No. 730,695. PATENTED JUNE 9, 1903.

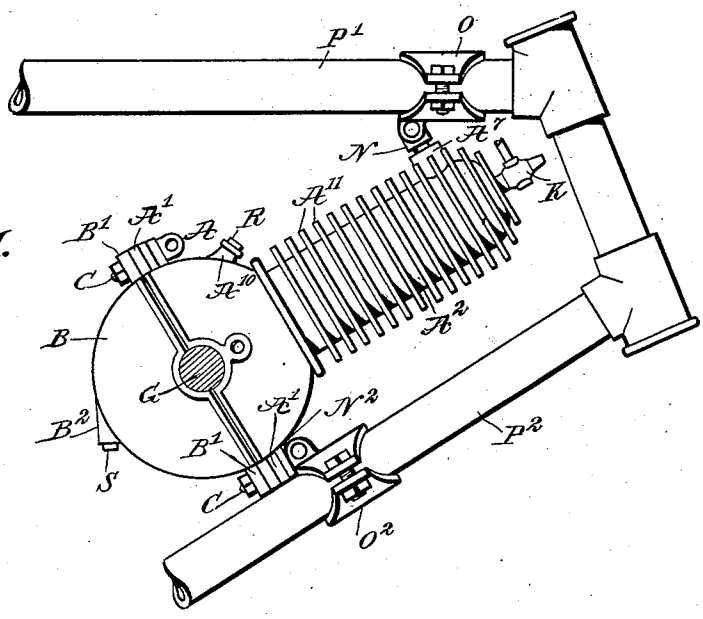
M. PIVERT.

EXPLOSION ENGINE.

APPLICATION FILED JUNE 5, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



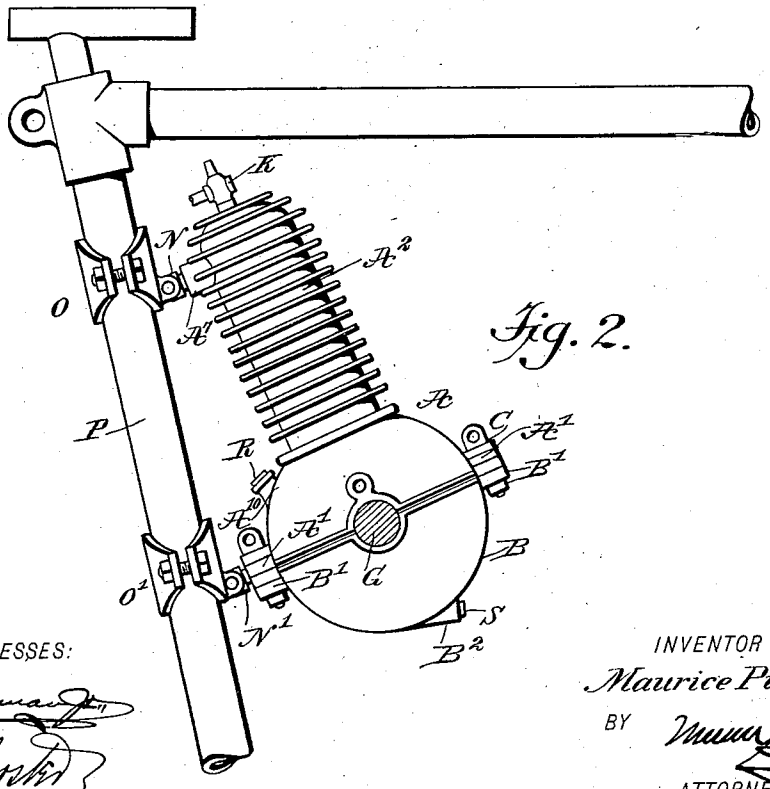


Fig. 2.

