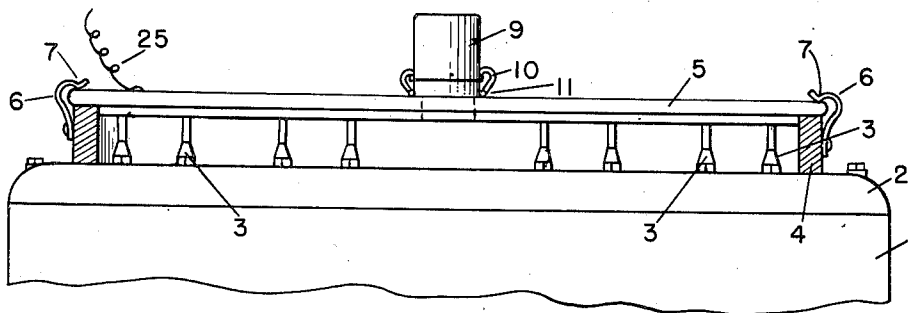


FIG. 6.

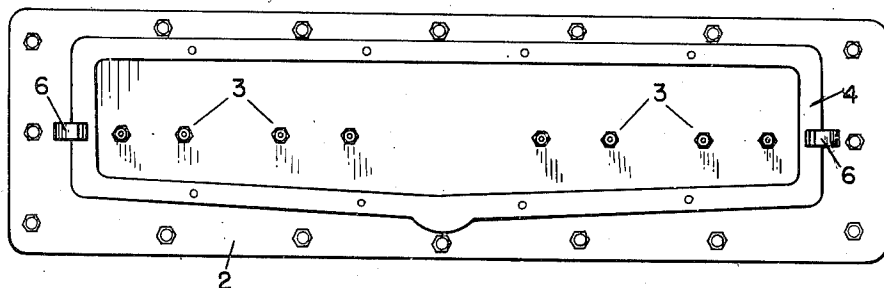
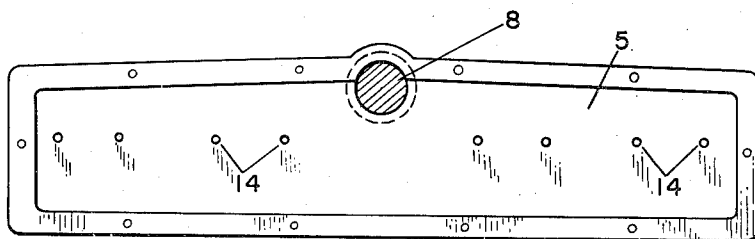


FIG. 7.



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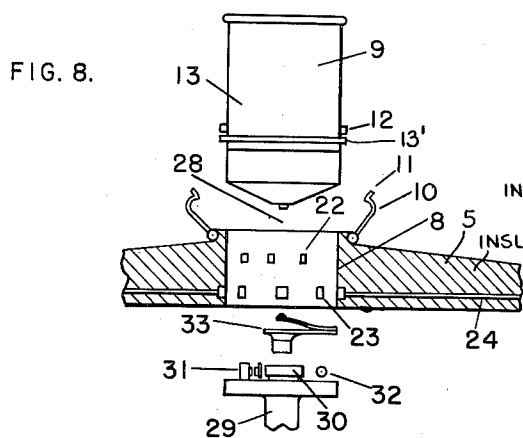


FIG. 8.

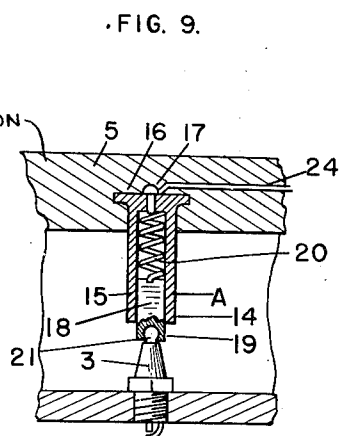


FIG. 9.

