July 15, 1958 E. G. KRAKAUER 2,843,192

CLIP FOR SINUOUS FURNITURE SPRING

Filed Sept. 6, 1956

Fig. 1

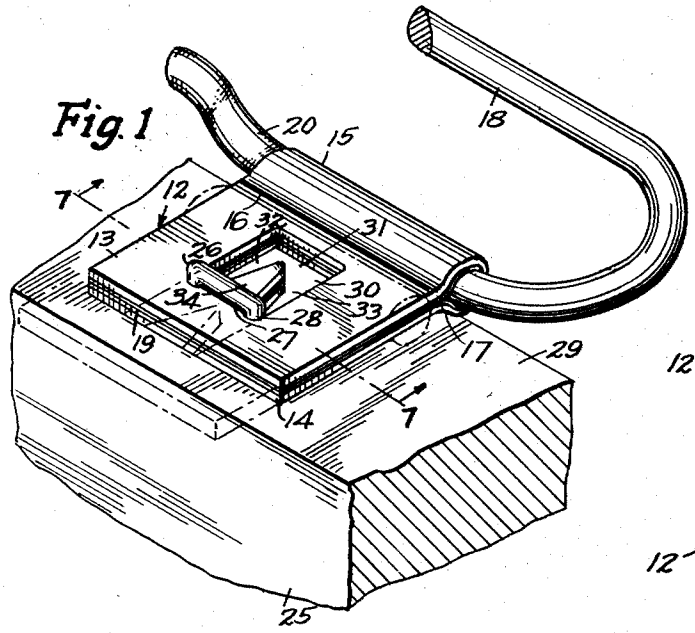


Fig. 2

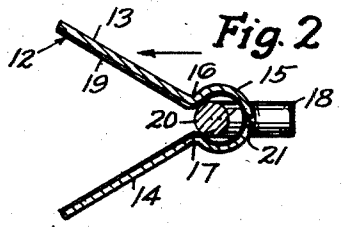


Fig. 3

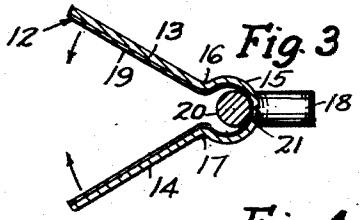


Fig. 7

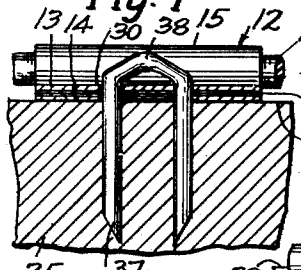


Fig. 8

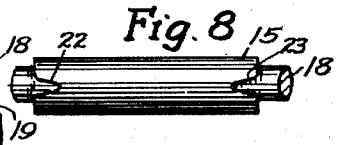


Fig. 4

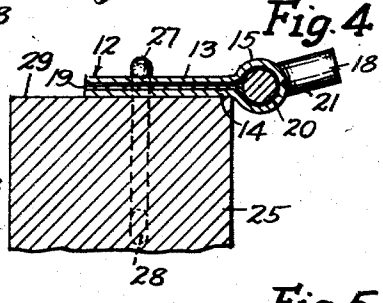


Fig. 9

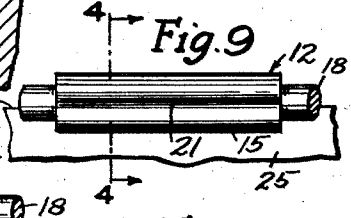


Fig. 6

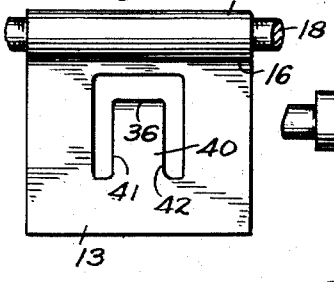


Fig. 10

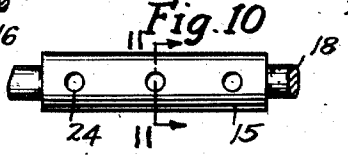


Fig. 5

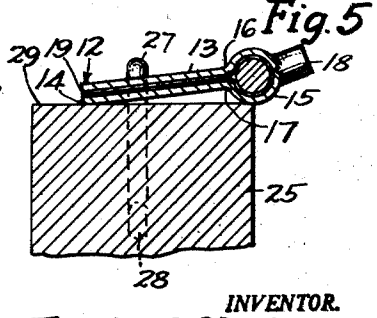
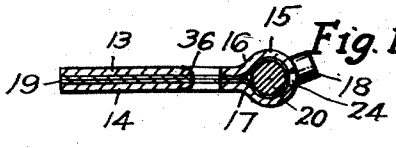


