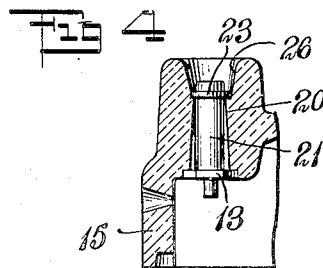
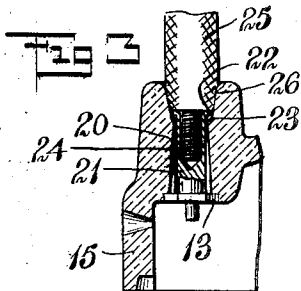
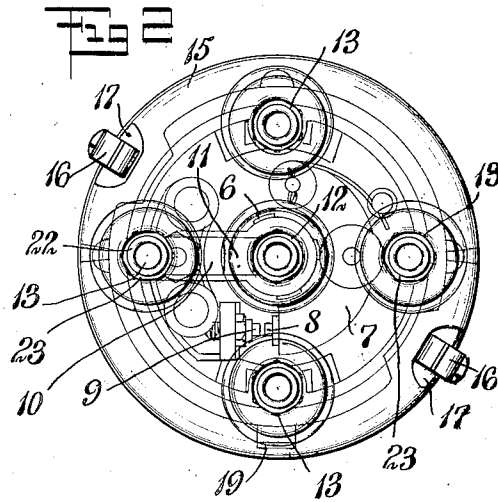
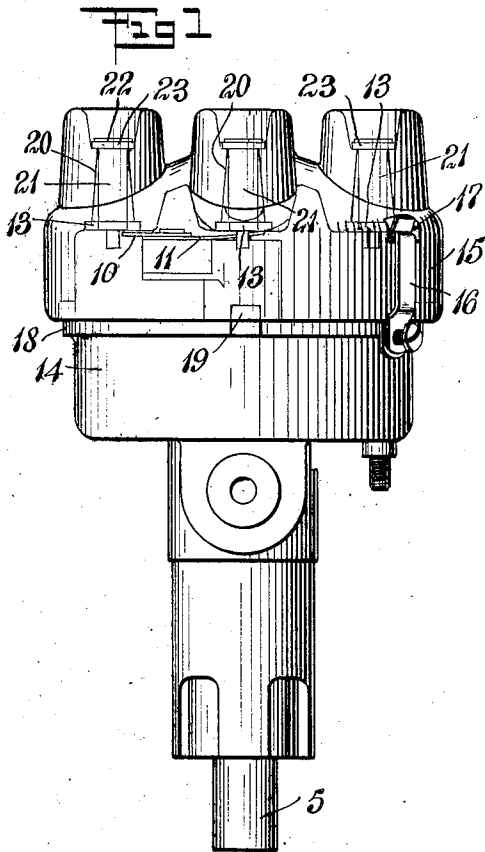


J. F. CAVANAGH,
DISTRIBUTER.
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1,242,895.

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JOHN F. CAVANAGH, OF MERIDEN, CONNECTICUT.

DISTRIBUTER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN F. CAVANAGH, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Distributer, of which the following is a specification.

My present invention relates to distributors for the ignition systems of internal combustion engines and the objects of the invention generally are to provide a distributor of improved dielectric and insulating qualities which can be cheaply manufactured and which will be durable and lasting.

Other objects of the invention are to provide a combined housing and terminal support for a distributor which will be impervious to oil and water and which will be non-hygroscopic.

Another object is to provide an insulating support for the terminals which will be free of impurities and not subject to carbonization or pitting by sparking action and so not liable to insulation break-downs.

A further special object is to enable the complete action of the distributor to be observed without taking the distributor apart.

In the attainment of the foregoing and other objects I have constructed a distributor with the housing and support for the terminals made of glass molded to the proper shape. This glass housing provides an insulating support for the terminals having a high dielectric strength, it being impervious to oil and water, non-hygroscopic and possessing the novel and important advantage that the entire action with the engine in operation can be observed without dismantling the distributor or any of the parts.

Another special feature is the mounting of the terminals in the glass-like support in such a way as to allow for their expansion without becoming displaced or rupturing the support.

Other features of the invention and the details of construction will appear as the specification proceeds.

In the accompanying drawing, I have illustrated the invention as embodied in a practical and preferred form, but I would

have it understood that changes and modifications may be made without departure from the true spirit and scope of the invention.

In this drawing:

Figure 1 is a side elevation of a distributor unit embodying the invention.

Fig. 2 is a top plan view of the same.

Fig. 3 is an enlarged sectional view illustrating the mounting of the terminals on the vitreous insulating support.

Fig. 4 is a similar view showing the terminal in position ready to have the end thereof flanged over to secure it permanently in place.

The device shown is a combined timer or interrupter and distributor, the timing being accomplished by an engine driven shaft 5 carrying a cam 6 operating a pivoted breaker arm 7 carrying a contact 8 for engagement with a relatively stationary contact 9. These two contacts constitute the ends of the primary circuit, and the current in the secondary or high tension circuit is distributed to the various cylinders by the distributor mechanism about to be described.

This distributor mechanism is shown in the form of a rotating distributor element or arm 10 on the upper end of the cam shaft receiving current at its center through a brush 11 from the contact or terminal 12 and distributing this high tension current in its rotation to the terminals 13 grouped about the center terminal.