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ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

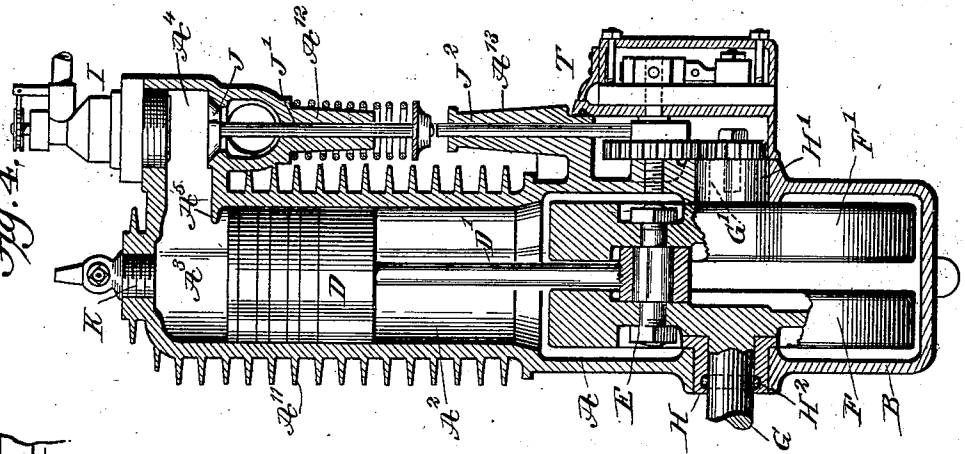


Fig. 7.

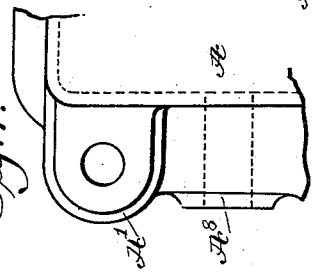


Fig. 8.

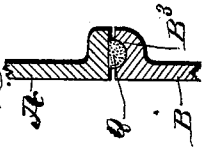


Fig. 3.

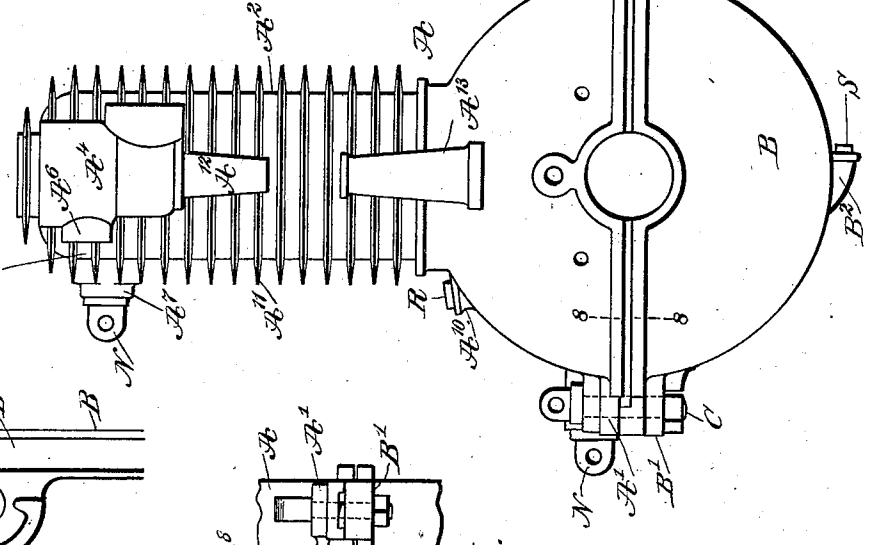


Fig. 6.

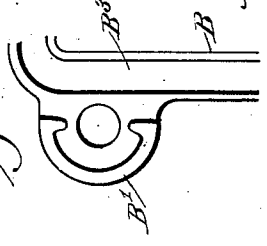
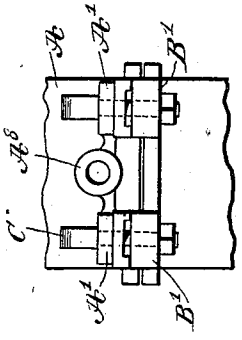


Fig. 5.



