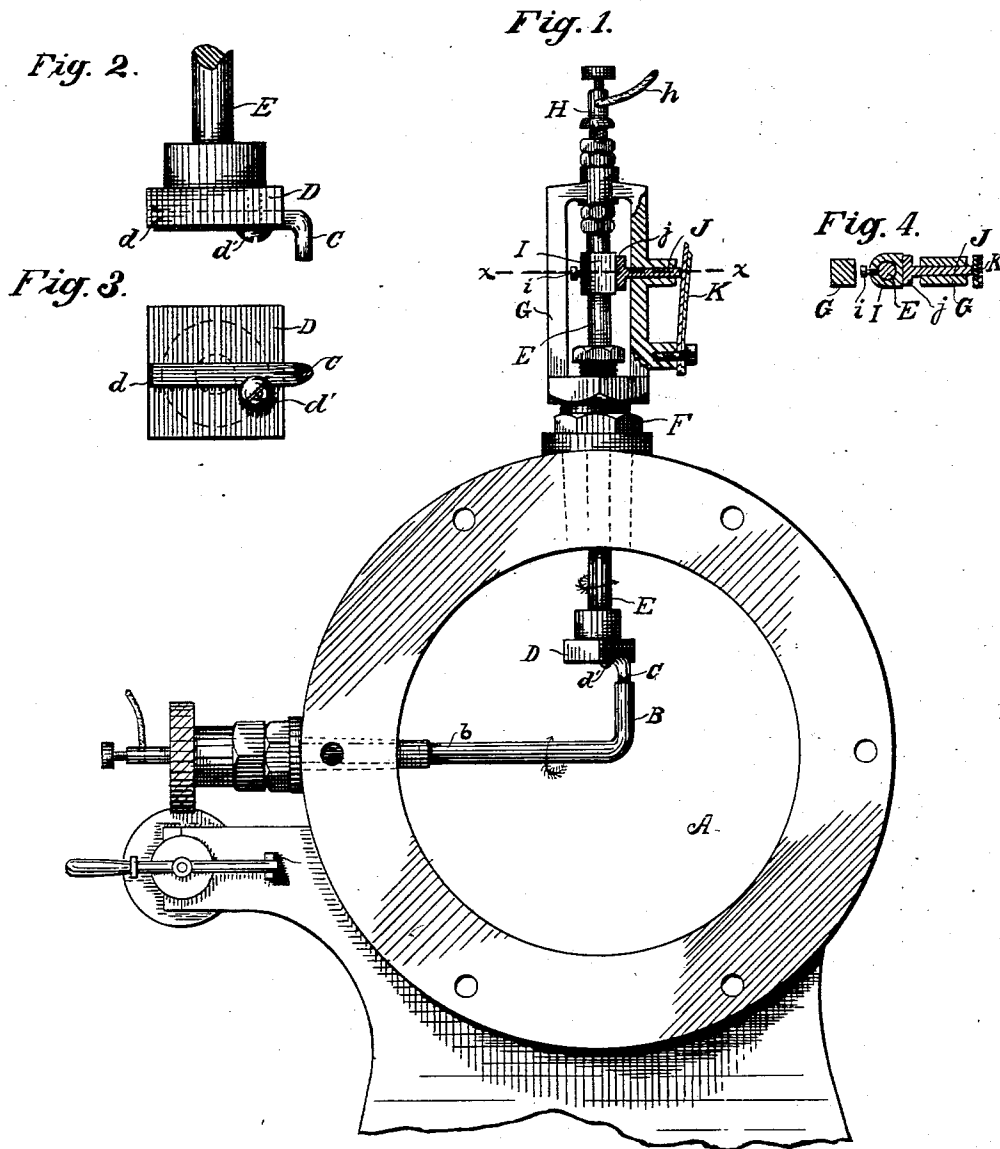


(No Model.)

T. G. CANTRELL.
IGNITER FOR EXPLOSIVE ENGINES.

No. 564,737.

Patented July 28, 1896.



Witnesses,
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UNITED STATES PATENT OFFICE.

THOMAS G. CANTRELL, OF SAN FRANCISCO, CALIFORNIA:

IGNITER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 564,737, dated July 28, 1896.

