

Aug. 30, 1938.

W. F. EISENHAUER

2,128,238

SPRING COVER AND METHOD OF APPLYING SAME

Filed Feb. 12, 1936

2 Sheets-Sheet 1

Fig. 1.

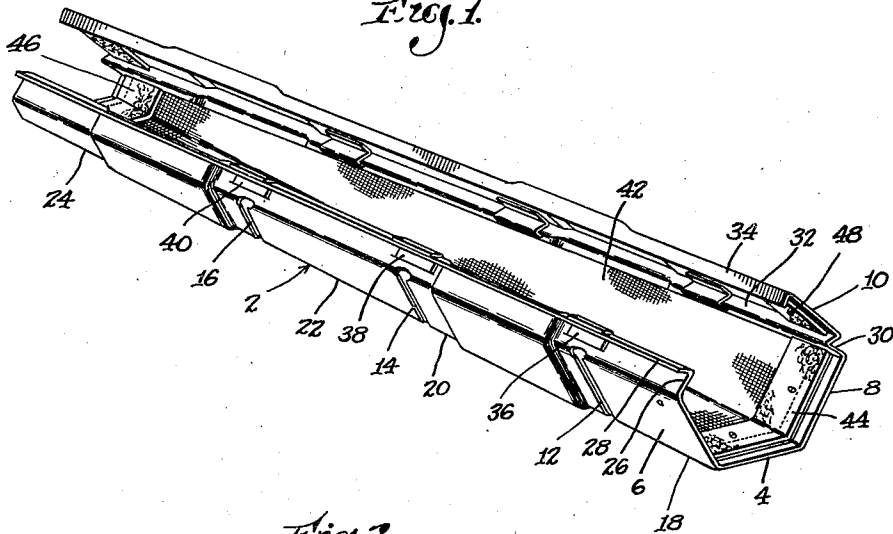


Fig. 2.

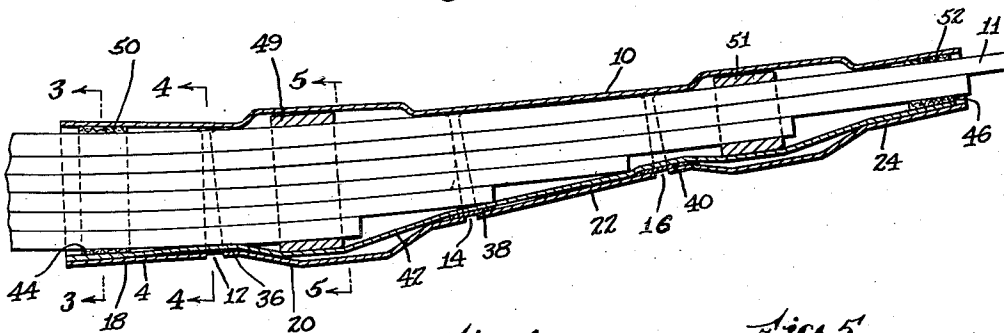


Fig. 3.

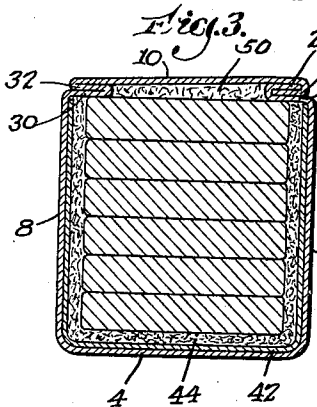


Fig. 4.

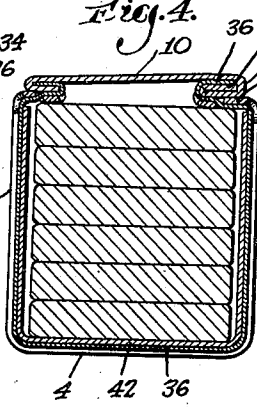
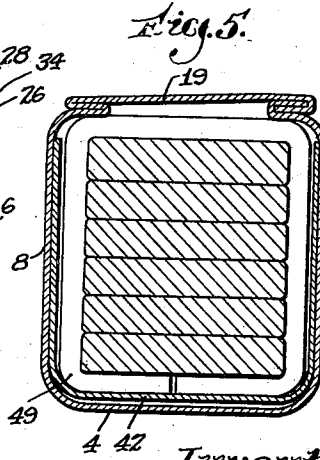


Fig. 5.



