PATENT SPECIFICATION

226,802

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(Patent of Addition to No. 191,006: Dec. 28, 1921, as improved upon or modified by No. 195,972: April 8, 1922).

Complete Accepted: April 23, 1925.

COMPLETE SPECIFICATION.

Improvements in or relating to Liquid Shock Absorbers.

We, LANCIA & C., an Italian company, of 99, via Monginevro, Turin, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention is a modification of or improvement in that claimed in Specification No. 191,006 relating to hydraulic shock absorbers as improved upon or modified by our invention as claimed in our Patent of Addition No. 195,972.

According to the present invention, the stem, at the end where it is provided with the piston has a hollow head occupied in part by a sleeve having on its lower end a calibrated opening, said sleeve being provided with a rim acted on by a spring and forming a valve to permit the liquid to flow during the motion of the piston in one direction.

Another feature of the invention consists in providing a coil spring to damp the shocks of the lower end of the hollow member.

Also, the main spring may be associated with one of a shorter length and adapted to come into operation when the said main spring is partly compressed.

In the accompanying drawing is illustrated by way of example a construction according to this invention in which,

Figure 1 is a central section of the entire absorber, while

Figure 2 shows the piston construction on an enlarged scale.

As shown by Figure 1, the absorber is provided with a top sleeve 1^1 to which is fastened the end of the concentric stem 12, and within it can move the hollow member 5 having a choked portion 5^1 dividing the internal space of said hollow member into two chambers.

In the construction illustrated, besides the spring 6, a second spring 6^1 having a shorter extension is located between the support outside the tube 5 and the end of the sleeve 1^1, said spring being located on the tube 5 and adapted to bear on the end of a tubular extension 1^{11} after the spring 6, has been compressed to a given extent. Therefore the relative motion of the hollow member 5 and sleeve 1^1, in one direction is more efficiently damped near the end of the stroke.

In order that the lower end of the hollow member 5 may be prevented from striking on the bottom of the sleeve 8^1, on this bottom is arranged a coil spring 24 on which bears a disc 25, say of fibre, which is fastened on the bottom of the hollow member 5.

The stem 12 has a passage 12^1 through it, said passage leading through an opening 26 to a recess 27 provided on the outer surface of the stem and intended to replace the series of ports 23 described in the prior Specification No. 195,972.

The piston 11 (as shown in detail in Figure 2) consists of a ring perforated by ports 15 parallel with its axis and closed by flaps 16^1.

The said ring is arranged on the end of the stem 12 which forms a recessed head in communication with chamber 14 through ports 19^1, said head having a sleeve 28 the perforated bottom of which provides a calibrated communication with the passage 12^1 in the stem 12. The annular space between the sleeve 28 and the mouth of the stem is covered by a rim 29 acting as a valve and held closed by a spring 30.

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Therefore when the piston 11 approaches the lower end of the tube 5, the liquid passes into the chamber 14 through ports 15 and into the passage 12^1 through the calibrated opening of the sleeve 28. On the contrary when the reverse motion takes place, the liquid contained in the chamber 14 flows through the ports 19^1 and opens the valve 29 to enter the chamber 10.

In other respects the operation of the shock absorber is similar to that described in the prior Specification No. 191,006.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An improvement in or modification of the liquid shock absorber claimed in Specification No. 195,972, characterised by the fact that the stem, at the end where it is provided with the piston, has a hollow head occupied in part by a sleeve having on its lower end a calibrated opening, said sleeve being provided with a rim acted on by a spring and forming a valve to permit the liquid to flow during the motion of the piston in one direction.

2. An improvement in or modification of the liquid shock absorber claimed in Specification No. 195,972, characterised by the fact that on the lower end a coil spring is arranged to damp the shocks of the lower end of the hollow member hereinbefore described.

3. An improvement in or modification of the liquid shock absorber claimed in Specification No. 195,972, characterised by the fact that with the main spring is associated one of a shorter length and adapted to come into operation when the said main spring is partly compressed.

4. The shock absorber substantially as described or substantially as illustrated in the accompanying drawing.

Dated this 8th day of December, 1924.

