

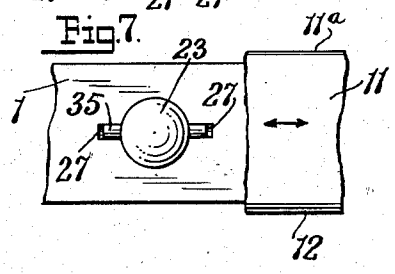
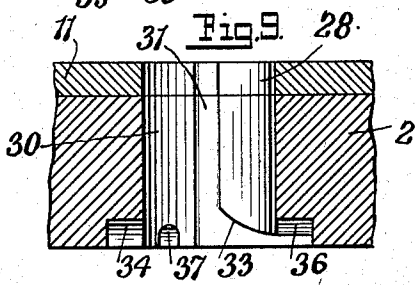
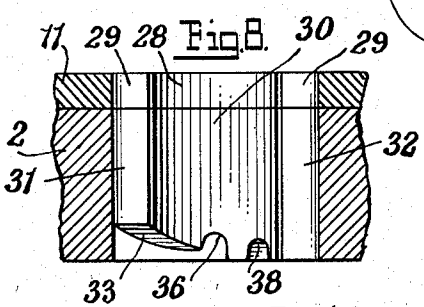
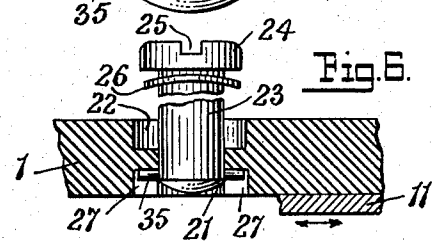
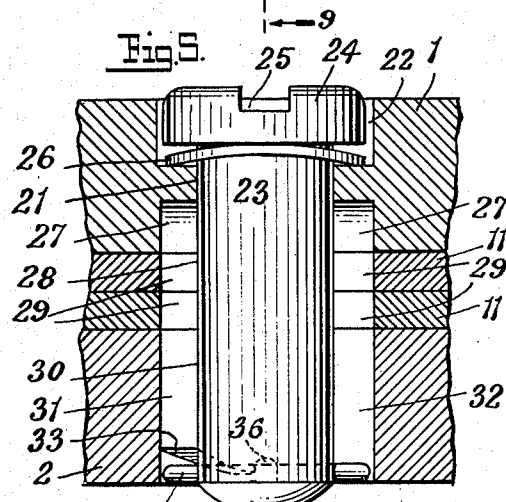
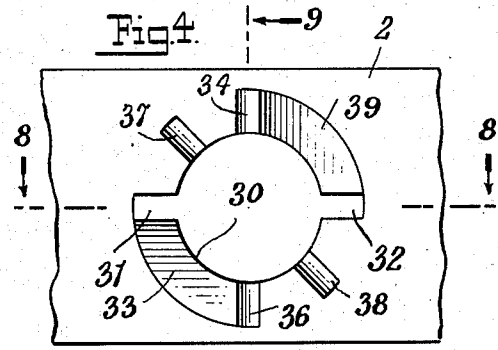
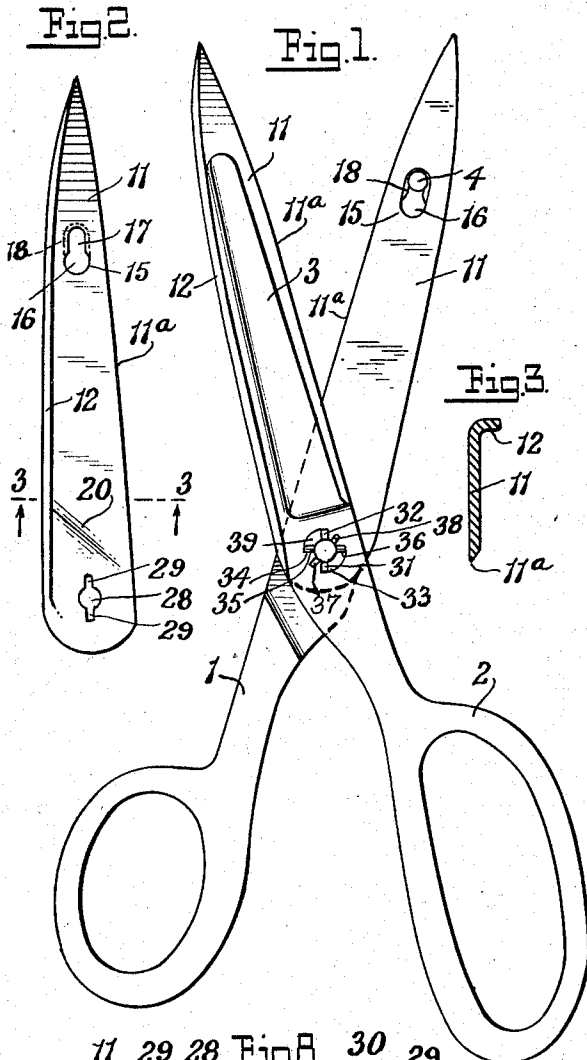
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SCISSORS

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2,382,341

SCISSORS

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12 Claims. (Cl. 30—260)

This invention relates to scissors, and particularly to a means by which the scissor frames may be readily held together in pivotal relation. The invention also comprehends scissors having removable blades and to means by which the blades may be properly shaped and readily and securely fitted to the blade-retaining frames.

