

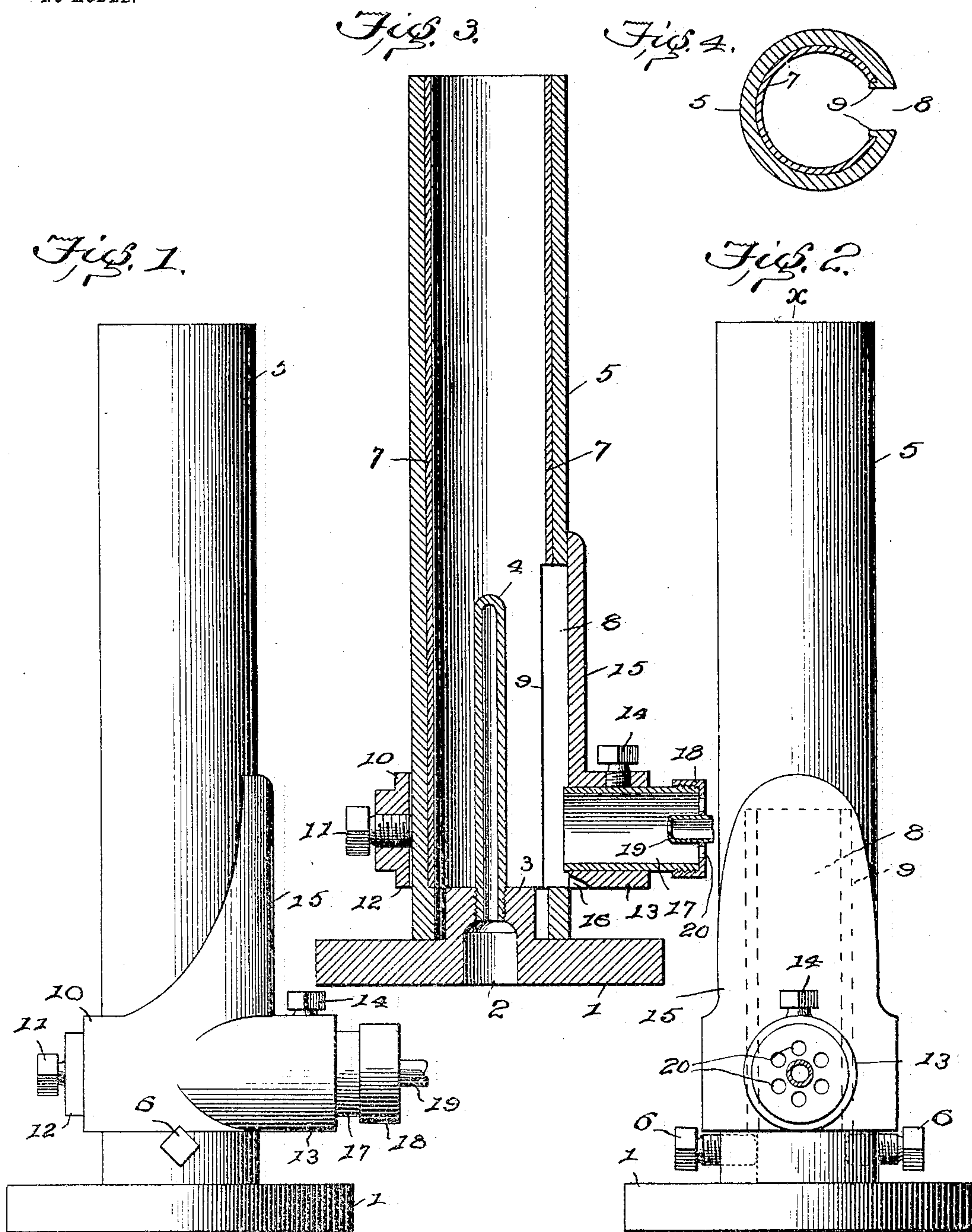
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PATENTED NOV. 22, 1904.