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2 Sheets-Sheet 2

Fig. 6.

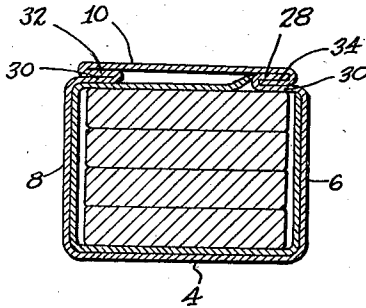


Fig. 7.

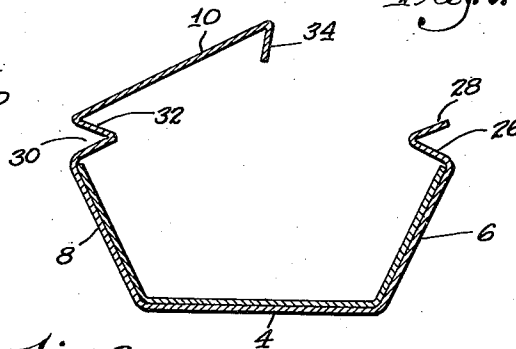


Fig. 8.

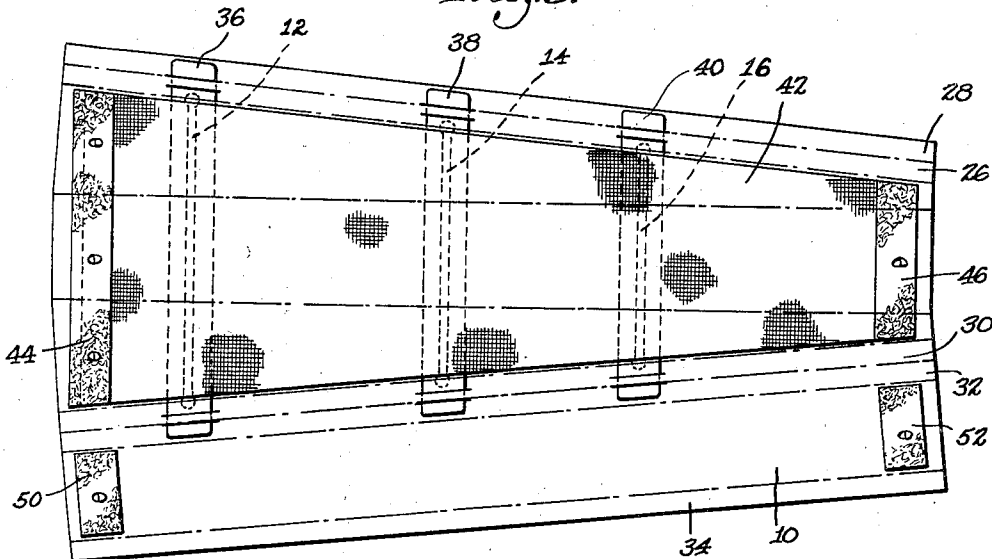


Fig. 9.

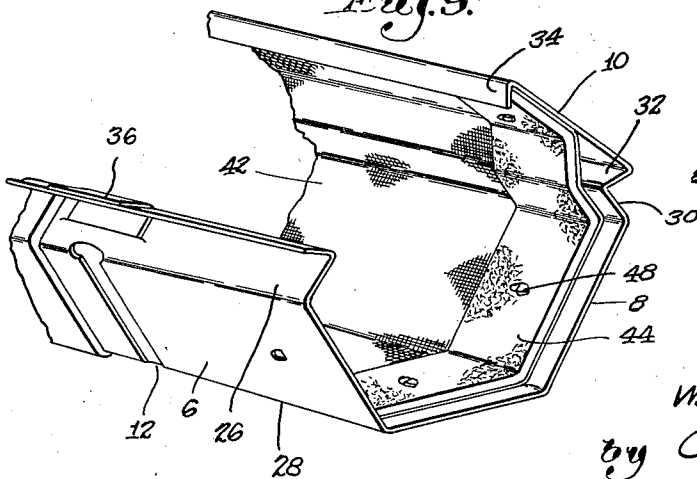
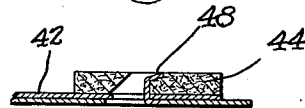


Fig. 10.



