

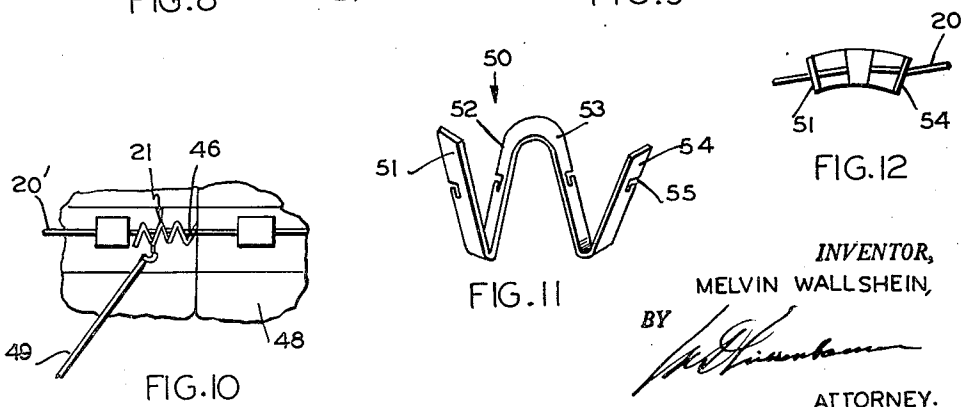
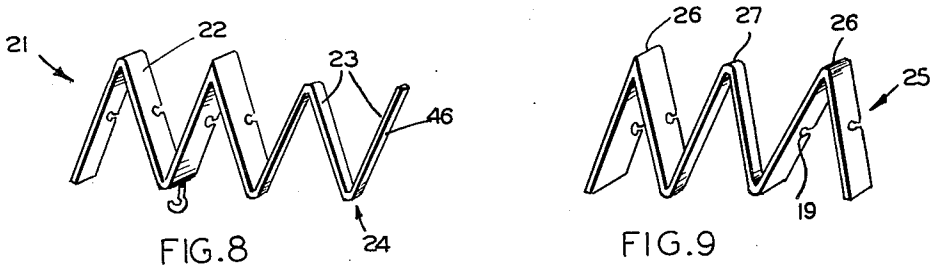
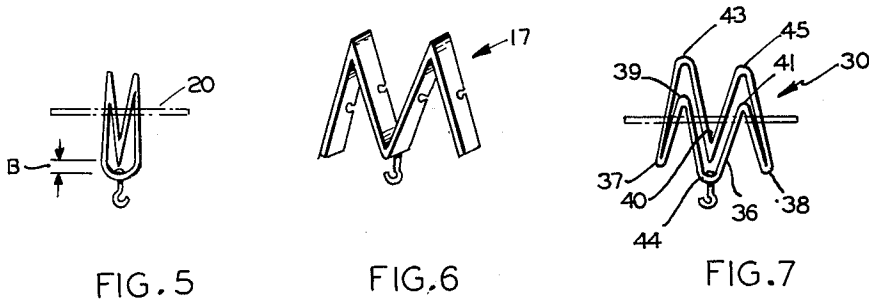
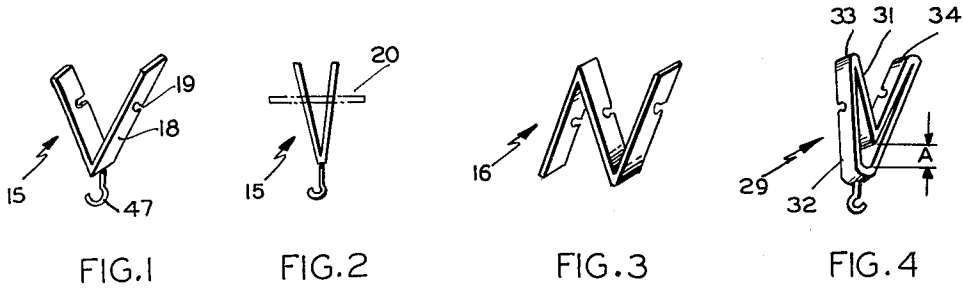
Sept. 4, 1962

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3,052,004

CLAMPING DEVICES FOR ATTACHMENT TO A WIRE OR CABLE

Filed April 1, 1959



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3,052,004

**CLAMPING DEVICES FOR ATTACHMENT  
TO A WIRE OR CABLE**

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Filed Apr. 1, 1959, Ser. No. 803,394  
6 Claims. (Cl. 24-129)

The present invention relates to clamping means for attachment to a wire or cable, and depending upon their size, are applicable for attachment to the arch wire in the practice of orthodontia, in the electrical arts as cable clamps, in the machine arts as a selectively positionable stop and in numerous other instances. These specific uses are mentioned merely by way of example to show the versatility of this invention. Various embodiments and modifications in their structure will be shown.

