No. 778,261. PATENTED DEC. 27, 1904.

J. B. MORRISON.

GAS ENGINE STARTER.

APPLICATION FILED JUNE 4, 1904.

Fig. 1.

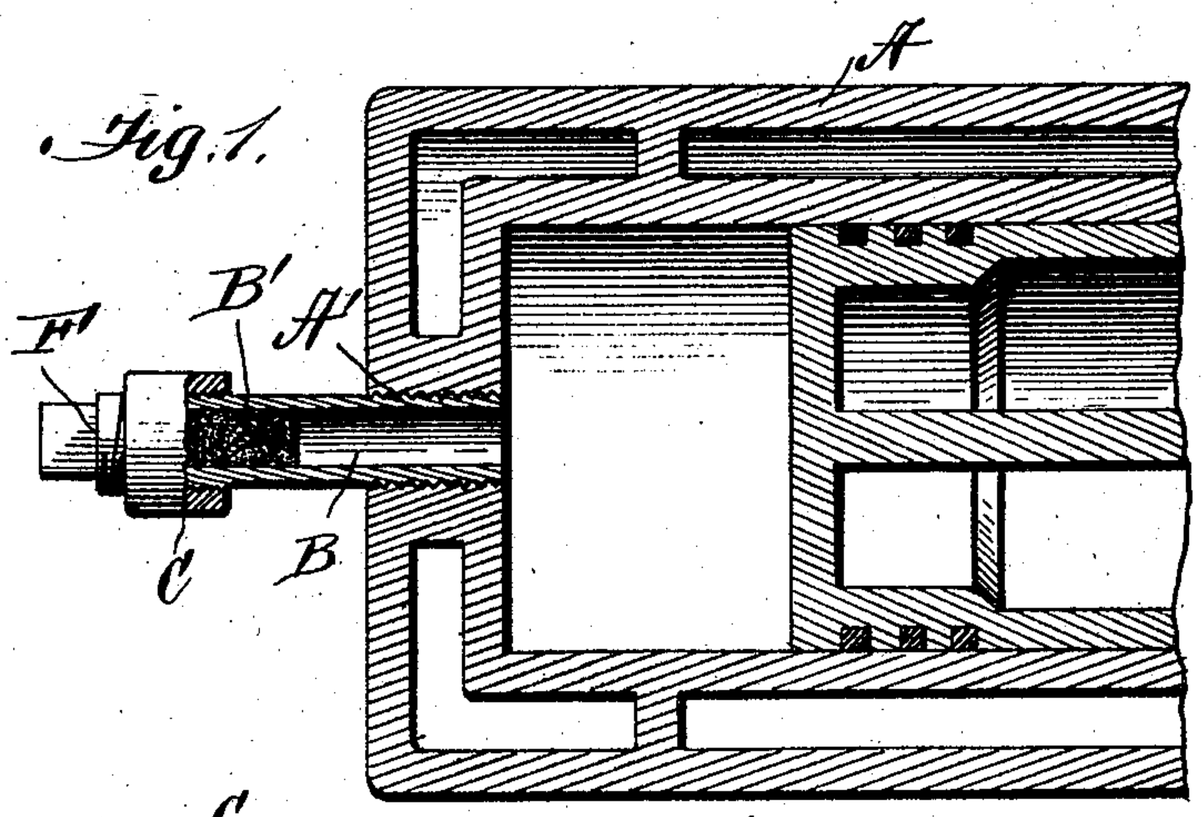


Fig. 2.