Application filed April 15, 1896. Serial No. 587,579. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. CANTRELL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Igniters for Explosive-Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of igniting or sparking devices for explosive-engines in which the stationary electrode, while rigid in itself, is so mounted as to adapt it to yield to the contact of the movable electrode and return again to its normal position. In the more common forms of electrodes the stationary electrode is a spring-strip in itself, adapting it by its own resiliency to yield and to return again. The serious objections to this form of electrode has led to the use, in some instances, of an electrode rigid in itself, but having such connections that it can yield and return again, said connections being controlled by a spring which accomplishes the necessary result. In the last-named construction it is usual to hinge or pivot the fixed electrode to its connections, and the controlling-spring operates indirectly or through intervening mechanism to control the electrode, as it is not practicable to control it directly on account of subjecting the spring to the heat within the explosion or combustion chamber, thereby quickly destroying it; but even where this difficulty is avoided the connections through which the remote spring operates have been in part, at least, located within the combustion or explosion chamber, or so near thereto as to be subject to extreme heat and to be injured thereby and to even suffer injury through disuse by becoming rusted.

My invention has for its object the overcoming of these difficulties by providing such connections for the yielding rigid electrode that they will not be subjected to injurious influences, but may be wholly outside of the cylinder and within reach and even within sight, so that their proper operation may be always observed.

My invention consists in the improved arrangement, construction, and combination of these connections, which I shall now describe by reference to the accompanying drawings, in which—

Figure 1 is an elevation of my device. Fig. 2 is an elevation of the foot D and the rigid electrode C. Fig. 3 is a bottom view of same. Fig. 4 is a horizontal section on line *x x* of Fig. 1.

A is the cylinder of an explosive-engine.

B is the movable electrode which, in this instance, is shown as a revolving one, being carried by a stem *b*, which extends to the outside of the cylinder and may be driven by suitable connections, unnecessary herein to show.

C is the stationary yielding electrode, which consists of a bar wholly rigid in itself, said bar being secured by its stem or shank to a cross-foot D of a stem E, which extends upwardly through a suitable stuffing-box (represented by F) screwed into the wall of the cylinder and properly insulated therefrom. The stem is guided above by a bracket G, and has connected with its top the post H for the circuit-wire *h*. The stem is mounted in the stuffing-box and bracket in such a way as to have an axially-oscillatory movement, and this movement is controlled by means of a flat-faced lug I, secured upon the stem, as by a set-screw *i*, which said lug bears against the head *j* of a sliding pin J, extending outwardly through and guided in the bracket and having its outer end impinged upon by a spring K.

It will now be seen that when the movable electrode B comes around to and in contact with the stationary rigid electrode C the latter will yield before it, turning with the stem E, and when the movable electrode has slipped by, the spring K will, acting through the sliding pin J, bearing against the lug I, cause said stem to return to its normal position, and thus cause the stationary electrode to resume its initial place.

The contacting surfaces of the lug I and the head of the spring-controlled sliding pin J thus fully control the axially-oscillatory movement of the stem on both sides, and even if it should slip beyond its normal movement the head of the pin and the lug will simply contact on other faces of the latter, and nothing will occur except that the stationary electrode will be out of position; but this, as well as the necessity for any repairs, and the fact of the proper operation and ad-

justment of the parts, can all be seen from outside, and these parts are not subjected to the heat of the cylinder and will not suffer any injury. Nothing is within the cylinder
5 that can be injured.

The stationary electrode may be adjusted in the cross-foot D, to which it is secured, by having its stem or shank slide in a groove *d* therein, and be set in any position by the
10 overlapping head of the screw *d'*.

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

1. In an igniter for explosive-engines, and
15 in combination with a rigid electrode, an axially-oscillatory stem to which said electrode is secured, said stem passing outside of the cylinder, a lug upon said stem, outside of the cylinder, a sliding pin bearing against
20 the lug, and a spring acting against said pin to hold it in contact with the lug.

2. In an igniter for explosive-engines, the combination of a rigid electrode, an axially-oscillatory stem to which it is secured, said

stem passing outside of the cylinder, a flat-
25 faced lug upon said stem outside of the cylinder, a laterally-projecting sliding pin having a head in contact with said flat-faced lug, and a spring impinging against the end of the pin to hold its head in contact with the
30 lug.

3. In an igniter for explosive-engines, the combination of a rigid electrode, a grooved foot in which said electrode is adjustably fitted, a stem to which the foot is secured, 35 said stem passing outside of the cylinder, a flat-faced lug upon said stem outside of the cylinder, a laterally-projecting sliding pin having a head in contact with said flat-faced lug, and a spring impinging against the end of
40 the pin to hold its head in contact with the lug.

In witness whereof I have hereunto set my hand.

THOMAS G. CANTRELL.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.