

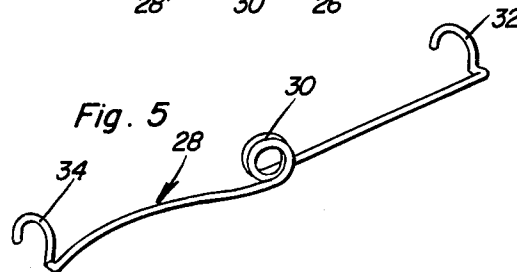
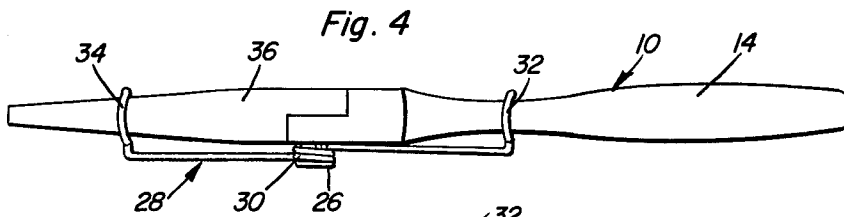
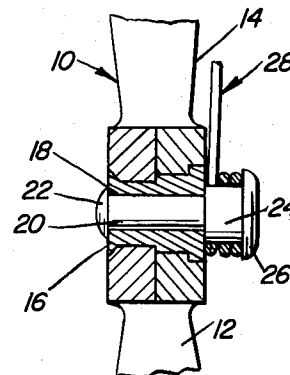
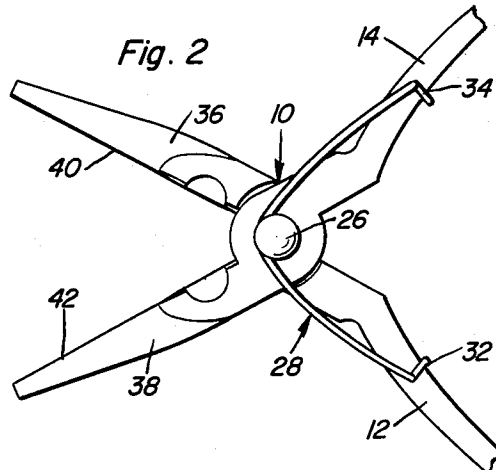
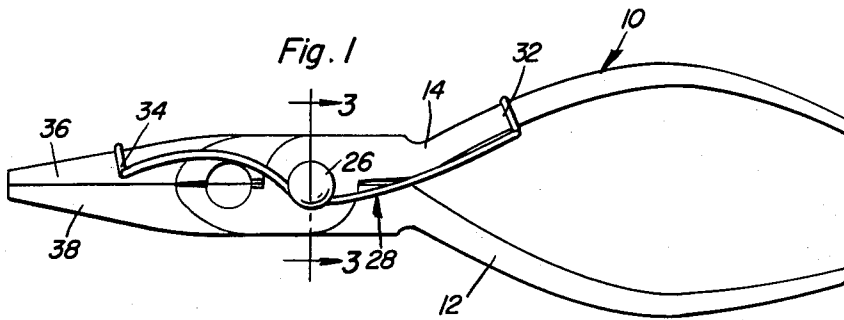
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SPRING ATTACHMENT FOR PIVOTALLY CONNECTED LEVERS

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SPRING ATTACHMENT FOR PIVOTALLY CONNECTED LEVERS

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6 Claims. (Cl. 81-417)

This invention relates to a novel and useful spring attachment for pivotally connected levers and more specifically to a spring attachment for pliers of the type including a pair of crossed levers pivotally connected together intermediate their opposite ends and defining a pair of confronting jaw members at one pair of corresponding ends.

The spring attachment of the instant invention comprises a specifically formed one-piece attachment which may be readily mounted on substantially all types of pliers and which is selectively engageable with the crossed levers of the pliers in a manner to alternately urge the jaw members of the pliers toward and away from each other as desired.

The main object of this invention is to provide an attachment for pliers including means by which the crossed levers of the pliers will be yieldingly urged to positions relative to each other with the jaw members of the pliers closed and selectively positionable in an alternate position engaged with the crossed levers of the pliers whereby the jaw members thereof will be yieldingly urged toward the open positions.

Another object of this invention, in accordance with the immediately preceding object, is to provide a spring attachment for pliers constructed in a manner whereby the attachment is adapted to be operatively mounted on substantially all types of pliers.

Still another object of this invention is to provide an attachment in accordance with the preceding objects constructed in a manner whereby it may be readily modified so as to conform to the various forms of pliers which are presently commercially available.

Still another object of this invention is to provide a spring attachment in accordance with the preceding objects and of one-piece construction whereby the attachment may be readily utilized on existing pliers as well as incorporated into the manufacture of new pliers.

A further object of this invention is to provide an attachment for pliers in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively troublefree in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a plan view of a pliers-type hand tool shown with the spring attachment of the instant invention mounted thereon and with the spring attachment operatively connected with the crossed levers of the hand tool in a manner so as to yieldingly urge the jaw members of the pliers together;

FIGURE 2 is a fragmentary plan view of the hand tool shown with the spring attachment of the instant invention operatively connected to the crossed levers of the pliers in a manner so as to yieldingly urge the jaw members of the pliers away from each other;

FIGURE 3 is a vertical sectional view taken substantially upon the plane indicated by the section line 3-3 of FIGURE 1 and on somewhat of an enlarged scale;

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FIGURE 4 is a side elevational view of the assembly illustrated in FIGURE 1 of the drawings and with the assembly inverted; and

FIGURE 5 is a perspective view of the spring attachment.

