C. SCHMIDT.

WIRE BAR FOR IGNITION SYSTEMS.

APPLICATION FILED NOV. 18, 1907.

958,835. Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

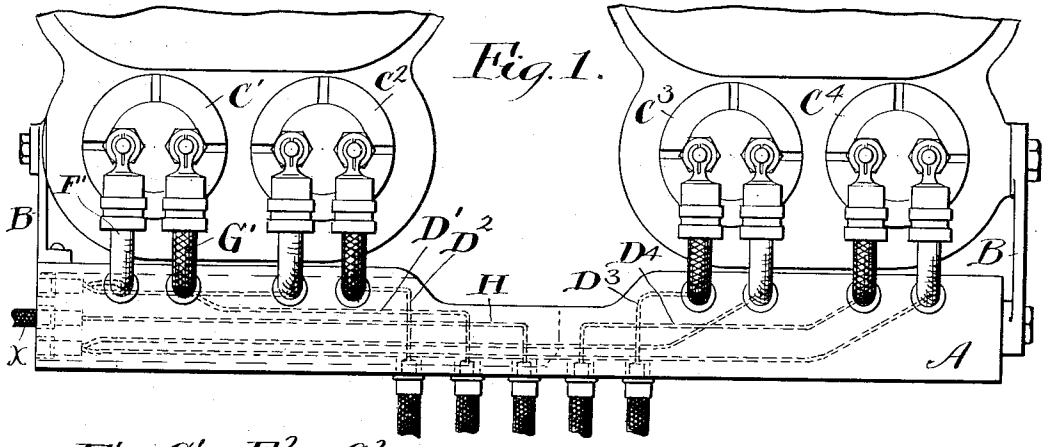


Fig. 2.

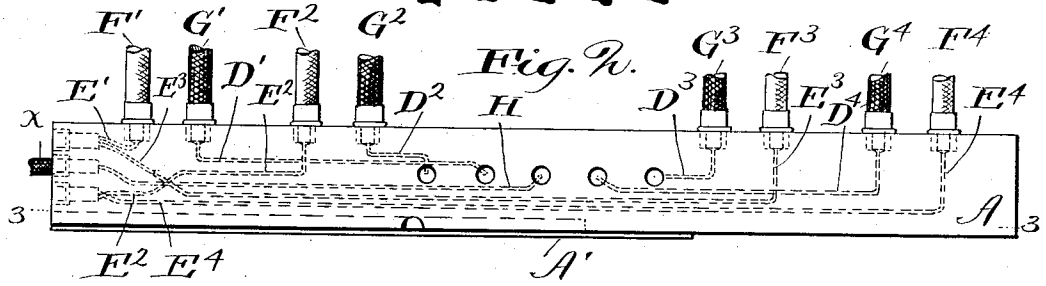


Fig. 3.

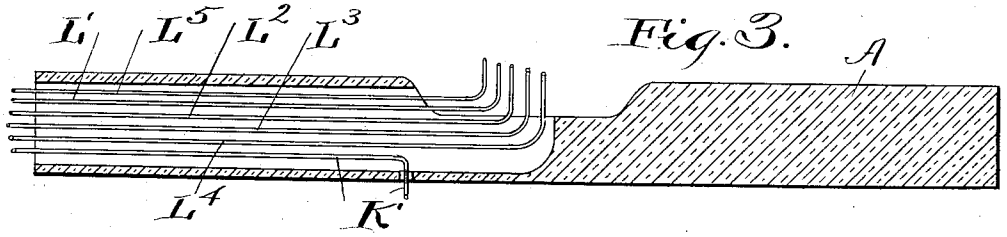


Fig. 4.

