G. L. LANG.

COMBINED DISTRIBUTER AND CONNECTOR.

APPLICATION FILED SEPT. 25, 1917.

1,338,989. Patented May 4, 1920.

FIG. 1

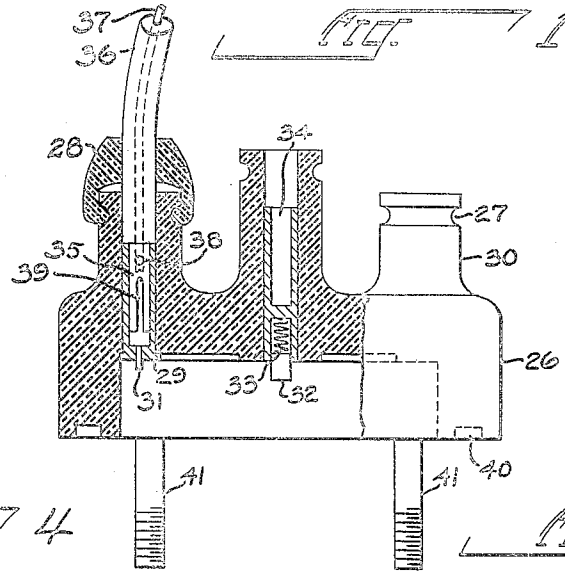


FIG. 4

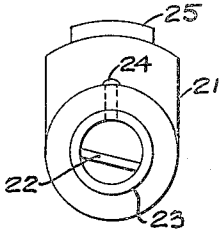


FIG. 3

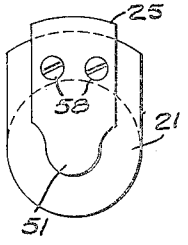
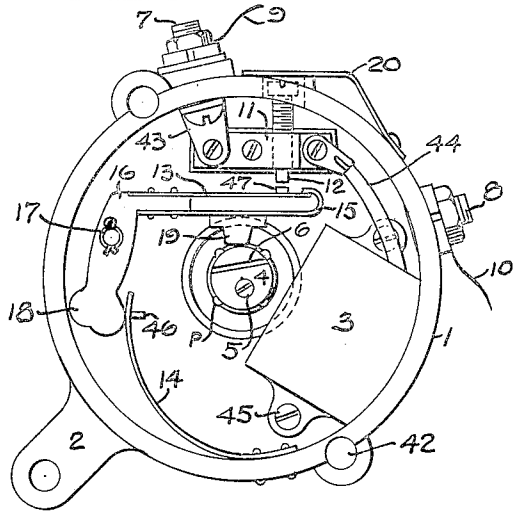


FIG. 2



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COMBINED DISTRIBUTER AND CONNECTOR.

1,338,989. Specification of Letters Patent. Patented May 4, 1920.

Original application filed October 23, 1914, Serial No. 869,017. Divided and this application filed September 25, 1917. Serial No. 193,121.

To all whom it may concern:

Be it known that I, GEORGE L. LANG, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Combined Distributers and Connectors, of which the following is a specification.

In the operation of internal combustion engines it has become quite common to use, for the purpose of producing sparks in the engine, what is known as a battery ignition system. This system usually consists of a timer device driven by some shaft operated by the engine for the purpose of making and breaking the primary circuit of an induction coil through which battery current is conducted. Associated with the timer is a distributer operated by the same shaft that operates the timer mechanism for the purpose of distributing the current from the secondary of the induction coil to the various cylinders of the engine.

In order that this sparking current may be distributed in a satisfactory manner considerable attention must be given to the design of the distributer block and method of connecting the high tension wires thereto, which wires conduct current from the distributer to the spark plugs in the engine cylinders.

It is the object of my invention to provide a distributer and connector which works in conjunction with the timer, that is simple, cheap to manufacture and one which is water and dust proof and having ready means for attaching and detaching the connections which run to the cylinders of the engine. Where devices of this character are exposed to all conditions of weather and are apt to become flooded with water when the vehicles in which the engines are used are washed, it is highly essential that the distributer parts be well insulated and carefully protected from all these injurious elements.

My invention consists of other novel features which will be apparent to anyone skilled in the art after a study of this specification in connection with the accompanying drawings, in which Figure 1 is a part sectional and plan view of my distributer block, with one of the secondary leads attached thereto and showing the waterproof construction.

Fig. 2 is a view of one form of my timer with the distributer block removed.

Fig. 3 is a top view of the distributer finger, which distributes the current to the various connections of the distributer block.

Fig. 4 is a bottom view of Fig. 3.

The various parts will now be described, in which similar numerals of reference indicate corresponding parts in the various figures of the drawings.

In the drawing accompanying this specification, I have shown a preferred form of my distributer and connector and one type of the timer, although it is to be understood that the distributer and connector may be used with any type of timer. This application constitutes a division of my pending application Serial No. 869,017, filed October 28, 1914, which issued May 28, 1918, No. 1,267,671, and the timer shown to be used in connection with my distributer block and connector will be briefly described herein in order that the whole disclosure may be readily understood.

