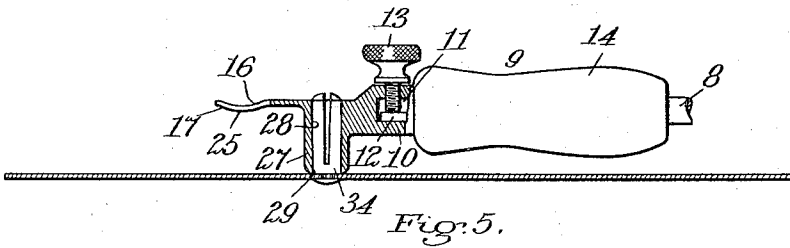
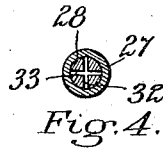
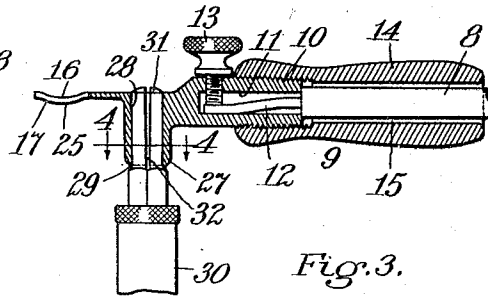
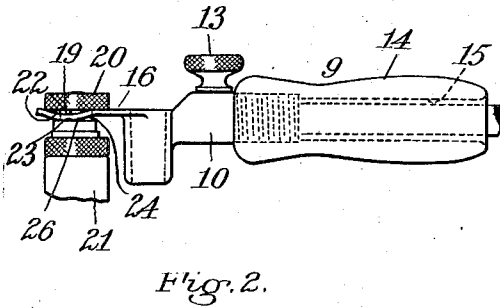
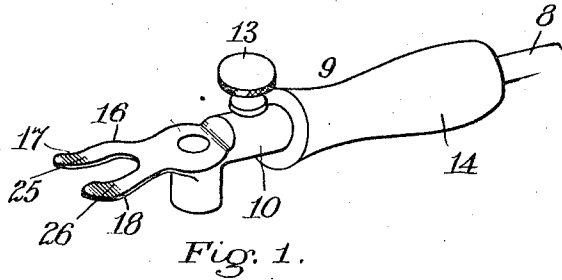


W. C. BRUNT.
COMBINATION SPARK PLUG.
APPLICATION FILED DEC. 9, 1911.

1,026,653.

Patented May 21, 1912.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM C. BRUNT, OF BOSTON, MASSACHUSETTS.

COMBINATION SPARK-PLUG.

1,026,653.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed December 9, 1911. Serial No. 664,752.

To all whom it may concern:

Be it known that I, WILLIAM C. BRUNT, a subject of King George V of Great Britain, residing at Dorchester, Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Combination Spark-Plugs, of which the following is a specification.

This invention relates to combination terminals particularly adapted for use in connecting spark plugs in circuit with a battery or a magneto.

In the operation of motor vehicles of the type employing spark plugs, a great deal of annoyance and inconvenience is sometimes caused by the giving out of a spark plug on the road, there being several kinds of plugs used, each of which might require a different battery or magneto circuit terminal and of the class which would ordinarily have to be soldered in place, in order to insure a perfect contact. Under these conditions, the disadvantages will be obvious when the operator does not succeed in securing a plug of the same type for which the car is fitted. Furthermore when the motor fails to work properly owing to a defective plug, it might become necessary to disconnect each of the spark plugs in succession until the defective one is located. The connections between the magneto and battery wires and the spark plugs should therefore be of such a character that the least possible amount of time will be lost in performing this operation.

The object of this invention is to provide a spark plug terminal which is adapted to be easily and quickly attached to the end of the current conductor from the battery or magneto, and which may be held in said connection without the use of solder, and which shall also be of such a construction that it may be handled by the operator without fear of getting a shock, and without wear or injury to said conductor.