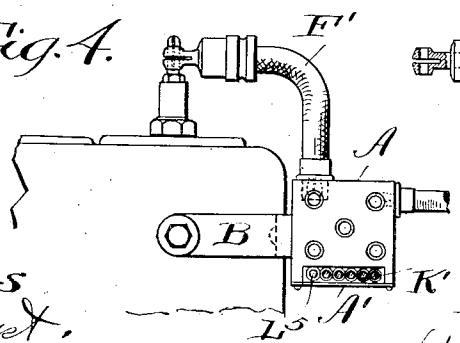
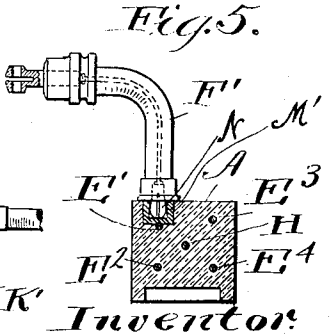


Fig. 5.



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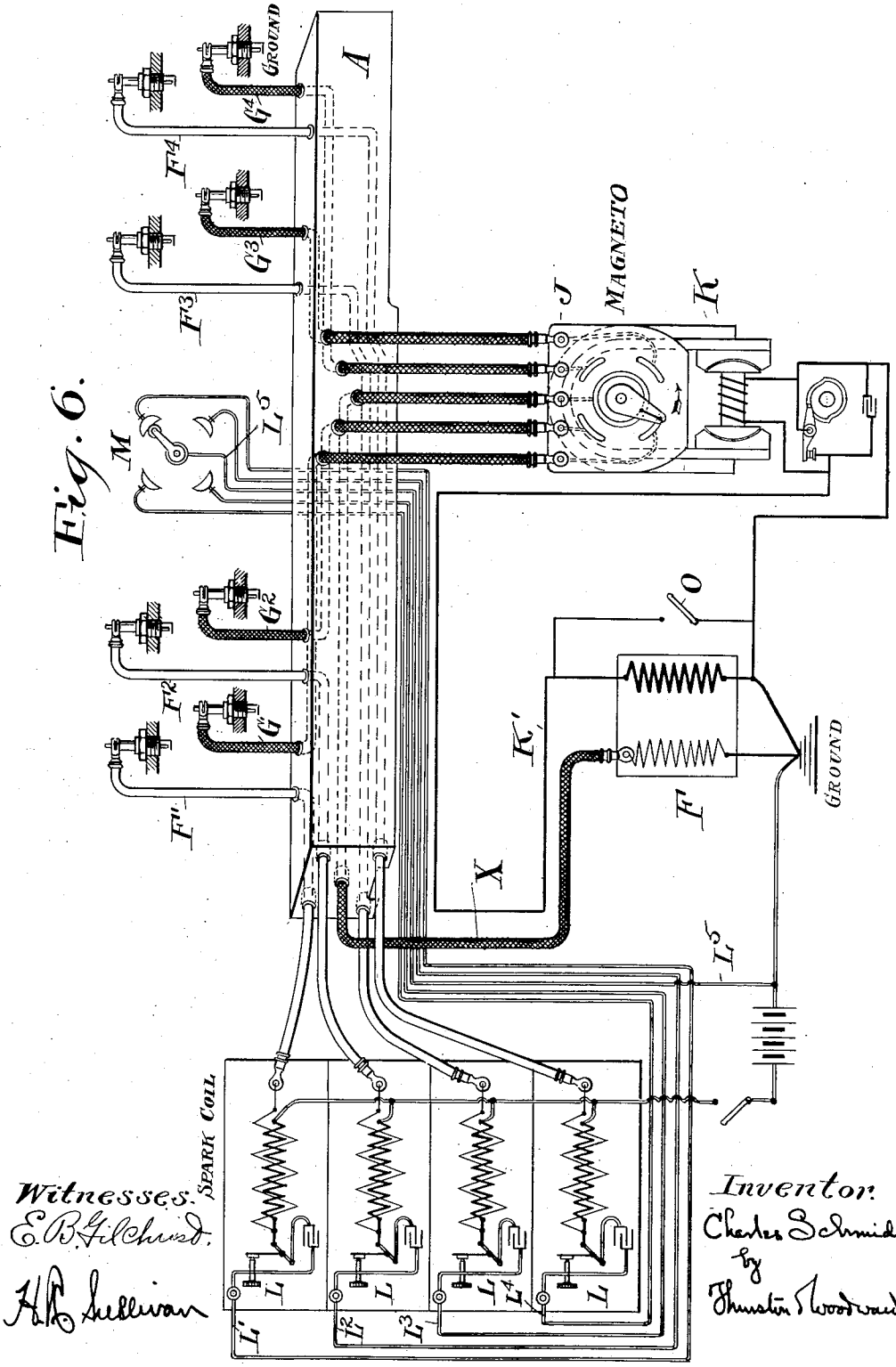
2 SHEETS—SHEET 2.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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WIRE BAR FOR IGNITION SYSTEMS.

