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PIVOT CONNECTION FOR THE BLADES OF SCISSORS OR SHEARS

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2 Sheets-Sheet 1

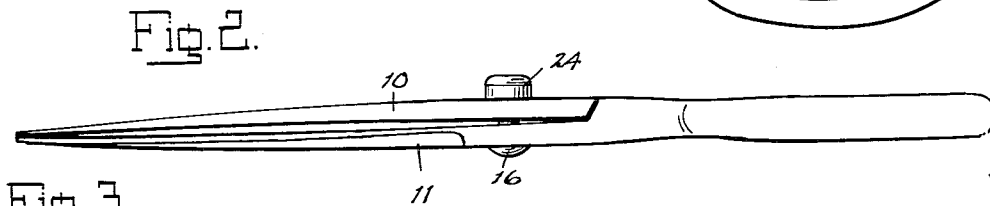
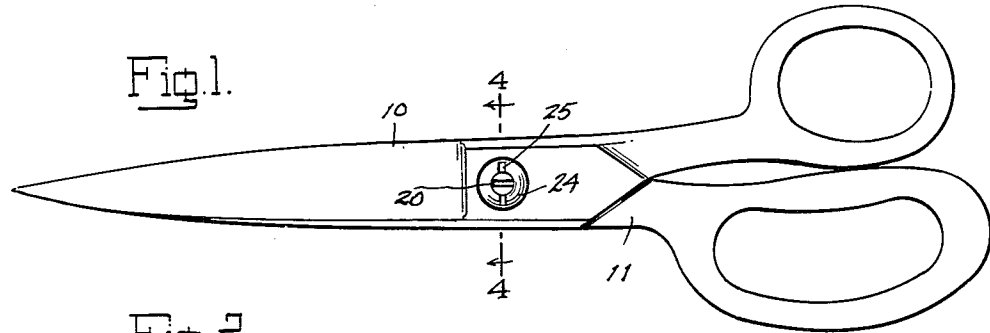


Fig. 3.

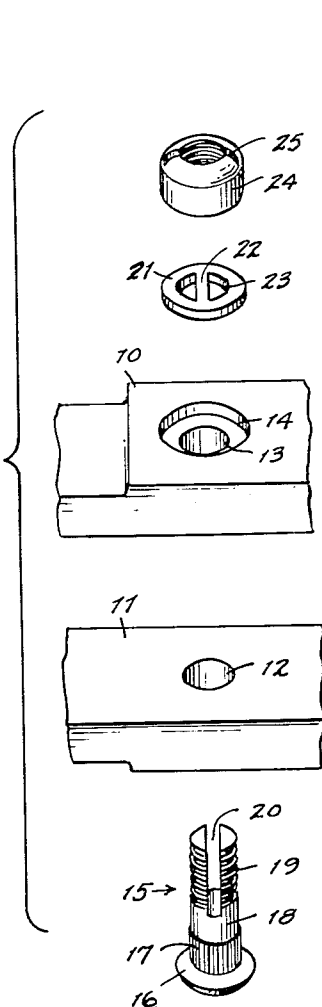
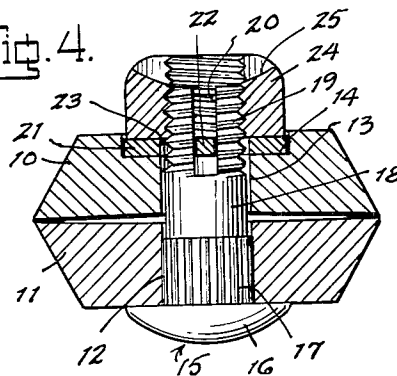


Fig. 4.



