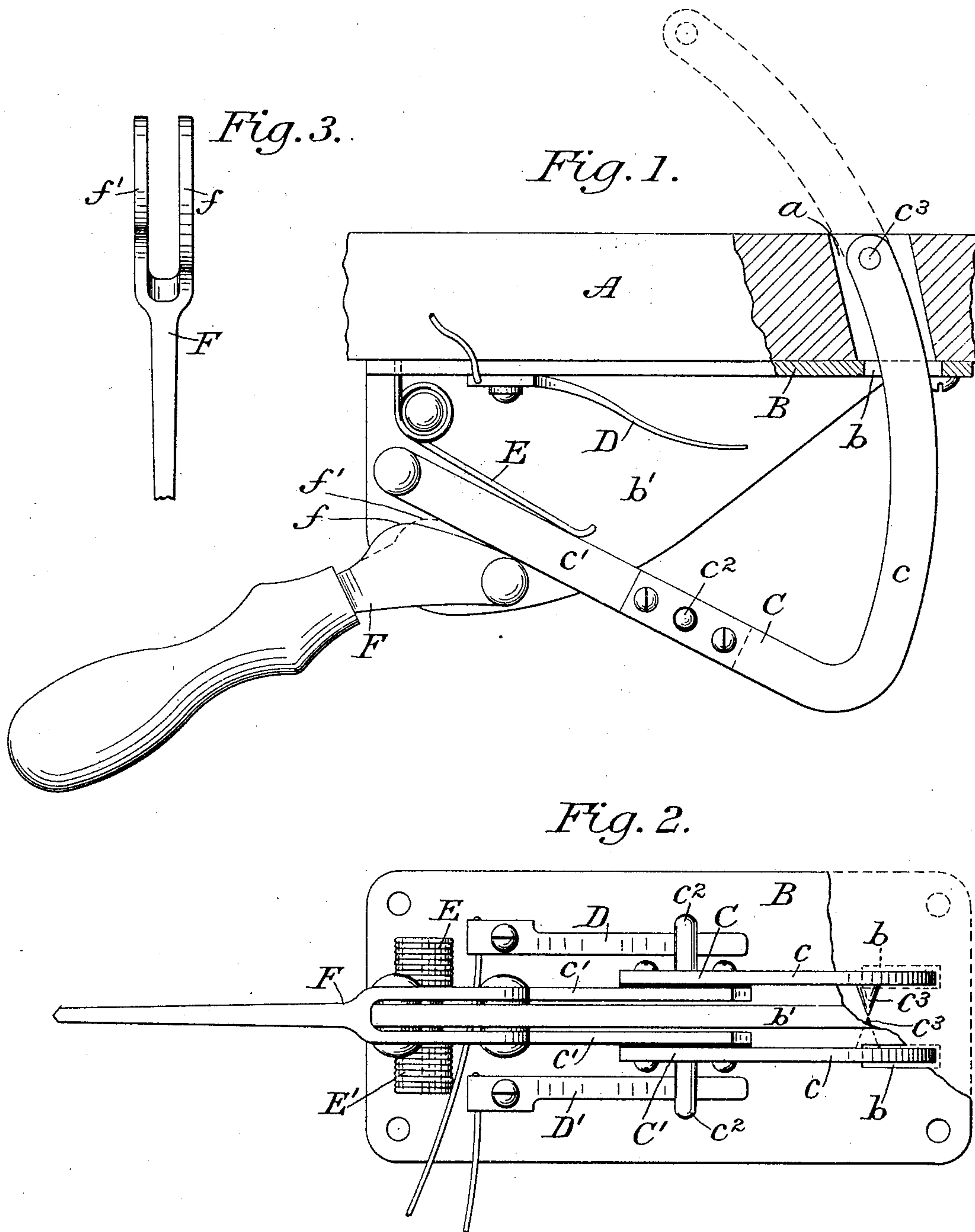


(No Model.)

W. F. WEST.  
ELECTRIC IGNITOR.

No. 500,644.

Patented July 4, 1893.



Witnesses:  
*A. N. Jesbera.*  
*A. L. Hadden.*

Inventor:  
*William Frank West*  
By *William B. Greeley*  
Attorney.



# UNITED STATES PATENT OFFICE.

WILLIAM FRANK WEST, OF NEW YORK, N. Y., ASSIGNOR TO CLEMENT GOULD,  
OF SAME PLACE.

## ELECTRIC IGNITOR.

SPECIFICATION forming part of Letters Patent No. 500,644, dated July 4, 1893.

Application filed February 4, 1893. Serial No. 460,986. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM FRANK WEST, of New York, in the county and State of New York, have invented certain new and useful  
5 Improvements in Electric Ignitors; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a  
10 part of this specification.

The particular object of this invention is to provide an electric ignitor which can be employed successfully with gas engines using naphtha vapor or gas under pressure for power and fuel. In engines of this description it is necessary, on account of the intense heat developed, that these several parts of the ignitor shall be located at a distance from the burner lest they be destroyed and it is also necessary  
20 that the two electrodes shall move from the same side into the line of the burner and that the two contact points shall be caused to touch and separate at or near said line. For these reasons the usual forms of electric ignitors, in which one electrode is fixed with its contact point near the line of the burner or in which two electrodes are caused to move toward the line of the burner from opposite sides, are not practically adapted for  
30 the special purpose referred to. Accordingly, I have devised an ignitor the parts of which are normally entirely outside of the combustion chamber while the electrodes may be caused to move in the same direction into the said chamber through a single opening in its wall, the contact points touching and separating to produce the spark at or near the line of the burner.

