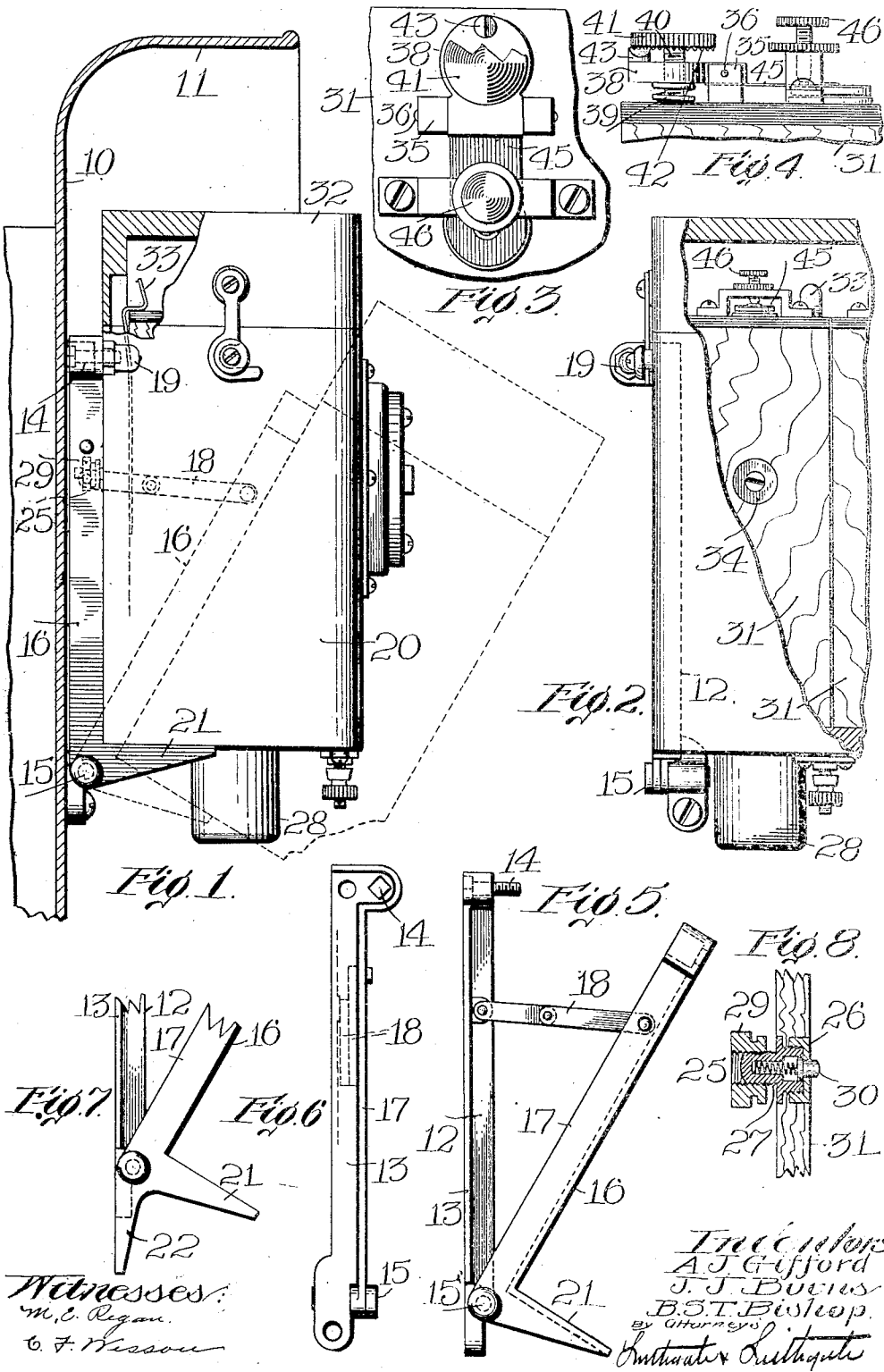


A. J. GIFFORD, J. J. BURNS & B. S. T. BISHOP.
 IGNITION DEVICE FOR GAS ENGINES.
 APPLICATION FILED NOV. 6, 1908.

933,246.

Patented Sept. 7, 1909.



UNITED STATES PATENT OFFICE.

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IGNITION DEVICE FOR GAS-ENGINES.

933,246.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that we, ALBERT J. GIFFORD, JAMES J. BURNS, and BENJAMIN S. T. BISHOP, citizens of the United States, all residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Ignition Device for Gas-Engines, of which the following is a specification.

This invention relates to ignition devices for gas engines, and while most of the features thereof are capable of general use, the invention as a whole is particularly adapted for use on motor cars and the like.

