

J. BOLAND.
SHOCK ABSORBER.
APPLICATION FILED JULY 3, 1912.

1,062,320.

Patented May 20, 1913.

FIG. 1.

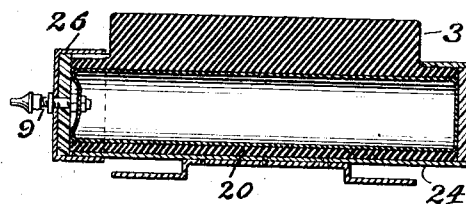
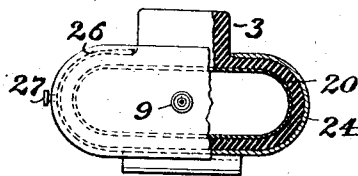
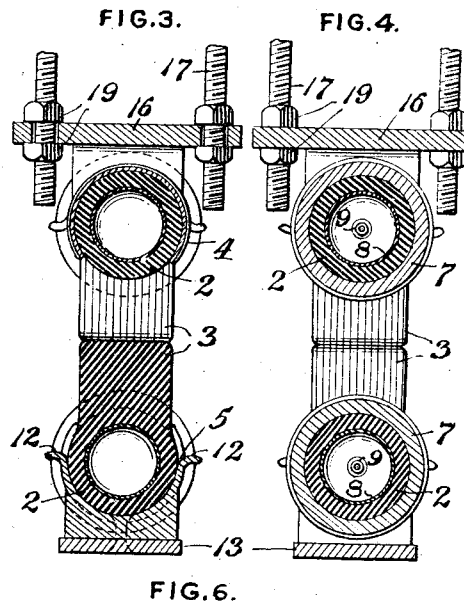
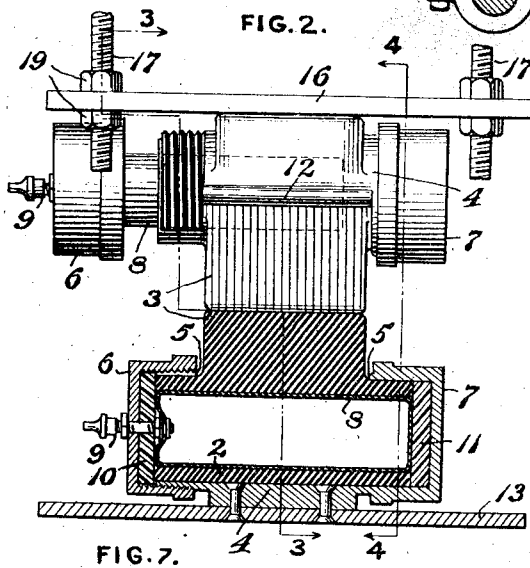
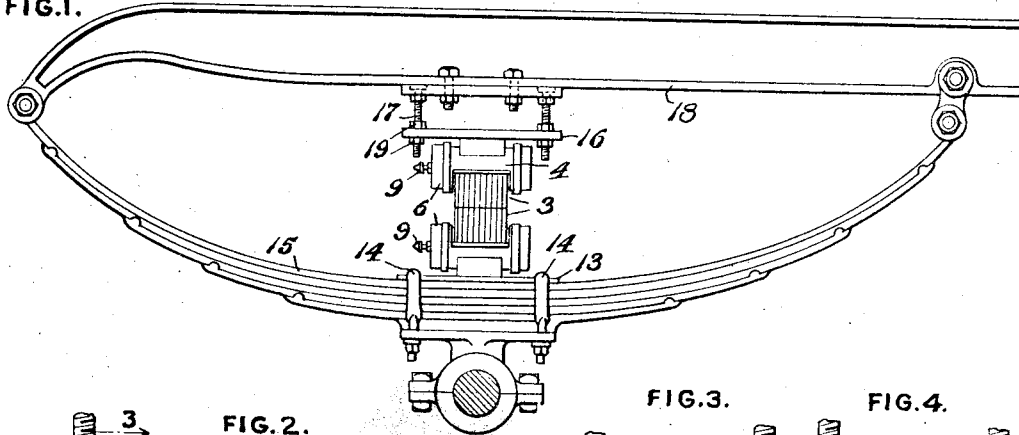


FIG. 5.

WITNESSES

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JOSEPH BOLAND, OF PITTSBURGH, PENNSYLVANIA.

SHOCK-ABSORBER.

1,062,320.

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To all whom it may concern:

Be it known that I, JOSEPH BOLAND, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Shock-Absorbers, of which the following is a specification.

The object of this invention, is to provide simple and efficient shock absorbing means adapted for either light or heavy vehicles, the device preventing severe shocks or jars from being communicated to the vehicle body and relieving the springs of breaking strains.

In the accompanying drawings, Figure 1 is an elevation of a shock absorber of double form in position between the frame and spring of the vehicle. Fig. 2 illustrates the upper portion of the double absorber in side elevation with the end cap detached, and the lower portion of the absorber in longitudinal section. Figs. 3 and 4 are vertical cross sections on lines 3-3 and 4-4, respectively, of Fig. 2. Fig. 5 is an elevation similar to Fig. 1, illustrating an absorber of single form. Fig. 6 is a longitudinal section of the form of absorber shown in Fig. 5, and Fig. 7 is an end view of the same, partly in section.

