June 19, 1923. 1,459,379

A. S. SHIMA

TESTING DEVICE FOR SPARK PLUGS

Filed March 9, 1922

Fig. 1.

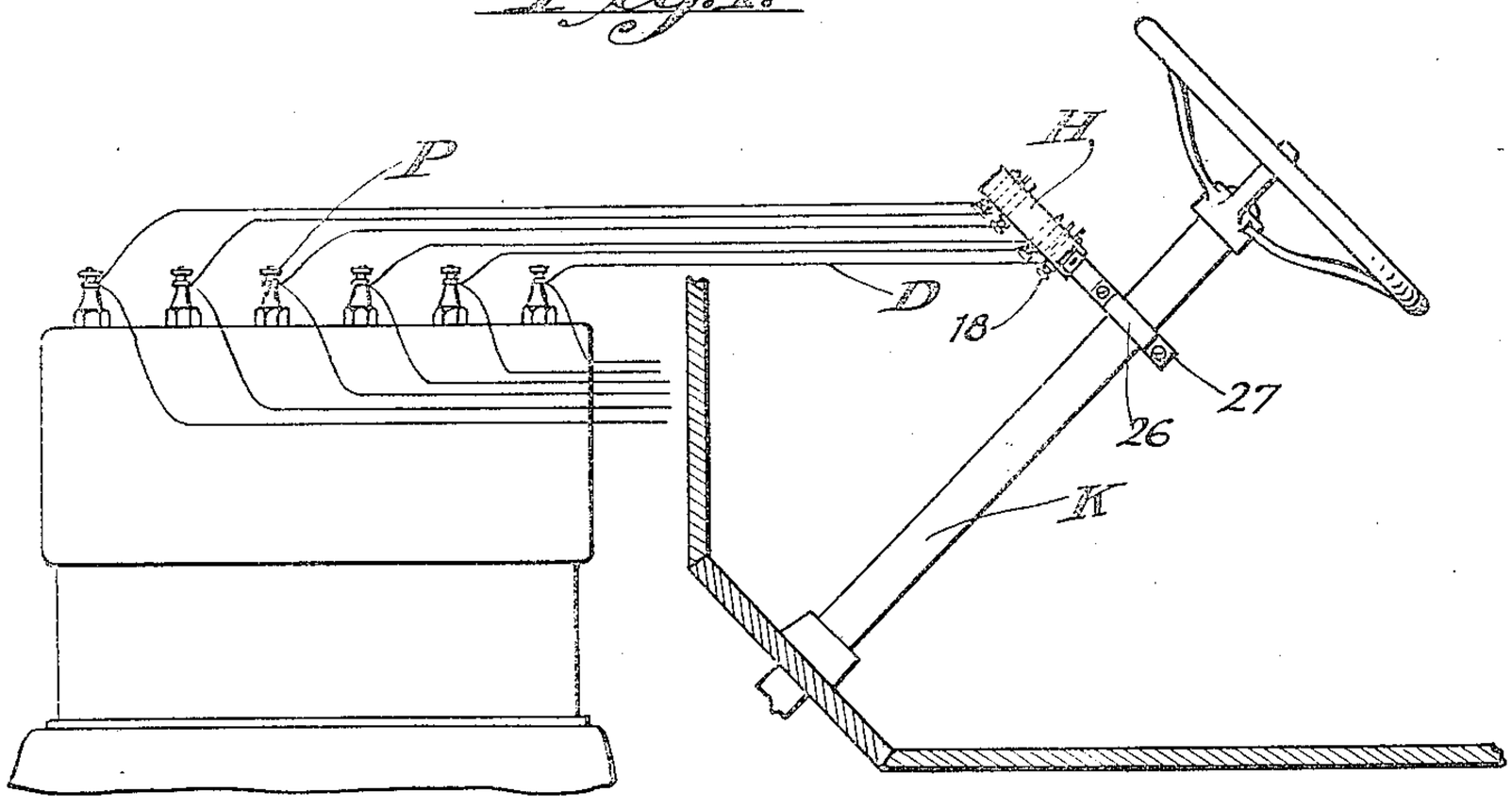


Fig. 2.

