July 31, 1923. 1,463,453

L. J. WERNER

DISTRIBUTOR BLOCK AND METHOD OF MAKING THE SAME

Filed July 22, 1918 3 Sheets-Sheet 1

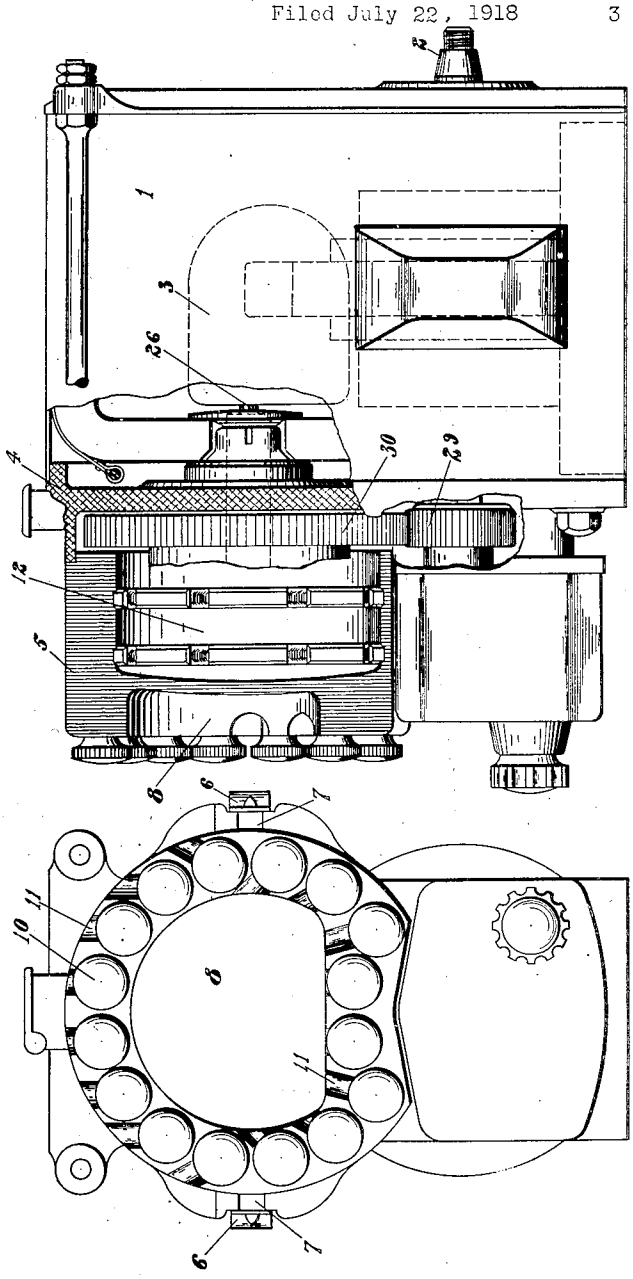


FIG 2

FIG 1

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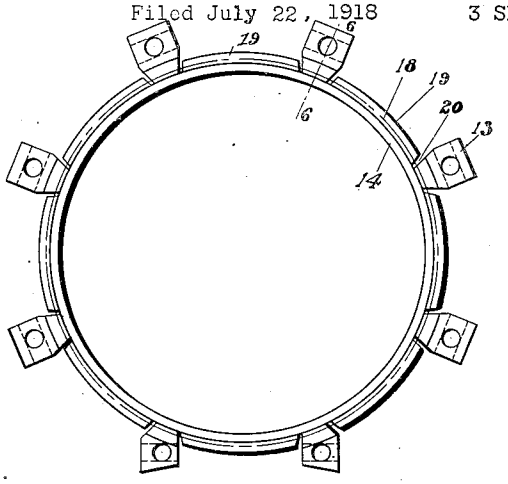