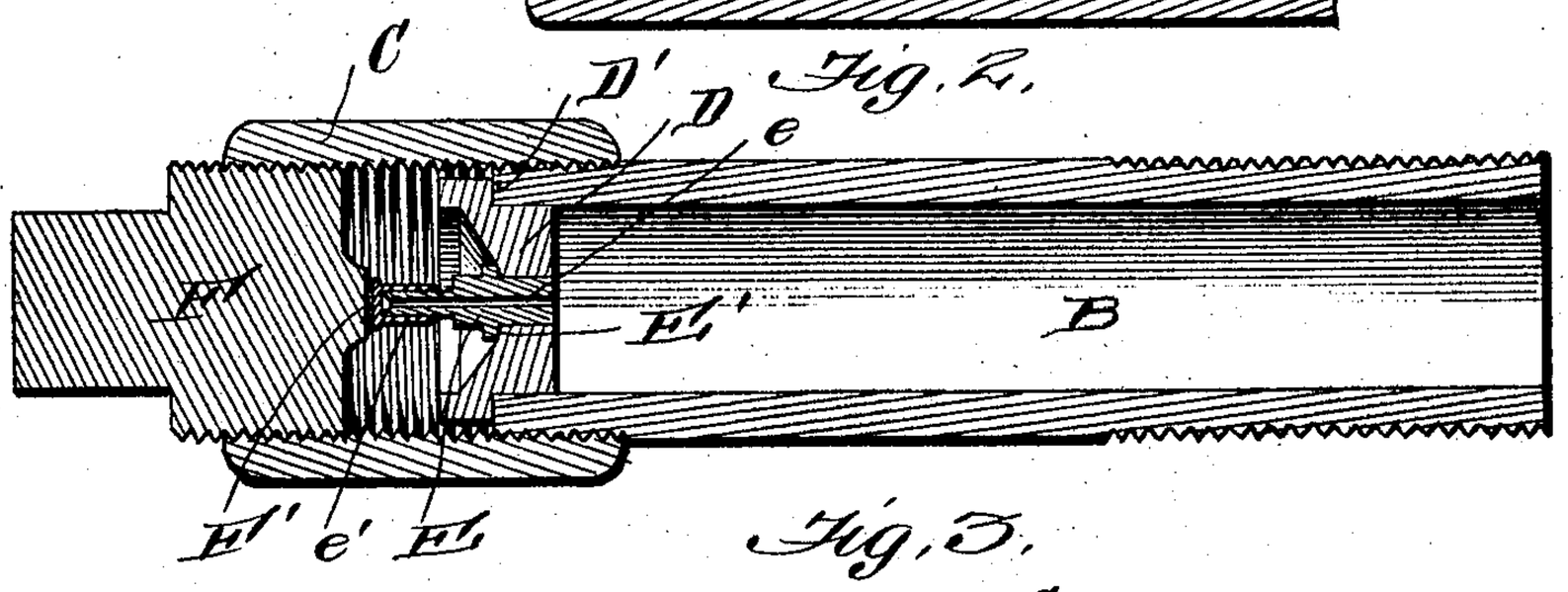


Fig. 3.

