Sept. 13, 1932. L. F. WENDELSTADT 1,877,543

SHOCK ABSORBER

Filed Oct. 21, 1930

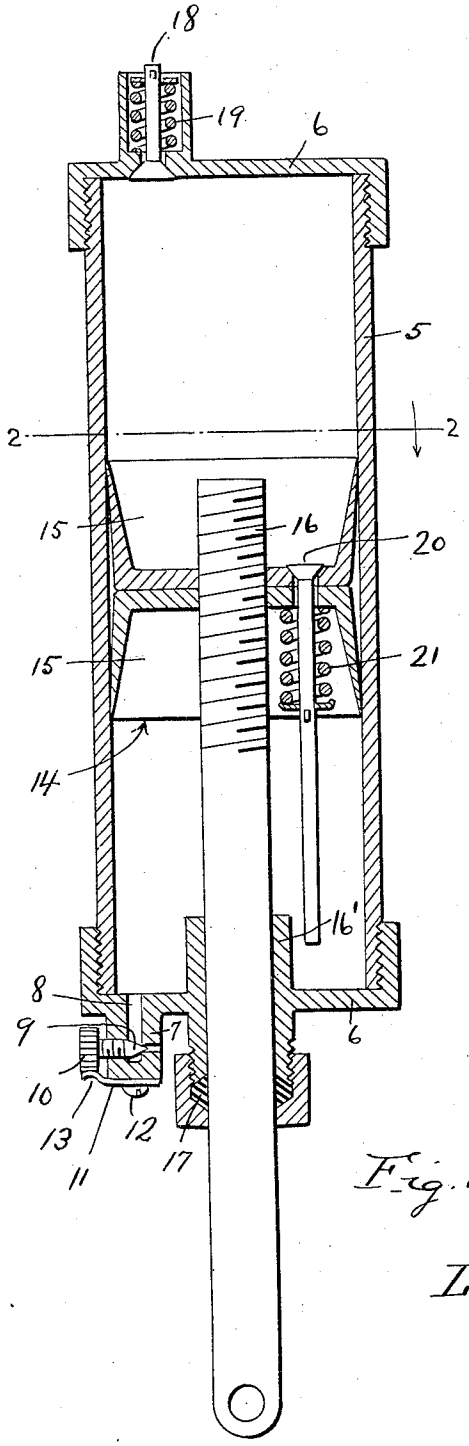


Fig. 1.

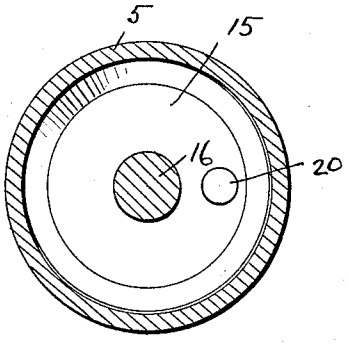


Fig. 2.

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LUCIUS F. WENDELSTADT, OF CANAAN, NEW HAMPSHIRE

SHOCK ABSORBER

Application filed October 21, 1930. Serial No. 490,264.

This invention appertains to new and useful improvements in shock absorbers and the same has as its principal object the provision of a shock absorber which will be both efficient and economical.

The principal object of this invention is to provide an inexpensive shock absorber which will permit quick adjustment to vary the reaction thereof to shock.

These and other important objects of the invention will become apparent to the reader of the following specification.

In the drawing:—

Figure 1 represents a longitudinal sectional view through the absorber.

Fig. 2 represents a cross sectional view taken substantially on the line 2—2 of Fig. 1.

Referring to the drawing wherein like numerals designate like parts, it can be seen that this novel shock absorber includes a barrel 5 externally threaded at each end to receive a cap structure 6, the lower cap structure 6 being provided with a valve shell 7 through which a duct 8 extends. A needle valve 9 is threaded into the body 7 with its pointed edge protruding into the duct 8, so as to vary the amount of air that can pass therethrough.

The needle valve 9 has a knurled head 10 and a leaf spring 11 secured to the body 7 as at 12 and which is provided with a curved free end portion 13 for engaging the knurled head 10 of the needle valve to retain the valve in an adjusted position.

A plunger structure generally referred by numeral 14, is made up of the two cups 15—15 which have registering openings therein to receive the threaded end portion of the plunger rod 16. This rod extends through the tubular guide 16′ and packing gland 17.

As can be clearly seen in Figure 1, the piston cups 15—15 have a stem protruding therethrough equipped at its upper end with a valve engageable in the valve seat of the upper cup 15. The stem of this valve depends into the lower portion of the barrel 5 and a spring 21 is provided thereon for normally retaining the valve in a closed position. (As shown in Fig. 1).

To permit the passage of air to the cylinder when the piston is lowered, a valve 18 is provided in the head 6 and this valve is equipped with a spring 19 for normally maintaining the valve closed.

The shock of the vehicle wheel dropping into a depression in a roadway is absorbed by the downward motion of the piston 14 compressing air in the lower portion of the barrel 5. When the piston reaches a position substantially below the middle point of the barrel, 5, the rod or stem of the valve 20 will engage the lower head 6 of the barrel and resisting the tension of the spring 21 will open the valve 20 so that the compressed air below the piston can escape through to the top side of the piston. Obviously on this downward stroke of the piston, the valve 18 opens to admit air into the upper portion of the barrel, above the piston.

Numeral 9 designates a needle valve which can be regulated to always maintain an air by-pass through which air can be forced on the down stroke of the piston and through which air is sucked on the upstroke of the piston. Obviously, the valve 20 will not open on the downstroke unless the stem thereof engages the head 6 at the lower end of the barrel 5, as in such instances where the shock is slight, the by-pass at the valve 9 will take care of the cushioning effect of air under compression escaping to the atmosphere.

While the foregoing specification discloses the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit or scope of the invention as claimed hereinafter.

Having thus described my invention, what I claim as new is:—

1. A shock absorber comprising a barrel closed at its opposite ends, a piston operative in the barrel, a piston rod extending from the piston through one end of the barrel, a valve in the piston, a stem projecting

from the valve in the piston toward one end of the barrel, an inlet check valve in the opposite end of the barrel, the end of the barrel opposed to the valve stem of the piston being provided with a port and an adjustable needle valve for closing the said port.

2. A shock absorber of the character described comprising a cylinder, a piston operative in the cylinder, a valve in the piston, a downwardly extending stem on the valve depending below the piston, a spring interposed between the piston and the stem for normally maintaining the valve in the piston closed, a check valve in the end of the cylinder opposed to the side of the piston opposite to the side from which the stem extends, an air by-pass at the opposite end of the cylinder, and a needle valve in the said air by-pass.

In testimony whereof I affix my signature.

LUCIUS F. WENDELSTADT.