FIG 4

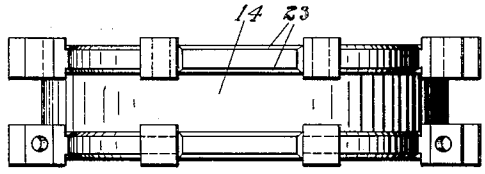


FIG 5

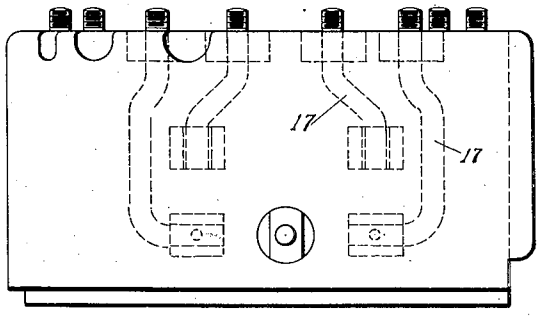


FIG 3

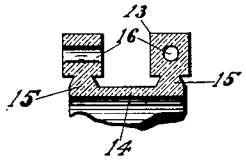


FIG 6

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DISTRIBUTOR BLOCK AND METHOD OF MAKING THE SAME

Filed July 22, 1918 3 Sheets-Sheet 3

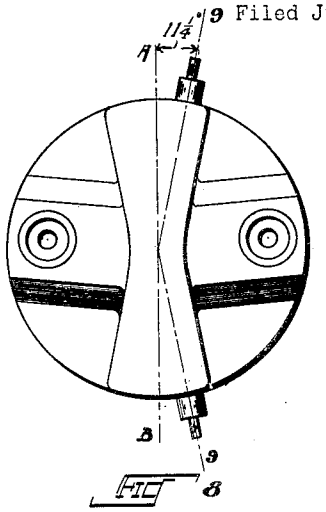


FIG 8

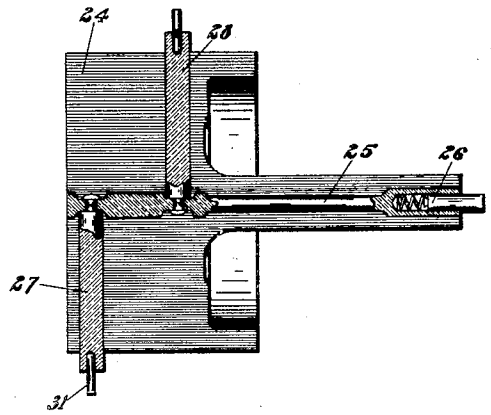


FIG 9

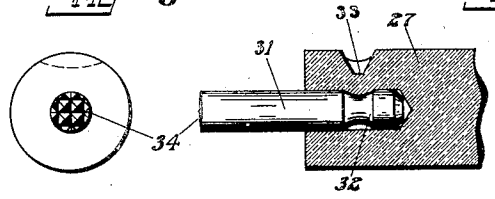


FIG 11

FIG 10

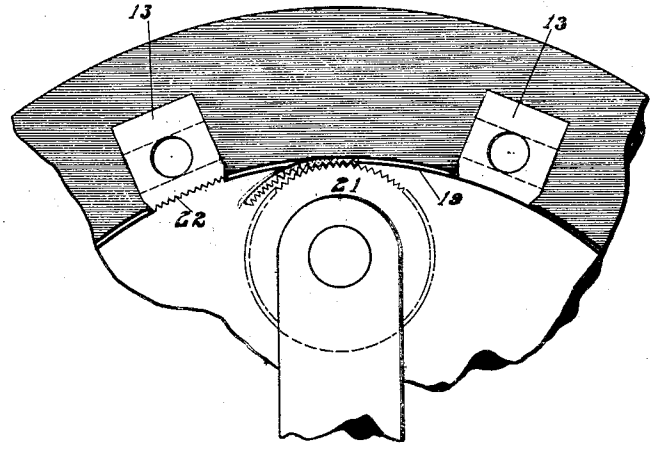


FIG 7

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Patented July 31, 1923. 1,463,453

UNITED STATES PATENT OFFICE.

LEO J. WERNER, OF ARLINGTON, NEW JERSEY, ASSIGNOR TO SPLITDORF ELECTRICAL COMPANY, OF NEWARK, NEW JERSEY.

DISTRIBUTOR BLOCK AND METHOD OF MAKING THE SAME.

Application filed July 22, 1918. Serial No. 246,177.