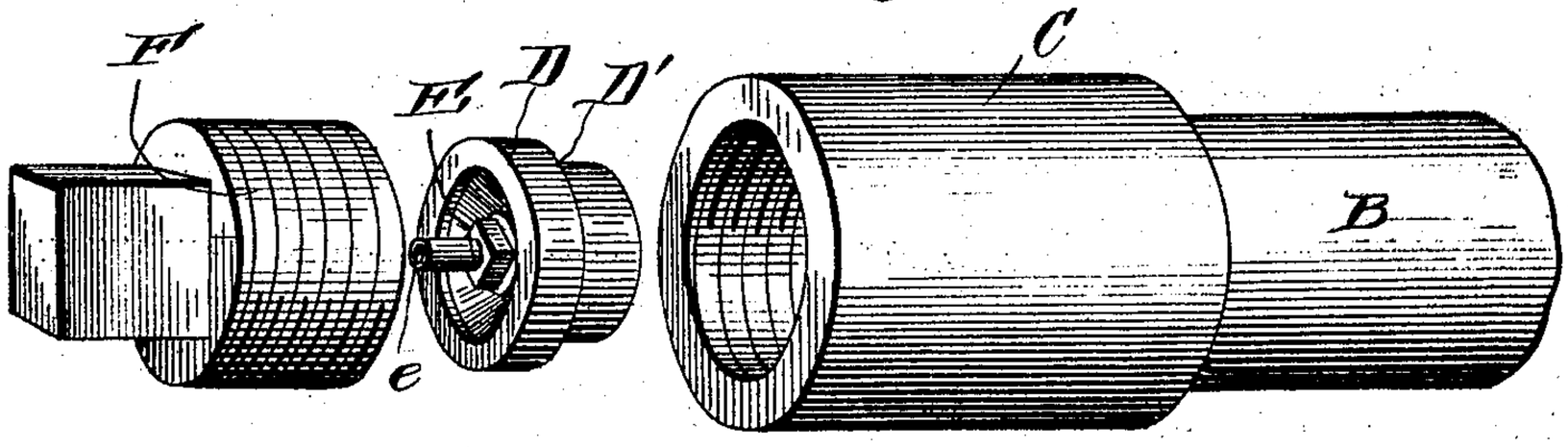
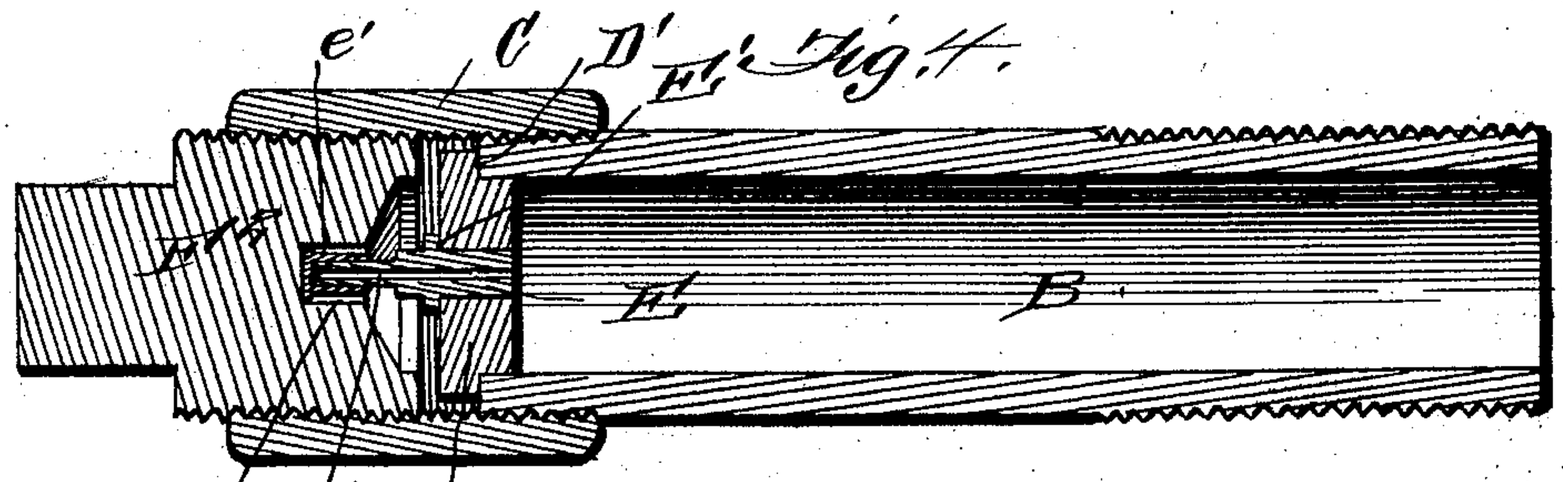


Fig. 4.



Witnesses

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No. 778,261. Patented December 27, 1904.

UNITED STATES PATENT OFFICE.

JOHN BRUCE MORRISON, OF BAYS, OHIO.

GAS-ENGINE STARTER.

SPECIFICATION forming part of Letters Patent No. 778,261, dated December 27, 1904.

Application filed June 4, 1904. Serial No. 211,174.

To all whom it may concern:

Be it known that I, JOHN BRUCE MORRISON, a citizen of the United States, residing at Bays, in the county of Wood and State of Ohio, have invented certain new and useful Improvements in Gas-Engine Starters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in starters for gas-engines; and the object of the invention is to produce a simple and efficient means whereby the initial stroke of a piston of an engine may be started by the impact of an explosive material which is ignited in a receptacle having communication with the combustion-chamber of the engine.