P. J. SHOUVLIN.
INCANDESCENT IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED MAR. 19, 1904.

NO MODEL.



Witnesses

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INCANDESCENT IGNITER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 775,385, dated November 22, 1904.

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To all whom it may concern:

Be it known that I, PATRICK J. SHOUVLIN, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Incandescent Igniters for Explosive-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to incandescent igniters for explosive-engines, and more particularly to that class known as "tube-igniters," in which the gas or other explosive in the engine-cylinder is admitted to the interior of a tube heated externally to a temperature sufficient to ignite the gas thus admitted.

The object of the present invention is to provide an igniter wherein the position of the burner which heats the tube may be adjusted to direct its heat against any desired portion of the tube, so as to give an earlier or later ignition, as desired, the structure being such that the tube and its inclosing flue or chimney remain in fixed position relatively to each other, the burner being preferably mounted on and being adjustable relatively to the flue or chimney, so that the tube is always properly inclosed and protected by the chimney, and the burner and its support are the only parts requiring adjustment.

To these ends my invention consists in certain novel features which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a structure embodying my invention in one form. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical sectional view taken on the line *x x* of Fig. 2 and looking in the direction of the arrows; and Fig. 4 is a plan section of the chimney and lining alone, taken below the top of the vertical slot therein.

In the said drawings, 1 indicates a suitable base adapted for connection to the engine-cylinder and provided with an opening 2 therein for the passage of the gas and a boss or projection 3, which serves as a means for

connecting with the base the ignition-tube and its chimney or flue. The ignition-tube is indicated by the reference-numeral 4 and is of any suitable construction, it being shown as screwed into a threaded aperture in the boss 3 and closed at its outer end, its other end communicating with the gas-opening 2.

5 indicates the flue or chimney which surrounds and incloses the ignition-tube, it being of an external diameter somewhat greater than the diameter of the boss 3 and being secured thereto by set-screws 6, threaded through the chimney and bearing against opposite sides of the boss 3. By this means the chimney can be readily connected with and removed from the base and its position adjusted relatively to the ignition-tube. The chimney or flue is provided with an internal lining 7 of asbestos or the like.

8 indicates a vertical slot formed in the chimney 5 and extending from a point on a level with the lower end of the exposed portion of the ignition-tube to a point as high as or above the upper end of said tube. In order to prevent the lining 7 from slipping over and obstructing this slot, the chimney is provided along each vertical edge of the slot with a rib 9, against which the end of the lining abuts and by which it is held in position.

10 indicates the burner-support, which comprises a sleeve encircling the chimney 5, on which it fits loosely and is vertically adjustable, being secured in position after adjustment by a set-screw 11, threaded through the sleeve, which is preferably provided with a boss or enlargement 12 to receive said set-screw, the inner end of which bears against the chimney to secure the support in position. The support also comprises a tubular socket or sleeve 13, located immediately in front of the slot 8 and provided with a set-screw 14, by means of which the burner is secured in said socket. The support is further provided with an upwardly-extending shield 15, which closes that portion of the slot 8 lying above the burner. At the lower end of the support there is formed an air-inlet opening 16, com-

municating with the slot 8 and serving to admit air to the lower end of the chimney when the burner is in its lowermost position.

The burner may be in any suitable construction, the form shown comprising a mixing tube or burner proper, 17, a cap 18, and a gas-supply pipe 19. The tube 17 fits within the sleeve or socket 13, being removably secured therein by the set-screw 14, and is preferably extended inward beyond the sleeve so as to project into the slot 8, which is of a width sufficient to receive the projecting end of the burner-tube. This prevents the burner and its support from turning on the chimney and holds the burner in proper registry with the slot 8. The cap 18 is threaded onto the outer end of the tube 17 and is provided with air-inlet apertures 20 and with a central aperture through which the gas-supply pipe 19 passes.

