Nov. 14, 1950 J. L. SJOLANDER 2,530,034

SPRING DAMPENER

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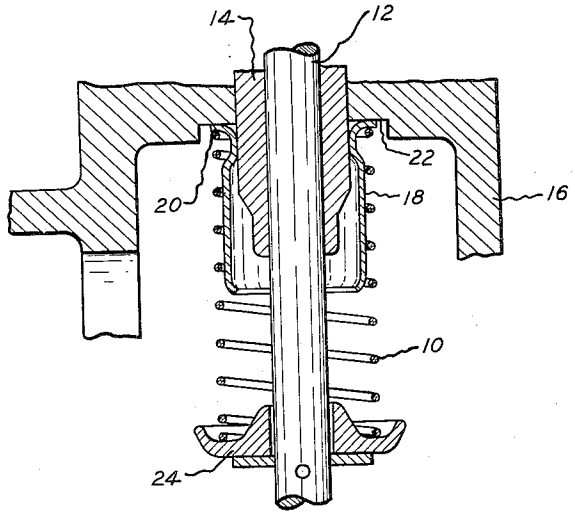



FIG. I.

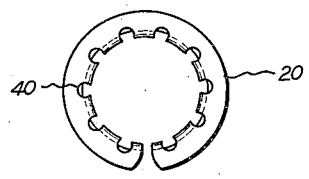



FIG. IV.

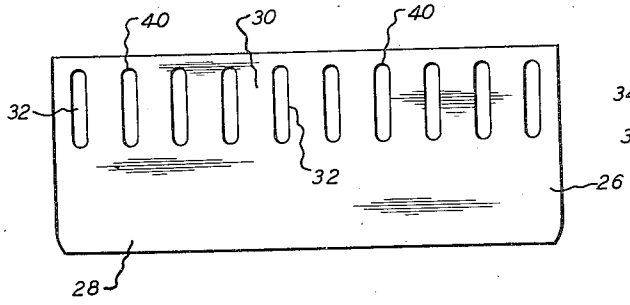



FIG. II.

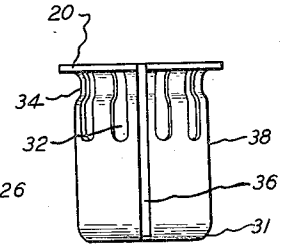



FIG. III.

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SPRING DAMPENER

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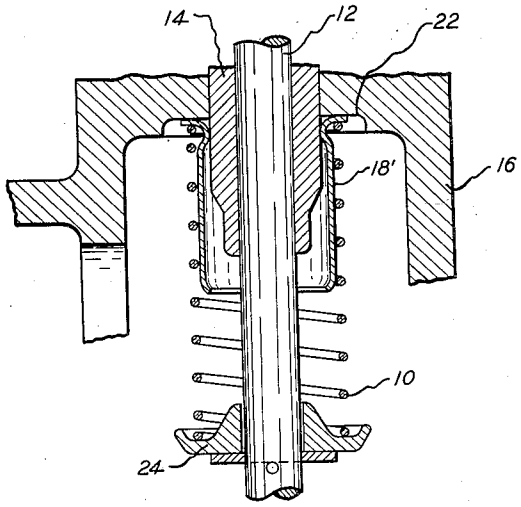



FIG. V.

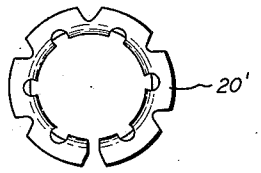



FIG. VIII.

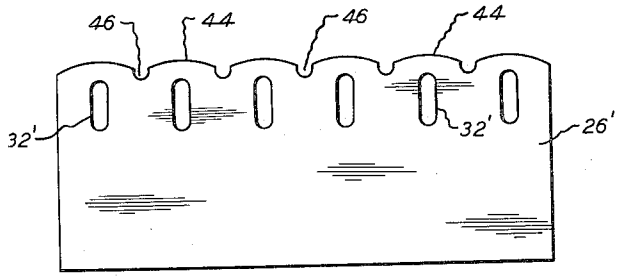



FIG. VI.

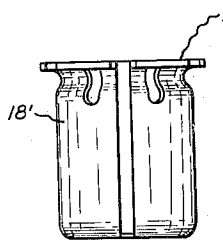



FIG. VII.

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# UNITED STATES PATENT OFFICE

2,530,034

## SPRING DAMPENER

John L. Sjolander, Cleveland, Ohio, assignor to Cleveland Wire Spring Company, Cleveland, Ohio, a corporation of Ohio

Application January 31, 1947, Serial No. 725,545

2 Claims. (Cl. 267—1)

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The present invention relates to improvements in spring dampeners, being an improvement upon the construction disclosed in my Patent No. 1,988,341, granted January 15, 1935.