More specifically, the invention consists in the provision of a starter for gas-engines comprising a shell adapted to contain an explosive material, such as powder, and which shell is connected to and communicating with the combustion-chamber of an engine and having in one end of said shell a nipple adapted to receive a percussion-cap, against which a plug is adapted to be forced to explode the same, whereby the charge may be ignited and exploded for the purpose of starting the engine.

My invention consists, further, in various details of construction and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view through a portion of the cylinder of an engine and of my attachment. Fig. 2 is an enlarged detail sectional view of an explosive-tube which is attached to the cylinder. Fig. 3 is a perspective view of the parts disassembled; and Fig. 4 is a longitudinal sectional view through a tube, showing a slight differentiation in the construction of the disk and plug.

Reference now being had to the details of the drawings by letter, A designates the cylinder of an explosive gas-engine, which may be of any construction, and one end of the cylinder has an aperture, as at A′, which is threaded to receive the threaded end of the tubular shell B, forming the cylinder of my improved starter. Said shell B is adapted to contain an explosive material, such as powder, (indicated by the dots B′,) and has its outer end externally threaded to receive a union C. A disk D, having a shoulder D′ of sufficient diameter to snugly fit into the outer end of said shell B, is provided, and said disk D has a central aperture adapted to receive a nipple E, and the outer face of the disk D is countersunken, as shown clearly in Fig. 2 of the drawings, and the nipple E has an annular shoulder E′ about its circumference adapted to bear against the outer face of said disk. The nipple is centrally apertured, as at *e*, and its outer end is of sufficient size to receive a percussion-cap *e′*. A plug F is provided, having threaded circumference adapted to engage the threads on the inner face of the union C and a projecting portion F′ upon its inner end adapted to contact with the cap and force the same against the end of the nipple with sufficient force to cause the same to explode as the plug is screwed into the union.

In Fig. 4 of the drawings I have shown a slight modification of my invention, in which the disk D^2 has its outer face flat instead of countersunken and the plug F^2 is provided with a hole or recess *f* in its inner end instead of the projection F′, illustrated in Fig. 2, said recess being adapted to receive the end of the nipple which is adapted to carry the cap.

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

1. A device for starting engines comprising a cylindrical portion adapted to contain a starting charge of an explosive material and fastened to and communicating with the explosion-chamber of an engine, a union mounted upon the threaded end of said cylinder, an apertured disk seated against the end of said cylinder and within the union, a hollow nipple carried by said disk, and a threaded plug

fitted within said union and adapted to bear against a cap upon said nipple with sufficient force to explode the cap, whereby the charge in the cylinder may be ignited, as set forth.

2. A device for starting gas-engines comprising a cylinder adapted to be connected to and communicating with the combustion-chamber of a gas-engine, a disk having a portion thereof fitted within said cylinder and centrally apertured, the outer face of said disk being countersunken, an apertured nipple fitted into the aperture of said disk, an internally-threaded union fitted to the circumference of the cylinder, and a threaded plug fitted to the threads of said union and adapted to bear with sufficient force against a cap designed to be held upon said nipple, to cause the same to explode, whereby the charge within said cylinder may be ignited, as set forth.

3. A starter for gas-engines comprising a cylinder adapted to be connected to and communicate with the explosion-chamber of a gas-engine, a disk having a shouldered portion engaging the outer end of said cylinder and a portion of the disk extending within the cylinder, an apertured nipple fitted in a central aperture in said disk and having an annular shoulder engaging the outer face of said disk, a union fitted to the threaded circumference of the cylinder, a plug adapted to screw into said union and to bear with sufficient force against a percussion-cap upon said nipple to cause the same to explode, whereby the explosive material within said cylinder may be ignited, as set forth.

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

JOHN BRUCE MORRISON.

Witnesses:
J. A. BEALS,
J. W. CHAMBERS.