Aug. 30, 1960 R. G. HEYL, JR 2,950,486

SUPPORT FOR SPRING END

Filed July 15, 1957

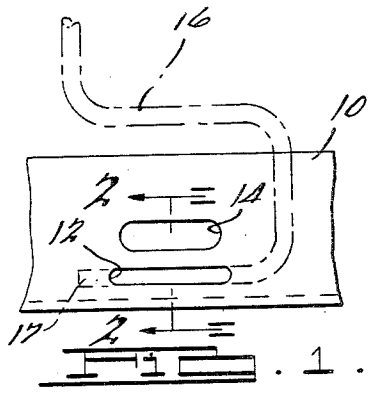


FIG. 1.

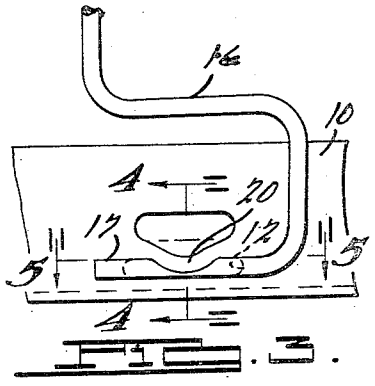


FIG. 3.

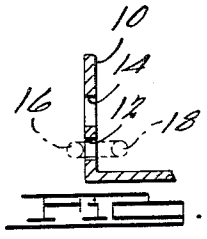


FIG. 2.

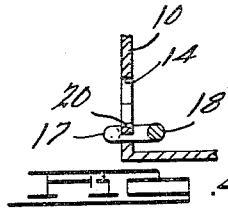


FIG. 4.

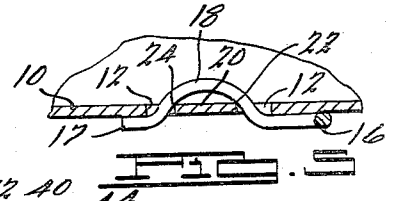


FIG. 5.

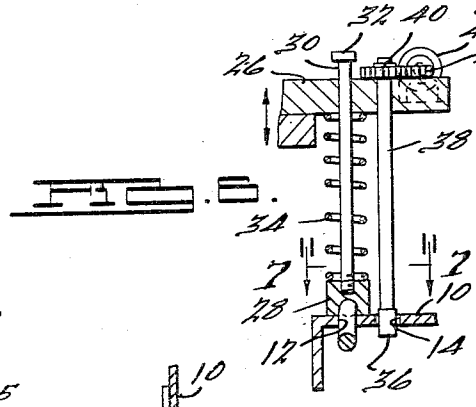


FIG. 6.

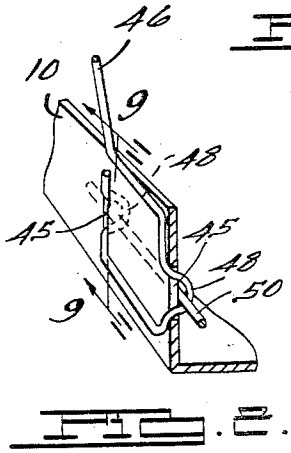


FIG. 8.

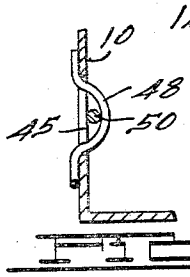


FIG. 9.

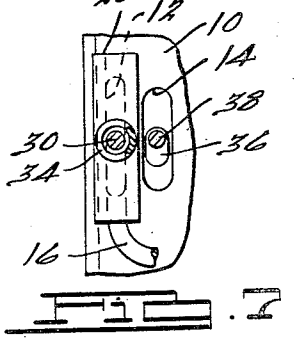


FIG. 7.

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SUPPORT FOR SPRING END

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2 Claims. (Cl. 5—260)

This invention relates to fastening wire spring strips to frames and particularly to a wire spring strip having the ends thereof adapted to be mechanically fastened directly to a frame.

Generally each end of each wire spring strip must be manually hooked over a clip support or otherwise positioned with respect to the frame. Consequently, a significant portion of the cost of springs made from a plurality of wire spring strips is attributable to the labor required to fasten each of the spring strips to a frame. This invention materially reduces the labor costs involved in assembling such springs by providing wire spring strips having an end configuration which enable the spring strips to be mechanically fastened to a frame in a simple, direct and effective manner.

It is one object of the invention to provide a wire spring strip having the ends thereof adapted to be mechanically fastened directly to a frame.

It is another object of the invention to provide a wire spring strip having the ends thereof adapted to be fastened directly to a frame without the need of clip supports or the like.

It is a further object of the invention to provide a wire spring strip having an end portion with a generally arcuate portion intermediate the ends thereof which may be inserted in an appropriate slot in a frame and locked therein by distorting the slot.