To all whom it may concern:

Be it known that I, LEO J. WERNER, a citizen of Russia, residing at Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Distributor Blocks and Methods of Making the Same, of which the following is a specification.

This invention relates to a distributor block and the method of making the same for use in connection with an ignition machine preferably of the magneto type. In certain cases where the number of engine cylinders is large, such as 12 or 16, the distributor has been placed on some part of the engine separate from the ignition generator, but this arrangement has certain objections, one of which is that it makes an extra mounting and drive for the distributor and for that reason it is preferable to mount the distributor directly on the ignition generator.

It is the object of my invention to provide a distributor mechanism which can be mounted directly on the ignition generator, one that will not be excessively large and clumsy. By way of illustration, I have shown in the drawings a 16 cylinder distributor block. In molding a distributor block for this large number of distributor contacts, it is a considerable problem to hold the contacts in position while the material is being molded around them as excessive pressure must be used in forming the block.

It is one of the objects of my invention to provide a method of holding these inserts securely in position whereby the tremendous pressure used in molding the material will not throw them out of place.

The high tension cables running from the distributor block to the spark plugs must, of necessity, have considerable insulation on them and therefore are relatively large in exterior diameter as compared with the amount of current carried and where so many of them are brought to the distributor block it is difficult to make attachment thereto unless special means are provided to take care of them. It is another object of my invention to provide a distributor block to which these electric cables may be readily attached without undue piling up or crossing of the cables.

These and other objects will be apparent to one skilled in the art after a study of the specification taken in connection with the attached drawings, wherein Figure 1 is an end view of an ignition generator showing a 16 cylinder distributor block in place on the end plate of the ignition generator.

Figure 2 is a part sectional and side elevation of Figure 1.

Figure 3 is a view of the distributor block showing the two pairs of distributor contacts with connectors extending to the face of the block.

Figure 4 is a view of a metallic ring carrying the inserts or electrical contacts.

Figure 5 is a side elevation of Figure 4.

Figure 6 is a section on the line 6—6 of Figure 4.

Figure 7 is an enlarged view of a section of the distributor block showing two of the electrical contacts after the support ring has been turned away and also illustrates the method of electrically separating the contacts one from the other and serrating their faces.

Figure 8 is an end view of the distributing finger which distributes the high tension current to the various contacts of the distributor block.

Figure 9 is a section on the line 9—9 of Figure 8.

Figure 10 is an enlarged view of one of the distributor points shown in Figure 9 and the method of holding the same to the insert.

Figure 11 is an end view of Figure 10.

Referring now to the details, wherein like numbers refer to corresponding parts in the various views, 1 illustrates an ignition generator having a driving shaft 2 carrying an induction coil 3 having the usual primary and secondary windings which are attached and function in the well known manner. Mounted on the end plate 4 is a distributor block 5 by means of attaching springs 6 which engage pins 7 fastened to the plate 4. The front face of the distributor block 5 has a recess 8 around which are arranged the various terminals referred to collectively as 10. It will be noted from Figure 1 that the block has channels 11, some of which lead from the terminals into the recess 8 and the balance toward the outer periphery of the block. By this arrangement it will be noted that the electrical cables leading to the terminals on the lower portion of the block can be "fanned" out or arranged in the recess 8 and attached to their respective terminals

through the channels 11. As the cables leave the recess 8 they can be readily arranged alternately with the cables leading away from the channels 11 in the outer periphery of the block. The block 5 has an inner bore 12 around the inner periphery of which all of the inserts or electrical contacts 13 are molded in a manner which will now be described.