The object is further to provide a device which may be used in connection with spark plugs having terminals of different types.

The object of the invention is still further to provide a device which may be secured while in disuse or in transportation, in such a manner as to prevent injury to the contact points thereof.

The invention consists in the combination and arrangement of parts set forth in the

following specification and particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a perspective view of a device embodying my invention. Fig. 2 is a side view of the device shown in Fig. 1 illustrating the same connected with one type of spark plug, with said spark plug being broken away to save space. Fig. 3 is a longitudinal section, partly in elevation, of the device shown in Fig. 1 with the same shown in connection with a spark plug of a different type from that shown in Fig. 2, said spark plug being broken away to save space. Fig. 4 is a section taken on line 4—4 of Fig. 3. Fig. 5 is a sectional elevation of the device illustrating the manner in which the same is supported when in disuse or disconnected from the spark plug.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 8 is an insulated current conductor which may be one of the wires leading from a battery or magneto.

9 is a combination terminal embodying in its construction a shank portion 10 having a hole 11 adapted to receive the bared end 12 of the insulated conductor 8 which is held in place within said hole by a thumb screw 13 which is adapted to be screwed against the end 12 and provides a perfect conductor through the shank 10. A handle 14 composed of insulating material, preferably hard rubber, has screw-threaded engagement with the end of the shank 10 and has a hole 15 extending longitudinally therethrough of sufficient size to admit the insulated end of the conductor 8, thereby insuring a safe device to handle. Extending from the opposite end of the shank portion 10 is a bifurcated or U-shaped member 16 having resilient legs 17 and 18 which are adapted to straddle the neck 19 of the nut 20 (see Fig. 2) which is secured upon the end of the spark plug 21 and between the flanges 22 and 23 which are separated by the annular groove 24. The legs 17 and 18 of the U-shaped member 16 are curved longitudinally thereof to form depressions 25 and 26, said depressions being intermediate the opposite ends of each of said legs. This curvilinear formation of the legs 17 and 18 results practically in a pair of curved springs so that when the U-shaped member is placed with-

in the annular groove 24, with said legs straddling the neck 19, the curvilinear form of said legs will serve to retain the same in place against accidental displacement or against displacement by reason of the jarring of the machine, and said legs will form a perfect contact with the resilient pressure upon the flanges 22 and 23. It will be understood that when the curved legs are forced into the groove 24 the curvature thereof will be slightly changed so that one face of said legs will bear against one of said flanges and the opposite face thereof will bear against the other of said flanges with a yielding pressure.

Referring now to Figs. 3 and 4, 27 is a tubular member which is disposed upon said terminal transversely of the median axial line thereof and intermediate said shank portion and said bifurcated members and is preferably provided with a tapered hole 28 which tapers inwardly toward the end 29. This tubular member is adapted to be used in connection with a spark plug 30 having a cylindrical end 31, said end having slots 32 and 33 extending longitudinally thereof and which divide said cylindrical end into four resilient members which are normally slightly separated at their outer ends and also chamfered to permit the tubular member 27 to be placed thereon, the diameter of the outer end being slightly larger than the diameter of the larger end of the tapered hole 28 in the member 27. It will therefore be seen that when said member is pressed upon said cylindrical end the resilient members are contracted and press against the sides of said hole 28, thus making a perfect contact therebetween and preventing said terminal from being shaken off by the vibration of the engine. It will also be seen that the bifurcated end of the terminal 9 is quite delicate and must be protected from injury and for this purpose the tubular member 27 coöperates with said bifurcated member when said terminal is not in use upon the spark plug, as will be seen by referring to Fig. 5, in which 34 is a cylindrical stud which may be secured to some stationary part of the automobile or to a case in which the terminal is to be transported, and is formed in a like manner to the end of the spark plug 30 and therefore secures said terminal to said case and prevents the end 16 from rattling around and becoming bent or injured.