Other objects and features of novelty of the invention will be specifically pointed out or otherwise become apparent when referring, for a better understanding of the invention, to the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a broken plan view of a portion of a frame embodying features of the invention;

Fig. 2 is a sectional view of the structure illustrated in Fig. 1, taken along the line 2—2 thereof;

Fig. 3 is a broken plan view of a portion of a frame having a wire spring strip fastened thereto in accordance with the invention;

Fig. 4 is a sectional view of the structure illustrated in Fig. 3, taken along the line 4—4 thereof;

Fig. 5 is a sectional view of the structure illustrated in Fig. 3, taken along the line 5—5 thereof;

Fig. 6 is a broken sectional view of apparatus for automatically fastening a wire spring strip embodiyng features of the invention to a frame;

Fig. 7 is a sectional view of the structure illustrated in Fig. 6, taken along the line 7—7 thereof;

Fig. 8 is a broken perspective view of a wire spring strip fastened to a frame in accordance with another form of the invention; and

Fig. 9 is a sectional view of the structure illustrated in Fig. 8, taken along the line 9—9 thereof.

Referring to Figs. 1 and 2, a portion of a frame 10 is illustrated having a relatively narrow slot 12 therein and a parallel relatively wider longitudinal slot 14 adjacent thereto. A wire spring strip 16, illustrated in broken lines, having a laterally extending end portion 17 with a generally arcuate portion 18 is adapted to be fastened to the frame 10 by inserting the arcuate portion 18 into the slot 12.

As most clearly illustrated in Figs. 3 through 5, the arcuate portion 18 is secured in the slot 12 by distorting a portion 20 disposed between the slots 12 and 14 so that it overlies the slot 12 to prevent the removal of the arcuate portion 18. Thus in a very simple and effective manner the arcuate portion 18 may be quickly and securely fastened to the frame 10. It will be observed that the distorted portion 20 engages the arcuate portion 18 at points 22 and 24 thereon and that the slot 12 is approximately the length of the arcuate portion 18. This eliminates unnecessary play or looseness to insure that the strip 16 is securely fastened to the frame.

The wire spring strip 16 readily lends itself to automatic mechanical insertion and fastening within the slot 12 by the use of relatively simple apparatus, as illustrated in Figs. 6 and 7. The apparatus may be comprised of a movable member 26 adapted to be advanced toward and away from frame 10 by any suitable means (not shown) with a gripping device 28 slidably mounted thereon by a rod 30 having a head 32 on one end thereof to limit movement of the gripping device 28 in a direction away from the member 26. A spring 34 is disposed between the member 26 and the gripping device 28 to urge them apart. A cam 36 is mounted on one end of a rod 38 disposed parallel to the rod 30 and having the other end thereof rotatably mounted on the member 26. The rod 38 is adapted to be rotated by a gear 40 keyed to the other end thereof and the gear 40 is driven by a rack 42 mounted on and actuated by the operating end of an air cylinder 44, or other suitable means.

In operation the end portion 17 of the wire spring strip 16 is gripped by the gripping device 28 on either side of the arcuate portion 18 and the member 26 advances the arcuate portion 18 through the slot 12 to the position illustrated in Fig. 6. It will be observed that the impact of the engagement of the gripping device 28 with the frame 10 is absorbed by the spring 34 which permits relative movement of the rod 30 with the member 26, and that at the end of the downward advancement of the member 26, the cam 36 is disposed within the slot 14.

The air cylinder 44 is then actuated to drive the rack 42 to rotate the gear 40 which in turn rotates the cam 36 to distort the portion 20 intermediate the slots 12 and 14 to the position wherein it overlies the slot 12 as illustrated in Fig. 3. The air cylinder 44 is then reversed to rotate the cam 36 to its original position, and the member 26 is retracted to withdraw the cam from the slot 14 and to disengage the gripping device 28 from the wire spring strip 16. In this manner the wire spring strip may be automatically fastened directly to the frame 10 without the use of separate clip supports or the like and without the need of manual labor.

Another form of the invention is illustrated in Figs. 8 and 9 wherein frame 10 is provided with a pair of slots 45, and the end of a wire spring strip 46 is formed into a generally square portion with two generally arcuate portions 48 on the opposite longitudinally extending sides thereof. The arcuate portions 48 are disposed within the slots 45 and a rod 50 is inserted between the arcuate portions 48 and the underside of the frame 10 to prevent the withdrawal of the arcuate portions from the slots 45.

It will be apparent that this construction readily lends itself to having one long rod 50 pass beneath the frame 10 and through a plurality of arcuate portions 48 to secure a plurality of the wire spring strips 46 to the frame 10. In this manner all of the spring strips 46 may be quickly fastened to the frame 10 by simply positioning each of the arcuate portions 48 within the

slots **45** and passing the rod **50** therethrough and thus provide a great saving in the time and expense required for fastening the wire spring strips to the frame **10**.

What is claimed is:

1. An elongated wire spring strip having a plurality of oppositely presenting loops and a substantially straight laterally extending retaining end portion, a plurality of said strips forming a supporting surface, said retaining end portion having a generally arcuate portion intermediate the ends thereof and opening in a direction substantially normal to said supporting surface, said retaining end portion providing short substantially straight portions extending in opposite directions from the ends of said arcuate portion.

2. In combination, a frame having a relatively flat flange with parallel adjacent slots therein, said slots being spaced apart by a narrow portion of the flange disposed therebetween, and an elongated wire spring strip having

a substantially straight laterally extending end portion with a generally arcuate portion intermediate the ends thereof, said arcuate portion being disposed within and projecting through one of said slots in the flange and the narrow portion of the flange disposed between the slots being deflected to extend within said one slot to prevent the removal of the arcuate portion.

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