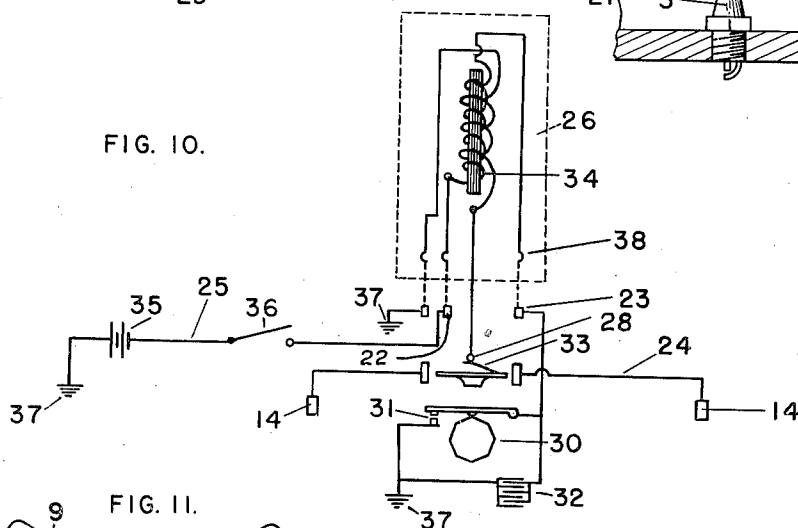


FIG. 10.

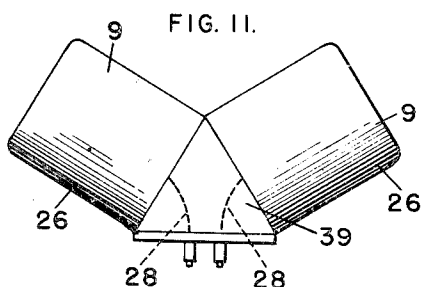


FIG. 11.

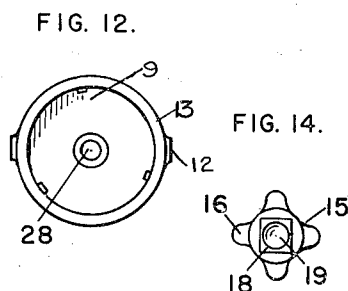


FIG. 12.

FIG. 14.

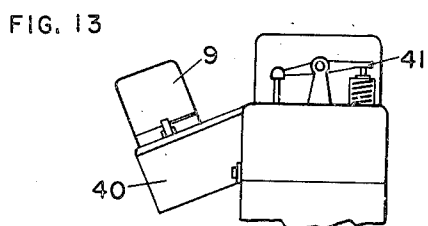


FIG. 13

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UNITED STATES PATENT OFFICE

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UNIT IGNITION SYSTEM

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Application March 16, 1945, Serial No. 583,055

1 Claim. (Cl. 123-143)

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The present invention, in its broad aspect, has to do with improvements in moisture, water, and dust proof means for connecting the spark plugs of an internal combustion engine with the distributor, and more particularly it is my purpose to provide a unitary ignition device which carries the distributor, novel and improved contacts to the spark plugs, and connections from the distributor to the spark plug contacts whereby all elements of the system are carried and enclosed against dust, moisture, water and the like, and the entire unit may be attached and removed from an internal combustion engine, and all adjustments quickly and accurately made, and short circuits, improper or inaccurate timing and the like due to deleterious influences and loose or bad connections and poor adjustments are guarded against. My device is desirable for marine installations where moisture and dampness are an ever present hazard to proper function of ignition, and short circuits through sweating and the like are eliminated.

In carrying out the above and other purposes of my invention, a cover plate of any suitable material, such as plastic, is provided which fits over that part of the engine from which the spark plugs project or are accessible. This cover plate is formed and designed to provide a water, moisture, dust, and air proof hood or enclosure about the spark plugs, and carries partially embedded therein novel and improved spring contacts which are placed to properly engage the spark plug terminal when the hood or cover is placed on the engine. The hood or cover carries an improved distributor, and the electrical connections from the distributor to the spark plug contacts are embedded in the cover so that the whole constitutes a self-sustained water, moisture, dust and air proof assembly when positioned on the engine.

Other and equally important objects and advantages of my invention will be apparent from the following description and drawings, but it is to be understood that changes in form, size, shape, material, construction and arrangement of parts may be made without departing from my broad inventive concept, or the scope of the appended claim.