958,835. Specification of Letters Patent. Patented May 24, 1910.

Application filed November 18, 1907. Serial No. 402,636.

To all whom it may concern:

Be it known that I, CHARLES SCHMIDT, citizen of the Republic of France, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Wire Bars for Ignition Systems, of which the following is a full, clear, and exact description.

The object of the present invention is to provide an improvement in ignition apparatus for explosive engines.

More particularly the improvement is directed to those ignition systems in use on explosive engines having a plurality of cylinders with the consequent plurality of high tension connecting wires.

The purpose of the improvement has been to provide means whereby the engine builder may eliminate from the machine the maze and net work of wires which is always present in such apparatus, and to eliminate the dangers and complications attendant upon the arrangement heretofore presented.

As is well known to persons using such apparatus both in marine work and automobiles, the presence of a great number of wires lying along side of or in proximity to each other and in proximity to the metal frame to which the circuit is grounded, is extremely annoying and somewhat dangerous. The insulation is frequently porous and is so located that it is difficult to keep dry or free from oil. If a short circuit occurs between the wires themselves, or between a wire and the frame at any time, there is liability of a spark passing through a cylinder prematurely, resulting in an explosion which will wrench or break the crank shaft. Further, it frequently happens that in the adjusting of the apparatus by a person unfamiliar with the business, the wires are wrongly rearranged with the result that considerable annoyance is had before the proper connections have been made. It is further very inconvenient, without my improvement, to test the individual cylinders when it is desired to do so to locate the cause of some defect in operation of the engine. The above noted difficulties are sufficient with a single ignition system with a mere plurality of cylinders, but the situation becomes a very serious one when the difficulties are multiplied by having a double ignition system and an engine with a large number of cylinders.

It is for the purpose of avoiding the inconvenience and dangers above outlined that I have devised the invention which forms the subject of this application, and a description of an embodiment thereof will be found below, reference being had to the accompanying drawings, in which,

Figure 1 is a top plan showing my wire bar in position on a four cylinder engine, the wiring connections being indicated in dotted lines. Fig. 2 is a front elevation of the wire bar. Fig. 3 is a horizontal section, looking down, on the line 3—3 of Fig. 2. Fig. 4 is an end elevation showing the wire bar mounted on the engine. Fig. 5 is a detail construction showing the removable connection for the high tension wires with the wire bar. Fig. 6 is a diagrammatic illustration of my wire bar used with a double ignition system on a four cylinder engine.

In the various figures it will be seen that I provide a wire bar A of suitable insulating material such as rubber, rigidly secured by supports B to the engine frame and of sufficient length to extend along the entire row of cylinders C' C^2 C^3 C^4. Any suitable form of securing brackets, such as shown in Figs. 1 and 4, may be employed, and although their detail structure is not important, it is advisable that the bar be held rigid with the engine and proximate thereto.