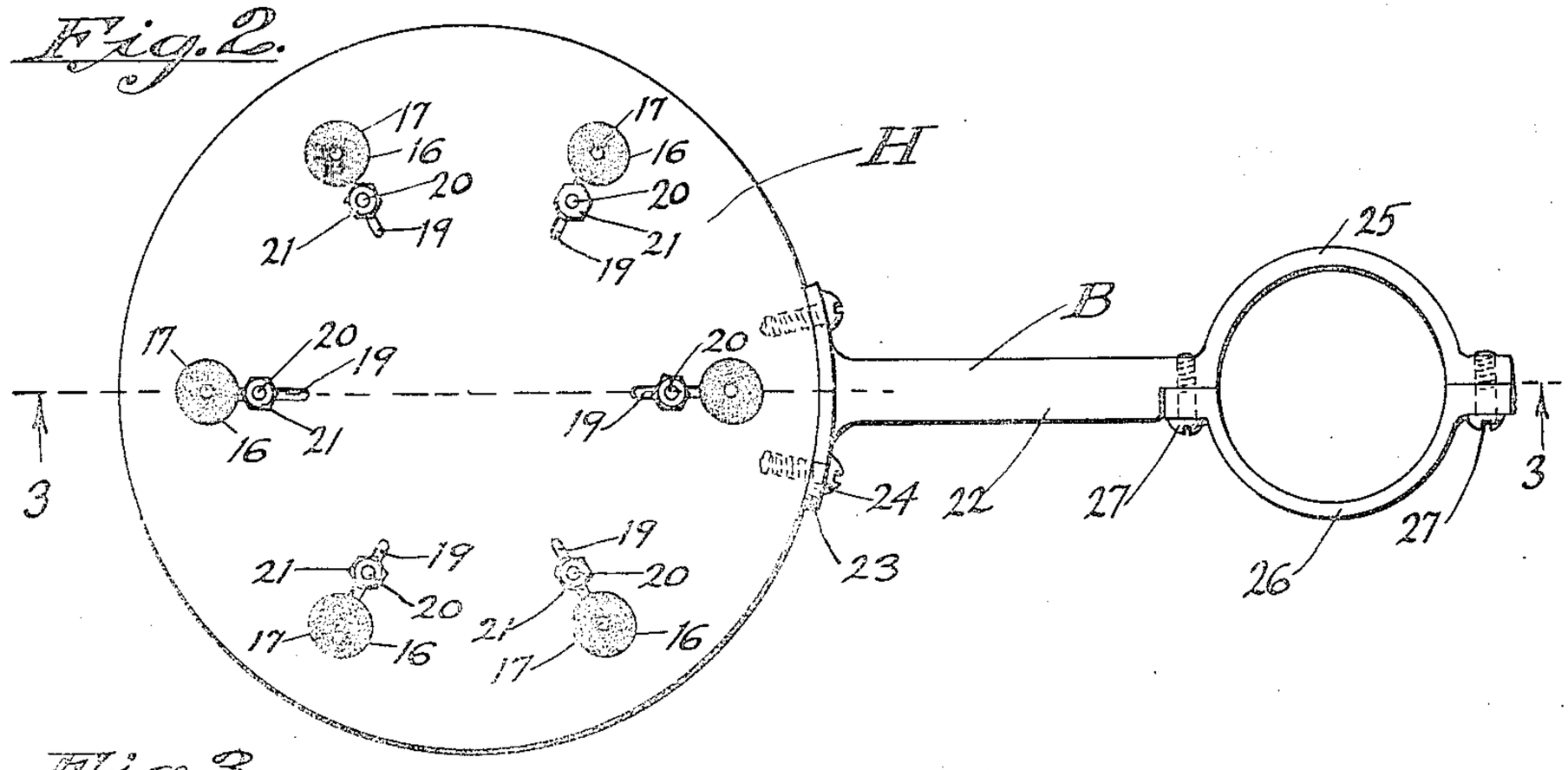
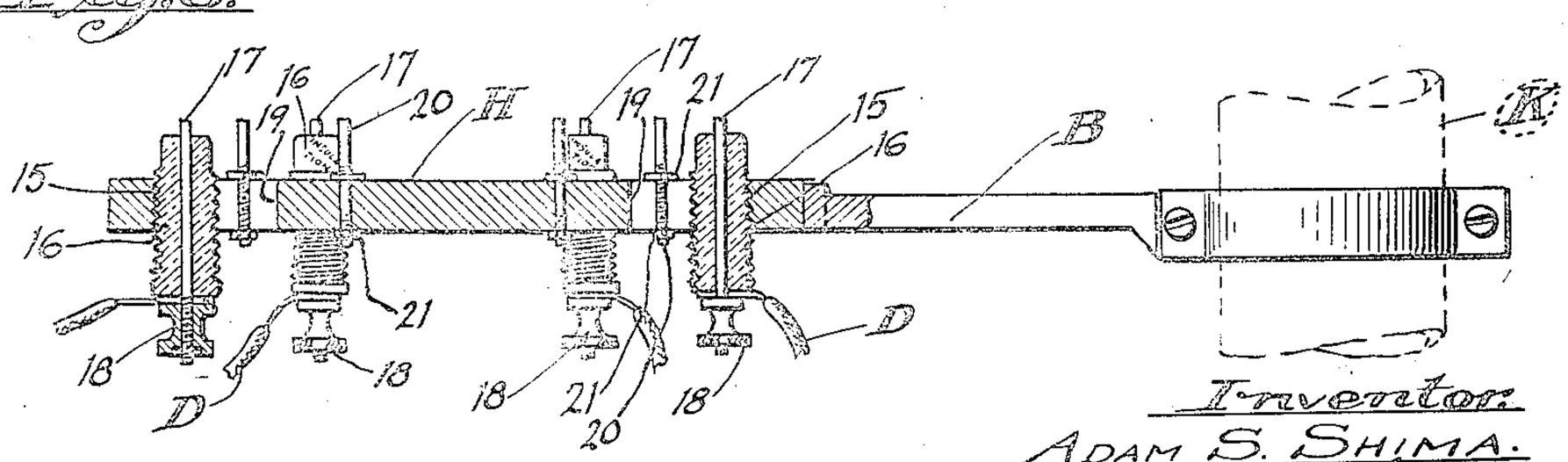