The principal objects of the invention are to provide simple and convenient means whereby the box or receptacle for the spark-coil units can be moved so that the top will be readily accessible even when applied to a dash having an overhanging hood, and even when located well up under said hood so that the cover can be removed and the units taken out and replaced without dismounting the receptacle from the dash; also to provide an improved form of supporting device for the receptacle, and to so construct the parts that one of the sets of terminals can be located along the front wall of the receptacle between it and the dash, thus protecting them and removing them as far as possible from the other terminals and avoiding the danger from short-circuiting which is always present in cases where the terminals are near each other, and providing a more convenient location for the terminals and for the contacts in the box.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation of a spark-coil receptacle mounted on an automobile dash in accordance with this invention, parts appearing in section; Fig. 2 is a front view of one end thereof partly broken away to show interior construction; Fig. 3 is a plan of part of one of the units; Fig. 4 is a side elevation of the top portion thereof; Fig. 5 is a side view of one form of supporting device for the receptacle shown in open position; Fig. 6 is a rear view of the same shown closed; Fig. 7 is a fragmentary view similar to Fig. 5 showing another form in which the invention can be carried out; and Fig. 8 is a

sectional view of one of the terminals which is located at the front of the receptacle.

The invention is shown as applied to an automobile or the like having a dash 10 provided with a rearwardly curved top or hood 11. In order to provide for moving the receptacle so that it will be accessible from the top a pair of vertical supports 12 of L-shaped cross section, are fixed firmly to the dash. It will be seen that the ribs 13 of the L-shaped supports are located to come on the inner sides thereof, that is, toward each other, the supports being made right and left. On each support is mounted a screw 14 projecting forwardly. At the bottom of each support is a horizontal pivot 15 located in a plane parallel with the dash and with the main part of the support. Connected with each of these pivots is a bracket 16 formed of metal of L-shaped cross-section of the reverse of that of the support so that when this bracket is swung to a vertical position against the support on its pivot, the side wall or flange 17 of the L-shaped part will overlap the edge of the support and cover the same, and the rear side of the bracket 16 will cover the projecting flange or rib 13 of the support. In this way these two parts on each side when folded together form a hollow box-like structure which is of rectangular cross-section.

Connected with the inner surface of the flange or rib 13 of the support 12 and the flange or rib 17 of the bracket is shown a link motion 18 in Figs. 1, 5 and 6. This serves to limit the swinging motion of the bracket. It will be understood that when the bracket is folded up it can be held firmly in that position by a nut 19 on the outside of the bracket engaging the screw 14 which projects through an opening in the top of the bracket. Two of these brackets, which are rights and lefts, are designed to support a spark-coil receptacle or box 20, and for this purpose each of the brackets is provided with a projection 21 extending outwardly from the bottom thereof at right angles, but preferably located not lower than the pivot 15. These projections support the bottom of the box and the latter is secured to the brackets 16 by bolts or in any other desired way. It may be stated at this point that instead of the link work 18

for limiting the tilting motion of the bracket, many other devices may be employed, one of which, of a simpler construction, is shown in Fig. 7. This consists
 5 merely of a projection 22 on each bracket extending down at an angle so that it engages the dash and limits the motion as indicated in that figure.

On account of providing for readily drawing the box forward or tilting its upper end out from under the hood, improvements are possible in the box itself. One of these consists of the provision of one series of terminals 25 on the front of the box between it
 15 and the dash. This is shown in this instance as being accomplished by locating a series of bushings 26 on the inside of the front wall of the receptacle and screwing a plug 27 into each so as to project on the
 20 outer side of the front wall where, on account of the space between the receptacle and the dash, it can be contained between the brackets and entirely concealed from view thereby, the wires passing down at the
 25 front of the box. This location of these terminals is a matter of considerable importance, as it removes them as far as possible from the high tension terminals 28, and thus reduces the chance of short-circuiting
 30 either by the crossing of the wires or by accidentally getting any piece of metal between the terminals. It also removes one set of terminals from a part of the receptacle which is visible, and puts them in a position where neither they nor the wires can
 35 be injured by any ordinary accident. Any terminals can be used in this place, but it is preferred to add a binding screw 29 to the plug 27, and place a spring-pressed plunger
 40 30 in the plug so as to project inwardly.

The receptacle is shown as provided with a series of units 31 which may be of ordinary construction, and it will be understood from what has been said that one of the important advantages of this invention is that
 45 both the cover 32 and units can readily be removed from the receptacle when the latter is in the position shown in dotted lines in Fig. 1. Each unit is shown as being held
 50 in position by a spring 33 and as being provided with the necessary contact piece 34 for making the electrical connection with the plunger 30.