Fig. 11



INVENTOR.
Edwin G. Krakauer
BY Harry Jacobs
ATTORNEY

United States Patent Office 2,843,192 Patented July 15, 1958

2,843,192

CLIP FOR SINUOUS FURNITURE SPRING

Edwin G. Krakauer, Roslyn Heights, N. Y., assignor to Kay Manufacturing Corporation, Brooklyn, N. Y., a corporation of New York

Application September 6, 1956, Serial No. 608,341

6 Claims. (Cl. 155—179)

This invention relates to sinuous spring installations for furniture and the like and particularly to the clips for such springs.

The invention contemplates the provision of a clip readily secured to a spring end and easily and adequately attached to a single staple pre-set into a frame after the clip is attached to the spring end.

The invention further contemplates the provision of a clip which can readily be clasped about the cylindrical end of a sinuous spring to grasp said end when the initially open clip is closed, and to engage substantially the entire lateral or cylindrical surface of said end adjacent the clip, prior to the fastening of the clip to the frame of an article of furniture.

The invention further contemplates the provision of a clip having a slightly resilient bend adapted to be readily reduced in diameter to grasp the greater part of the spring end, the bend subtending an angle considerably greater than 180° and terminating in concave indents at its junction with the initially diverging flanges of the clip, the indents being spaced apart less than the diameter of the spring end, so that said end may be forced past the indents into the interior of the bend.

The invention further contemplates the weakening of the bend of the clip by the removal of material therefrom to permit the bend to be easily reduced in diameter when the flanges are to be brought together and the clip closed.

The invention further contemplates the provision of U-slots in the flanges, adapted to register with each other when the clip is closed, the head of a fixed staple secured in advance to the furniture frame with the staple head projecting slightly above the frame passing through the end of the slots when the clip is arranged in place after it has been clasped to the spring, and the legs of the staple entering the sides of the slots when the clip and spring are moved bodily in the proper direction.

The various objects of the invention will be clear from the description which follows and from the drawings, in which

Fig. 1 is a fragmentary perspective view of a spring installation, showing in dash-dot lines the initial position of the closed clip prior to the movement thereof bodily into the position wherein it is secured by the staple.

Fig. 2 is a vertical longitudinal sectional view of the clip in its initial open position and with the spring end forced just past the indents into the bend.

Fig. 3 is a similar view thereof with the spring end in the interior of the bend and the flanges about to be closed together in the direction of the arrows.

Fig. 4 is a vertical sectional view of the installation taken on the line 4—4 of Fig. 9 showing the clip bend arranged entirely inside of the frame so that the clip flanges lie flat on the top edge of the frame.

Fig. 5 is a similar view of a modified form of the installation showing the clip bend partly inside of the frame.

Fig. 6 is a top plan view of a modified form of the clip wherein the sides of the interior tongue are parallel and the tongue end is reduced in thickness.

Fig. 7 is a vertical transverse sectional view taken on the line 7—7 of Fig. 1, but showing a modified form of the staple.

Fig. 8 is a rear elevational view of a modified form of the clip wherein the bend is weakened by end slots therein.

Figs. 9 and 10 are similar views of the clip showing modified forms of the bend-weakening means.

Fig. 11 is a vertical sectional view of the clip taken on the line 11—11 of Fig. 10.

