

M. L. SENDERLING.  
SPRING CLIP CONSTRUCTION.  
APPLICATION FILED APR. 21, 1908.

911,545.

Patented Feb. 2, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

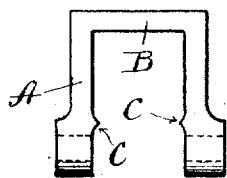


Fig. 2.

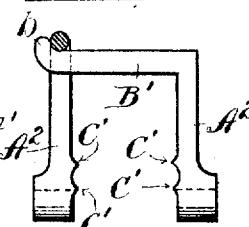
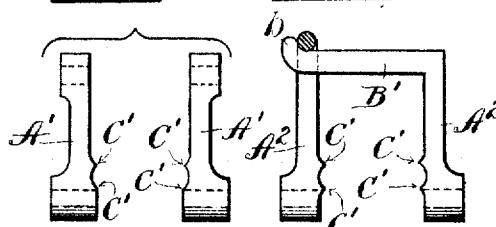


Fig. 4.

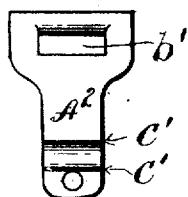


Fig. 5.

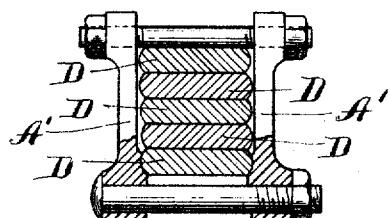


Fig. 7.

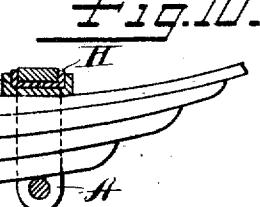
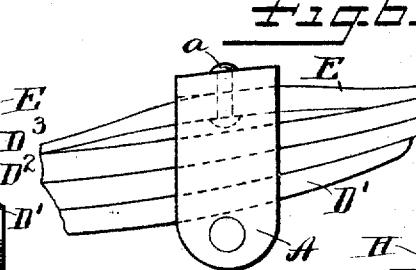
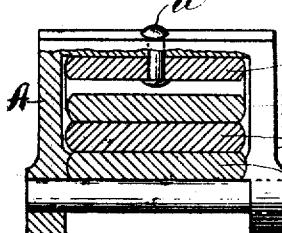
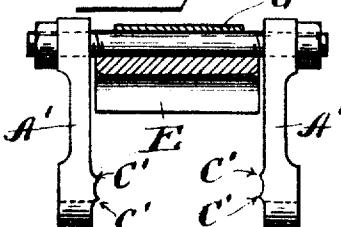


Fig. 8.



Witnesses:

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# UNITED STATES PATENT OFFICE.

MARTIN L. SENDERLING, OF JERSEY CITY, NEW JERSEY.

## SPRING-CLIP CONSTRUCTION.

No. 911,545.

Specification of Letters Patent.

Patented Feb. 2, 1909.

Original application filed May 13, 1907, Serial No. 373,306. Divided and this application filed April 21, 1908.  
Serial No. 428,426.

To all whom it may concern:

Be it known that I, MARTIN L. SENDERLING, a citizen of the United States, residing at Jersey City, Hudson county, State of New Jersey, have invented certain new and useful Improvements in Spring-Clip Construction, of which the following is a full, clear, and exact description.

My invention relates to improvements in vehicle springs, and consists mainly in the construction of a clip which is adapted to a great variety of springs which may be readily attached without the necessity of providing the usual interlocking stud or rivet, such as now commonly employed.

This application is a division from my former application, Serial No. 373,306, filed May 13, 1907.

In the drawings I have shown a variety of modifications of my improved clip, illustrating its application to springs of different varieties.

In the drawings, Figure 1 is a front elevation of a clip made to embody my invention in one form; Fig. 2 is a similar view of another form, having separate cheek pieces; Fig. 3 is a similar view of another form, having separable cheeks, one of the latter being shown partly in section; Fig. 4 is a view of one of the cheek pieces shown in Fig. 3; Fig. 5 is a sectional view of a set of spring leaves with a clip in place, said clip being shown partly in section; Fig. 6 is a side elevation of one end of a spring fitted with my improved recoil check and with my improved clip applied thereto; Fig. 7 is a sectional view thereof; Fig. 8 is a side elevation of a recoil checking device; Fig. 9 is a section thereof; Fig. 10 is a fragmentary view of one end of a spring with a clip in place, the latter being shown partly in section; Fig. 11 is a view similar to Fig. 6, but showing a slight modification; Fig. 12 is a view similar to Fig. 7, but showing a slight modification; Fig. 13 is a view similar to Fig. 8, but showing a modification; Fig. 14 is a side elevation of a modification; Fig. 15 is a vertical section thereof; Fig. 16 is a plan view partly in section of Fig. 14, partly broken away; Fig. 17 is a side elevation of a modification, partly in section.