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UNITED STATES PATENT OFFICE

2,128,238

SPRING COVER AND METHOD OF APPLYING
SAME

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Application February 12, 1936, Serial No. 63,607

10 Claims. (Cl. 267—37)

This invention pertains to spring casings of the type which are used for covering the leaf springs of vehicles.

This invention is particularly concerned with a one-piece casing having secured thereto as an integral part a liner commonly of fabric although it may be of any other suitable material, the liner being interposed between the spring and the casing.

The usual practice in applying metallic spring casings to automobile leaf springs is, first, to straighten the spring by means of a loading machine, then to apply a stabilizing compound or lubricant about the spring leaves, following which a piece of canvas, called a liner, is wrapped about the leaves for the purpose of assisting in sealing the stabilizing compound within the casing as well as to prevent dirt and water from reaching the spring. Thereafter, the spring casing is applied, the fabric liner being between the casing and the spring.

One of the objects of my invention is to eliminate the necessity of wrapping the fabric liner about the spring prior to the application of the casing. Accomplishment of this object would provide a very material advantage in commercial applications since the time required to install a casing would be reduced about one-third.

Another object is to reduce the amount of material used in the liner.

Another object is to provide means whereby a stabilizing or lubricating compound can be placed on a liner integral with a casing, the entire unit thereafter being applied to a spring and locked thereon.

Still another object is to provide an improved method of applying and retaining a stabilizing or lubricating compound about the leaves of a spring.

Other objects of my invention will become apparent as the description proceeds with the aid of the accompanying drawings in which

Fig. 1 is a perspective view of a one-piece spring casing having the liner attached as an integral part of the casing about three sides.

Fig. 2 is a longitudinal cross-section of the casing shown in Fig. 1 after it has been applied to the spring and the spring has been allowed to assume its normal position.

Fig. 3 is a cross-sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a cross-sectional view on the line 4—4 of Fig. 2.

Fig. 5 is a cross-sectional view on the line 5—5 of Fig. 2.

Fig. 6 is a cross-sectional view of the casing

shown in Fig. 9 with the liner extending about four sides, after being locked in position on a spring.

Fig. 7 is a cross-sectional view of the casing shown in Fig. 1 prior to its application to the spring.

Fig. 8 shows a spring casing blank prior to being folded to the form shown in Fig. 1. The fabric liner and end seals have been attached to the blank.

Fig. 9 shows another construction in which the fabric liner extends around all four sides of the casing.

Fig. 10 is a detail showing the method of securing the liner to the casing.

A perspective view of my invention is seen in Fig. 1 wherein is shown a one-piece spring casing 2 made of metal or other bendable sheet material capable of being formed which consists in general of a bottom portion 4 and sides 6 and 8 and a cover 10. It will be noted that cover 10, which is positioned adjacent the main leaf 11 of the spring, is a continuous member, whereas the lower channel-shaped portion, consisting of the bottom and the two sides, is separated into a plurality of sections by the slots 12, 14 and 16 to provide the sections 18, 20, 22 and 24. The slots 12, 14 and 16 extend around at least three sides of the spring as can be seen from an inspection of Fig. 4 which is a section on the line 4—4 of Fig. 2.

All of the sections 18, 20, 22 and 24 are connected together, however, along the upper or fourth side of the spring by the longitudinally extending portions 26 and 30, as shown in the several figures.

Connected with longitudinally extending portion 30 is the cover 10, having the two inwardly turned flanges 32 and 34 of which flange 32 is integral with longitudinally extending portion 30. Flange 32, due to its angularity, tends to place the cover under lateral tension and serves the purpose of taking up slack when the cover is finally locked in position with the flange 34, which is set at a complementary angle to engage flange 28, thereafter is locked with flange 28 together, as shown for example, in Fig. 3.

The transverse slots 12, 14 and 16, which are for the purpose of permitting the casing to flex when it is in position on the spring, are closed by the slot covers 36, 38 and 40 which may be secured in position by any suitable means. One convenient method is shown in the various figures whereby the ends of the slot covers are tucked under a narrow strip integral with the casing, but raised sufficiently above the surface to permit the

passage of the slot covers thereunder. This construction can be seen in Figs. 1, 4, 8 and 9.

