M. H. NABER.

SHOCK ABSORBER.

APPLICATION FILED JAN. 25, 1918. RENEWED APR. 14, 1920.

1,344,593. **Patented June 22, 1920.**

Fig. 1.

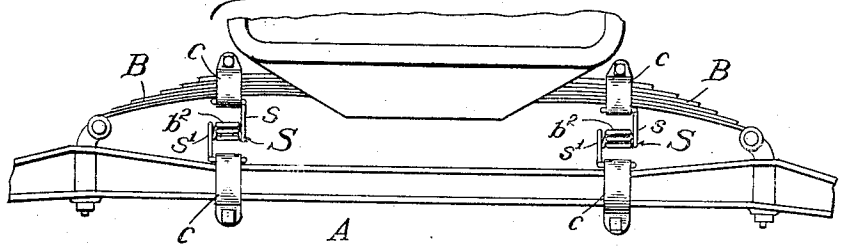


Fig. 2.

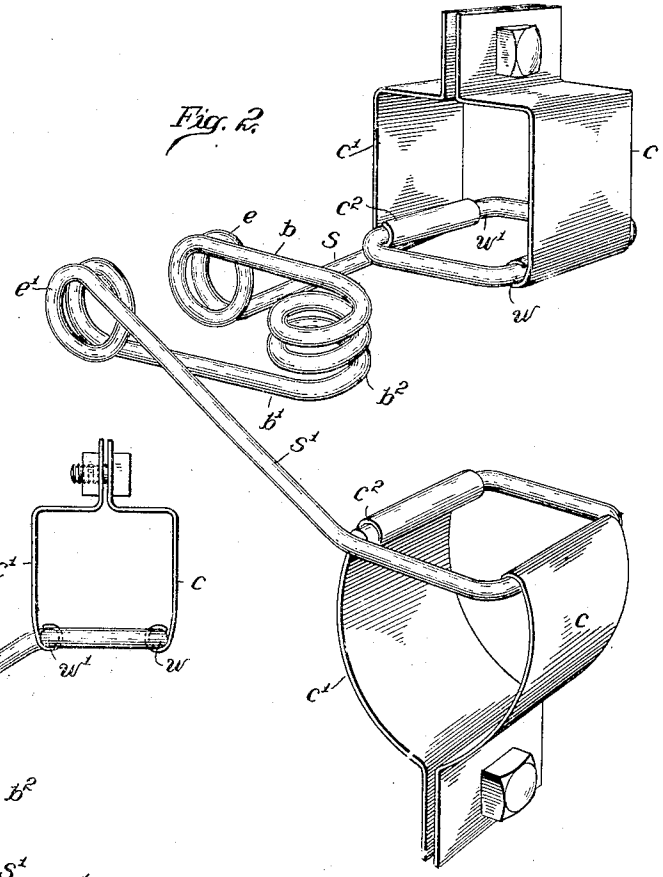
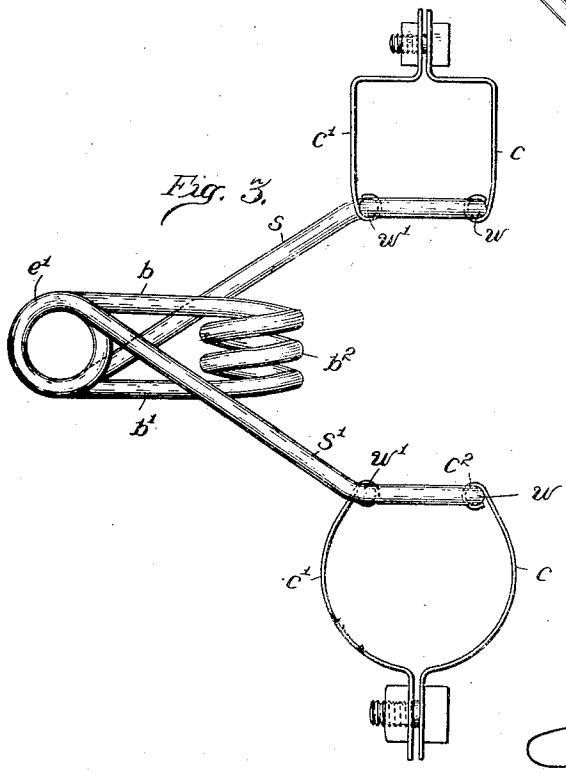


Fig. 3.



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SHOCK-ABSORBER.

1,344,593. Specification of Letters Patent. Patented June 22, 1920.

Application filed January 25, 1918, Serial No. 213,803. Renewed April 14, 1920. Serial No. 373,934.

To all whom it may concern:

Be it known that I, MOSES H. NABER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shock-Absorbers, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to shock-absorbers for automobiles, and its object is to provide a new and useful spring device, which not only will cushion both the drop and rebound of the auto body, but will provide an increasing resistance to its rebound beyond the normal position.