Referring now to the drawings, 1 is the timer casing, which has a lever 2, for the purpose of connecting thereto the timing rod, running to the steering wheel. 3 is a condenser, one end of which is connected by screw 45 to the case 1, the other end connected by an insulated connector 44, to the terminal block 11, on which is mounted a screw carrying a contact 12. This screw is adjustable from the exterior of the case by moving aside the spring member 20. Attached to the driving shaft by some means, such as a screw 5, is a cam 4, having projections *p*. Attached to the case is a stud 17, upon which is pivoted a member 16, to which is fastened a member 15 and a resilient member 13, upon which is mounted a contact 47, adapted to engage the contact 12.

Attached to the member 15 is a friction bumper element 19, as shown in Fig. 2. One end of the member 16 is enlarged at 18, which enlargement engages the side of the case 1. Attached to the case 1 is a resilient member 14, which presses against the member 16 and is guided thereon by pin 46. The block 11 is connected to an insulated stud 7 by member 43. It is readily seen that a cir-

cuit through the timer is provided as follows: from wire 9, stud 7, connector 43, block 11, contact 12, contact 47, member 13, member 16 to the case 1, and stud 8 to conductor 10. It is to be understood that the conductors 9 and 10 respectively lead to a source of current and primary of an induction coil, one end of the secondary being grounded and the other end brought to the center electrode 34 of the distributer block. These parts and their functions are so well known, that for the sake of brevity, they are not shown nor further described.

The distributer finger 21 has a metal ring 23 held in position by rivet 24. Ring 23 is adapted to slip over the end of cam 4 and the cross member 22 is adapted to enter the slot 6 in the cam, thus providing means for rotating the finger 21. Mounted on one side of the finger 21 is a metal strip 25, being held in place by screws 58. When the distributer block 26 is in place, the studs 41 pass through the holes 42 in the timer case, and the groove 40 engages the edge of the case 1; at the same time brush 32 which is held in the metal insert 34 is pressed by the spring 33 against the small end 51 of the member 25. Arranged in a suitable manner around the center electrode 34 are a number of electrodes 29, corresponding to the number of engine cylinders. These electrodes are embedded in the insulating projections 30, which have the tops grooved as shown by 27. 37 is a conductor covered by insulation 36 over which is slipped a flexible cap 28, preferably of insulating material, which is adapted to snap over the top of the projections and engage the grooves 27. Since the cap 28 is flexible, it has a gripping effect on the insulation 36 as well as on the top of projections 30, thereby holding the conductor securely in place on the distributer block. The conductor 37 is connected to the terminal 35 being soldered thereto through the hole 38. The lower end of the terminal 35 is slotted at 39, so that the terminal can be spread to securely engage the hollow electrode 29, the end of which terminates in a pin 31.

It will be readily seen that when the distributer block 26 is in place on the timer case, the secondary current which comes in at the center electrode 34 is conveyed by brush 32 to the member 25. This current being high tension in character, passes or jumps from the member 25 to the pins 31, whenever the primary circuit is broken by contacts 12 and 47. As shown, the member 25 is not adapted to touch the pins 31, as it is rotated on the finger 21, but passes in close proximity thereto, so that the current or "spark" jumps across the small intervening gap and goes out on the conductors 37.

While I have shown a jump spark type of distributer yet I do not wish to be limited to this construction as the so-called "wipe" spark may be used instead.

It is also apparent that the base of the distributer block and the method of holding the same to the timer case may be modified to suit conditions. Numerous other changes may be made without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim is:—

1. In a combination of the character described, a distributer block having the following instrumentalities, an annular groove around the base of said block and spaced away from the inner and outer edges, hollow projections extending above the surface of said block and integral therewith, each of said projections having an annular groove near the top thereof and electrodes mounted within said block and extending only partially upward within said hollow projections and terminating in pin like points within the hollow portion of said block; and connectors having electrical cables attached thereto, said connectors and cables adapted to extend into said hollow projections to connect with said electrodes and flexible insulated caps adapted to fit around said cables and engage said grooves for the purpose described.

2. In a combination of the class described, a distributer block having the following instrumentalities, a base portion having hollow projections integral therewith and extending from the upper surface thereof, said projections having annular grooves near the tops and hollow electrodes mounted within and extending from the bottom of the hollow projections only a portion of their length; and connectors having electrical cables attached thereto, said connectors and cables adapted to extend into said hollow projections whereby the connectors enter said hollow electrodes and flexible caps adapted to grip said cables and said grooves for the purpose described.

3. In a combination of the class described, a distributer block having the following instrumentalities, a base portion having hollow projections integral therewith and extending from the upper surface thereof, said projections having annular grooves near the tops and hollow electrodes mounted within and extending from the bottom of the hollow projections only a portion of their length; said base portion having a hollow interior for the reception of a distributing finger adapted to distribute current to certain of said electrodes, means for conveying current from one of said electrodes to said finger; and connectors split at one end to tightly fit said hollow electrodes and having means at the other end for attaching conductors, insulated conductors adapted to fit

within the hollow projections and to be connected to said connectors and flexible caps adapted to grip said insulated conductors and said grooves, as and for the purpose described.

4. In a combination of the class described, a distributer block having the following instrumentalities, a base portion having hollow projections integral therewith and extending from the upper surface thereof, said projections having annular grooves near the tops, said base portion being hollow for the reception of a distributing finger, electrodes extending from the hollow portion of said base upward in the hollow projections for a part of their length; and connectors adapted to make contact with said electrodes and having electrical cables attached thereto and gripping devices to grip said cables and grooves, as and for the purpose described.

In witness whereof I affix my signature.

GEORGE L. LANG.