The interrupter and distributor mechanism is mounted in a housing and support consisting in the present disclosure of a cup shaped base 14 and a cap or cover 15, secured to the base by spring catches 16 engaging shoulders provided by the notches 17 in the rim of the cap.

The cap portion of the housing which forms the support for the terminals is made of insulating material which is of a non-absorbitive non-hygroscopic nature such as glass, and which further is preferably transparent so as to disclose the entire working while the parts are assembled and the engine is running. Figs. 1 and 2 show how both the action of the distributor and the circuit breaker can be watched while in op-

eration. This is especially desirable when the engine is not operating properly, as it enables the detection of any faults in the circuit breaker and distributing mechanism of the ignition system.

The glass housing and terminal support is formed to shape in any suitable way, usually by molding it in suitable dies. If found necessary, the lower rim and the inside surface of the edge of the cap may be trued up so as to properly seat on the flange 18 of the distributor base 14, and said base may be provided with a lug 19 engaging in a corresponding notch in the cap to insure proper registry of the parts. The spring catches hold the cap firmly seated against the base so that there is no danger of breakage by jarring, etc., and the cap being made of glass the notches for the spring clips do not wear down, so that the cap is always firmly held and the spring holding devices are enabled to always exert the proper tension on the cap.

Danger of breakage is further avoided by making the wall of the cap relatively heavy or as thick as may be necessary to withstand the shocks to which the device may ordinarily be subjected, this being a practical manufacturing possibility because of the fact that the glass is cheaper than the composition material now used for such purposes.

Another important advantage of this glass distributor housing and terminal support is that it can be made practically free of impurities, which is not the case with composition materials. This means superior insulating qualities and higher dielectric strength. Furthermore, the glass is not affected by any high tension sparks and no carbonization or pitting takes place. The glass, on account of its hard, vitreous and non-absorptive qualities is easily kept clean and has a tendency to remain clean by reason of the fact that water or oil quickly flows off the same. The non-hygroscopic qualities of the device are especially desirable in this connection for the distribution of the high tension current.

As above stated, the device on account of the greater cheapness of the glass can at no greater cost, be made actually stronger than similar devices molded in composition, and even if the cap should become cracked, such fact is easily ascertained, as any cracks are easily detected.

A special advantage of being able to observe the operation while the engine is working is that it enables the regulation of the gap at the interrupter points to just the desired extent. It will be apparent that numerous other advantages will follow from this construction, such as that in case of the failure of the ignition system it can readily be determined by watching the operation

whether the fault is in the distributor unit, or to which side of the distributor unit the fault lies.

The high tension terminals are specially mounted in the cap to prevent them from fracturing the cap by undue expansion. Accordingly, the passages 20 provided in the cap for the tubular shanks 21 of the terminals are made large enough to receive the terminal shanks without confining them, and the terminals are preferably held only at their ends, as in the illustration by forming the terminals on the lower ends of the shanks as outstanding heads or flanges and by flanging over the upper ends of the terminals as indicated at 22. Washers 23 of lead or other relatively soft material may be engaged beneath these end confining flanges to prevent breakage while spinning over the securing flanges, and to hold the terminal seated firmly in place. Figs. 4 and 3 illustrate how the parts are assembled by first inserting the terminals in their seats, then applying the washers or gaskets around the end of the terminal shanks and finally spinning the ends of the shanks over the washers.

Fig. 3 also illustrates how a water tight joint between the terminals and the conductors connected with them can be effected by making the tubular terminal shanks internally screw threaded to take the threaded terminals 24 on the ends of the conductors 25, the cap being formed with tapering sockets 26 into which the insulating covering of the wires is tightly drawn by the screw threaded connections.

The seats 20 for the terminals are preferably enlarged for the expansion of the terminals by making them tapering in form as clearly indicated in Figs. 1, 3 and 4, this tapered construction providing all the room necessary for the expansion and also providing for the easy separation of the molded product from the dies.

What I claim is:

1. In ignition apparatus, a distributor unit, comprising a movable distributor element, an integral hollow cup-shaped transparent cap covering said distributor element and terminals carried by said transparent cap and spaced and supported thereby in operative relation to the movable distributor element.

2. In ignition apparatus, a distributor base, a movable distributor element on said base, an integral one-piece hollow cup-shaped glass cap secured in inverted position over said distributor base and covering the distributor element and terminals carried by said hollow glass cap and supported thereby in operative relation to the movable distributor element.

3. In a device of the character described, the combination with a timer, including a

relatively stationary contact and a movable breaker arm coöperating therewith and a distributor including relatively stationary distributor terminals and a movable distributor arm coöperating therewith, of a housing inclosing said parts, including a base and an integral hollow cap of transparent insulating material secured to said base and forming a transparent cover through which the operation of the timer and distributor may be observed while in operation, said transparent cap having the distributor terminals mounted in and carried thereby.

4. In combination with a distributor cap

of glass-like material provided with a tapering passage, a substantially cylindrical terminal located in said passage and means at the ends of said terminal for securing the same in said tapering passage.

5. In ignition apparatus, the combination with a movable distributor element, of a glass terminal support having terminal passages therein for supporting and spacing terminal elements in proper relation to the movable distributor element, and terminal elements seated in said passages in operative relation to the movable distributor element.

JOHN F. CAVANAGH.