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A. C. ENNIS

VALVE SILENCER

Filed Nov. 12, 1923

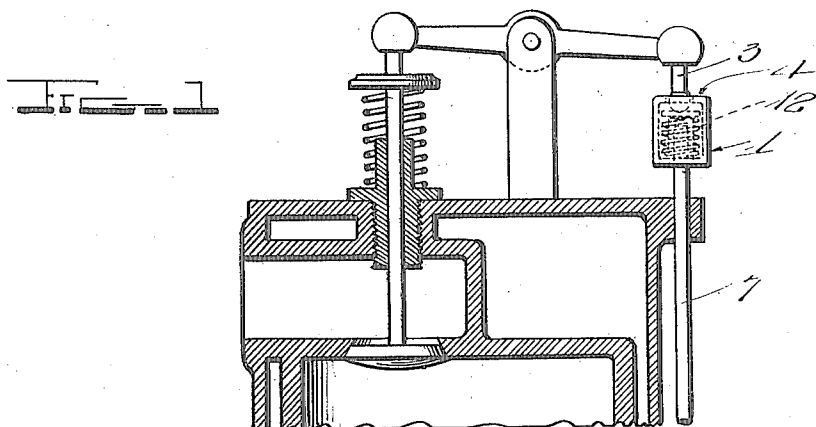


Fig. 2

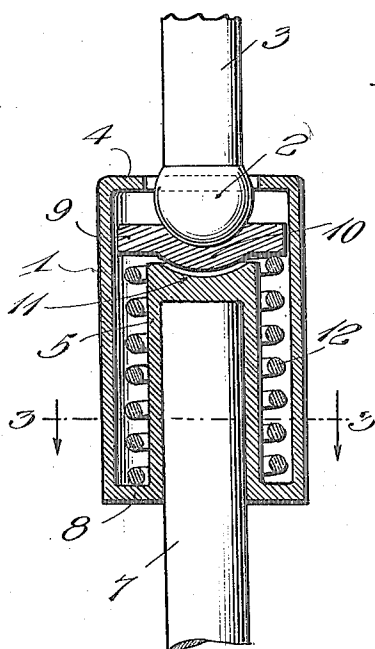


Fig. 3

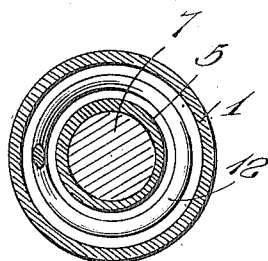
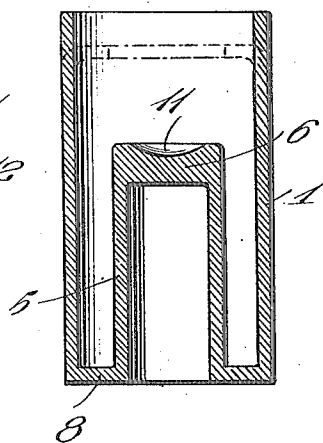


Fig. 4



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UNITED STATES PATENT OFFICE.

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VALVE SILENCER.

Application filed November 12, 1923. Serial No. 674,295.

To all whom it may concern:

Be it known that I, ANDREW C. ENNIS, a citizen of the United States, residing at Smithfield, in the county of Johnston and State of North Carolina, have invented certain new and useful Improvements in Valve Silencers; 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.

My invention relates to improvements in silencers for the push-rods of overhead valves, for automobile and other motors.

The object of the invention is to provide a simply constructed, inexpensive, easily applied, and highly efficient silencer which is of such construction that it may be kept packed with grease to prevent wear and to assist in the silencing operation.

With the foregoing in view, the invention resides in the novel subject matter herein-after described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is a side elevation of the invention showing its application.

Figure 2 is an enlarged vertical sectional view.

Figure 3 is a horizontal section on line 3—3 of Fig. 2.

Figure 4 is a vertical sectional view through the grease-containing casing.

The preferred construction of my invention is illustrated in the accompanying drawing, from which it will be seen that I make use of an outer vertically disposed cylindrical sleeve 1 which is open at its top to receive the lower spherical end 2 of an upper push-rod section 3, the upper edge of the sleeve 1 however, being turned inwardly to provide a flange 4, for a purpose to appear. Disposed concentrically within the sleeve 1, is a relatively small inner sleeve 5 whose upper end is closed as at 6 and is spaced downwardly within the upper end of the outer sleeve 1. The lower end of the sleeve 5 is open to receive the upper end of a lower push-rod section 7, and a closure 8 is provided for the space between the lower ends of the two sleeves, said closure being preferably integral with said sleeves as shown.

Within the upper portion of the sleeve 1,

over the closed upper end 6 of the sleeve 5, is a floating disk 9 having a concavo-convex central portion 10 with its concave side disposed upwardly to receive the spherical end 2 of the upper push-rod section 3. The closed upper end of the inner sleeve 5 is formed with a shallow concave recess 11 receiving the convex lower side of the disk portion 10. While this construction is preferable, it will be seen that in some instances, the disk 9 might be flat, and the parts 3 and 6 shaped accordingly.

A coiled compression spring 12 surrounds the inner sleeve 5 and forces upwardly against the disk 9, and downwardly upon the closure 8. It may here be stated that before the device is installed, the spring is prevented from forcing the disk 9 out of the sleeve or casing 1, by the flange 4.

The casing or sleeve 1 is intended to be packed with grease, and it will be seen that as the spring 12 forces upwardly upon the disk 9 and downwardly upon the casing or sleeve 1, a slight space will normally be created between the inner sleeve end 6 and said disk (see Fig. 2). This space fills with grease from the casing or sleeve 1 and when the push-rod section 7 thrusts upwardly, the thrust of the sleeve end 6, against the disk 9, is cushioned by the grease between the two. Hence, there will be no noise, such as that occasioned when two valve-operating parts which are normally spaced apart, are suddenly brought into contact with each other. The disk 9 is always held tightly against the lower end of the upper push-rod section 3, by the spring 12, and the end 6 of the inner sleeve 5 is similarly always held tightly against the upper end of the lower push rod section 7, so that the only space existing, is between the upper end 6 of the inner sleeve 5 and the disk 9, but as this space fills with grease, which cushions the upward thrust as above set forth, no noise will result.

As excellent results are obtainable from the details disclosed, they are preferably followed, but within the scope of the invention as claimed, numerous minor changes may be made.

I claim:

1. A device of the class described comprising an outer sleeve open at its upper end to receive the lower end of an upper

push-rod section, an inner sleeve disposed concentrically in said outer sleeve and having its lower end open to receive the upper end of a lower push-rod section, the upper end of said inner sleeve being closed and spaced downwardly from the upper end of said outer sleeve, a disk in said outer sleeve over said inner sleeve to abut the upper push-rod section, a closure between the lower ends of the two sleeves, and a coiled compression spring surrounding said inner sleeve with its upper end in contact with said disk and its lower end resting on said closure.

2. A structure as specified in claim 1; said disk having a concavo-convex central portion with its convex side disposed downwardly, the closed upper end of said inner

sleeve having a concave recess receiving said convex side.

3. A device of the class described comprising an outer sleeve open at its upper end to receive the lower end of an upper push-rod section, an inner sleeve disposed concentrically within said outer sleeve in spaced relation and having its lower end open to receive the upper end of a lower push-rod section, the upper end of said inner sleeve being closed and being spaced downwardly from the corresponding end of the outer sleeve, and a web connecting the lower ends of said sleeves for closing the space therebetween.

In testimony whereof I have hereunto affixed my signature.

ANDREW C. ENNIS.