Referring now to that form of the invention shown in Figs. 1–5 and 9, the clip 12 is illustrated as being made of sheet metal and having substantially identical flat flanges 13 and 14 joined integrally by the bend 15. Said flanges initially diverge outwardly and symmetrically from the bend as seen in Figs. 2 and 3, there being an outwardly concave indent 16 at the junction of the bend with the flange 13 and a similar indent 17 at its junction with the flange 14. The initial distance between the indents 16 and 17 is preferably, though not necessarily, slightly less than the diameter of the wire of which the sinuous spring 18 is made, while the diameter of the bend 15 is initially greater than the diameter of the spring wire. Since the clip is customarily lined throughout with suitable sound-deadening material such as the cloth lining 19 which is somewhat compressible, and since the rather large bend is itself slightly resilient, the spring end 20 can readily be forced past the indents 16, 17, or the indents forced past the spring end in the direction of the arrow of Fig. 2, to insert said end into the interior of the bend 15. The bend temporarily expands slightly and the lining is sufficiently compressed to permit such insertion into the position of Fig. 3. Thereafter, the flanges 16 and 17 are closed preferably into contact and into the position of Fig. 4 by pressing them in the direction of the arrows of Fig. 3 either manually, as when the clip material is relatively thin, or by means of a suitable tool. Not only are the flanges brought together, but the indents 16, 17 are also brought into positions adjacent each other, the bend 15 being reduced in diameter by the described movement of the flanges, thereby to clasp the spring end 20 around substantially its entire cylindrical surface without distortion of the flanges or indents and solely by the reduction in diameter of the bend.

To assure the action described and that the bend is reduced enough to close the clip, said bend is weakened by removing material therefrom or by reducing the thickness thereof along a suitable line such as the middle line 21 Fig. 9. Or as shown in Fig. 8, the cross section of the bend along the middle line is reduced in area by the opposed slots 22, 23 extending toward each other from the respective end edges of the bend. Another way of weakening the bend is by removing material elsewhere than at the ends as by means of the holes 24 along the inner middle line of the bend.

Suitable means are provided to secure the clip to the furniture frame 25. As shown in Fig. 1, said means comprises the U-shaped staple 26 having the head 27 and legs 28. The staple is driven into the frame so that the under side of the head 27 is spaced above the top surface 29 of the frame by an amount slightly less than the combined thickness of the flanges 14 and 13 and the lining 19 and with said head arranged longitudinally of the top 29. Cooperating with the staple 26, which has been pre-set as just described in the frame, are U-slots as 30, one through each of the flanges 13 and 14, and through the lining. The slots in the flanges register with each other in the closed position of the clip owing to the symmetrical shape of the clip, the positions of the indents and the uniform reduction in diameter of the bend 15 as the clip is closed. The width of the end part 31 of the slot 30 is about the same as the length of the staple head 27, so that said head may be quickly

and easily passed through the slot end when the clip with the spring end attached thereto is set on the top of the frame. The least width of the slot sides **32**, **33** is about equal to the diameter of the staple legs. Between the sides of the slot is left the interior tongue **34**, the side edges of which preferably converge in the direction toward the end of the slot, the free end **36** of the tongue being preferably reduced in thickness as best seen in Fig. 11.

By so tapering the sides of the tongue **34** and thinning its free end, it becomes relatively easy to slide the tongue under the projecting head **27** of the staple and to wedge the tongue, if desired, tightly under the head with the staple legs at the outer ends of the slot sides as shown in Fig. 1. The spring **18** is usually of the type which is biased, curled or pre-set on an arc of lesser radius than that which it assumes when operative. Consequently, the spring ends are normally urged toward each other and exert a pull on the clips tending to draw them toward each other inside of the frame. Such pull aids in sliding the clip into, and maintaining it in, the secured position thereof.

In addition to tapering the tongue **34**, the staple as **37** may have a head **38** in the shape of an inverted V as shown in Fig. 7. Such head provides additional space for the tongue to enter thereunder and aids in certain cases, in the rapid assembly of the clip and the staple. As shown in Fig. 6, the tongue **40** has parallel side edges **41**, **42** and the tongue tip **36** is reduced in thickness to allow its ready entrance into the space underneath the staple head and the final wedging of the tongue in the staple. Obviously however, the shapes of the slots, tongue, staples, clip bend and flanges may be varied considerably and other obvious changes may be made in the forms of the invention herein illustrated and described without departing from the spirit of the invention defined in the appended claims.

