

L. B. STONE.
IMPULSE PRESSURE GAGE.
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1,336,104.

Patented Apr. 6, 1920.

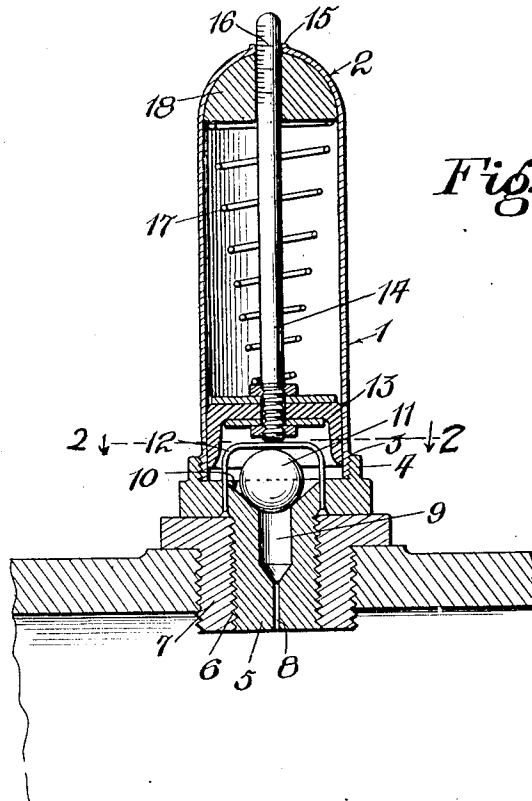


Fig. 1.

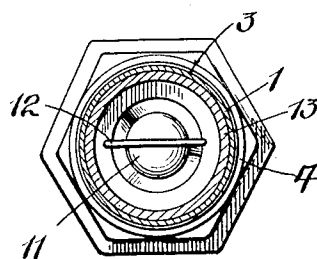


Fig. 2.

Inventor
Lloyd B. Stone.
By Fred P. Levin
attorney

UNITED STATES PATENT OFFICE.

LLOYD B. STONE, OF TACOMA, WASHINGTON, ASSIGNOR TO STAR DEVICE MANUFACTURING COMPANY, OF COUNTY OF KING, WASHINGTON.

IMPULSE-PRESSURE GAGE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LLOYD B. STONE, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Impulse-Pressure Gages, of which the following is a specification.

This invention relates to an improvement in pressure gages of that type designed particularly for use in explosive engines, and adapted in such use to indicate the maximum pressure of the cylinder with which the gage is used.

The improved gage is designed to visually indicate the maximum compression of the particular cylinder, and to this end is adapted to receive the gases under successive compression strokes, the construction of the governing valve being such as to tend to prevent an over indication in the compression impulses, and also tends to prevent a receding movement of the indicator between compression strokes of the piston.

In the drawings:—

Figure 1 is a view in vertical section illustrating the improved pressure gage in its applied position.

Fig. 2 is a section on line 2—2 Fig. 1.

In the drawings the improved pressure gage comprises an elongated cylindrical body 1 having a rounded top 2, and exteriorly threaded at its lower open end to seat within a base 3, which latter is preferably provided on its upper surface with an upstanding flange 4 to receive the body 1. The base 3 has a depending exteriorly threaded extension 5, to seat within an opening 6 in a bushing 7, which latter coöperates with the engine head, for example in the usual spark plug opening.

The base 3 is formed with a longitudinal gas passage, which at the entrant end is of small diameter as at 8, above which the passage is enlarged at 9, terminating in a conical or flared enlargement 10, forming a valve seat. A valve 11 is arranged to co-operate with the seat 10, and this valve forms one of the material parts of the present invention. The valve is spherical or of ball type and compressible, as for example a rubber ball, and a holding strip 12 is terminally secured in the base 3 with its inter-

mediate portion overlying and bearing upon the valve, with sufficient pressure to hold said valve on its seat, in substantial sealing relation independent of upward pressure.

A piston 13 operates in the usual manner in the body 1, and has a piston rod 14 projecting therefrom, and extending through an opening 15 in the top of the body. This piston rod, which will be hereinafter termed as the indicator may, and preferably has indicating marks 16, indicating pressure points, which marks are read in line with the upper edge of the body 1 to indicate the pressure within the body, as will be understood. A spring 17 is coiled about the rod 14 bearing between a filling block 18 in the upper end of the body, and a piston 13. The block 18 also serves as a guide for the piston rod or indicator in its movement.

With the improved gage applied to each cylinder of which it is desired to obtain the compression, the compression stroke of the piston in such cylinder forces the gases through the gas passage of the gage, and by the valve. The gases move around the valve by compressing the latter to provide the opening, as the strip 12 prevents upward movement of the valve. The gases entering the body force the piston upwardly and thereby raises the indicator. The compressible ball valve, however, by reason of the fact that it is held in place by the strip 12 is extremely sensitive and quick acting, so that immediately the compression stroke of the engine ceases the valve closes, trapping the gases from the compression within the body 1. This operation is repeated on each compression stroke until the compression of the engine cylinder balances the spring 17, indicating the maximum compression.

The ball valve through its resilient nature insures an extremely quick acting valve when held to its seat as described, and furthermore the pressure of the gases within the body 1 acts against this resilient ball valve with the effect to somewhat cushion the action of said gases against the piston 13, and thereby prevent an impact action which would have a tendency to overthrow the indicator, with a consequent false indication.

What I claim is:—

In an article of the class described, the

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combination of a shell, a base removably secured to the shell and having a U-shaped member rigidly secured thereto, a central opening throughout the base, a bushing
5 adapted to be screwed into the wall of the compression chamber of a gas engine and into which the base is screw-threaded, a piston within the shell, a graduated stem for the piston which protrudes through the top of the shell, a resilient valve normally closing the said opening in the base and a U-shaped member for holding the valve to its seat.

In testimony whereof I affix my signature.

LLOYD B. STONE.