As in the case of the dampener disclosed in the above-mentioned patent, the purpose of the present invention is to provide effective means for reducing the vibration of coil springs and eliminating longitudinal and lateral surge. Coil springs used for intake and exhaust valves of internal combustion engines offer one field of application of my improved dampener.

In lieu of a split spring metal having a plurality of depending resilient fingers as disclosed in my aforesaid patent, my improved dampener is developed from a relatively solid blank which is only perforated or slotted adjacent one end to facilitate the forming of the radial flange at one end.

Thus, one of the objects of the present invention is to provide an improved dampener of the type described in the form of a split relatively solid wall member presenting maximum surface to the inside of the convolutions of the spring upon which the member exerts a constant frictional pressure.

Another object is to provide a dampener of the type described having a relatively solid split cylindrical wall portion.

Another object is to provide a dampener of the type described having a relatively solid split cylindrical wall portion and a perforated flange portion.

These and other objects and advantages residing in the present invention will become apparent from a consideration of the following specification and claims.

In the drawings, wherein two forms of the invention are illustrated,

Fig. I is a side view of the invention inserted into the valve spring of an internal combustion engine,

Fig. II is a development of a sheet metal blank from which the dampener is formed,

Fig. III is a side view of a dampener formed up from the blank of Fig. II,

Fig. IV is a top view of Fig. III,

Fig. V is a view similar to Fig. I of a slightly modified form of the invention,

Fig. VI is a development of the blank from which the modification of Fig. V is formed,

Fig. VII is a side elevational view of the blank, of Fig. VI, formed up, and

Fig. VIII is a top view of Fig. VII.

In the form of the invention illustrated in Figs. I to IV, the coil spring 10 for the valve stem 12 is shown operating in a bushing 14 in the cylinder block 16. The dampener 18 is piloted on the lower end of the bushing 14 with its upper flanged end 20 abutting the counter sink 22 of the block 16 under the stress of the spring 10 pressed between the flange 22 and the spring seat 24.

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As more clearly shown in Fig. II to IV, inclusive, the dampener 18 is formed from a resilient sheet metal blank 26 generally rectangular in shape. The lower section 28 is of solid sheet metal construction with the upper section 30 being provided with elongated, transversely arranged slots or openings 32. In forming the blank 26 into the shape shown in Figs. III and IV, the slot 32 facilitates a necking down at 34 and the turning of the flange 20. After forming the section 28 of the blank 26 is substantially cylindrical, having a narrow transverse slit at 36.

By having the outer diameter of the lower cylindrical portion 38 of the dampener 18 slightly larger than the inside diameter of the convolutions of the spring 10, at the time the dampener 18 is inserted into the spring 10 as shown in Fig. I, the split 36 is substantially closed and a relatively solid cylindrical surface exerts a constant frictional pressure along a substantial portion of the spring 10. This frictional pressure on the spring 10 will dampen the action of the spring 10 in service, reduces its vibration, and substantially obviates a tendency to laterally surge. Because of its solid cylindrical shape, the portion 38 exerts a substantially equal and well-balanced frictional pressure upon the convolutions of the spring 10 within which it is embraced. The lower edge 31 of the portion 38 is slightly tapered to permit insertion of the dampener into the spring 10.

From Fig. IV it will be noted that the upper portion 40 of the slot 32 extends into the flange 20. Aside from facilitating the forming of the flange 20, this arrangement partially overcomes the normal stiffening action thereof.

The operation and function of the dampener 18 is substantially that disclosed in my aforesaid patent, to which reference may be made for a more detailed explanation; the differences between the present disclosure and the aforesaid patent being structural.

In the modification of Figs. V to VIII, inclusive, the dampener 18' is formed from a sheet metal blank 26' having spaced slots 32'. To facilitate forming the flange 20', one edge of the blank 26' is provided with an arcuate portion 44

separated by notches 46. This arrangement greatly assists in the turning of the flange 20' and results in an increased tool life. It will be noted that the notches 46 and slots 32' are disposed in staggered relation.

Having thus described my invention, what I claim as new and desire to cover by Letters Patent is:

1. A spring dampener of the type described comprising a longitudinally split sleeve forming throughout a substantial portion of one end and intermediate portion a substantially continuous unbroken surface, an out-turned flange at the opposite end, the portion of said sleeve adjacent said flange defining longitudinally extending circumferentially spaced slots located between said intermediate portion and flange and projecting into a portion of said flange.

2. A spring dampener of the type described in claim 1 wherein the outer periphery of said flange has circumferentially spaced notches defined therein, said notches being in staggered relationship to said slots.



JOHN L. SJOLANDER.


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