The principal object of this invention is to provide novel and improved clamping means of the character mentioned, which are easily mounted and detached without the use of tools and which stay put wherever placed along a wire or cable.

Another object thereof is provide novel and improved constructions in clamping means of the nature set forth, which are cheap to manufacture, easy to use and efficient in carrying out the purposes for which they are designed.

Other objects and advantages will become apparent as this disclosure proceeds.

For the practice of this invention, I preferably take springy strip material and bend it transversely to make V, U, N, M or other zig-zag or sinuous form and provide a notch in each or some of the elements thereof. I prefer that the notches in any such article be in alignment. Each of these articles is a clamp which to be attached to a wire or cable as the case may be, is compressed, then set onto the wire so that all the notches have the wire therethrough and then let go to expand, whereupon the wire is bitten into and the clamp is securely fixed thereon. At the apex of the V-shape and appropriately in the other forms, an outward hook or other suitable appurtenances may be provided as use of the article may dictate. As one modified embodiment, an endless piece of springy strip material may be transversely bent into a form comprising a pair of nested V's or M's, which of course would be joined at their corresponding distal ends and otherwise spaced. Further, the zig-zag form may be manufactured as linear stock which can be cut into sections as required. Further, some of the elements may have notches and the others may be utilized only for their spring value. The notches may be U-shaped or key-hole shaped, the latter preferably.

In the accompanying drawing forming part of this specification, similar characters of reference indicate corresponding parts in all the views.

FIG. 1 is a perspective view showing the V-form of clamp embodying the teachings of this invention.

FIG. 2 is a front view of the clamp of FIG. 1, shown mounted on a wire.

FIG. 3 is a perspective view showing the clamp in N-form.

FIG. 4 is a perspective view showing a clamp which comprises two nested elements to form a 2-ply V-clamp.

FIG. 5 is a front view of the clamp of FIG. 4, shown mounted on a wire.

FIG. 6 is a perspective view of the clamp in M-form.

FIG. 7 shows a modification of the clamp of FIG. 6 mounted on a wire. This is a front view.

FIG. 8 is a perspective view of an M-shaped clamp with an integral part which is to be employed for its spring value.

FIG. 9 is a perspective view of a modification of the

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clamp shown in FIG. 8. Here in FIG. 9, an intermediate part is used for its function as a spring.

FIG. 10 is a fragmentary outer face view of teeth carrying an arch wire for orthodontic treatment, showing one way the clamp of FIG. 8 may be employed; said clamp being mounted on the arch wire. This view is drawn to an enlarged scale; FIG. 8 in respect to FIG. 10 being magnified.

FIG. 11 is a perspective view showing a further embodiment of this invention.

FIG. 12 is a top plan view of the clamp of FIG. 11, when mounted on a wire.

In the drawing showing various embodiments of this invention, out of springy strip material, I have formed the several clamps illustrated. The numerals 15, 16 and 17 designate generally clamps of the V, N and M shapes respectively. In each of these forms, each arm 18 is provided with a notch 19. These notches in each item, are substantially in alignment; same being at corresponding side edges of the arms so that all may be entered onto a wire 20. The closed end of each notch 19 is slightly enlarged as in key-hole form. The clamp indicated generally by the numeral 21 is a zig-zag form comprising an M-shape integral with an N-shape as an extension thereof. The M-shape portion 22 has a notch 19 as mentioned, in each of its relatively wide arms while the arms 23 of the N-shape 24 are relatively narrow and away from any extended wire which may be positioned through the notches in the arms of the M-shape portion 22. The clamp indicated generally by the numeral 25, is a zig-zag form comprising two V-shaped clamps 26 having relatively broad arms each of which has a notch; said V-clamps being integral with and having intermediate them, the V-shape portion 27 whose arms 28 are relatively narrow and away from any extended wire which may be positioned through the notches in the arms of the V-shaped clamps 26. The clamps denoted generally by the numerals 29 and 30, may each be formed from an endless piece; the clamp 29 being two nested V-shapes 31, 32 joined at their distal ends at 33, 34, but spaced otherwise; the clamp 30 being two nested M-shapes 35, 36 joined at the distal ends at 37, 38, but spaced otherwise. The inner bends 39, 40, 41 are preferably sharp while the outer bends 43, 44, 45 are preferably rounded. These clamps may be provided with a hook 47 preferably at their mid-region as shown.

To mount any of these clamps onto a wire 20, it is held in hand and compressed, then set so that the wire lies through all the notches. The width of each notch should of course preferably admit sliding fit entrance of the wire to the closed end thereof, so that upon releasing the hold on the clamp, said clamp shall expand but a part of its capability as compared to its expansion when off the wire, and the notch edges shall bite into the wire, thereby firmly attaching the clamp onto the wire. It is evident that to release the mounted clamp, it is compressed and moved laterally off the wire.