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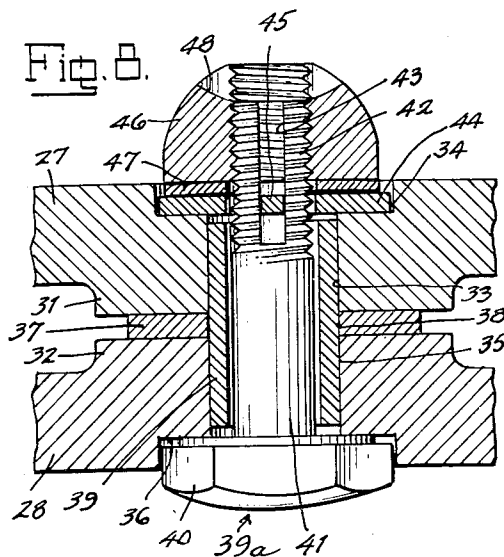
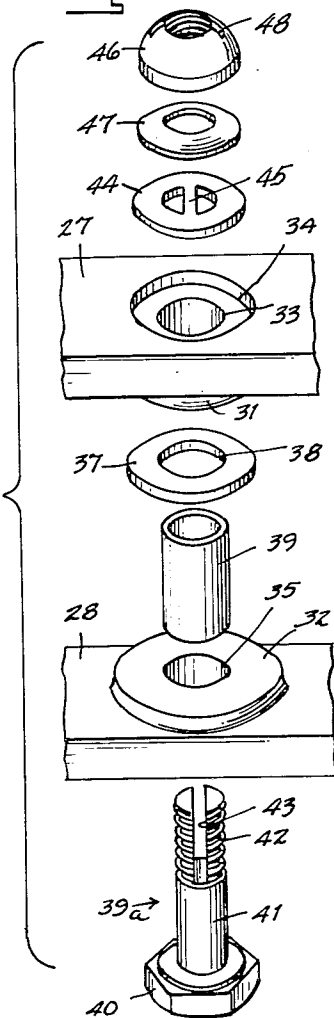
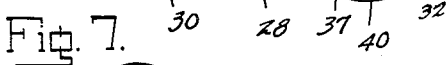
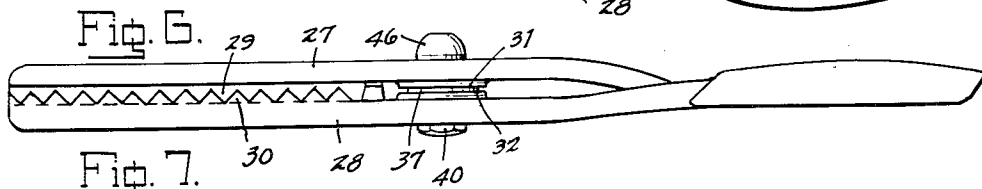
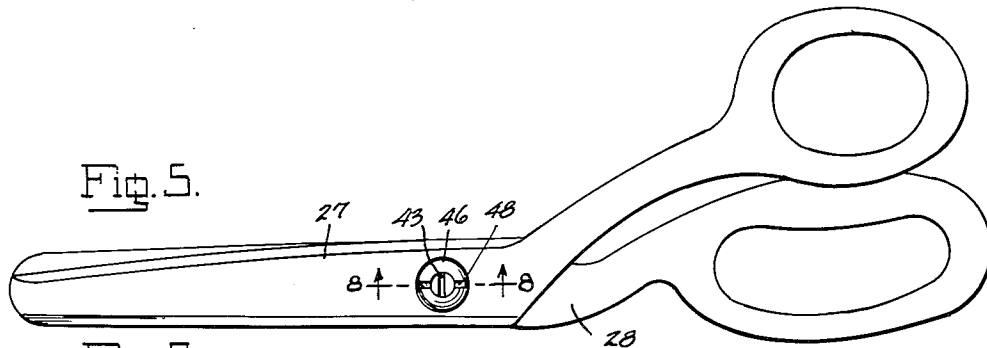
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PIVOT CONNECTION FOR THE BLADES OF SCISSORS OR SHEARS

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2 Sheets-Sheet 2



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PIVOT CONNECTION FOR THE BLADES OF
SCISSORS OR SHEARS

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4 Claims. (Cl. 30—266)

The present invention relates to a pivot connection for the blades of scissors or shears, and has for an object to provide a pivot connection by means of which the tension of the blades, with respect to each other, may be readily adjusted as desired, and following such adjustment, the repeated pivotal movement of the blades will not change the adjustment.

A further object is to provide such pivotal connection in which the adjustment may be made by the simple operation of turning a nut part relatively to an externally threaded pivot part, such operation being conveniently carried out by the user of the scissors with the use of a coin, such as a dime, for engaging a slot in the nut part and imparting turning adjustment movement thereto.

A further object is to provide a pivot connection employing relatively simple and inexpensive parts, and which may be assembled without substantial alteration in the normal structure of the scissors or shear blades.

With the above and other objects in view, embodiments of the invention are shown in the accompanying drawings, and these embodiments will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a side view of a pair of shears embodying the invention;

Fig. 2 is an edge view thereof;

Fig. 3 is a perspective view, on an enlarged scale, showing the several parts of the pivot connection in separated relation.