The terminal as embodied in the above description is employed in the following manner: The terminals of each of the battery or magneto conductors 8 are connected with the shank portions of their respective combination terminals by means of thumb screws 13, and the bifurcated member 16, or the tubular member 27 is then connected according to the type of spark plug used, that

is to say, whether employing a spark plug of the character shown in Fig. 2 or that shown in Fig. 3. When something has gone wrong with the engine or motor and it is not absolutely certain just where the trouble lies, it is usually customary to test each of the spark plugs, especially where several cylinders are in use, and with a device of this character it will be seen that this operation is very simple as the operator may grasp the handle of each of the terminals and disconnect them one at a time, or disconnect all but one, the disconnected terminals being placed upon the cylindrical studs 34 which may be placed at convenient locations for this purpose.

It is very often necessary when the car to which these devices are to be attached is on the road, to purchase new spark plugs to replace those which have become defective and sometimes trouble is caused by not being able to obtain the same kind of plug as those already in use on said car, as some of the plugs which are purchased might require a special terminal connecting the same with the battery or magneto conductor terminals. But with a device of the character described, where several types of connections are employed, it will be readily seen that the inconveniences which might be possible where said car is fitted for one type of plug would be obviated and but very little time will be lost in connecting the new plugs.

This invention has been shown and described in connection with a spark plug terminal, but it will be readily seen that the same may be applied to various other uses where a separable or detachable terminal is required, without departing from the spirit of the invention.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A spark plug terminal having, in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, attached to said shank, and provided with a hole to receive a portion of said insulated conductor, a bifurcated member on said shank having resilient legs each of which is provided with a depression and a tubular member formed upon said shank portion disposed transversely of the median axial line thereof.

2. A spark plug terminal having, in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material attached to said shank, and provided with a hole to receive a portion of said insulated

conductor, and a tubular member formed upon said shank portion and disposed transversely of the median axial line thereof.

3. A spark plug terminal having, in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, a thumb screw adapted to fasten said conductor within said shank, a handle composed of insulating material, attached to said shank, and provided with a hole to receive a portion of said insulated conductor and a bifurcated member on said shank having resilient legs, each of which is provided with a depression.

4. A spark plug terminal, having in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, separably connected with said shank and provided with a hole to receive a portion of said insulated conductor, a bifurcated member on said shank and a tubular portion disposed transversely of the median axial line of said shank portion.

5. A spark plug terminal having, in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, separably connected with said shank and provided with a hole to receive a portion of said insulated conductor, a bifurcated member on said shank and a tubular portion disposed transversely of the median axial line of said shank portion intermediate said shank portion and said bifurcated member.

6. A spark plug terminal having, in combination, an insulated current conductor, a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, separably connected with said shank and provided with a hole to receive a portion of said insulated conductor, a bifurcated member on said shank and a tubular por-

tion disposed transversely of the median axial line of said shank portion and provided with a tapered hole.

7. In combination, a spark plug having a split cylindrical end, an insulated conductor, means adapted to detachably connect said conductor with said split end, embodying in its construction a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, having engagement with said shank and provided with a hole to receive a portion of said insulated conductor, a U-shaped member integral with said shank, and a tubular member disposed on said shank portion transversely of the median axial line of said shank and provided with a tapered hole adapted to receive the split end of said spark plug.

8. In combination, a spark plug having an annular groove adjacent to the upper end thereof, an insulated conductor, means adapted to detachably connect said conductor with said split end, embodying in its construction a shank portion adapted to receive the bared end of said conductor, means adapted to fasten said conductor within said shank, a handle composed of insulating material, having engagement with said shank and provided with a hole to receive a portion of said insulated conductor, a tubular member disposed on said shank portion transversely of the median axial line of said shank, a resilient U-shaped member integral with said shank and provided with depressions intermediate the opposite ends of each of the legs thereof, whereby said U-shaped member is locked in place astride said spark plug and within said annular groove.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM C. BRUNT.

Witnesses:

CHARLES S. GOODING,
SYDNEY E. TAFT.