No. 753,814. PATENTED MAR. 1, 1904.

L. B. SMYSER.

MEANS FOR ATTACHING SUCTION TUBES AND INLET VALVES TO EXPLOSIVE OR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED JULY 23, 1900.

NO MODEL.

Fig. 1,

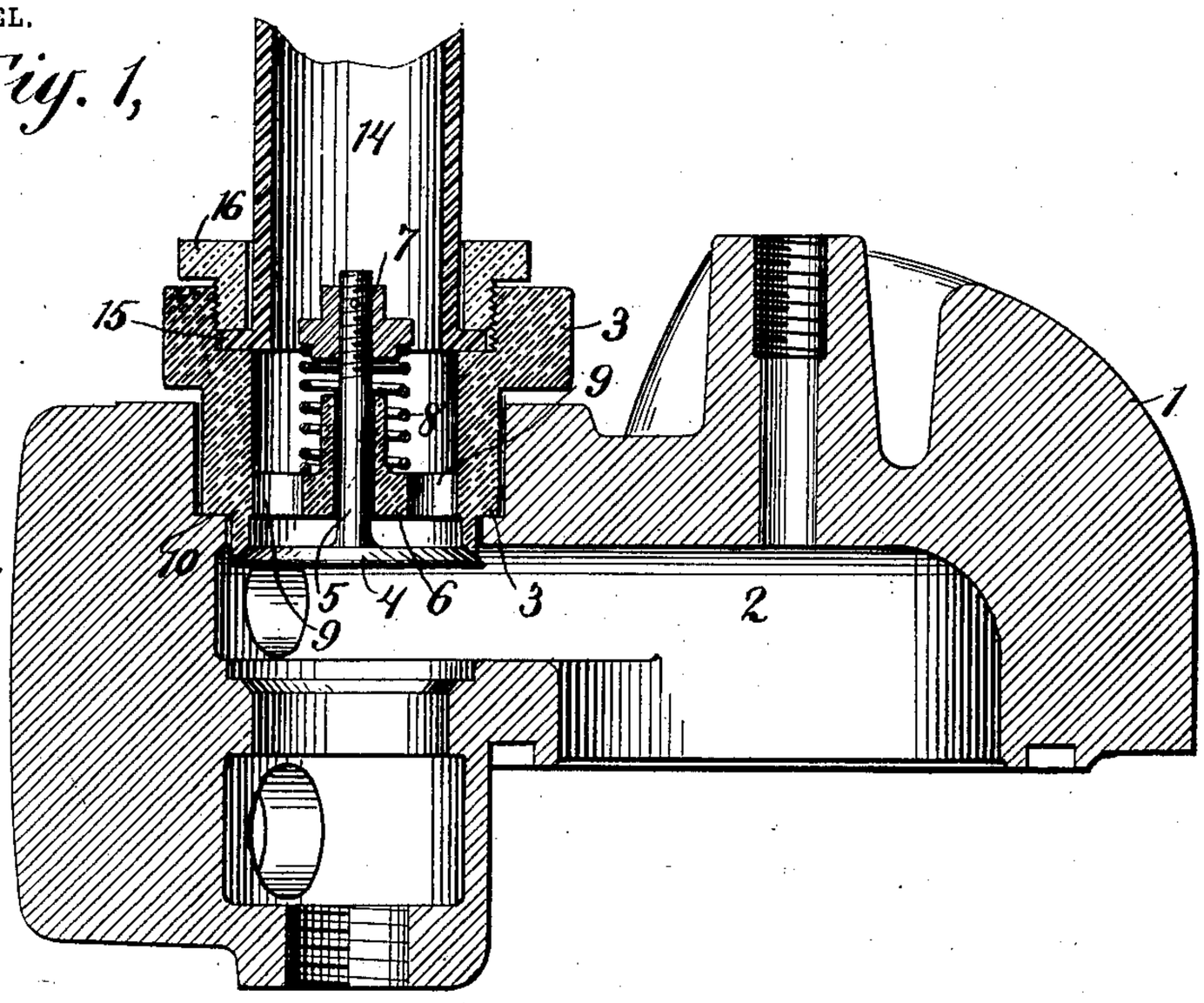
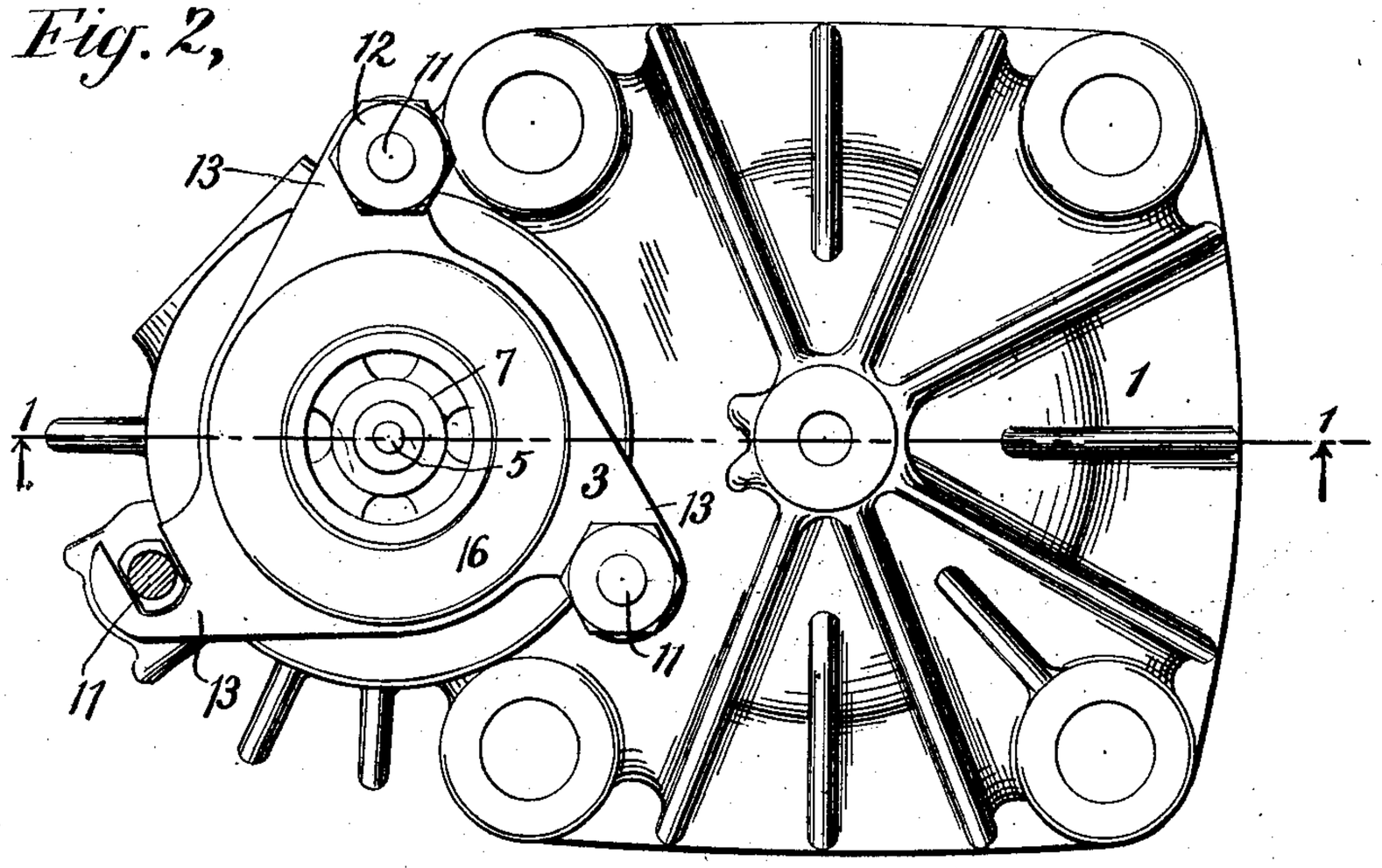