After the casing has been brought to the form shown in Fig. 1, there is positioned therein the liner 42 which may be of fabric or other suitable material. This liner extends substantially the length of the casing and has extending transversely at each end a strip or pad of heavier material, as for example, felt as at 44 and 46. The liner, which is capable of stretching slightly, may be positioned in the casing after it is formed as in Fig. 1 or it may be attached to the blank as in Fig. 8 prior to the shaping of the casing. In most applications, it is only necessary that the casing extend around the lower three sides of the spring since the lubricating or stabilizing compound is not necessary on the top of the main leaf. In such cases the liner is positioned and secured either as in Fig. 1 or as in Fig. 8. It will be noted that the liner is fastened to the casing at its ends only by the means shown in detail in Fig. 10. By the use of a tool designed for the purpose, a tongue of metal 48 is punched from the casing, turned upwardly and passed through the fabric liner and the felt seal or pad, and thereafter bent backwardly and crimped as shown in Fig. 10 to securely affix the liner to the casing. It will be observed that by this means the liner is fastened to the casing without the necessity of using any additional securing means, the fastening device 48 being an integral part of the casing. In practice, it has been found that the liner may be adequately maintained in place by fastening it to the bottom and two sides at the large end of the casing and at the bottom alone at the small end of the casing, as shown in Fig. 8. The liner has sufficient elasticity to adapt itself to the spring clips 49 and 51, as shown in Fig. 2.

In the case where a liner covering three sides of the spring only is used, as in Figs. 1 and 8, it has been found desirable to introduce a seal as at 50 and 52, not only to prevent the escape of any compound that may work its way up on top of the main leaf, but also to prevent the entrance within the casing of water and dirt.

In some instances it has been found desirable to have the liner extend around all four sides of the spring. Such a construction is shown in Fig. 9, that part of the liner and seal underlying the cover 10 being secured by a tongue 48 as heretofore described. The presence of the liner underlying the cover 10 in no way affects the application of the casing to the spring since the engaging and binding action of flanges 28 and 34 are not interfered with, nor is the take-up action of flange 32 in any way modified, as can be seen from an inspection of Fig. 6.

The application of my cover to a spring is as follows:—

The spring is placed in a loading machine and flexed until the main leaf 11 is substantially straight. A stabilizing compound or other lubricant is placed by means of a brush or air gun along the bottom and two sides of the liner positioned within the channel-shaped portion of the casing. The casing is then positioned on the spring, the bottom 4 extending along the staggered ends of the several leaves. While holding the bottom 4 of the casing against the spring, the sides 6 and 8 of sections 18, 20, 22 and 24 are pressed toward each other until flange 34 has snapped over flange 28, which action takes place automatically thereby locking the casing on the spring. The casing is thereafter permanently se-

cured by pressing downwardly on cover 10 normal to the main spring leaf, whereby the flange 32 is folded against cover 10 and against the longitudinally extending portion 30, and flange 34 is securely interlocked with flange 28 as shown in Figs. 3, 4, 5 and 6. The combined action of take-up flange 32 and locking flanges 34 and 28 serve to draw the sides 6 and 8 to a snug position about the spring.

Thus, I have provided a combined one-piece spring casing and liner which materially facilitates the application thereof to leaf springs, since the stabilizing or lubricating compound may be applied to the liner in the casing in advance, the casing, liner and compound thereafter being positioned simultaneously. The securing of the liner to the casing is cheaply and easily effected, no additional securing means in the form of rivets or clips being necessary. In this way the material expense is not increased. The usual practice at the present time in the application of the liner to the spring prior to the positioning of the casing thereon requires that the width of the liner be somewhat greater than the circumference of the spring since it has been found necessary to overlap the liner on top of the main leaf that it may stay in position until the casing is applied. On the other hand, by my construction, I am able to use less liner material as it is entirely unnecessary that the edges of the liner overlap at any point throughout its length. Where the covering of a large number of springs is involved, the saving in liner material is substantial.

Thus, by my invention not only do I provide a casing and liner which may be applied with great speed, but also a combination requiring the use of less liner material.

It should be pointed out that the thickness of the material used in the casing has been considerably exaggerated in the drawings for the purpose of clarity. In actual practice, the combined thickness of cover 10, flanges 28 and 34 and longitudinally extending portion 26 is but little more than the combined thickness of cover 10, take-up flange 32 and longitudinally extending portion 30 shown in Figs. 3, 4, 5 and 6 so that when the casing is permanently positioned on a spring, the cover 10 is substantially parallel to the main leaf.

