June 6, 1939. R. M. HEINTZ 2,161,043

DISTRIBUTOR

Filed Oct. 30, 1936

Fig. 1.

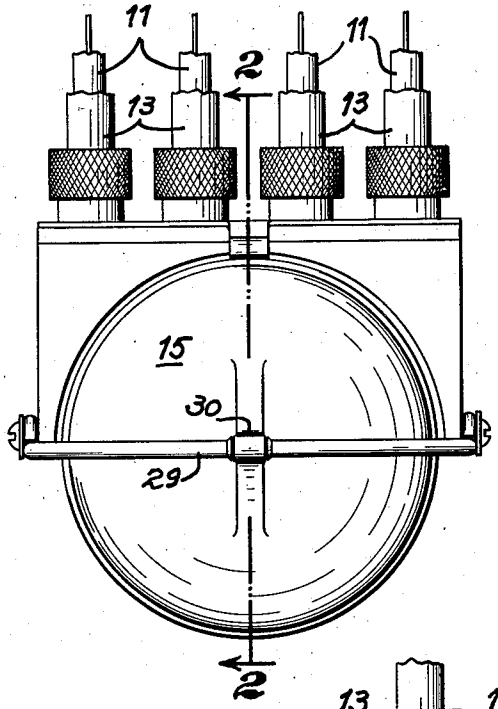


Fig. 3.

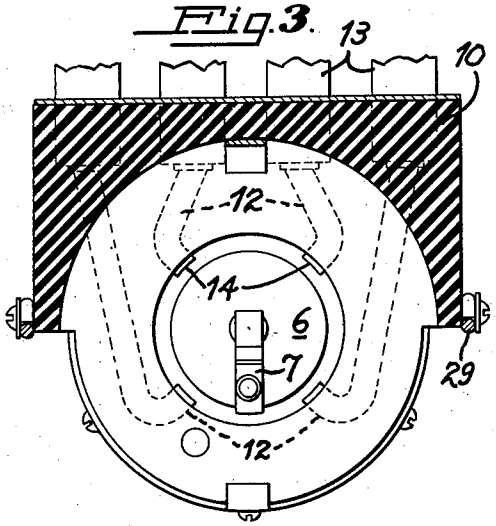


Fig. 4.

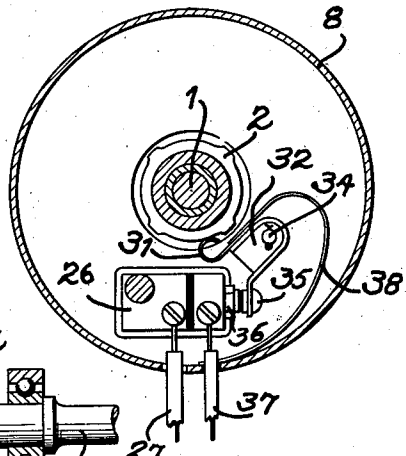
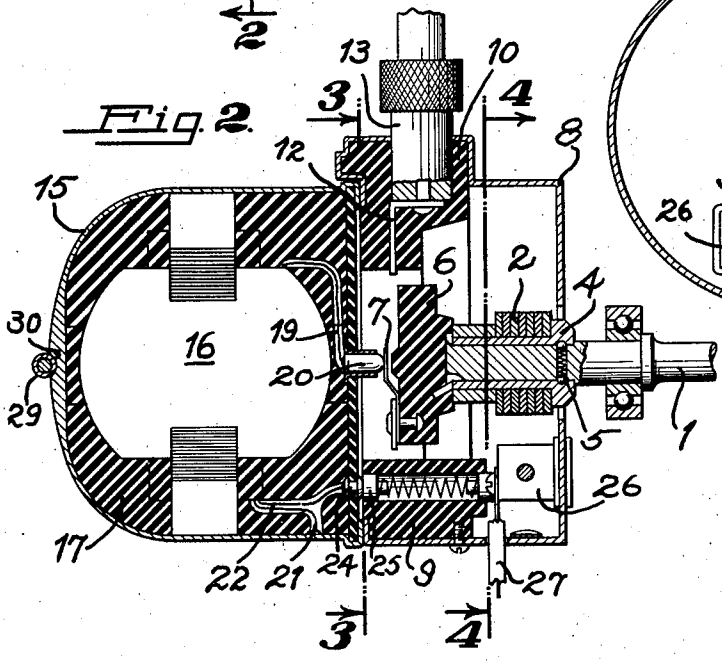


Fig. 2.



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UNITED STATES PATENT OFFICE

2,161,043

DISTRIBUTOR

Ralph M. Heintz, Palo Alto, Calif., assignor, by mesne assignments, to Bendix Aviation Corporation, South Bend, Ind., a corporation of Delaware

Application October 30, 1936, Serial No. 108,432

3 Claims. (Cl. 123—148)

My invention relates to distributors of the type used to supply high tension current for ignition of internal combustion engines, and is particularly adapted for use on light weight engines.