In the drawings wherein I have illustrated a preferred form of my invention:

Figure 1 is a top plan view of my cover plate and distributor mounted on an engine of the type having spark plugs in the head;

Figure 2 is a side elevation;

Figure 3 is an end view;

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Figure 4 is an end view of my invention applied to a so-called V-type engine;

Figure 5 is a longitudinal section;

Figure 6 is a view of the engine with the cover plate removed;

Figure 7 is a bottom plan view of the cover plate;

Figure 8 is a fragmentary transverse section through the cover plate with the distributor head detached;

Figure 9 is a section showing one of my improved spark plug contacts;

Figure 10 is a diagrammatic view of the electrical circuit;

Figure 11 is a view showing the application of two distributors;

Figure 12 is a plan view of the bottom of a distributor;

Figure 13 is a view showing my device as used with an engine having over-head valves and the spark plugs in the sides of the head, and

Figure 14 is a bottom plan view of the contact assembly shown in Figure 9.

In the drawings wherein like characters of reference are used to designate like or similar parts:

The numeral 1 designates an engine block having a cylinder head 2 and spark plugs 3. About the head is a rim 4 on which my cover plate 5 is mounted—a suitable removable rubber gasket being used to insure an absolutely water, moisture, dust and air proof connection between the cover plate and rim thereby, forming a water, moisture, dust and air proof chamber or compartment over the spark plugs of the engine. The cover plate may be formed of any suitable material, such as a plastic or the like, and is held in place by spring clips 6 which are attached to the rim, and are bent over at 7 to engage on the edge of the cover.

The cover plate 5 has an opening 8 in which is seated the distributor 9 with a water, moisture, dust and air proof contact and is held in place by hinged clips 10 which are pivoted to the cover at 11 and engaged over the lugs 12 in the distributor cover 13. The cover about the opening has a narrow flange 13'.

Partially embedded in the under side of the cover plate are contact assemblies 14. Each contact assembly comprises a cylindrical elongated housing 15 having a flanged head 16 which carries the connecting wire attaching post 17. A plunger 18 having a concave end 19 is slidable in the housing and is urged downwardly by a coil spring 20. In practice the concave end 19 fits over the ball contact point 21 of the spark plug 3.

All contact assemblies are alike in construction and they are spaced to automatically fit down with proper alignment and contact on the plugs 3 when the cover plate is mounted on the engine.

Embedded in the walls of the opening 8 are coil contact points 22 and spark plug contact points 23 connected by conduits 24 embedded in the cover plates to the posts 17 of the contact assemblies 14, and a low tension wire 25 from the ignition switch of the engine—not shown—is also embedded or molded in the cover plate and connects to the ignition coil 26. Advance of the spark may be automatically or vacuum controlled and may be so installed as to prevent tampering. Referring particularly to Figures 8 and 10, the coil 26 is in the cover 13 and the high tension contact to the distributor is shown at 28. The distributor shaft 29 carries a cam 30 and there are the usual breaker points 31 and condenser 32 and distributor arm 33. In the diagram shown in Figure 10, the coil 26 is shown in dotted lines and the primary and secondary windings are shown at 34. The battery is designated by 35, the ignition switch by 36, the grounds at 37, and the spring contacts at 38.

In Figure 11 I have shown an adaptation of my invention designed for use with double distributors 9; these are set at an angle 39. In Figure 13 a laterally and downwardly inclined cover 40 carries the distributor 9 so that my device is adaptable for use with an engine having over-head valves 41. In the adaptation for a V-type engine—shown in Figure 4—the cover plate extends downwardly and laterally as at 42 over the spark plugs from a central flat cover part 43 carrying the distributor.

From the foregoing it is believed that the operation and advantages of my invention will be apparent, but it is again emphasized that interpretation of its scope should only be conclusive when made in the light of the subjoined claim.

I claim:

In a moisture, dirt and air proof ignition system for supporting an internal combustion engine distributor and contacts for the spark plugs and electrical connections, the improvement comprising a vertically disposed rim carried by the cylinder head of said engine, an elongated cover element removably mounted on the rim and covering the spark plugs, said cover adapted to have sealing contact with the rim and means carried by the rim for retaining said cover in such contact, a seat in said cover to receive the distributor for the engine having exposed contacts thereon, exposed contacts carried by said seat for engagement with the exposed contacts of the distributor, electrical connections embedded in the cover, exposed resilient spark plug contacts having spring pressed contact plungers engaging the spark plugs and a casing carrying a plunger and a spring embedded in the cover plate and having engagement with said electrical connections and protruding from the cover to contact the spark plugs, contacts carried by the seat for engagement with the low and high tension wires, means carried by the cover for detachably connecting the distributor to the cover plate and the cover distributor and spark plug contacts constituting a removable unit.

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The following references are of record in the file of this patent:

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