I claim:

1. A clip for a sinuous spring comprising a generally cylindrical bend across one end of the clip, said bend extending through an arc of less than 360° and more than 180° to provide a pair of parallel spaced apart edges bounding an opening between the edges for the passage between said edges and through the opening of the end portion of a spring into the interior of the bend by a movement perpendicular to the axis of the bend, a first flat flange extending from one of the edges away from the bend, a second flat flange extending from the other of the edges away from the bend whereby said flanges are arranged in lateral spaced relation to each other at the bend and throughout the flanges, the flanges being substantially identical with and coextensive with each other, each of the flanges having a U-shaped slot therethrough registering with the U-shaped slot of the other flange when said flanges are brought into face to face contact, said slot forming an integral tongue on the flange between the sides of the slot, both of said flanges being adapted to be maintained in face to face contact with each other and thereby to close the opening between said edges by a single staple of approximately the same width as that of the slots with the tongues of both flanges passing under and in contact with the head of the staple.

2. A clip for a sinuous spring, comprising a pair of initially outwardly diverging flat flanges each having a U-slot therethrough similar to the U-slot of the other flange and forming an interior tongue on each flange, the end part of the tongue being tapered, an open bend integrally joining the inner ends of the flanges, said inner ends being spaced apart laterally to provide a space throughout the width of the clip at the junction of the flanges with the bend, the inner diameter of the bend being initially greater than the said space between the inner ends of the flanges, the bend being reduced in cross

sectional area along a middle line thereof to weaken the bend at said line, and an outwardly concave indent at the junction of each edge of the bend with the inner end of a flange, the U-slots of the respective flanges coming into registration with each other when the flanges are brought into face to face contact with each other and the edges of the bend are brought together to close the space therebetween.

3. The combination with a sinuous wire spring of a clip therefor comprising a pair of angularly disposed spaced apart substantially identical flanges, a generally cylindrical open bend integrally joining the flanges, each edge of the band at the juncture of the bend with a flange being in lateral spaced relation to the other edge of the band to provide a space between said edges for the passage therethrough and into the interior of the bend of the end portion of said spring, the bend being adapted to receive the end of the spring in the interior thereof, said space being slightly less than the diameter of the end portion of the spring, whereby said end portion temporarily spreads the flanges slightly apart when forced into the bend, the inner diameter of the bend being initially greater than that of the wire of said spring, said inner diameter being reduced to cause the bend to clasp the end of the spring when the flanges are brought into face to face contact with each other.

4. The combination of claim 3, the clip being symmetrical about the middle line of the bend and the thickness of the material of the bend along said line being lessened to weaken the bend and to assure movement of both halves of the bend toward each other about said middle line when the flanges are brought into face to face contact.

5. The combination of claim 3, each of the flanges having a U-slot therethrough adapted to register with the slot of the other flange when the flanges are brought into face to face contact, said slot forming a tongue on the flange, both of said slots being adapted to receive the legs of a U-shaped staple simultaneously with the tongue underneath and engaging the head of the staple when the flanges are in face to face contact with each other.

6. In a spring installation, a frame, a sinuous wire spring, and means for securing the end portion of the spring to the frame comprising a clip clasped about said end portion and a single staple entering the frame and adapted to engage the clip, said clip comprising a pair of initially diverging flat substantially identical flanges each having a U-slot therein forming an interior tongue on each flange of substantially the same size as the tongue on the other flange, a generally cylindrical open bend terminating initially in spaced apart edges integrally joining the inner ends of the flanges, the inner diameter of the bend being initially greater than the space between said edges and also greater than the diameter of the spring wire, said bend being sufficiently resilient to permit the end portion of the spring to be forced past and to temporarily spread said edges apart and thereafter to enter the interior of the bend, the inner diameter of the bend being reduced to the diameter of the wire to clasp the greater part of said end portion of the spring when the flanges are brought together into face to face contact throughout, said staple having a pair of spaced apart legs integrally joined by a head, the legs of the staple passing through the respective sides of the slots and the tongues of the flanges passing under the head of the staple, said head maintaining the flanges in contact and also maintaining the edges of the bend closed against each other.

References Cited in the file of this patent

UNITED STATES PATENTS

1,754,921	Warren	Apr. 15, 1930
2,215,373	Krakauer	Sept. 17, 1940
2,306,150	Asaro	Dec. 22, 1942