Fig. 4 is a transverse sectional view, on a further enlarged scale, taken along the line 4—4 of Fig. 1;

Fig. 5 is a side elevation of a modified form of shears, namely, pinking shears, embodying a modified form of the invention;

Fig. 6 is an edge view thereof;

Fig. 7 is a perspective view, on an enlarged scale, of the parts of the pivot connection as employed in the modified form of the invention illustrated in Figs. 5 and 6, shown in separated relation; and

Fig. 8 is a transverse sectional view, on a further enlarged scale, taken along the line 8—8 of Fig. 5.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, and more particularly to Figs. 1—4 thereof, the shears illustrated therein comprise a thumb blade member 10 and a finger blade member 11, these being of substantially conventional form having thumb and finger engaging loops at one end of the respective blade portions. The finger blade 11 is provided with a cylindrical hole 12, and the thumb blade 10 is provided with a cylindrical hole 13 and a countersunk recess 14 of circular form.

A pivot element 15 comprises a head 16, a knurled portion 17 adjacent the head, a smooth cylindrical shank portion 18, and an externally threaded end portion 19, the latter having a diametrically disposed slot 20. This pivot element is fixed to the blade 11 by driving it into the

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hole 12 with a press fit, obtained by means of the knurled portion 17, which tends during the driving operation to cut into the metal of the blade and thereby firmly fix the pivot element against turning. The shank portion 18 of the pivot element engages the hole 13 of the blade 10 with a relatively loose fit so as to permit of the normal tilting movement of one blade relatively to the other as the cutting edges of the blades slide over each other as the blades are opened and closed.

Within the countersunk recess 14 there is engaged a spider washer 21 having a diametrically disposed bar 22 across its pivot element receiving opening 23, the opening being of such diameter as to be engaged by the threaded portion 19 with the bar 22 disposed in the slot 20 of the pivot element, so that the spider washer is locked by the pivot element against relative turning. The fixing of the pivot element to the blade 11 thus fixes the spider washer against relative turning with respect to the blade 11.

The spider washer seats in the base of the countersunk recess 14 and a nut 24 is screwed upon the threaded end 19 of the pivot element and bears upon the upper side of the spider washer, tightening down of the nut thus increasing the tension in the blades and loosening of the nut decreasing the tension. A slot 25 is provided in the upper end of the nut and has a concave bottom surface for convenient engagement by the edge of a coin for the purpose of adjusting the nut.

Pivotal movement of the blade 10 about the shank of the pivot element will not tend to turn the nut 24 as the spider washer is fixed against rotation with respect to the pivot element, and thereby provides a fixed thrust bearing surface upon which the blade may pivot. As the blade is normally under tension, it exerts axial pressure upon the spider washer and the nut, and thus produces frictional resistance between the threads of the nut and the pivot element against turning. In the cutting of thick and thin materials, it is desirable to change the blade tension, and this can be quickly and easily accomplished simply by engaging a coin in the slot of the nut and turning it in the desired direction to increase or decrease the blade tension.

In Figs. 5—8 there is illustrated a modified form of the invention, which is shown as embodied in pinking shears wherein the blades are constrained against relative tilting movement at the pivot, but have a slight relative movement axially of the pivot during the cutting action. The pinking shears comprise a thumb blade member 27 and a finger blade member 28, these being of substantially conventional form having thumb and finger engaging loops at one end of the respective blade portions, and the blades having inter-engaging pinking teeth 29 and 30.

Upon the opposed inner sides of the blades there are respectively provided circular bearing bosses 31 and 32, the blade 27 being provided with a cylindrical hole 33 having its axis centrally of and normal to the flat bearing surface of the boss 31 and opening at its outer end into a countersunk circular recess 34. Similarly, the blade 28 is provided with a cylindrical hole 35 coaxial with and of corresponding diameter to the hole 33 and opening at its outer end into a countersunk recess 36 of hexagonal form, which is adapted to non-rotatively receive the hexagonal head of the pivot element, as will presently more fully appear.

A circular wear washer 37, having a circular hole 38 substantially corresponding in diameter to the holes 33 and 35, is interposed between the bearing bosses 31 and 32, and a tubular cylindrical bearing bushing 39 is engaged in the holes 33 and 35 and through the hole 38 of the washer, the fit of this bearing bushing being such as to allow relative turning movement of the blades thereon while constraining the blades against any substantial tilting action.

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A pivot element 39a comprises a hexagonal head 40, and a cylindrical shank portion 41 having an externally threaded end portion 42, the latter having a diametrically disposed slot 43. This pivot element has its shank engaged through the bearing bushing 39 with its hexagonal head 40 seated in the recess 36, the hexagonal form of the recess holding the pivot element against relative turning movement with respect to the blade 28.