The invention consists in the matters hereinafter described and pointed out in the appended claims.

In the acompanying drawings—

Figure 1 is a view in elevation of a portion of an automobile equipped with my invention;

Fig. 2 is a perspective view of the absorber detached from the automobile, and

Fig. 3 is a side view of the same.

In the drawings in which like letters of reference indicate the same or similar parts in the several views, the letter S designates the spring portion of the device which is made of a single length of wire formed with an upper and a lower wing by which it is respectivcly attached to opposing parts of the machine, the wings being formed by bending the ends of the length of wire into loops each comprising a pair of parallel strands w, w'. Each wing is thus adapted to receive a pair of clips c, c', by which it is attached to its associated part of the machine; in the application of the device illustrated in Fig. 1 the clips of the bottom wings are secured to the axle A and those of the top wings to the springs B of an automobile. The clips are metallic plates each having a loop c^2 at one end by which it is pivotally mounted on one of the strands of a wing which are of sufficient length to afford a wide bearing for the plates of the clips and to make it possible to use clips of considerable width, and the clips are of suitable size or dimensions so that each pair will encircle the associated part and have their opposite or meeting ends secured together by suitable bolts and nuts as shown.

The wire of each absorber extends from its wings in a pair of arms s, s', which project from the outer ends of the wings in the same direction but in different vertical planes and terminate in one or more vertical coils e and e', respectively, the coils being disposed upon the inner sides of the arms so as to face each other and being arranged in horizontal alinement. The arms are angularly disposed to their wings and are diagonal or cross each other so that the arm of the upper wing merges with its coil at the lower portion thereof and the arm of the lower wing merges with its coil at the upper portion thereof. The wire extends reversely from the opposite portions of the coils toward or in the direction of the wings in substantially horizontal legs b and b', which are in different vertical planes from each other and also from the arms s and s', and which are united in any suitable manner as before by the horizontally disposed coils b^2. The wings carrying the clips project in opposite directions inwardly into the longitudinal vertical plane of the coils b^2, so that the clips of each absorber stand in vertical alinement at approximately the central line of the absorber.

In positioning the absorber it is placed between the axle and spring with the horizontal coils b^2 under the machine and in such position that its clips will engage the axle and spring with the parts of the absorber in natural position so that it is neither compressed or extended to any considerable extent. The bolts are then passed through the openings in the meeting ends of the clips and fastened by suitable nuts. The absorbers are thus arranged according to the relation of the springs and axles or other parts of the machine; in the arrangement shown in the drawing as a typical example the axle and spring are parallel and so a pair of the absorbers are connected to them as shown. The absorbers cushion the drop downward of the body carried on the springs, and the diagonal disposition of each arm tends to put its vertical coils under an accumulating or increasing tension as its wing is moved away from its neutral point or the normal separation of the wings is increased, so the absorbers provide a gradually increasing resistance to the rebound of the body beyond its normal position and tend to stabilize the action of the springs and to minimize shocks and vibrations resulting from the blows of high speeds or rough roads. The diagonal disposition of the arms

s and *s'* enables them to wind up their coils when the wings move away from each other, and so the car-body upon its rebound is subjected to an increasing resistance due to the winding up of these coils. The arm of the upper wing with its vertical coil in effect forms a spring resistance to all downward thrusts of the auto body, while the arm of the lower wing with its vertical coil in effect forms a spring resistance to all upward thrusts of the axle, and as both these coils are placed under increasing resistance or accumulate tension upon any abnormal separation of their wings the rebound of the body is taken up and neutralized.

The absorber may be attached at any suitable point or location; I have shown it attached between the auto spring and axle, but it may be otherwise located, as for example between the auto body and running gear or between the upper and lower portions of the auto spring.

I claim:

1. A shock-absorber for automobiles comprising a spring composed of a length of wire having an attaching wing at each end formed of parallel strands, arms extending diagonally from the outer ends of the wings in different vertical planes, vertical coils at the ends of the arms in the same horizontal plane and wound up when the wings are separated, and an integral pair of legs projecting reversely from the opposite portions of the coils and united in a suitably disposed bend, and clips mounted on the strands of each wing.

2. A shock-absorber for automobiles comprising a spring composed of a lengh of wire having a wing at each end formed of parallel strands, arms extending diagonally from the outer ends of the wings in different vertical planes, vertical coils at the ends of the arms in the same horizontal plane, the arm of the upper wing merging with its coil at the lower portion thereof and the arm of the lower wing merging with its coil at the upper portion thereof, legs projecting from the opposite portions of the coils in opposite direction to the arms and terminating in an intermediate set of horizontal coils, and clips on the strands of each wing.

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

MOSES H. NABER.

Witnesses:

EDWARD J. PHILLIPS,

J. MCROBERTS.