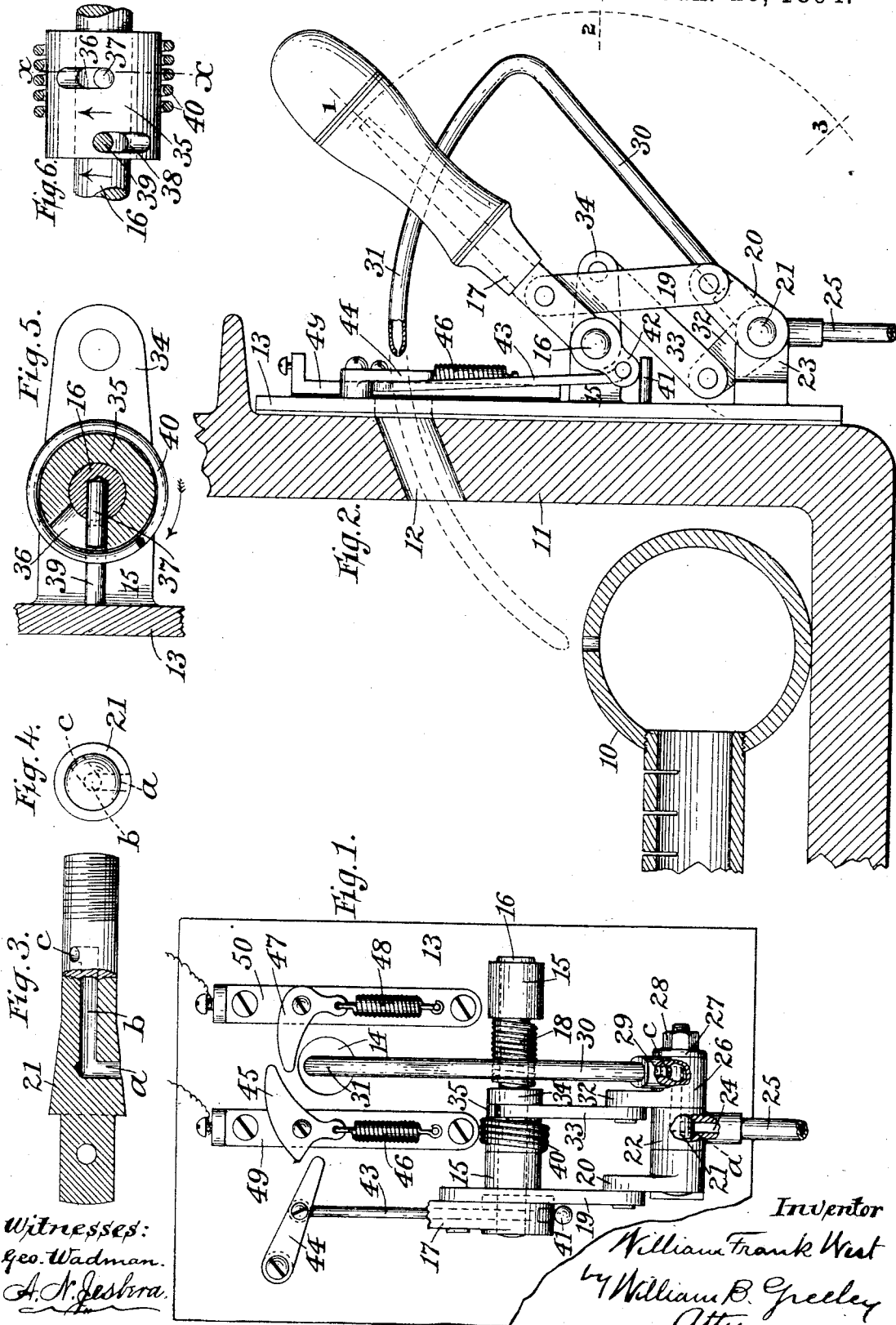


(No Model.)

W. F. WEST.
IGNITOR FOR GAS MOTORS.

No. 513,289.

Patented Jan. 23, 1894.



UNITED STATES PATENT OFFICE.

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

IGNITER FOR GAS-MOTORS.

SPECIFICATION forming part of Letters Patent No. 513,289, dated January 23, 1894.

Application filed April 13, 1893. Serial No. 470,169. (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 Igniters for Gas-Motors, &c.; 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,
10 making a part of this specification.

