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K. SCHAFFLER-GLÖSSL

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ELECTROMAGNETIC SPARK IGNITION APPARATUS

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FIG. 1.

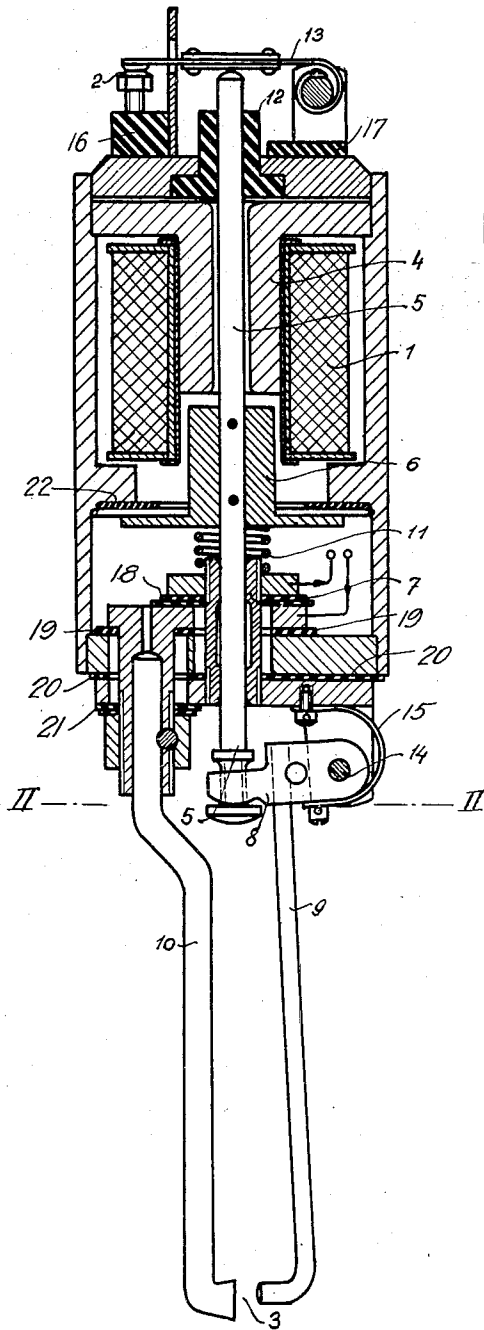
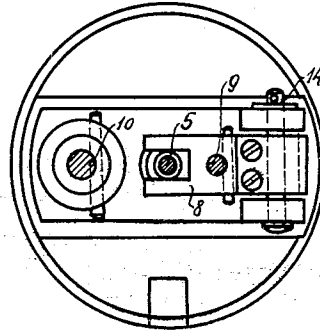


FIG. 2.



Inventor:

Konrad Schaffler-Glössl

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ELECTROMAGNETIC SPARK IGNITION
APPARATUS

Konrad Schaffler-Glössl, Vienna, Austria

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In Austria April 16, 1932

3 Claims. (Cl. 175—115)

This invention relates to an electro-magnetic spark ignition apparatus, particularly for use with crude oil, and of the kind comprising a pair of spark electrodes one of which is movable and controlled by an electro-magnet for intermittent contact with the companion electrode.

In known devices of this kind the movable electrode is controlled by springs the action of which has to be overcome by the magnet, and the impact with which the electrodes meet is therefore insufficiently strong to maintain the contact points free from carbon deposits when the apparatus is employed for the ignition of crude oil vapours.

The object of the present invention is to obtain an arrangement capable of maintaining the contact points perfectly free from carbon deposits, and the invention consists broadly in employing a pair of rod-shaped electrodes one of which is pivoted and adapted to strike against the companion electrode under the influence of a magnet the action of which is strengthened by the provision of an armature carrying part of the magnet core, the electrodes being resilient and adapted to separate by elastic reaction on making impact with each other.

The magnet may act on the movable electrode through the medium of a rod which passes axially through the magnet and carries the armature, the electrode being pivoted and fitted with a bracket engaged by a head on the rod.