Embedded in the body of the bar but separated from each other, are several wires D' D^2 D^3 D^4 and E' E^2 E^3 E^4 designed to conduct the high tension current, each leading from a connecting terminal, shown as a socket, at its one end, where connection is made with the source of current, to a connecting terminal, shown as a socket, at its other end, where connection is made with the spark plug of one of the cylinders of the engine. These sockets are each constructed in a suitable manner such as that shown in Fig. 5 where the socket is lettered M', to permit of the ready insertion or removal of a plug N on the end of the short connecting wires which transmit the current from the wire bar A to the proper point. In the arrangement shown, in which a double ignition system is provided for, there are four of these short connecting wires F' F^2 F^3 F^4 leading from the high tension battery connections in the wire bar to spark plugs on the cylinders, while there are also four short wires G' G^2 G^3 G^4 leading from the high

tension connections of the magneto also to spark plugs on the four cylinders. It will be observed that there is also a ninth conductor H embedded in the wire bar which receives the high tension current from the magneto transformer F through the connecting wire X and conducts it to the distributer J, which, as illustrated, is located on the magneto K.

Beneath the wire bar I preferably provide a groove space with a supporting plate A', in which space I run the low tension wires L' L^2 L^3 L^4 leading from the vibrators L and the wire L^5 from the batteries to the timer M and also the low tension wire K' leading from the magneto to the transformer I. There is not the same advantage in embedding the low tension connections in the body of the wire bar as in the case of the high tension conductors, but the protection which I give to the low tension wires is of course ample and the wires are kept in order and out of contact with the metal frame of the engine by this arrangement.

The details of the ignition system are not material, it being quite obviously of no concern what the nature or method of operation of the magneto may be or what particular structure of spark coils, timers, distributers or transformer may be employed. The wiring diagram illustrated in Fig. 6 is intended to illustrate the ordinary conventional arrangement in which the current generated by the magneto passes through the transformer F, there being a switch O provided to short circuit the current, however, whenever it is desired to do so.

By the adoption and use of my wire bar regardless of what peculiar ignition system may be employed, the operator is relieved of responsibility and annoyance, while the manufacturer will be relieved of the worry arising from his engine being in the hands of operators who are either novices at the business or careless in their care of the apparatus. With my wire bar the danger of high tension wires is eliminated, avoiding possible short circuiting by reason of the insulation being porous or by reason of it becoming water soaked or saturated with oil. There, further, can be no sagging or dropping of the wires onto the metal frame of the engine and no confusion possible in the connections. Whenever an operator disconnects his cylinders for any purpose whatever, it is not possible for him to reconnect them in an improper manner since the location of the sockets in the wire bar is fixed and adjacent to the spark plugs of the cylinders so that it is not possible with the short connecting wires to make an improper connection no matter how absent minded or ignorant the operator may be. This is of the greatest consequence as is well known to all persons familiar with such machines. It is further possible with these removable connections to at any time test the cylinders of the engine separately. These and many other advantages will be obvious to those skilled in the art.

Having thus described my invention I claim:—

1. In an ignition system for explosive engines, having a plurality of cylinders, a wire bar of insulating material located adjacent to the cylinders of the engine having several high tension wires for the cylinders and connecting terminals therefor embedded therein, each high tension wire leading from a connecting terminal for the current source at its one end to a connecting terminal for a cylinder at its other end.

2. In an ignition system for explosive engines having a plurality of cylinders, a wire bar mounted on the engine frame and held in fixed relation to the cylinders, conducting wires embedded and insulated in the wire bar, and connecting terminals in the wire bar in proximity to the cylinders to which terminals the said conducting wires lead.

3. In an ignition system for explosive engines having a plurality of cylinders, a wire bar having insulated therein the high tension wires for the cylinders, a connecting terminal adjacent to each cylinder, each wire leading to one of said connecting terminals, and an exterior connection between said terminals and the cylinders.

4. In an ignition system for explosive engines, having a plurality of cylinders, a wire bar of insulating material having embedded therein the several wires for the high tension current, terminals adjacent to the cylinders, to which terminals said wires lead, and removable connections between the terminals and the cylinders.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

CHARLES SCHMIDT.

Witnesses:

E. B. GILCHRIST,

H. R. SULLIVAN.