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No. 730,695. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

MAURICE PIVERT, OF NEW ORLEANS, LOUISIANA.

EXPLOSION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 730,695, dated June 9, 1903.

Application filed June 5, 1902. Serial No. 110,312. (No model.)

To all whom it may concern:

Be it known that I, MAURICE PIVERT, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Explosion-Engines, of which the following is a full, clear, and exact description.

The invention relates to explosion-engines of the four-cycle type; and its object is to provide certain new and useful improvements in explosion-engines whereby the engine can be conveniently attached to the frame of a motor-bicycle or other motor-vehicle, the engine being simple and durable in construction, very compact, completely dust-proof, and not liable to leak or to easily get out of order.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improved explosion-engine secured to the upper and lower braces of a bicycle-frame. Fig. 2 is a similar view of the same secured to the center brace of a bicycle-frame. Fig. 3 is an enlarged side elevation of the motor-casing and its cover. Fig. 4 is a cross-section of the explosion-engine. Fig. 5 is a side elevation of part of the casing and its cover. Fig. 6 is an enlarged plan view of part of the cover. Fig. 7 is a like view of part of the casing, and Fig. 8 is an enlarged cross-section of part of the casing and cover and the gasket between the same on the line 8 8 in Fig. 3.

The explosion-engine is provided with a casing A, made of a single casting, closed at one end and open at the other end, and this open end is adapted to be closed by a cover B, having lugs B′ in register with lugs A′ on the casing to be engaged by eyebolts C to securely fasten the cover to the casing. The casing A is provided with a cylinder A^2, in which reciprocates a piston D, connected by a pitman D′ with a wrist-pin E, extending between fly-wheels F and F′ and secured to the webs thereof, as plainly indicated in Fig. 4. The fly-wheels F and F′ are secured or formed on the inner ends of main shaft parts G G′, journaled in bearings H H′, fitted in the joint of the casing A with the cover B, as plainly indicated in Figs. 3 and 4. One or both of the bearings H H′ are formed with internal annular recesses for the reception of a packing-ring H^2 of soft material, such as leather and the like, the packing-ring being preferably half-round in cross-section, with the flat face fitting on the shaft part G or G′. It is understood that the lower portion of the casing A and the cover B are made semicircular, so as to readily accommodate the fly-wheels F and F′.

The upper end of the cylinder A^2 terminates in the working chamber A^3, arranged in the closed end of the casing A, having a sidewise extension A^4 for admission and exhaust devices I and J of any approved construction. The admission device I is, however, preferably of the construction shown and described in the application for Letters Patent of the United States filed by me of even date herewith. The exhaust device J is periodically and positively actuated by suitable means from the shaft part G′; but as the means are the ordinary ones usually employed in engines of this class it is not deemed necessary to further describe the same.

The top of the working chamber A is provided with a compression-cock K, and a sparking-plug L screws in a threaded boss A^6, formed on the extension A^4 of the working chamber, so that the inner end of the said sparking-plug is immediately above a shoulder A^5, integral with the casing and projecting inward over a portion of the upper end of the cylinder A^2. (See Fig. 4.) By this arrangement splashing of oil or dirt onto the sparking-plug by the action of the piston D is entirely prevented, so that the sparking-plug properly functions at all times.

The upper end of the casing A is provided on one side with a threaded lug A^7, (see Figs. 1, 2, and 3,) and a similar lug A^8 is arranged on the same side of the casing between the corresponding lugs A′, and the said lugs A^7 and A^8 are engaged by eyebolts N and N′ and clips O and O′, secured to the center brace

P of a bicycle-frame, as plainly indicated in Fig. 2, to support the engine from the center brace solely whenever it is desired to do so. One or both eyebolts C on each side of the casing are adapted to be pivoted on a clip O^2, secured to the lower brace P^2 of a bicycle-frame whenever it is desired to support the engine on the upper and lower braces, as indicated in Fig. 1, it being understood that the eyebolt N and its clip O are then secured to the upper brace P'.