In Figs. 1 to 4, I have shown several different forms of clips to which my improvement may be applied.

55 In Fig. 1, A—A are the side bars of a clip

united at one end by a cross-bar B. C—C are gripping shoulders at the inner side of the side bars A—A and arranged to grip one of the spring leaves so as to tightly hold the same. The usual bolt is provided to pass 60 through the usual eyes in the disconnected ends of the side bars A—A.

In Fig. 2, A' A' represent the side bars, in this instance not integrally connected, a bolt being used to connect both ends. In this instance C' C' represent two gripping shoulders 65 on each bar arranged to grip the opposite edges of one of the spring leaves.

In Figs. 3 and 4, A<sup>2</sup> A<sup>2</sup> are the side bars provided with my improved gripping shoulders C' C', as in Fig. 2, but in this instance the connecting bar B' at one end of the clip is formed integrally with one side bar and its hooked end b adapted to pass through a perforation b' in the opposite leaf. From 75 the foregoing it will be seen, that the leading feature of my improved clip is to provide means for causing the side bars thereof to grip one of the leaves at opposite edges, thereby dispensing with the necessity of any other attaching means and making it possible to apply the clip to the spring at any desired point.

In Fig. 5 I have shown a clip similar to that shown in Fig. 2, and as it would appear 85 in place holding a number of spring leaves D—D.

In Figs. 6 and 7 I have shown a clip as applied to a special form of spring, including a shock-absorbing leaf E. In this instance the load-bearing spring leaves are indicated at D' D<sup>2</sup> D<sup>3</sup>. The recoil leaf has a reverse curve rests upon the upper leaf D<sup>3</sup> and partially embraces the latter by the overturned end E'. In this instance a rivet 95 a is passed through the upper bar of the clip A to prevent the longitudinal displacement of the recoil leaf.

In Figs. 8 and 9 I have shown a spring 100 similar to that shown in Figs. 6 and 7 and including the recoil leaf E, but in this instance I have substituted a clip of the type shown in Fig. 2 and have shown a modified method of attaching the recoil leaf to said clip, said connection being made by a plate 105 G, as shown.

Inasmuch as my improved clips are applicable to any spring and may be adjusted thereon to any position, and inasmuch as it is sometimes desirable to provide shimming 110

pieces, the same may be easily inserted as indicated in Fig. 10 at H.

In Figs. 11 and 12 I have shown a construction generally similar to that shown in Figs. 6 and 7, save that the recoil leaf is more bowed. In this instance too, the spring-engaging shoulder C should be formed in a plane adapted to the lowermost of the load-bearing leaves. It might be said that in all instances the angle of the leaf-engaging shoulder should be so directed as to properly embrace the leaf to which it is to be clamped.

In Fig. 13 the recoil leaf E<sup>2</sup> is not only provided with a reverse bow, but it is dished at the center, as shown, to stand under the pin B<sup>4</sup> of the clip, the clip in this instance being secured to the load-bearing leaf, which in turn holds the recoil leaf from displacement longitudinally or otherwise.

In Figs. 14 to 16, inclusive, A' A' are the side bars of a clip of the type shown in Fig. 2. B<sup>5</sup> is a saddle piece having hub extensions B<sup>6</sup> which pass through the side bars A' A' and are screwthreaded to receive the retaining nuts B<sup>7</sup>, as in the case of a bolt. In this instance the saddle piece B<sup>5</sup> may be riveted to the recoil spring E, as indicated at B<sup>8</sup>.

In Fig. 17 I have shown a clip of the type shown in Fig. 1 but having a fiber or yield-

ing shimming block H' instead of the nonyielding shimming blocks H, shown in Fig. 10.

I have shown my clip as applied to a variety of springs to illustrate its universal adaptability.

What I claim is:

1. In a clip for vehicle springs, two side members connected at their ends, one of said connecting means being adjustable, leaf gripping shoulders at the inner opposite sides of said side members, arranged to engage a leaf and be clamped thereto by the connection of said adjustable means.

2. A clip for a vehicle spring, comprising side members disconnected at one end, adjustable means for connecting said side members at said end and inwardly projecting leaf engaging shoulders on the inner sides of said side members.

3. A clip for a vehicle spring, comprising side members disconnected at one end, adjustable means for connecting said side members at said end, and leaf engaging shoulders on the inner sides of said side members, said leaf engaging shoulders on each member forming a recess arranged to receive the adjacent edge of a spring leaf.

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Witnesses:

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