In engines using vapor or gas under pressure for power and fuel the ignition of the vapor or gas in the retort base by hand is attended with some danger or inconvenience on
15 account of the explosive nature of the vapor or gas. It is impossible to use igniting devices, such as electric spark producers, which remain in position always within the retort base, for the reason that they are soon destroyed or rendered useless by the intense
20 heat which is developed. It has been proposed therefore to arrange electrodes outside of the retort base so that by the movement of a suitable handle the electrodes can be
25 moved into the retort base and caused to produce a spark at or near the line of the burner. This device is practical and effective but it is possible that under some conditions the electrodes may become oxidized or coated with
30 carbon to such an extent as to prevent the production of the spark at the proper time. It is my object in the present case to overcome such a possible objection and to provide an igniting device by which a stream of
35 gas or vapor is ignited outside of the retort base and is then carried into the same to or near the line of the burner. The parts are thus located entirely outside of the retort base and the electrodes, if they are used for ignit-
40 ing the stream of gas, are not exposed to the direct action of the flames within the retort base.

In the accompanying drawings, wherein the improvements are shown as embodied in a convenient form, Figure 1 is a front view of the complete igniting device with the actuating handle broken off. Fig. 2 is a side elevation of the same, showing a portion of the retort base and burner in section, and indicating the inner position of the movable gas tube in dotted lines. Fig. 3 is a detail view of the

valve employed, partly in central section. Fig. 4 is an end view of the same, the relative position of the ports being indicated in dotted lines. Fig. 5 is a transverse section through the actuating shaft and its sleeve, on the line $x-x$ of Fig. 6 and looking toward the left in said figure; and Fig. 6 is a rear view of the parts shown in Fig. 5, with one of the stop-pins and the returning spring shown in section.
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The scale of Figs. 3, 4, 5 and 6 is somewhat larger than that of Figs. 1 and 2.

The burner 10 and the retort base 11 may be of any usual or preferred construction, the wall of the retort being formed with an aperture 12 through which the igniting flame
65 may be introduced. Upon the outside of the retort base is secured a plate 13 which furnishes a convenient support for the several parts of the igniting device and is formed
70 with an aperture 14 to register with the aperture 12 in the wall of the retort. In suitable brackets 15, is journaled a shaft 16 to which is secured the actuating handle 17. A
75 spring 18 acts upon the shaft in a manner to return the handle 17 and the connected parts to the position represented in Fig. 2, after they have been moved therefrom by hand and released. A link 19 serves to connect the handle to an arm 20 which is fixed to the
80 valve 21 which controls the admission of gas to the igniting tube. The valve 21 is supported by a sleeve 22 in which it can be partly rotated. The sleeve may be supported by a suitable bracket 23 and is perforated, as at
85 24. A tube 25 may be connected to the sleeve to supply gas or vapor from any suitable source, such as the tank in which is stored the naphtha which is used to supply vapor for the engine, or from an independent gen-
90 erator. Upon the valve is placed a sleeve 26 which can be oscillated thereon and may be held in place by a washer 27 and nut 28 in a well known manner. The said sleeve is also
95 perforated, as at 29, to communicate with a tube 30 which is fixed rigidly to the sleeve and is bent so that its terminal portion 31 may pass through the apertures 14 and 12 into the retort base when the sleeve 26 is oscillated. The valve 21 is provided with an in-
100 let port a , a longitudinal bore b and an outlet port c which are so arranged that when the

parts assume a certain position the gas or vapor will be permitted to pass from the tube 25 to the movable tube 30, 31.

The sleeve 26 has fixed thereto an arm 32 which is connected by a link 33 to an arm 34. The latter is fixed to a sleeve 35 which is mounted loosely on the shaft 16. On its rear side the sleeve 35 is slotted circumferentially, as at 36, to receive a pin 37 which projects from the shaft 16. The sleeve is also slotted, as at 38, to receive a stop pin 39 which projects from the plate 13. The relative arrangement of these slots and pins is such that while the handle 17, which is fixed to the shaft 16, is moved from the position marked "1" in Fig. 2, to the position marked "2" in the same figure, the sleeve 35 remains stationary; at this point in the movement of the handle the pin 37 reaches the end of the slot 36 and partly rotates the sleeve during the continued movement of the handle from the position "2" to the position "3." Finally the rear end of the slot 38 engages the stop-pin 39 and further movement of the sleeve is prevented. A spring 40 is applied to the sleeve 35 to return it to the position of rest represented in Figs. 5 and 6, when the handle 17 is released. A stop-pin 41 may also be fixed to the plate 13 in line with the handle 17 to limit the movement of the handle and prevent straining of any of the other parts.

To the shaft 16 or to the handle 17, but on the opposite side of the axis of the shaft, is fixed a short arm 42 which is connected by a link 43 to a trip lever 44 pivotally secured to the plate 13. In the plane of movement of the lever 44, and in such position that its heel will be struck by the said lever in its movements, is pivoted a contact finger or electrode 45 which is held in the normal position represented in Fig. 1 by a spring 46. A second finger or electrode 47 is pivotally supported in the plane of the finger 45 and in such position as to be struck and moved by said finger 45 as the latter is shifted. The finger 47 may likewise be yieldingly held in its normal position by a spring 48. The two fingers 45 and 47 are mounted upon insulated bars 49 and 50 which may be connected respectively to the poles of a suitable electric battery, the contact between the bars and their respective fingers being effected through their pivots.