It is to be noted that spring action is offered at each bend in each of the clamps illustrated. When compared with the V-clamp 15, the N-clamp 16 requires one-half more material, but offers twice the spring action; the M-clamp 17 requires twice the material and offers three times the spring action; the clamp 29 requires twice the material to give four times the spring action of clamp 15 and the clamp 30 requires four times the material to give six times the spring action of the clamp 15. It is also to be noted that the distance "A" in the unattached clamp 29 is decreased to the distance "B" when said clamp is mounted on a wire. This causes that portion of said wire 20 which is between its remote points of engagement at 42 and 46, to become waved somewhat because the

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notches of said clamp assume non-alignment relation when the clamp is mounted as in FIG. 5.

The clamp 21 of FIG. 8 has many uses. For instance when mounted on a wire or cable or in machinery on a rod, it can be called upon to act as a stop for a member reciprocating against end 47 to offer the action of a shock absorber or to effect recoil for such moving member. In orthodontia, when clamp 21 is mounted on an arch wire 20', the stressed spring portion 24, at 46, may be arranged to act against a tilted tooth 48 to shift it back into place to make the proper contour with the teeth adjacent it. The clamp 21 is shiftable of course whenever desired towards tooth 48 to change its pressure against said tooth from time to time, until correct position of said tooth is attained. Such use of this clamp 21 is illustrated in FIG. 10, where also shown is the rubber band 49 attached to the hook 47 and adapted for attachment at its other end to a proper anchorage elsewhere in the mouth, for techniques well known in dentistry.

The size of these clamps will of course depend on the uses to which they are put. Springy metal strip is suitable for their construction, though if used merely to hang a display card thereon, they may be of a suitable plastic strip having resilient quality. Though strip material is mentioned here, it choice is merely most practical. Other stock forms made of any suitable material may of course be employed to make clamps in accordance with this invention. It is even possible to make a long length of zig-zag material provided with notches 19 as mentioned and parts cut off to form any embodiment as a particular use may dictate.

For a notch 19 to "bite" the wire 20 when a clamp as herein taught is mounted thereon as explained, it is preferred that they be key-hole shaped as shown.

In all embodiments described to this point, the folding action is that of an accordian pleat. For further gripping action, I provide a clamp designated generally by the numeral 50, where there is also a torsion action in the spring when "collapsed" from normal rest condition. So here, in the W or M shape 50 which is of strip material, the intermediate arms 52, 53 are so bent that their planes are in angular relation and so the planes of the outer arms 51, 54 will be in angular relation. Squeezing this clamp 50 in order to mount it on a wire 20, its arms will not only approach each other accordian-pleat-wise, but the angle between the planes of the intermediate arms and hence of the outer arms angle, will diminish and exert in said clamp a torsional stress besides the spring actions at the arm junctures. The notches here may be key-hole shaped as at 19 or L-shaped as shown at 55.

This invention is capable of numerous forms and

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various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiments shown herein shall be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific description herein to indicate the scope of this invention.

I claim:

1. In a clamp of the character described, a member of springy material bent into a shape including a plurality of successive arms; the end arms being a distance apart greater than that between the first arm and any of the intermediate arms; arms which are immediately in succession of one another being in angular relation, a second member of springy material similar in shape to the first member; said members being in nested relation and joined securely at their remote distal ends to form a unitary structure and elsewhere spaced; at least two of the arms of each of said members being provided with a notch in each of them; said notches being of such shape and size that when said unitary structure has a force applied thereto to compress it whereby all the arms approach each other so that all the notches register, so that when a relatively straight wire is set into said registered notches and then the hold on said unitary structure is released, said structure will expand only partially to its initial condition and grippingly engage said wire.

2. A clamp as defined in claim 1, wherein each springy member is V-shaped.

3. A clamp as defined in claim 1, wherein each springy member is M-shaped.

4. A clamp as defined in claim 1, wherein the inner bends in the unitary structure are sharp and the outer bends are rounded.

5. A clamp as defined in claim 1, wherein adjacent bends in the unitary structure, are one sharp and the other rounded.

6. A clamp as defined in claim 1, wherein the notches are at least in each of the end arms of each of said members of said unitary structure.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

687,431	Kimball	Nov. 26, 1901
1,038,664	Schell	Sept. 17, 1912
1,152,892	Henry	Sept. 7, 1915
1,505,220	Shay	Aug. 19, 1924
2,508,491	Cayo	May 23, 1950
2,600,091	Becker	June 10, 1952
2,721,365	Olson	Oct. 25, 1955