All of the contacts 13 are cast integral with a ring 14. The entire ring with the contacts are machined to the proper dimensions so that they are connected to the ring 14 by tapered portions 15 with holes 16 to accommodate the connectors 17. After the ring has been machined, in the manner shown in Figures 4, 5, and 6, and the connectors 17 fastened to the various contacts 13 by means of the holes 16 described, two pairs of which connectors are shown in dotted position in Figur 3, the entire ring is placed in the mold and the insulating material molded around. On account of the integral structure of the ring and contacts no displacement takes place during the molding operation. After the block has been molded it is held in a proper fixture and a tool inserted within the bore 12 and the body portion 14 of the ring is turned out down to the line 18, shown in Figure 4, at which position it will be seen that the electrical contacts 13 are separated one from the other but there still remains the segments 19 spaced circumferentially between the contacts 13 and being only separated therefrom by the small space 20. A knurling tool 21 is now inserted within the bore and operated in such a manner that the faces of the contacts 13 are knurled or serrated as at 22. On account of the tapered side, indicated at 23, Figure 5, of the segments 19, they are withdrawn by the knurling tool 21 as the knurl passes over them, as indicated in Figure 7. After this operation has been performed the electrical contacts are left in their proper places being securely held thereto by the connectors 17 around which the material has been molded.

Mounted on the ignition generator, in any suitable manner, and adapted to be operated within the bore 12 is a rotary member 24 which has an insert 25 carrying a brush 26 that collects the high tension current from the coil 3 carrying the same to the two inserts 27 and 28 that are set 11¼ degrees from the line A—B, shown in Figure 8, it being understood that the contacts 13 which are arranged in two rows are spaced 45 degrees apart and it being further understood that the ignition generator shown is capable of delivering 4 sparks per revolution of the shaft 2 and the rotary member 24 is rotated at half the speed of the shaft 2 by means of the gears 29 and 30, the shaft 2 being driven at twice engine crank shaft speed as eight sparks are required for one revolution of the crank shaft of the engine. The inserts 27 and 28 are mechanically and electrically connected to the insert 25. I preferably use a special electrical contact or finger 31 held in the inserts 27 and 28 in any suitable manner. As shown in Figure 10, a depression 32 is made in the finger 31 and the metal of the insert is pushed downward, as at 33, therein. I preferably knurl the special fingers 31, as indicated at 34 so as to give a number of spark contacts on the end, it being understood that the fingers 31 are fixed in position on the inserts 27 and 28, as described, and that they pass in close proximity to the serrated surface 22 of the contacts 13. I have found that by serrating the surface of the contacts 13 and the end of the fingers 31 that longer life is obtained at the fingers as well as at the distributor contacts and a better result is obtained than where flat or single pointed surfaces are used.

While I have shown one particular type of ignition generator, it is understood that any suitable type may be used, and that various changes may be made in the details herein shown, without departing from the spirit of the inventon or the scope of the appended claims.

Having thus described my invention what I claim is:—

1. A distributor block for ignition generators having, an internal bore with electrical contacts arranged around the periphery of said bore and an external recess with terminals on the block arranged around said recess with connectors extending to said contacts, said external recess serving as a receptable for electrical cables running to a portion of said terminals.

2. A distributor block for ignition generators having, an internal bore with electrical contacts arranged around the periphery of said bore and an external recess with terminals on the block arranged around said recess with connectors extending to said contacts and channel openings leading from a portion of said terminals into said recess for the reception of cables as described.

3. A distributor block for ignition generators having, an internal bore with electrical contacts arranged in two rows around the periphery of said bore and an external recess with terminals on the block arranged in a single row around said recess with connectors extending from said terminals to said contacts, channel openings leading from a part of said terminals into said recess for electrical cables, said internal bore adapted to have a distributing finger rotate therein to distribute current impulses to said contacts as described.

4. A distributor block for ignition generators having, an internal bore with electrical contacts arranged in two rows around the periphery of said bore and an external

recess with terminals on the block arranged in a single row around said recess with connectors extending from said terminals to said contacts in such a manner that the successive contacts in one row are followed alternately by successive contacts in the other row, channel openings leading from the lower terminals of the block into said recess for the reception of electrical cables, said internal bore adapted to have a distributing finger rotate therein to distribute current to successive contacts in alternate rows as described.

5. A distributor block for ignition generators having, an internal bore with electrical contacts having serrated faces arranged around the periphery of said bore and an external recess with terminals on the block arranged around said recess with connectors extending to said contacts and channel openings, the upper half of which opens on the outer periphery of the block and the lower half into said recess for the reception of cables as described, said bore adapted to have a member rotated therein carrying fingers with serrated ends to ditribute current through said serrated faces to the contacts in said block.

In witness whereof, I affix my signature.

LEO J. WERNER.