The vibrator of the unit is also improved for the purpose of securing a finer adjustment and accurately holding the parts in position. For this purpose a stationary member or frame 35 is mounted on the top of the unit and provided with a horizontal pivot
 60 36. On the latter is swingingly mounted a rigid member 38 normally held up by a spring 39 and adapted to be adjusted downwardly by a screw 40 having a knurled head 41 provided with a circumferential series of
 65 downwardly projecting teeth 42 of fine

pitch. On top of the member 38 is a pointed projection 43 adapted to engage the teeth from below, so that the screw can be adjusted readily, and yet the resistance of the projection 43 due to the spring 39 will be sufficient to avoid any necessity of using excessive care in turning the screw and to hold the screw securely when it has been adjusted. In this way the screw can be turned in such a way as to secure practically a micrometer
 75 adjustment of the member 38. This member is provided with the usual resilient contact member 45 and adjusting screw 46 therefor.

While we have illustrated and described 80 certain preferred embodiments of the invention, we are aware that many modifications may be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. 85 Therefore, we do not wish to be limited to all the details of construction shown, but

What we do claim is:—

1. The combination with the dash of a vehicle, of a receptacle for a spark-coil, and means carried by the dash for supporting said receptacle and permitting it to move from an upright to an inclined position. 90

2. The combination with the dash of a vehicle, of a receptacle for a spark-coil, and swinging means carried by the dash for supporting said receptacle, whereby the receptacle can be tilted to an inclined position. 95

3. The combination with the dash of a vehicle, of a bracket, a spark coil receptacle connected with said bracket, and means for connecting said bracket with the dash and for permitting the bracket and receptacle to be bodily moved rearwardly from the dash. 100

4. The combination with the dash of a vehicle, of brackets movably supported thereon, a spark coil receptacle fixed to said brackets, and means connected with the dash for limiting the motion of the brackets and receptacle. 105

5. The combination with the dash of a vehicle, of brackets pivotally connected at their lower ends with said dash, a spark coil receptacle carried by said brackets above the point of pivotal support, and means for limiting the motion of the brackets above their pivots. 110

6. The combination with the dash of a vehicle, of brackets pivotally connected at their lower ends with said dash, a spark coil receptacle carried by said brackets above the point of pivotal support, means for limiting the motion of the brackets about their pivots, and means for removably fixing the brackets to the dash in upright position. 120

7. In a vehicle, the combination with the dash, of a pair of supports fixed to the rear side thereof, a bracket pivotally connected at its lower end with the bottom of each of said supports, each of said brackets having 125

a forwardly projecting member at right angles to its main body located not lower than the point of pivotal support, said brackets having means for securing a spark-coil receptacle thereto resting on the projections, whereby said brackets may swing forwardly so as to bring the receptacle into inclined position with its top accessible from the rear, and means for limiting the forward motion of the brackets.

8. In a vehicle, the combination with the dash of a support of an L-shaped cross section fixed in vertical position thereon, a horizontal pivot at the lower end thereof in a plane parallel with the front surface of said support, a bracket pivoted at its lower end on said pivot and of an L-shaped cross section, the walls of the support and bracket constituting when closed together a rectangular structure having two walls formed by the support and two by the bracket, said bracket being adapted to support a spark-coil receptacle, and means for limiting the swinging motion of the bracket on its pivot.

9. In a vehicle, the combination with a dash of a support of an L-shaped cross section secured thereto, a horizontal pivot at the lower end thereof, a bracket pivoted on said pivot and of an L-shaped cross section, the walls of the support and bracket constituting when closed together a hollow rectangular structure having two walls formed by the support and two by the bracket, and means for limiting the swinging motion of the bracket on its pivot; said means constituting a link motion connected with the inner surface of the side wall of the support and the inner surface of the side wall of the bracket, whereby when the bracket is moved to vertical position against the support, said link motion will be folded between the sup-

port and bracket and concealed thereby, and means for removably fixing the upper end of the bracket to the support.

10. The combination with the dash of a vehicle, of means on the rear surface thereof for movably supporting a spark-coil receptacle, a spark coil receptacle carried by said means, and electric connections located partly on the front of the spark-coil receptacle and extending between it and the dash.

11. The combination with the dash of a vehicle, of a spark-coil receptacle, means for movably supporting said receptacle on the rear of said dash and spaced therefrom, an electric terminal mounted on the receptacle and having a contact member inside the front wall thereof and extending through said wall and having a binding screw on the outside between the receptacle and the dash.

12. The combination with a vehicle having a dash, of a spark-coil receptacle, means for supporting the receptacle on the dash in vertical position and for permitting it to turn about an axis at the bottom into an inclined position, and for holding it in inclined position, whereby the cover may be removed and the units taken out, and a series of terminals extending through the front wall of the receptacle, and having their binding posts on the front of said front wall.

In testimony whereof we have hereunto set our hands, in the presence of two subscribing witnesses.

ALBERT J. GIFFORD.
JAMES J. BURNS.
BENJ. S. T. BISHOP.

Witnesses:

C. FORREST WESSON,
C. I. HARTNETT.