Fig. 2,



WITNESSES:

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No. 753,814. Patented March 1, 1904.

UNITED STATES PATENT OFFICE.

LOUIS B. SMYSER, OF ELIZABETH, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CANDA BROTHERS, OF NEW YORK, N. Y., A COPARTNERSHIP.

MEANS FOR ATTACHING SUCTION-TUBES AND INLET-VALVES TO EXPLOSIVE OR INTERNAL-COMBUSTION ENGINES.

SPECIFICATION forming part of Letters Patent No. 753,814, dated March 1, 1904.

Application filed July 23, 1900. Serial No. 24,493. (No model.)

To all whom it may concern:

Be it known that I, LOUIS B. SMYSER, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Means for Attaching Suction-Tubes and Inlet-Valves to Explosive or Internal-Combustion Engines; and I do hereby 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.

My invention relates to improvements in explosive or internal-combustion engines, and more especially to improved means for securing to such engines the suction-tube and the suction or inlet valve.

My invention consists in the novel means employed for this purpose.

The objects of my invention are, first, to attach the suction or inlet valve to the engine in such manner that such valve may be removed readily when desired; second, to connect the suction-tube to the engine in such manner that it may be disconnected therefrom readily when desired, and, third, to make the means employed for attaching the suction-valve and suction-tube to the engine as simple, compact, and inexpensive as possible. These objects are attained in the invention herein described and illustrated in the drawings which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a central vertical section of the cylinder-head of an explosive or internal-combustion engine, showing my improved device for attaching the inlet-valve and suction-tube thereto. Fig. 2 is a top view of the parts shown in Fig. 1.