Within the countersunk recess 34 there is engaged a spider washer 44 having a diametrically disposed bar 45 disposed in the slot 43 of the pivot element, so that the spider washer is locked by the pivot element against relative turning. As the pivot element is held against turning with respect to the blade 28 through the engagement of the hexagonal head in the hexagonal recess 36, the spider washer is thus fixed against relative turning with respect to the blade 28. The spider washer seats in the base of the countersunk recess 34 and a nut 46 is screwed upon the threaded end 42 of the pivot element and bears upon the upper side of a cupped spring washer 47 interposed between the nut and the spider washer 44, so that the spring washer is tensioned and thus tension is set up between the blade members, tightening down of the nut increasing the tension in the blades and loosening of the nut decreasing the tension. A slot 48 is provided in the upper end of the nut and has a concave bottom surface for engagement by the edge of a coin for the purpose of adjusting the nut.

As in the first embodiment, pivotal movement of the blade 27 about the bearing bushing 39 will not tend to turn the nut 46 or the spring washer 47, as the spider washer 44 is fixed against rotation with respect to the pivot element which, in turn, is fixed against rotation with respect to the blade member 28.

I have illustrated and described preferred and satisfactory embodiments of the invention, but it will be understood that changes may be made therein within the spirit and scope thereof, as defined in the appended claims.

What is claimed is:

1. A pivot connection for the blades of scissors or shears, comprising first and second blade members, each having a hole therethrough in coaxial relation one to the other, a pivot element disposed in said coaxial holes, means fixing said pivot element against relative turning with respect to said first blade member, said second blade member being free to turn about said pivot element and said pivot element having an external thread and being disposed partially within said hole of said second blade member and projecting outwardly therefrom, said pivot element having a diametrically disposed longitudinally extending slot, a spider washer having a hole loosely engaged about the external thread of said pivot element for free axial movement thereon and a bar extending diametrically across said hole and engaged in said slot to fix said spider washer against relative turning movement with respect to said pivot element, and a nut engaged upon said pivot element at the outer side of said spider washer, the inner side of said washer being in bearing relation with said second blade member.

2. A pivot connection for the blades of scissors or shears, comprising first and second blade members, each having a hole therethrough in coaxial relation one to the other, a pivot element disposed in said coaxial holes having a knurled portion fixedly engaged in said hole of said first blade member, said second blade member being free to turn about said pivot element and said pivot element having an external thread and being disposed partially within said hole of said second blade member and projecting outwardly therefrom, said pivot element having a

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diametrically disposed longitudinally extending slot, a spider washer having a hole loosely engaged about the external thread of said pivot element for free axial movement thereon and a bar extending diametrically across said hole and engaged in said slot to fix said spider washer against relative turning movement with respect to said pivot element, and a nut engaged upon the pivot element at the outer side of said spider washer, the inner side of said washer being in bearing relation with said second blade member.

3. A pivot connection for the blades of scissors or shears, comprising first and second blade members, each having a hole therethrough in coaxial relation one to the other, a cylindrical tubular bearing bushing engaged in said coaxial holes, a pivot element disposed in said bushing, means fixing said pivot element against relative turning with respect to said first blade member, said second blade member being free to turn about said pivot element and said pivot element having an external thread and being disposed partially within said hole of said second blade member and projecting outwardly therefrom, said pivot element having a diametrically disposed longitudinally extending slot, a spider washer having a hole loosely engaged about the external thread of said pivot element for free axial movement thereon and a bar extending diametrically across said hole and engaged in said slot to fix said spider washer against relative turning movement with respect to said pivot element, and a nut engaged upon the pivot element at the outer side of said spider washer, the inner side of said washer being in bearing relation with said second blade member.

4. A pivot connection for the blades of scissors or shears, comprising first and second blade members, each having a hole therethrough in coaxial relation one to the other, a cylindrical tubular bearing bushing engaged in said coaxial holes, a bearing washer surrounding said bushing and disposed between said blade members, a pivot element disposed in said bushing, means fixing said pivot element against relative turning with respect to said first blade member, said second blade member being free to turn about said pivot element and said pivot element having an external thread and being disposed partially within said hole of said second blade member and projecting outwardly therefrom, said pivot element having a diametrically disposed longitudinally extending slot, a spider washer having a hole loosely engaged about the external thread of said pivot element for free axial movement thereon and a bar extending diametrically across said hole and engaged in said slot to fix said spider washer against relative turning movement with respect to said pivot element, and a nut engaged upon the pivot element at the outer side of said spider washer, the inner side of said washer being in bearing relation with said second blade member.

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