The main object of my invention is to provide a light weight and weatherproof coil and distributor. Another object is to provide a unitary ignition system, and one in which various elements are quickly replaceable.

Other objects of my invention will be apparent or will be specifically pointed out in the description forming a part of this specification, but I do not limit myself to the embodiment of the invention herein described, as various forms may be adopted within the scope of the claims.

The drawing illustrates a preferred embodiment of my invention.

Figure 1 is a side view in elevation of my device as applied to a horizontal, radial type engine.

Figure 2 is a sectional view taken as indicated by the line 2—2 in Figure 1.

Figure 3 is a sectional view taken as indicated by line 3—3 in Figure 2.

Figure 4 is a view partly in section and partly in elevation taken as indicated by line 4—4 in Figure 2.

While my distributor assembly is designed to operate in the position shown, it is obvious that it can also be used in other positions.

A distributor shaft 1, operated as is customary by timing gears connected to the engine to be ignited is provided with a laminated breaker cam 2 mounted on a breaker sleeve 4 sliding over the shaft and maintained in position by a spring lock 5.

Mounted on sleeve 4 is an insulated distributor block 6 carrying a radial conducting arm 7 fastened at the periphery only of the block. A breaker casing 8 fastened in any convenient manner to the engine body supports a molded distributor ring block 9 having an extension 10 from which high tension leads 11 emerge, each of which has connections 12 to equally spaced current collectors 14. The high tension leads come out through, but insulated from metal sleeves 13 to which shielding conduits may be attached to reduce radio interference, the sleeves being grounded to casing 8. The current collectors 12 are set in ring block 9 level with but spaced slightly from the peripheral end of conducting arm 7.

The main novelty of my invention lies in the distributor cover 15, which is preferably a cup shaped metal spinning and which contains the high tension coil 16. I prefer to mold the coil into the cup in solid insulating material 17, bring out therethrough a high tension lead 19, terminating in a central contact button 20, which is long enough to contact arm 7 when the cap is in place. Primary leads 21 and 22 are similarly brought out, one of which 21 is grounded to the cap and thence to the engine frame through casing 8 by contact, and the other 22 being led to a lateral stud 24 which is forced against a spring contact 25 connecting with a connection block 26, from which a wire 27 leads to the usual switch and battery, not shown. The cap and coil assembly is held on the casing assembly by a snap bail 29 hinged to the casing and crossing over the cap to spring into bail notch 30.

In case a waterproof unit is desired, a soft rubber gasket may be advantageously used between the cap and ring block.

The breaker mechanism is shown in Figure 4. Here the cam 2 rotates against a curved steel anvil 31 which is fastened to an anvil block 32 oscillating on block pin 34. The anvil black carries a moving breaker contact 35 cooperating with a stationary contact 36 mounted on block 26 and having an exterior connection 37 cooperating with connection 27 for battery supply and switching purposes.

The breaker contacts 35 and 36 are maintained normally closed by breaker spring 38.

It can be readily seen that coils may be quickly changed in toto and if dual ignition is used, may be changed during operation of the engine.

I have therefore produced a distributor system completely shielded to reduce radio interference and one in which defective parts may be quickly replaced.

My distributor is therefore ideally adapted for use on small engines designed to produce dependable auxiliary power in airplanes, which power may be used for the generation of electricity.

I claim:

1. A metallic encased unitary ignition assembly comprising distributing means for high tension current, a metallic casing surrounding said distributing means, said casing having an opening exposing contacts of said distributing means, and a metallic cup shaped removable cover for said opening, an ignition coil mounted in said cover and having a terminal supported in the approximate plane of the opening of said cup shaped cover, said cover when assembled to said casing, effecting contact between said terminal and one of said contacts, and at the same time establishing metal to metal contact between said metallic cover and said metallic casing whereby

said coil and contacts will be completely enclosed by metal.

2. A metallic encased unitary ignition assembly comprising a circuit breaker and distributing means for high tension current, a metallic casing surrounding said breaker and distributing means, said metallic casing having an opening exposing said breaker and distributing means, and providing a shoulder about said opening, a metallic cup shaped removable cover to fit said opening and having a rim adapted to engage said shoulder to establish electrical and metallic contact between said cover and said casing when assembled together, an ignition coil in said cover, and means for establishing electrical connection between said ignition coil and said distributing means and at the same time effecting said electrical and metallic connection between said metallic cover and said metallic casing.

3. A metallic encased high tension ignition unit including a distributor comprising a rotating shaft, breaker means for interrupting a primary current mounted on said shaft, distributing means for high tension current mounted on said shaft, a metallic casing surrounding said breaker and distributing means, said metallic casing having an opening in a plane at right angles to the axis of said shaft, and a metallic cup shaped removable cover for said opening, an ignition coil molded in said cover in solid insulating material, a high tension rotating connection between said coil and distributing means, a low tension connection between said coil and said breaker, including a low tension ground connection between said coil and said metallic cover, said metallic casing joining with said metallic cover when said cover is in place, and means for bringing out high tension leads through said metallic casing.

RALPH M. HEINTZ.