The mode of operation of the devices shown is as follows: As the handle 17 is moved from the position "1" to the position "2" the first effect of the movement is to partly rotate the valve 16, sufficiently to bring the ports *a* and *c* respectively into line with the perforations 24 and 29 and thereby to admit gas to the tube 30. At the same time the arm 42 through the link 43 causes the lever 44 to strike the heel of the contact finger 45 and to move the point of the same downward against the finger 47 and to move the two together across the aperture 14 just in front of the tip of the

tube 30, 31, which at this time is stationary. The movement of the fingers continues until the finger 45 slips beyond the finger 47 and thereby produces a spark which ignites the stream of gas that is by that time issuing from the tip of the tube 30, 31. The finger 47 flies back to its normal position as soon as it is released by the finger 45, and the latter also returns nearly to its normal position, but beneath the finger 47, as soon as the lever 44 slips from the heel of said finger 45. On the return movement of the lever 44, which takes place later, the lever strikes the heel of the finger 45 from above and so restores the finger to its proper position relative to the finger 47, as represented in Fig. 1, itself slipping from the heel of said finger 45, so that the relative position of the parts becomes once more normal. As the movement of the handle is continued from the position "2" to the position "3" the shaft 16 picks up the sleeve 35, in the manner already described, and rocks the sleeve 26 to throw the tip of the tube 30, 31, into the retort to or near the line of the burner, as indicated by the dotted line in Fig. 2, and thereby to bring the flame carried by said tube into contact with the gas or vapor issuing from the burner.

It will be observed that the spark producing devices are not essential to the operation of the improved igniter, although they afford a convenient and ready means of igniting the gas as it issues from the tube 31. It is also evident that the flow of gas to the movable lighting tube might be controlled by an independent valve if desired. Various other modifications of the mechanical features employed will readily suggest themselves and need not be referred to more particularly herein.

I claim as my invention—

1. The combination with a retort base having an aperture, of a lighting tube movable through said aperture, means to supply gas to said tube, a valve to control the admission of gas and a handle connected to said tube and to said valve, whereby a movement of the handle will move the tube into the retort base and open the valve, substantially as shown and described.

2. The combination with a retort base having an aperture, of a lighting tube mounted upon a fixed pivot and bent to enter said aperture, means to supply gas to said tube, and means to move said tube to cause its tip to enter said aperture, substantially as shown and described.

3. In an igniter, the combination of a lighting tube mounted upon a fixed pivot, means to supply gas to said tube, and a handle connected to said tube to swing it upon its pivot, substantially as shown and described.

4. In an igniter, the combination of a lighting tube mounted upon a fixed pivot, means to supply gas to said tube, a valve to control the admission of gas, and a handle connected

to said tube and to said valve, whereby a movement of the handle will swing the tube on its pivot and open the valve, substantially as shown and described.

5 5. In an igniter, the combination of a lighting tube mounted to swing on a pivot, a valve to control the admission of gas to said tube, a handle mounted on a fixed pivot, a connection from said handle to said valve to open and close the same, and an independent connection to said tube to swing the same on its pivot, substantially as shown and described.

6. In an igniter, the combination of a partly rotatable valve, a sleeve mounted on said valve, a lighting tube carried by said tube, a handle mounted on a fixed pivot, a connection from said handle to said valve to partly rotate the same to admit gas to said tube, and a connection from said handle to said sleeve to swing said lighting tube, substantially as shown and described.

7. In an igniter, the combination of a lighting tube mounted to swing on a pivot, a valve to control the admission of gas to said tube, a shaft mounted in bearings, a handle fixed to said shaft, a connection from said handle to said valve to open the same, a sleeve mounted on said shaft and having a loose connection therewith, and a connection from said sleeve to said tube to swing the latter, whereby, upon movement of the handle, the valve is first

opened and the tube is then swung on its pivot, substantially as shown and described.

8. In an igniter, the combination of a lighting tube movable upon a pivot, electrodes adapted to be moved to produce a spark near the end of said tube, a handle, a connection from said handle to said tube to swing the latter, and means actuated by the handle to move said electrodes into and out of contact to produce a spark, substantially as shown and described.

9. In an igniter, the combination of a lighting tube mounted upon a pivot, a valve to control the admission of gas to said tube, electrodes adapted to be moved to produce a spark near the end of said tube, a valve to control the admission of gas to said tube, a handle, a connection from said handle to said tube to swing the latter on its pivot, a connection from said handle to said valve to open the latter, and means actuated by said handle to move said electrodes into and out of contact to produce a spark, substantially 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.