H. C. LINDEMANN.

EXHAUST VALVE FOR COMBUSTION ENGINES.

APPLICATION FILED JULY 1, 1916.

1,235,344. Patented July 31, 1917.

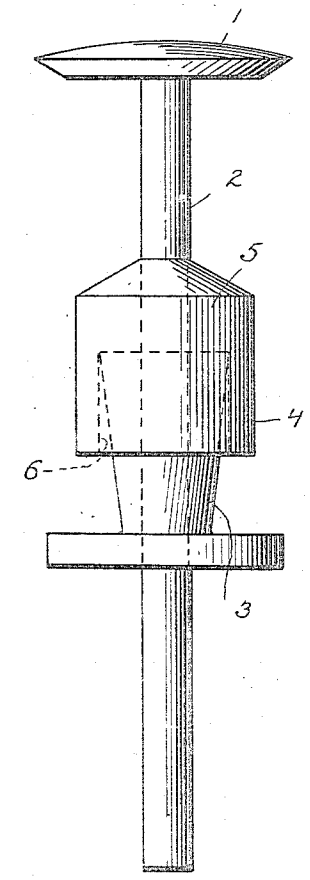


Fig. 1.

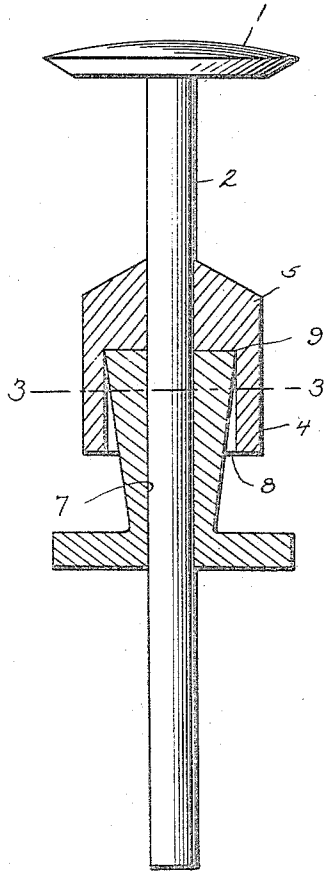


Fig. 2.

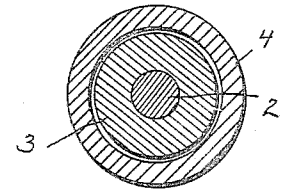


Fig. 3.

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UNITED STATES PATENT OFFICE.

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EXHAUST-VALVE FOR COMBUSTION-ENGINES.

1,235,344. Specification of Letters Patent. Patented July 31, 1917.

Application filed July 1, 1916. Serial No. 107,134.

To all whom it may concern:

Be it known that I, HENRY C. LINDEMANN, a citizen of the United States, residing at Avoca, in the county of Murray and State of Minnesota, have invented certain new and useful Improvements in Exhaust-Valves for 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.

The invention relates to improvements in exhaust valves for combustion engines.

The object of the present invention is to improve the construction of exhaust valves for combustion engines and to provide simple, practical and efficient means for effectually preventing the valves from sticking and thereby eliminating the troubles resulting therefrom such as the burning out of the valves, a highly heated exhaust pipe, black smoke and the loss of power.

A further object of the invention is to provide protecting means adapted to exclude the gases and the carbon particles carried by the same, from the valve stem and the guiding means therefor, whereby the stem will slide freely at all times in the said guiding means and permit the valve to close securely and properly and to cause the full force of the charge to act against the piston.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—

Figure 1 is a side elevation of an exhaust valve having guiding means and a protecting device therefor constructed in accordance with this invention.

Fig. 2 is a longitudinal sectional view of the same the valve stem being in elevation.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2.

Like numerals of reference designate corresponding parts of the several figures of the drawing.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, 1 designates a puppet or exhaust valve provided with a stem 2 operating in a guide 3 and equipped with a sleeve or cap 4 receiving and forming a guard and cover or shield for the said guide whereby the gases, carbon and the like are excluded from the valve stem and effectually prevent it from adhering to the same and causing the valve stem to stick in the guide and interfere with a proper operation of the valve and the correct feeding of the same. The sleeve or cap 4 which may be fixed to the valve stem in any desired manner, either by being formed integral therewith, welded thereon or other equivalent means is closed at its inner end or end nearer the valve 1 by a head 5 and it is provided with a cylindrical opening 6 which receives the guide 3. The guide 3, which has a transverse disk or plate at the smaller end of the tapered tubular portion, is provided with a cylindrical bore or opening 7 for guiding the stem 2 of the valve and it is exteriorly tapered outwardly or away from the valve 1 which provides an intervening space 8 back of the sleeve for causing a draft of air and to assist in preventing accumulation from adhering to the guide. Also the tapered character of the guide forms a relatively sharp edge 9 which will remove any accumulation from the space 8 when the valve is reciprocated. In the reciprocation of the valve the sleeve is of sufficient length to cover always the inner enlarged end of the guide so as to completely protect the guiding means and the adjacent portion of the valve stem. The device is adapted to be readily applied to valve stems and an advantageous operation may be had with the guide of cylindrical form but the greatest advantage will be obtained from the construction disclosed in the drawing.

The tubular projecting portions of the guide or guide proper must be of course of sufficient length to correspond with the stroke of the valves so that the sleeve of the valve stem will afford a proper protection for the guiding means at all times.

What is claimed is:—

1. The combination with a guide having a tapered tubular portion, a valve provided with a stem slidable through the guide, and a sleeve carried by the stem and closed at one end and having a cylindrical opening fitting the larger end of the tapered tubular guide, said tubular guide and sleeve hav-

ing an intervening annular tapered space between them when the closed end of the sleeve is in contact with the larger end of the tapered tubular portion of the guide.

2. The combination with a guide having a tapered tubular portion, and provided at the smaller end thereof with a transverse plate or portion, a valve having a stem slidable in the guide, and a sleeve mounted on the stem intermediate of the ends thereof and having a closed thickened end portion tapered exteriorly, said sleeve being also provided with a cylindrical opening receiving the larger end of the tapered tubular portion of the guide, and a tapered intervening annular space being formed between the guide and sleeve when the closed end of the latter is in engagement with the large end of the tapered tubular portion of the guide.

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

HENRY C. LINDEMANN.

Witnesses:
A. E. GOHRS,
RAY WALKER.