Fig. 3.



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UNITED STATES PATENT OFFICE.

ADAM S. SHIMA, OF PASADENA, CALIFORNIA.

TESTING DEVICE FOR SPARK PLUGS.

Application filed March 9, 1922. Serial No. 542,329.

To all whom it may concern:

Be it known that I, ADAM S. SHIMA, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Testing Devices for Spark Plugs, of which the following is a specification.

My invention relates to testing devices for the spark plugs of internal combustion engines as used on automobiles, and a purpose of my invention is the provision of a spark plug tester of extremely simple, durable, and efficient construction which is adapted to be associated with a motor vehicle so as to be within full view of the operator and to function in such a manner that when any one of the spark plugs fails to function a spark will occur within the tester and in such manner as to designate the particular spark plug which is out of order.

It is also a purpose of my invention to provide a spark plug tester which is capable of being associated with a steering column of an automobile and which includes electrodes which are adjustable to vary the spark gaps so as to permit of the tester being used in conjunction with ignition systems of various characters.

Although I will describe only one form of spark plug tester embodying my invention and point out the novel features thereof in claims, it is to be understood that various changes and modifications may be made herein without departing from the spirit and scope of such claims.

In the accompanying drawings,

Figure 1 is a view showing a portion of a motor vehicle having applied thereto one form of spark plug tester embodying my invention.

Fig. 2 is an enlarged top plan view of the tester shown in Fig. 1.

Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 2.