While I have shown and described a preferred form of my invention, it is to be distinctly understood that the invention is to be limited only by the appended claims.

I claim:—

1. In combination, a one-piece spring casing comprising a plurality of relatively movable sections comprised of a bottom and two sides and adapted to extend about three sides of a spring, a cover for the fourth side integrally connected to the sections, interlocking means on said sections and cover to secure said casing in position on a spring, a one-piece liner permanently secured within said casing to the bottom and two sides only by means punched from the bottom and two sides of said casing, and sealing means at the ends of the fourth side of said casing.

2. In combination, a one-piece spring casing comprising a plurality of relatively movable channel-shaped sections extending about three sides of a spring, said sections integrally connected by a portion extending longitudinally along the fourth side of the spring, a cover for the fourth side integrally connected with said sections, and a liner substantially the length of

the casing overlying the bottom and two sides only and having materially thickened sealing members extending the width of the liner at each end to provide a seal, separate sealing members at the ends of the cover, and means punched from the casing adjacent its ends to secure the liner and respective sealing members thereto.

3. In combination, a one-piece articulated spring casing, comprising a plurality of relatively movable channel-shaped sections and a cover integrally attached thereto, means associated with said sections and cover to provide locking engagement, and a liner including transversely extending pads at the ends thereof, said liner substantially covering the interior or bottom and two sides only of said channel sections, and independent transversely extending pads at the ends of said cover, and means integral with said casing extending through said liner and independent pads respectively and securing them to said casing.

4. A blank adapted to be formed into a lined spring cover comprising a generally trapezoidal blank of bendable material transversely slotted to provide a plurality of sections, a marginal unslotted portion integral with said sections to provide a cover, and a liner substantially overlying said sections only, said blank and liner permanently connected at their ends by means integral with said blank.

5. In combination, a four-sided one-piece spring casing having spaced, movable sections and a liner extending substantially the length of the casing and overlying three sides only, said casing having prongs integral therewith and penetrating said liner and attaching said casing and liner to each other at their ends only.

6. In combination, a leaf spring and a casing thereon, said casing comprising a one-piece spring casing having spaced, movable sections extending about three sides of said spring, members covering the spaces between said sections, a cover integral with one side of each of said sections and connected with the other side of said sections, a liner between said spring and the three sides of said casing extending substantially the length of the casing, said liner and casing secured together at the ends of each of the three sides only by means integral with said casing.

7. A one-piece spring casing comprising articulated sections adapted to cover three sides of a spring, a cover for the fourth side integral with and adapted to lock to said sections, a liner sub-

stantially the length of said casing and of a variable width substantially three-quarters of the circumference of the spring at any section, said liner positioned within said casing and secured thereto at its ends only by means integral with the end sections whereby it overlies the bottom and two sides of the spring.

8. A one-piece spring casing comprising a series of channel-shaped sections movable with respect to each other and adapted to encompass three sides of a leaf spring, said sections connected by means extending continually longitudinally along the fourth side, members overlying the spaces between said sections and connected to said longitudinally extending means, a cover for the fourth side integrally connected with said longitudinally extending means, means for sealing said cover on a spring, an interiorly positioned liner substantially covering said sections only and extending over the spaces between the movable sections, said liner attached at its ends to said sections only by means integral therewith.

9. A spring casing comprising a sheet shaped for enclosing at least three sides of a spring and transversely slotted at intervals between its ends, each slot terminating at each end short of the side edges of the sheet, a separate cover band for each slot, each band being independent of each other, means for retaining each band individually in position, means engaging with said sheet for closing the fourth side of the spring, and a liner extending substantially the length of the casing and overlying the slotted walls only, said casing and liner attached to each other at their ends only.

10. A one-piece spring casing comprising spaced sections engaging three sides of a spring, a cover for the fourth side integrally connected with said sections by a slack take-up device, said sections also integrally connected with a reversely turned flange on said fourth side, a complementary flange on said cover to engage said reversely turned flange, said flanges arranged to engage each other and said take-up device arranged to draw said sections closer about said spring when said cover is moved towards said spring, and a liner extending substantially the length of the casing, said casing and liner attached to each other at their ends only, and said liner covering three sides of the casing only whereby the fourth side, at which said slack take-up device is disposed, is free from interference by said liner.

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