The operation of the device will be readily understood by those skilled in the art. The particular portion of the ignition-tube heated by the burner determines the time of the explosion relatively to the cycle of operation of the engine in connection with which the igniter is employed, ignition taking place earlier when the burner is opposite the lower end of the tube and later in proportion as it is moved away from said lower end. In starting the engine the burner is located near the bottom of the tube, and when the explosion occurs too early the burner can be readily moved, so as to bring the incandescent point of the tube farther from the inlet thereof, thus correspondingly delaying the explosion. The igniter is thus particularly adapted for use in connection with engines using as a fuel gas made from crude oil, since the ignition may be readily adapted to the degree of compression employed in such engines. It will be observed that the shield keeps that portion of the tube above the burner hot by preventing the entrance of air through the slot 8, while the leaving open of the slot below the burner keeps that portion of the tube below the burner cool, thereby preventing ignition of the gas before it reaches that portion of the tube lying opposite the burner.

The tube and its flue are maintained in fixed relation to each other, so that the tube is always inclosed and protected whatever the position of the burner may be. The burner and its support are firmly supported by the flue or chimney, so that the device does not require any additional part or parts to effect this support. In regulating the time of the explosion the burner and its support are the only parts which it is necessary to adjust, the tube and chimney remaining fixed.

The device is simple and inexpensive in construction and efficient in operation.

I do not wish to be understood as limiting myself to the precise details of construction

hereinbefore described, and shown in the accompanying drawings, as the same may obviously be modified without departing from the principle of my invention.

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

1. An igniter for explosive-engines, comprising an ignition-tube, a flue or chimney surrounding the same and provided with an opening in its wall, and a burner supported on said chimney and adjustable longitudinally thereof of opposite said opening, substantially as described.

2. An igniter for explosive-engines, comprising an ignition-tube, a flue or chimney surrounding the same in fixed relation thereto and provided with a longitudinal slot, and a burner supported on said chimney opposite said slot and adjustable longitudinally on the chimney, substantially as described.

3. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted chimney surrounding the same, a burner supported on said chimney and adjustable longitudinally thereof opposite said slot, and a shield closing the portion of said slot above the burner and moving with the burner, substantially as described.

4. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted flue or chimney surrounding the same, a burner-support mounted and adjustable longitudinally on said chimney, and a burner carried by said support and located opposite the slot in the chimney, substantially as described.

5. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted flue or chimney surrounding the same, a burner-support mounted and adjustable longitudinally on said chimney and provided with a shield to close the portion of the slot above the burner, and a burner carried by said support and located opposite the slot, substantially as described.

6. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted flue or chimney surrounding the same, and a burner-support mounted and adjustable longitudinally on the chimney, provided with a burner located opposite said slot, and having an air-inlet opening below the burner, substantially as described.

7. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted flue or chimney surrounding the same, a sleeve adjustably mounted on said chimney and provided with a socket to receive a burner and with an upwardly-extending shield above said socket, and a burner mounted in said socket, substantially as described.

8. An igniter for explosive-engines, com-

prising an ignition-tube, a longitudinally-slotted flue or chimney or flue surrounding the same, a burner-support comprising a sleeve mounted on said chimney and provided with a set-screw, and means for preventing said sleeve from rotating on said chimney, substantially as described.

9. An igniter for explosive-engines, comprising an ignition-tube, a longitudinally-slotted flue or chimney surrounding the same, a burner-support mounted and adjustable longitudinally on said chimney, and a burner carried by said support and extending into said slot, substantially as described.

10. In an igniter for explosive-engines, the combination, with an ignition-tube, of a flue or chimney surrounding the same and provided with a longitudinal slot, and a burner

adjustable along said slot, said chimney being provided with ribs along the longitudinal margins of the slot, and with a lining of asbestos or the like abutting against said ribs, substantially as described.

11. An igniter for explosive-engines, comprising an ignition-tube, a flue or chimney surrounding the same in fixed relation thereto and having a longitudinal opening in its wall, and a burner adjustable longitudinally of said opening, substantially as described.

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

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Witnesses:

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