Referring specifically to the drawings in which similar reference characters refer to similar parts, my invention, in its present embodiment, comprises a head designated at H and which as shown in Figs. 2 and 3 is of disc formation. This head H is preferably formed of metal and provided with openings 15, the walls of which are screw-threaded to receive screw plugs 16 formed of any suitable insulating material and exteriorly screw-threaded as shown. These plugs 16 are bored longitudinally to accommodate electrodes 17 which project beyond the opposite ends of the plugs with one end threaded to receive binding nuts 18 which co-operate with the plugs in providing binding posts for the securing of conductors thereto. The head H is also formed with slots 19, with one slot for each of the openings 15 and arranged adjacent to the latter as clearly shown in Fig. 2. These slots 19 receive electrodes 20 which are threaded to receive nuts 21 for clamping the electrodes in any adjusted position along the length of the slots so that the electrodes can occupy predetermined positions with respect to the electrodes 17 to form spark gaps of various lengths.

As shown in Fig. 2, I have provided six electrodes 17 and six electrodes 20, the invention in its present embodiment being designed for use in conjunction with a six cylinder internal combustion engine. It is to be understood, however, that any number of electrodes can be provided depending upon the number of cylinders of the engine with which the device is adapted to be used.

A bracket designated at B is adapted to be used in conjunction with the head H for sustaining the device upon a steering column K as shown in Fig. 1. This bracket comprises an arm 22 one end of which is formed with a flange 23, and through the flange 23 screws 24 extend for securing the bracket as a unit to the head. The arm 22 is formed with a semicircular extension or jaw 25 which co-operates with a similarly shaped member 26 detachably secured thereto by means of screws 27. The members 25 and 26 constitute jaws which embrace the steering column K in the manner shown in Fig. 1 so as to sustain the tester in a position in which the operator of the vehicle can readily observe the electrodes 17 and 20.

In the application of the tester to an internal combustion engine, conductors D are extended from the nut ends of the electrodes 17 to the spark plugs P of an engine thus forming an electrical communication between the spark plugs and the electrodes 17. The electrodes 20 are grounded through the head H, the bracket B, and the steering column K, and as one side of the spark plugs P are also grounded, it will be clear that the electrodes 17 and 20 are connected in parallel with the spark plugs. By this arrangement it will be seen that as long as the spark

plugs continue to function no current will traverse the electrodes 17 and 20. However, when any one spark plug fails to function the current traverses the corresponding conductor D and the corresponding electrode 17 jumping the gap between this electrode and the corresponding electrode 20 to provide a spark which is visible to the operator of the vehicle. This indicates to the operator that the respective spark plug is not functioning so that he may readily determine which plug is to be repaired or replaced.

By an adjustment of the electrodes 20, it will be clear that the length of the spark gaps can be varied to permit of the tester being used in conjunction with ignition systems of various characters.

What I claim is:

1. A spark plug tester comprising a head of conductive material, a set of electrodes fixed within and insulated from the head by means of insulating plugs bored longitudinally, and electrodes being adapted for connection with the spark plugs of an internal coumbustion engine, a second set of electrodes adjustably mounted within the head and in conductive contact therewith, with one electrode for each of the electrodes of the first set, said second set of electrodes being seated in slots whereby the gaps between any pair of electrodes can be varied.

2. A spark plug tester comprising a head formed with openings and slots, with each slot disposed adjacent an opening, plugs of insulating material threadedly fitted within said openings, electrodes mounted in said plugs, other electrodes adjustable within said slots and co-operating with the first electrodes to provide spark gaps, and means for locking the second electrodes in any adjusted position.

3. A spark plug tester comprising a head formed with openings and slots, with each slot disposed adjacent an opening, plugs of insulating material threadedly fitted within said openings, electrodes mounted in said plugs, other electrodes adjustable within said slots and co-operating with the first electrodes to provide spark gaps, means for locking the second electrodes in any adjusted position, and a bracket secured to the head adapted to sustain the tester upon the steering column of an automobile.

4. A spark plug tester comprising a head formed with openings and slots, with each slot disposed adjacent an opening, plugs of insulating material threadedly fitted within said openings, electrodes mounted in said plugs, other electrodes slidably fitted in said slots, and nuts mounted on the other electrodes and adapted to engage said head for securing the electrodes in any adjusted position within the slots for the purpose described.

In testimony whereof I have signed my name to this specification.

ADAM S. SHIMA.