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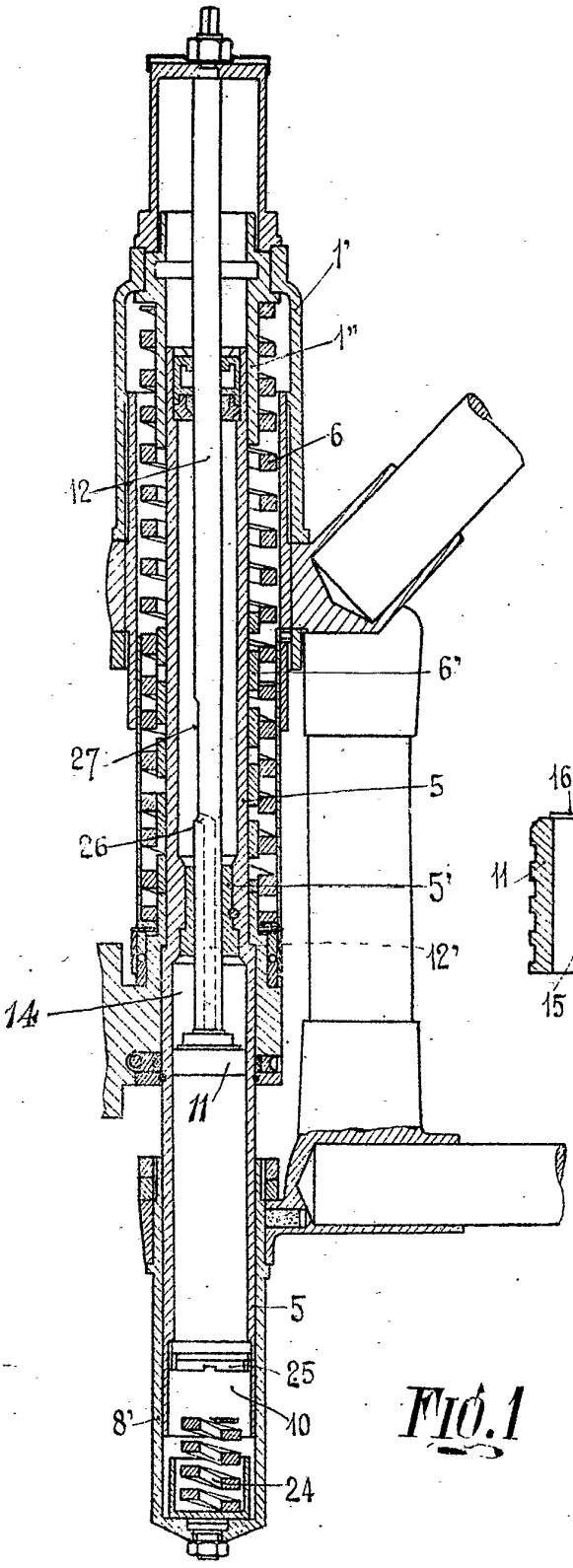

FIG. 1

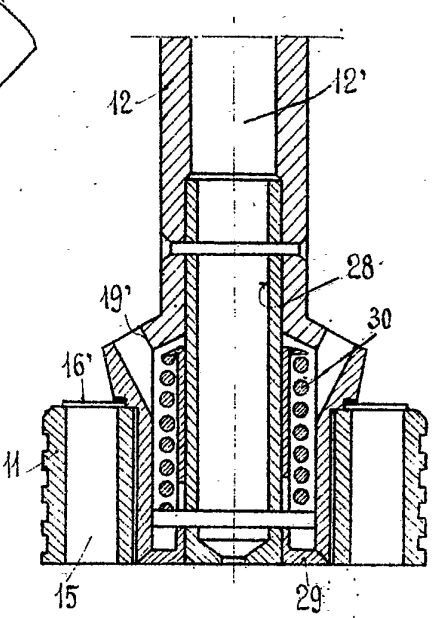

FIG. 2

Malby & Sons, Photo-Litho