Referring now more specifically to the drawings the numeral 10 generally designates a conventional form of pliers which includes a pair of crossed levers 12 and 14 pivotally interconnected intermediate their opposite ends by means of a pivot pin 16, see FIGURE 3.

The pliers 10 are conventional in design with the exception that the pivot pin 16 has a longitudinal bore 18 formed therethrough and a headed shank-type fastener 20 has been secured through the bore 18 and enlarged as at 22 on its first inserted end so as to prevent its withdrawal from the bore 18.

The fastener 20 includes diametrically enlarged shoulder portion 24 whose free end is provided with a further diametrically enlarged head 26.

The fastener 20 may or may not comprise a part of the spring attachment of the instant invention. However, if the fastener 20 is omitted, a journal or shank portion similar to the headed shoulder 24 is required. The spring attachment of the instant invention is generally designated by the reference numeral 28 and comprises a one-piece torsion spring which is coiled at its approximate mid-portion as at 30. The coiled mid-portion 30 of the attachment or spring 28 is rotatably received on the shoulder 24 and the free ends of the spring 28 include generally U-shaped laterally directed end portions 32 and 34 which are similar in configuration.

From FIGURE 1 of the drawings it may be seen that one pair of corresponding ends of the levers 12 and 14 define a pair of jaw members 36 and 38 respectively defining confronting jaw faces 40 and 42.

While it may be seen from FIGURE 2 of the drawings that the levers 12 and 14 are crossed, it is to be understood that the levers defining the pliers 10 need not be crossed but merely pivotally connected together for rotation relative to each other about an axis which is substantially fixed relative to the lever members 12 and 14.

In operation, when it is desired for the jaw members 36 and 38 to be yieldingly urged together, the end portions 32 and 34 are engaged with the handle end portion of the lever 14 and the jaw defining end portion of the lever 12 respectively. The torsional spring 28 is tensioned in a manner such that the free end portion of the spring carrying the end portion 32 tends to rotate in a clockwise direction as viewed in FIGURE 1 of the drawings while the other end portion of the spring 28 tends to rotate in a counterclockwise direction. In this manner, the jaw members 36 and 38 are urged together.

With attention now directed more specifically to FIGURE 2 of the drawings, it may be seen that the end portion 32 has been removed from engagement with the handle portion of the lever 14 and engaged with the handle portion of the lever 12 and that the end portion 34 has been removed from engagement with the jaw-defining end portion of the lever 12 and engaged with the handle-defining end portion of the lever 14. In this instance, with the end portions of the spring 28 carrying the terminal end portions 32 and 34 being tensioned so as to have a tendency to rotate in clockwise and counterclockwise directions respectively as viewed in FIGURE 2 of the drawings, the jaw members 36 and 48 are urged apart.

The end portions 32 and 34 are of course formed of a configuration adapted to correspond to the cross-sectional shape of the jaw and handle-defining end portions of the levers 14 and 12, and the cross-sectional shape of the

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handle-defining end portions of the levers 14 and 12, respectively.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with pliers of the type including a pair of crossed levers pivotally connected together intermediate their end portions for relative rotation about an axis extending transversely of said levers, said levers including two pairs of corresponding end portions disposed on opposite sides of said axis, one pair of corresponding end portions defining jaw members and the other pair handle members, and spring means supported from said pliers releasably engageable either with one of said corresponding pairs of end portions or with one of the end portions of each of said pairs of corresponding end portions disposed on opposite sides of said axis.

2. The combination of claim 1 wherein said one of said corresponding pairs of end portions with which said spring means is releasably engageable is the handle members.

3. The combination of claim 1 wherein the end positions of each of said pairs of corresponding end portions disposed on opposite sides of said axis define one of said handle members and one of said jaw members, and said spring means, when engaged with said one jaw member, includes a connection therewith free of projections extending into the area between said jaw members.

4. The combination of claim 1 wherein said crossed levers are pivotally connected together by means of a pivot pin extending therebetween and upon which at least

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one of said levers is journaled, said pivot pin including means defining a shank on one end thereof projecting outwardly to one side of said pliers, said spring means comprising an elongated torsion spring member having its mid-portion coiled about said shank and its opposite ends projecting outwardly of said shank and including means defining embracing means adapted to selectively embrace corresponding end portions of said levers.

5. The combination of claim 4 wherein said embracing means comprises integral and generally U-shaped terminal end members carried by the free ends of said spring member.

6. In combination with pliers of the type including a pair of levers pivotally connected together intermediate their end portions for relative rotation about an axis extending transversely of said levers, said levers including two pairs of corresponding end portions disposed on opposite sides of said axis, one pair of corresponding end portions defining jaw members and the other pair handle members, and spring means supported from said pliers releasably engageable either with one of said corresponding pairs of end portions or with one of the end portions of each of said pairs of corresponding end portions disposed on opposite sides of said axis.

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