Referring to the drawings, each of the shock absorbing devices is here shown consisting of a cylindrical body or shoe 2 of flexible material, tubular and open at both ends, and formed integral therewith is buffer head 3 which is shorter than the body with the opposite ends of the latter projecting beyond the buffer head, as shown. Body 2 may be a composite of textile fabric and rubber, much like the outer casing of a pneumatic tire, and buffer 3 is preferably a solid block of resilient rubber.

Body 2 is confined within tubular casing 4 having a side opening 5 through which head 2 projects, the opening extending to one end of casing 4 and with said end adapted to be closed by the cap-like head 6. The opposite end 7 of the casing may be integral with the casing body as shown. With cap 6 removed the tubular body and its projecting buffer head may be readily inserted, one end of the body entering end 7 of the casing with the opposite end confined by cap 6 when the latter is screwed on.

Fitting within the tubular body 2 is the inflatable tube 8 which is secured at one end by valve device 9 to cap 6. The tube closely fits within the body with the tube ends bear-

ing against gaskets 10 and 11, respectively, within opposite ends of the casing, thereby permanently holding the tube when inflated and preventing any portion thereof from bulging in such manner as to be torn or injured. With an adequate pressure of air within the tube, say seventy-five pounds to the square inch, more or less, according to the type of vehicle and load, all shocks or jars communicated to the buffer head 2 are dissipated without injury either to the vehicle body or its springs. Flexible body 2 is so held and confined by casing 4 that it cannot be injuriously strained or distorted. The casing does not in any manner interfere with the desired resilient action, the rounded edges 12 thereof permitting the buffer head 3 to compress and expand without hindrance.

The absorber may be secured in position by various means. In the adaptation shown in Fig. 1, two opposed shock-absorbing devices of the same general construction are utilized, with the lower of the two devices provided with a base plate 13 which is secured by clips 14 of vehicle spring 15. The upper shock absorber may be secured to plate 16, with bolts 17 depending from the vehicle frame 18 adjustably secured to said plate by nuts 19. By this means the shock absorber may be adjusted relatively to the clear space between the frame and spring, as will be understood. When two of the shock-absorbing devices are utilized as in Fig. 1, buffer blocks 3 thereof are preferably normally in engagement as shown.

In the adaptation shown in Fig. 5, a single shock absorber is utilized, being held in position in manner similar to the lower of the two devices shown in Fig. 1. Fig. 5 also illustrates an adaptation of the device designed for use where the available space between the vehicle body and spring is limited. In this construction the outer casing 24 and the flexible body 20 are preferably oval in cross-section, as shown in Fig. 7, with the buffer head 3 projecting from a flat side of the body. The transverse extent of the oval body affords the buffer head quite as much resiliency as the circular body of the first described adaptation. In this form the removable casing head 26 is simply slipped onto the extremity of the casing and is secured by set screws 27; the threads of the circular construction first described being omitted.

It will be understood that the shock ab-

sorbing device may be used singly as in Fig. 5, or double as in Fig. 1, without departing from the invention.

I claim:—

- 5 1. A shock absorber comprising a resilient body, a buffer head shorter than the body and projecting therefrom with opposite ends of the body extending beyond the head, and a casing having an opening between its ends 10 through which the buffer head extends with the ends of the body confined in the ends of the casing.
2. A shock absorber comprising a resilient body, a buffer head projecting from the 15 body between the ends of the latter, and a casing having an opening through which the buffer head extends with the casing ends embracing the ends of the resilient body and with one of the casing ends removable.
- 20 3. A shock absorber comprising a resilient body, a buffer head projecting from the body between the ends of the latter, a casing having an opening through which the buffer head projects, the casing being open at one 25 end with the buffer-head opening extending through said end and with the opposite end of the casing adapted to embrace one end of the resilient body, and a cap-like device for closing the open end of the casing and con- 30 fining therein an end of the resilient body.
4. A shock absorber comprising a tubular flexible body open at its ends, a buffer head projecting from the body, a tubular casing adapted to embrace the body and having an 35 opening through which the buffer head extends, a removable cap fitting and closing one end of the casing, and an inflatable tube fitting within the tubular body with the ends of the tube bearing against opposite ends of 40 the casing.
5. A shock absorber comprising a tubular

flexible body, a body-inclosing casing open for subjecting the body to shocks, a removable head for the casing, and an inflatable tube secured to the head and adapted to be 45 entered in the tubular body.

6. A shock absorber comprising a tubular flexible body, a buffer head projecting from the body with the ends of the latter project- 50 ing beyond the head, a casing having an opening through which the buffer head projects, and an inflatable tube inserted within the body with opposite ends of the casing forming abutments for the tube ends and with the tube when inflated normally hold- 55 ing the buffer head projected from the casing.

7. A shock absorber comprising a resilient body, a resilient buffer head formed integral with and projecting from the body between 60 the ends of the latter, and a rigid casing having end portions which embrace the ends of the body and with an opening in the casing between its ends through which the resilient buffer head extends. 65

8. A shock absorber comprising a hollow resilient body, a non-hollow resilient buffer head formed integral with and pro- 70 jecting from the body between the ends of the latter, a casing having end portions which embrace the ends of the resilient body and having an opening between said ends through which the resilient buffer head ex- 75 tends, and means for maintaining air under pressure within the resilient body.

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

JOSEPH BOLAND.

Witnesses:

J. M. NESBIT,
F. E. GAITHER.