In the drawings the suction-tube and inlet-valve are shown as connected to the cylinder-head of the engine, this being the construction commonly employed in the case of small engines; but I do not limit myself to the connection of these parts to the cylinder-head.

In the drawings, 1 designates the cylinder-head. It is of substantially ordinary construction and is provided with a clearance-chamber 2, adapted to communicate with the interior of the engine-cylinder.

3 is a sleeve fitting into an opening in the cylinder-head 1, which opening extends through the wall of the cylinder-head. At the lower end of this sleeve 3 is a seat for the inlet or suction valve 4, which valve opens inwardly. The valve 4 has a spindle 5, mounted within and guided by a centrally-apertured guide 6, forming a part of the sleeve 3. Upon the end of the spindle 5 there is a screw-nut 7, and between said nut and the sleeve 3 there is a compression-spring 8, which tends to hold the valve 4 against its seat. In the transverse partition of the sleeve are a series of openings 9, which permit the passage of the explosive mixture.

The sleeve 3, constituting the valve seat and casing, has a shoulder 10, adapted to rest upon a corresponding shoulder formed in the aperture in the cylinder-head into which said sleeve fits. Said sleeve is not screwed into this aperture in the cylinder-head 1, but merely rests in such aperture with the shoulder 10 bearing against the corresponding shoulder in the cylinder-head, the sleeve being held in place by screw-studs 11, projecting from the cylinder-head 1, and nuts 12 upon said studs, which bear upon projecting horns 13 of the sleeve 3. By means of these nuts 12 the sleeve 3 may be forced so firmly into its seat in the head 1 that the escape of gas around the sleeve is prevented. The slots in the horns 13 of sleeve 3, through which slots the studs 11 pass, are open at one end, so that the sleeve may be removed after the nuts 12 have been slackened by simply rotating the sleeve slightly and then lifting it out of its seat.

To prevent possible loosening of the studs 11, these studs are flattened at their sides, as shown in Fig. 2, and the slots in the horns 13 are so little larger than the diameter of the studs that the studs are not free to turn while the sleeve 3 is in place.

The suction-tube 14 has at its end a flange 15, fitting within the open mouth of the sleeve 3, and when the end of the suction-tube is in place in the mouth of sleeve 3 it may be held there by a gland 16, screwing into the mouth of the sleeve 3. It will be noted that the suction-tube may be disconnected at any time without disturbing the suction-valve by simply unscrewing the gland 16. The valve, suction-tube, and sleeve 3 can all be removed from the engine without disturbing the connection of the suction-tube and sleeve 3 by slackening the nuts 12, rotating the sleeve slightly, and then pulling it out, and when it is desired to place a new inlet-valve in the engine this may be done conveniently by disconnecting the suction-tube 14, removing the sleeve 3, with its valve 4, and placing a new valve and sleeve in the engine. The sleeve 3 can be made so cheaply that it may be cast aside in preference to attempting to separate parts, like the spindle 5 and nut 7, which may have become united rather firmly by the heat generated in the engine.

No difficulty will be experienced in removing the sleeve 3 from the engine, since said sleeve simply fits loosely into the opening in the cylinder-head and is not screw-threaded therein.

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

1. The combination, with a member of an explosive or internal-combustion engine, having an opening adapted to receive a valve-casing, and a shoulder against which said casing may bear, of a valve-casing fitting freely into said opening and seated against said shoulder, but not against the sides of the opening, means for holding said casing to its seat, a valve carried by the casing, a pipe connected to the casing and having a substantially straight entrance thereto in substantially the direction of the passage of gases past the valve, and means independent of the said casing-holding device, holding said pipe in place; whereby the valve may be inspected without breaking joint between the valve-casing and its seat.

2. The combination, with a member of an explosive or internal-combustion engine, having an opening adapted to receive a valve-casing, and a shoulder against which said casing may bear, of a valve-casing fitting freely into said opening and seated against said shoulder, but not against the sides of the opening, means for holding said casing to its seat, a valve carried by the casing, a pipe fitting into the casing and having a substantially straight entrance thereto in substantially the direction of the passage of gases past the valve, a gland surrounding said pipe and holding the same to the mouth of said casing, and means, independent of said gland, for holding the said valve-casing to its seat; whereby the valve may be inspected without breaking joint between the valve-casing and its seat.

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

LOUIS B. SMYSER.

Witnesses:

HARRY M. MARBLE,

A. H. PERLES.