Fig. 1 of the accompanying drawing represents a vertical section of an apparatus according to the invention, and

Fig. 2 is a cross-section on the line II—II of Fig. 1.

The apparatus comprises a casing containing a magnet coil 1, a relatively short magnet core 4, and an armature 6 which forms a complementary part of the core. The armature is connected to a rod 5 which passes axially through the magnet core and which is movable in axial direction, the rod being guided in a metallic sleeve 7 and in an insulating sleeve 12. A coil spring 11 is provided on which the armature and rod are normally supported in position to be moved by the magnet. The circuit of the magnet coil contains a contact spring 13 which traverses the top end of the rod 5 and which normally makes contact with a stud 2 for closing the circuit. The ignition circuit comprises two rod-shaped electrodes 9 and 10 the latter of which is rigidly secured to the casing. The electrode 9 is connected to a fork bracket 8 which is pivoted at 14 and which engages loosely a head on the rod 5. The free

ends of the electrodes are bent off so as to face each other and are normally separated by a spark gap 3. On the magnet coil 1 being energized, an axial movement will be imparted to the rod 5 through the medium of the armature, and by the action of the head on the bracket 8, the electrode 9 will be rocked so as to strike against the electrode 10. As the rod moves it engages the contact spring 13 and separates it from the stud 2 so that the magnet circuit will be broken. The rod then drops and allows the electrodes to separate, thereby producing a spark or, if the current be strong enough, an arc in the gap 3. As the rod drops, the magnet circuit will again be closed and the operation repeated, the device acting as an automatic interrupter.

In the illustrated arrangement the arm of the electrode 9 is made comparatively thin and resilient and it will therefore spring back by elastic reaction under the impact made on the electrode 10. This happens just after the magnet circuit has been broken, and the separation of the electrodes will therefore be very rapid, and a powerful spark will be produced. A separate spring for the separation of the electrodes will be obviated by the arrangement. Naturally both electrodes can be made springy instead of only one.

A further advantage obtained by the arrangement is that the armature forms part of the core and that it will move in a straight line in the axial direction of the magnet. It will therefore work in a very strong magnetic field with an air space of minimum dimensions between it and the pole pieces, and a very strong magnetic action will be obtained by a comparatively small magnet. The strong magnetic action will keep the contact surfaces of the electrodes free from carbon deposits.

I claim:

1. An electro-magnetic spark ignition apparatus of the character described, comprising a support, a pair of normally separated rod-shaped spark electrodes connected, one rigidly and the other pivotally, to said support, an electro-magnet in said support, a relatively short core in said magnet, an armature forming a complementary part of said core, connection between said armature and the pivoted electrode adapted to cause the latter to strike against the rigid electrode on the magnet being energized, the electrodes being resilient and adapted to separate by elastic reaction on making impact with each other.

2. A structure as claimed in claim 1 wherein the connection between the armature and the pivoted electrode comprises a headed rod ar-

ranged coaxially with and passing through the magnet, and a forked bracket connected to the pivoted electrode and being in loose engagement with the head of said rod.

- 5 3. An electro-magnetic spark ignition apparatus of the character described, comprising a support, a pair of normally separated rod-shaped spark electrodes connected, one rigidly and the other pivotally, to said support, an electro-magnet in said support, a relatively short core in said
10 magnet, an armature forming a complementary part of said core, an axially movable rod passing centrally through the core and connected to the

armature so as to be moved axially thereby on the magnet being energized, a bracket on the pivoted electrode, a head on said rod engaging loosely with said bracket and operative to turn the pivoted electrode into contact with the rigid electrode when the rod is moved by the magnet, and a contact spring arranged in the circuit of the electro-magnet and in the path of said rod so as to be acted upon by the latter for breaking the circuit when the rod is operated, the electrodes being resilient and adapted to be separated by elastic reaction on making impact with each other.

KONRAD SCHAFFLER-GLÖSSL.

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25	100
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65	140
70	145
75	150