In the drawings: Figure 1 is a plan view of  
40 an ignitor constructed in accordance with the invention, the supporting plate and a portion of the wall of the combustion chamber being shown partly in section. Fig. 2 is a front view of the same, with a portion of the supporting plate broken off. Fig. 3 is a detail view of a  
45 portion of the operating lever.

The wall A of the combustion chamber is formed with an aperture *a* and on its outer face is secured the plate B which supports the  
50 several parts of the ignitor and is formed with two small apertures *b*, *b*, which register with

the aperture *a*. A horizontal web *b'* of the plate B has pivoted thereon, upon a common axis but independently of each other, two similar elbow levers C and C'. One arm of each  
55 lever is substantially straight while the other is bent upon an arc of which the pivot of the lever is the center. Preferably each lever is made of two parts, the one part *c* being fixed to but insulated from the other part *c'* while  
60 the part *c* bears a contact pin *c*<sup>2</sup>. Each part *c* is an electrode and is provided near its free extremity with a platinum or other suitable contact point *c*<sup>3</sup>, the two points being placed  
65 on the proximate faces of the electrodes and so disposed with reference to each other as to produce a spark as the one is moved by the other. Two yielding contact pieces D and D' are fixed to the plate B in line respectively with the contact pins *c*<sup>2</sup> and are  
70 connected respectively to the poles of a suitable source of electricity. Springs E and E' are fixed to the plate B to bear against the levers and to hold them normally in the position indicated by full lines in Fig. 1.

In order that the spark may be produced at the proper point it is necessary that the two electrodes shall be moved together in the same direction and also that they shall move to some degree with respect to each other. 80 As a convenient means to effect this movement I have shown a differential hand lever F pivoted to the web *b'* and forked or having two cam faces *f* and *f'* which are differentiated with respect to each other, as represented by the full and dotted lines in Fig. 1 and by the shaded portions of Fig. 3, and are adapted to effect the required movements of the two electrodes relatively to each other. The movement of the lever F upon its ful- 90 crum causes the cam face *f'* to bear against the lever C' and therefore to commence the movement of the latter from the full line position in Fig. 1 into the dotted line position. The cam face *f* immediately thereafter comes 95 in contact with the lever C and moves the latter with the lever C' but slightly behind it until both levers have been moved to bring their pins *c*<sup>2</sup> into contact with the respective pieces D and D' thereby connecting the electrodes *c*, *c*, with the battery. When the parts 100 have reached this position the heel of the cam



face  $f$ , being nearer the fulcrum of the levers than is the heel of the cam face  $f'$ , causes the lever C to move more rapidly than the lever C' and its contact point  $c^3$  to overtake and  
 5 pass beyond the contact point of the lever C', thus producing a spark and igniting the gas as the electrodes reach the limit of their movement. The handle F is then released and the  
 10 parts to their normal position withdrawing the electrodes from the flame.

I do not intend to limit my invention to the exact arrangement and construction shown in the drawings and described above, as many  
 15 modifications of the arrangement shown which will permit the electrodes to be moved in the same direction to the point of ignition will be readily understood.

As suggested above, the improved ignitor is  
 20 primarily intended for use with that class of engines in which naphtha gas under pressure is employed both for power and fuel, and in which the action of the ignitor is required only in starting the engine. The operating  
 25 lever has therefore been shown herein as having a handle to be grasped by the engineer, but however the moving force is applied to said lever the construction of the ignitor as a whole need not be varied essentially.

30 I claim as my invention—

1. In an electric ignitor for gas engines, the combination of two electrodes supported to move in the same direction toward the point of ignition, and means to move said electrodes  
 35 together and to cause the contact point of one to overtake the contact point of the other, substantially as shown and described.

2. In an electric ignitor for gas engines, the combination of two electrodes supported to

move in the same direction toward the point 40 of ignition, and a lever having differential cam faces to cause the electrodes to move together and the contact point of one to overtake the contact point of the other, substantially as shown and described. 45

3. In an electric ignitor for gas engines, the combination of two elbow-levers pivoted at one end and having each at its free extremity a contact point, and means to move said levers together upon their fulcra and to cause 50 the contact point of one to overtake the contact point of the other, substantially as shown and described.

4. In an electric ignitor for gas engines, the combination of two elbow-levers pivoted at 55 one end and having each at its free end a contact point, and a lever disposed near the fulcrum of said elbow levers and having two differential cam faces to bear respectively against said elbow-levers, substantially as 60 shown and described.

5. In an electric ignitor for gas engines, the combination of two electrodes supported to move in the same direction toward the point of ignition, and having each a contact point 65 and a contact pin, yielding contact pieces supported respectively in the line of movement of said pins, and means to move said electrodes together and to cause the contact point of one electrode to overtake the other, sub- 70 stantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM FRANK WEST.

Witnesses:

A. N. JESBERA,  
 A. WIDDER.