In order to produce as much cooling-surface on the cylinder A^2 as possible, I provide the same with external ribs A^{11}, as plainly indicated in the drawings. The lower portion of the casing A is provided, near its junction with the cylinder A^2, with a threaded lug A^{10}, normally closed by a plug R, which when removed permits of introduction of the lubricant into the casing. The bottom of the cover B is provided with a threaded lug B^2, normally closed by a plug S, which when removed permits cleaning of the cover.

In order to render the joint between the cover and casing dust-proof, I provide a gasket Q, preferably half-round in cross-section and set in an annular recess B^3, formed in the enlarged top edge of the cover B, as plainly indicated in Figs. 6 and 8, and the flat face of this gasket Q is engaged by the lower edge of the casing A, so that when the cover and casing are fastened together by the bolts C then the latter compress the gasket between the adjacent edges of the casing and cover to render the interior of the casing dust-proof. By reference to Fig. 6 it will be seen that the annular groove B^3 is inside of the lugs B', so that the bolts do not interfere with the gasket, as the latter is inside of the shanks of the bolts.

As shown in Figs. 3 and 4, the casing is also provided with apertured lugs A^{12} and A^{13}, extending vertically in alinement one with the other for receiving the working rods J' and J^2 of the exhaust device J.

The circuit-breaker T for the sparking-plug L may be of any approved construction, and further detailed description of the same is not deemed necessary.

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

1. In an explosive-engine, a cylinder comprising a body having a semicircular lower end and provided with a semicircular cover for said lower end, the semicircular lower end of the body and cover being provided with oppositely-arranged pairs of apertured and registering lugs, the body of the cylinder being also provided with a laterally-projecting lug at its upper end and with a similar lug at its lower end on the same side and between a pair of lugs on its semicircular portion, eyebolts in the registering lugs of the body and cover of cylinder, eyebolts in the tubular lugs of the body, and clips for attachment to a bicycle-frame and to said eyebolts, whereby provision is made for securing the cylinder either to the center brace or to the upper and lower braces of a bicycle, as set forth.

2. In an explosive-engine, a cylinder comprising a body having a semicircular lower end and provided with a semicircular cover for said lower end, the semicircular lower end of the body and cover being provided with apertured and registering lugs, the body being provided at its upper and lower ends with laterally-projecting tubular lugs, said lugs being internally screw-threaded, eyebolts engaging the registering lugs of the body and cover, and eyebolts engaging the tubular lugs of the body, as set forth.

3. In an explosive-engine, a cylinder comprising a body having a semicircular lower end and provided with a semicircular cover for said lower end, the semicircular end of the body and the cover being provided with lateral flanges and apertured and registering lugs projecting beyond the flanges, the flange of the cover having an annular recess in its face, a gasket in the said recess, and bolts engaging the apertured flanges and securing the cover to the body, as set forth.

4. In an explosive-engine, a cylinder comprising a body having a semicircular lower end and provided with a semicircular cover for the said lower end, the lower end of the body and cover being provided with apertured and registering lugs by means of which they are secured together, bearings fitted in the joint of the body and cover, fly-wheels, each having its shaft mounted in one of the said bearings, a wrist-pin connecting the fly-wheels, a piston in the cylinder, a pitman connecting the piston with the wrist-pin, admission and exhaust devices connected with the upper end of the body, and a sparking-plug, as set forth.

5. An explosive-engine, comprising a cylinder having a circular lower end with flattened sides, lugs projecting from the cylinder, clips connected with said lugs for securing the cylinder to a bicycle-frame, fly-wheels mounted in the lower end of the cylinder, a wrist-pin connecting the fly-wheels, a piston working in the upper part of the cylinder, a pitman connecting the piston with the wrist-pin, admission and exhaust devices connected with the upper end of the cylinder, and a sparking-plug, as set forth.

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

MAURICE PIVERT.

Witnesses:
ALEX ESTEIN,
GEORGE KELLER.