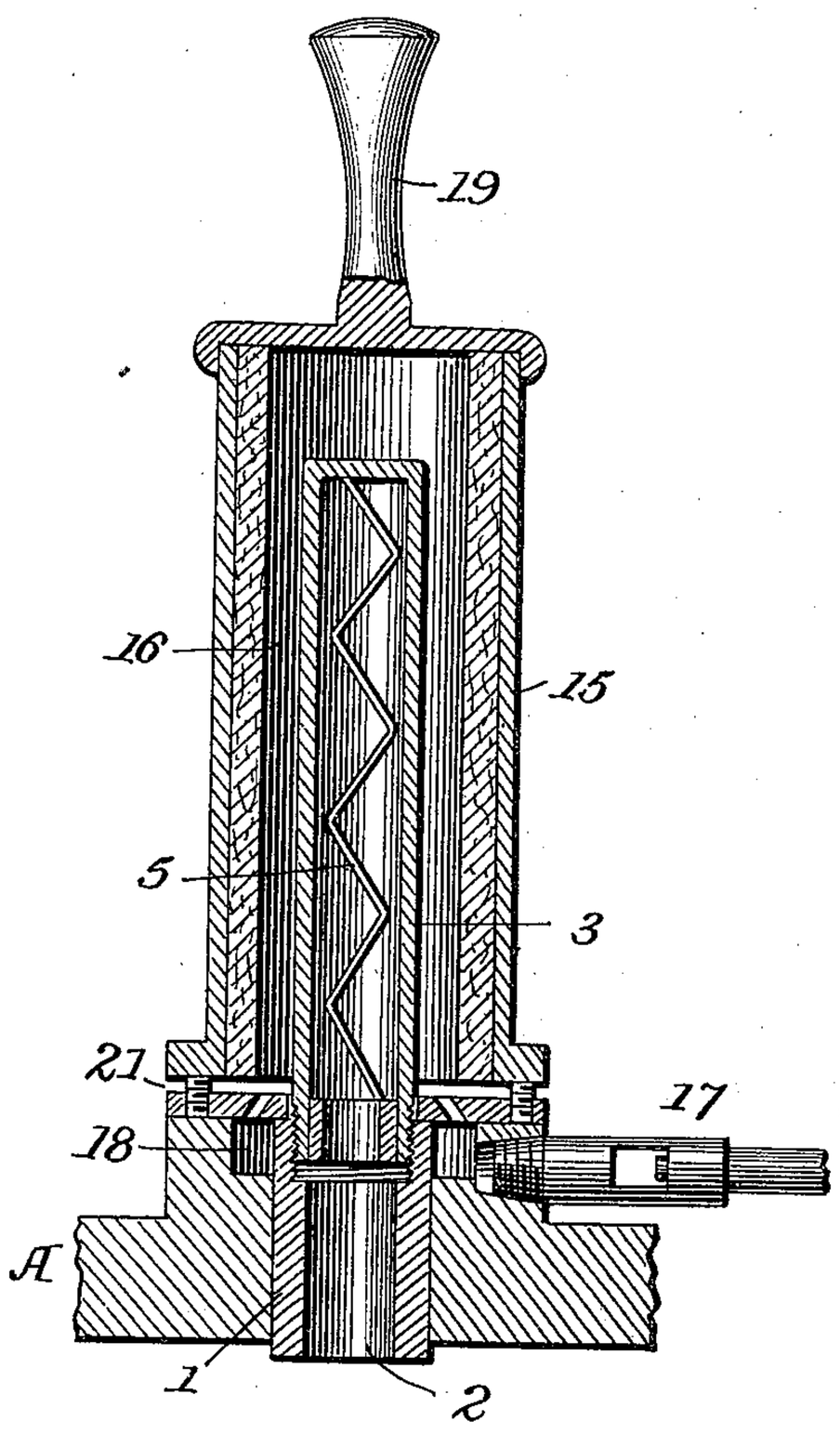
No. 619,396. Patented Feb. 14, 1899.

W. L. CROUCH.

IGNITER FOR GAS ENGINES.

(Application filed Feb. 2, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WALKER LEE CROUCH, OF NEW BRIGHTON, PENNSYLVANIA, ASSIGNOR TO THE PIERCE-CROUCH ENGINE COMPANY, OF SAME PLACE.

IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 619,396, dated February 14, 1899.

Application filed February 2, 1897. Serial No. 621,630. (No model.)

To all whom it may concern:

Be it known that I, WALKER LEE CROUCH, a citizen of the United States, residing at New Brighton, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Igniters for Gas-Engines, of which the following is a specification.

This invention relates to certain new and useful improvements in igniters for explosive-engines; and it has for its object to provide a simple and efficient igniter which may be maintained in a highly-heated condition by the exploded gases without necessitating the employment of a continuous flame or of electricity.

With these objects in view the invention consists in the novel construction, combination, and arrangement of the parts hereinafter more fully described.

In the accompanying drawing the figure is a vertical sectional view of an igniter embodying the invention.

Referring to the drawing, A designates the cylinder of some suitable explosive-engine. Screwed into the sides of this cylinder is a cylindrical plug 1, having its outer end projecting from the cylinder and its passage 2 communicating with the interior of the cylinder. The outer end of the cylindrical plug 1 is interiorly screw-threaded and is adapted to receive the end of the ignition-tube 3. This tube is preferably formed of nickel alloy; but other materials may be employed, if desired, and it is closed at its sides and top and open at its lower end to communicate with the engine-cylinder.

Extending longitudinally through the ignition-tube is one or more strips or bodies 5, of nickel alloy, platinum, or other non-oxidizing material, and these strips may be either straight, corrugated, or twisted helically and are supported in the ignition-tube to leave a space intermediate them and the walls of the tube. Preferably the strip 5 is made of some thin material which can be rapidly brought to a state of incandescence and maintained in such state without fusing, and it is desirable that the strip be twisted or bent, as shown, in order to present the greatest possible surface to the gases or explosive mixture, and as a convenient means of supporting such strip and retaining it in its place within the ignition-tube the lower end of the tube is provided with a bushing 6, to which the strip is connected.

The ignition-tube is surrounded by a stationary asbestos-lined chimney 15, and a space 16 is left intermediate the lining and the ignition-tube for the passage of the flame of a Bunsen or other suitable burner 17, opening into a mixing-chamber 18, which communicates with the space 16 at its lower end. The chimney 15 is closed at its top by means of a detachable cap 19, and near its lower end it is provided with an opening 21.

With an igniter thus constructed when it is desired to start the engine the cap 19 is removed and the burner 17 lighted, the flame passing up through the space 16 in contact with the ignition-tube 3. When the strip 5 within the tube has been heated to incandescence, the engine may be started. The cap is then replaced upon the chimney and the flame extinguished. A portion of the highly-heated gases remains in the ignition-tube and serves to heat and maintain the strip in its incandescent state until the next explosion takes place. It will thus be seen that the strip 5 after being heated initially to incandescence by the application of external heat will be kept in this condition throughout the operation of the engine by the heated spent gases and without the aid of external heat.

It will be noted that in this form of igniter the spent gases which remain in the ignition-tube are depended upon to prevent the fresh gases from coming into contact with the strip *b* until such gases have been compressed to such a degree that they will compress the spent gases in the ignition-tube.

I am aware that it has been proposed heretofore to employ a perforated casing in which is suspended a body of material capable of being made incandescent by heat and to arrange this casing within the engine-cylinder at the rear end thereof. The operation of an igniter thus constructed and arranged is extremely uncertain, as it is almost, if not totally, impossible to prevent the casing from becoming heated sufficiently by the surrounding spent gases to explode a fresh charge of gases

prematurely when they are admitted into the cylinder. I wish it to be understood, therefore, that I make no claim to an igniter located within an engine-cylinder.

What I claim is—

In a gas-engine, the combination with the cylinder, of an ignition-tube upon the exterior of the cylinder, a non-conducting cover inclosing the ignition-tube and arranged to leave a space between the cover and tube, the said cover being provided at or near its top with an opening, a removable cover adapted to close said opening, a strip or body of material capable of being heated to incandescence suspended within the ignition-tube and a burner communicating with the space intermediate the cover and ignition-tube, substantially as described.

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

WALKER LEE CROUCH.

Witnesses:
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