As an example of scissors of the type to which the invention relates will be found in my Patent No. 2,373,607 dated April 10, 1945.

Most scissors having removable blades utilize the pivot pin or screw as a part of the means employed for holding the blades attached to the scissor frames. This requires the removal of the pivot pin or screw each time that the blades are to be replaced, and the removal and replacement of the pin or screw very often results in the loss of satisfactory adjustment of the blades.

An object therefore, of the present invention is to provide a scissors, and one having either removable or non-removable blades, with a pivot pin construction so arranged as to greatly facilitate the separation of the scissor frames for replacement of the blades if detachable blades are used, for the sharpening of the blades, or for other purposes. The improved construction contemplates the provision of means by which the pivot pin is fixedly held in a selected position of adjustment, thus securing the exertion of a constant shearing pressure between the blades.

A further object of the invention is to provide means by which a selected adjustment when once obtained, may be repeatedly secured and maintained.

Another object of the invention is to provide a pivot pin which will be permanently carried by one of the scissor frames; and while being capable of being withdrawn to an extent necessary to prevent it from interfering with the easy separation of the frames and the removal of the detachable blades carried thereby, the pin will remain attached to one of the frames and therefore cannot become lost or mislaid.

Still another object of the invention is to provide a construction of detachable blades and scissor frames therefor whereby improved shearing action is obtained.

These and other objects are attained by the construction hereinafter described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, forming a part hereof, Fig. 1 is a face view of a pair of scissors in open position, constructed in accordance with the invention; Fig. 2 is a face view of one of the detachable blades; Fig. 3 is a sectional view on the line 3—3 of Fig. 2, looking in the direction of the arrows; Fig. 4 is a face view of one of the scissor frames adjacent to the pivot pin opening; Fig. 5 is a sectional view through the pivot, Fig. 6 is a

sectional view through one of the frames at the pivot, Fig. 7 is a face view of the structure of Fig. 6; Fig. 8 is a sectional view on the line 8—8 of Fig. 4, looking in the direction of the arrows, and Fig. 9 is a sectional view on the line 9—9 of Fig. 4, looking in the direction of the arrows.

Referring to the drawing, 1 and 2 respectively indicate the conventionally shaped scissor frames having the usual looped handle portions. Extending integrally from each of the handle portions is the shank portion 3 of reduced thickness and of tapering blade-like form, and provided with a pivot hole through which the pivot pin 23 of special construction extends to maintain the two frames of the scissors in pivotal relation.

Detachably secured to each of the shanks 3 is a blade 11 which is preferably, but not necessarily, made from sheet metal, and the longitudinal edge of each blade indicated at 11a is the cutting edge, the opposite longitudinal edge being stiffened or reinforced by means of a turned-over flange 12 extending substantially for the full length of the blade. The blade may be slightly transversely curved if desired, and to dispose each blade at the required shearing angle to its companion, each blade is given a slight off-set bend indicated at 20 in Fig. 2, and scarcely perceptible to the eye since it causes a transverse slope of the blade of only approximately two degrees to the bearing surface at the butt or larger end of the blade, but nevertheless sufficient to provide satisfactory shearing action between the blades. The frame members have the shanks 3 formed with a corresponding off-set so that they will be complementary to the blades and the blades will lie in close contact with them.

Each blade is provided with two apertures. That which is located near the wider or butt end of the blade is for the passage of the pivot pin 23, while that located relatively close to the pointed extremity or tip of the blade and generally indicated at 15, is a so-called "button-hole" aperture, sometimes also referred to as a "key-hole" slot. This aperture 15 is adapted for detachable engagement with a headed stud 4 projecting from the inner face of the shank or frame part 3.

In placing a blade on the shank part 3, the enlarged portion 16 of the button-hole opening 15 is placed over the head of the stud 4. The blade is then pushed longitudinally toward the handle part so that the shank of the stud 4 is moved up into the narrower part 17 of the button-hole opening. The portion of the opening 15 that is located around the narrow part 17 is counter-sunk, thus providing a ledge 18 which engages behind the head of the stud 4 when the blade is moved home as described. When the head of the stud 4 is in the position just mentioned, its face will be flush with the face of the

blade, and the blade will be held flatly against the shank portion 3.

When the blades have been placed on the two shanks 3 in the manner just described, the pivot pin holes extending through the scissor frames as well as through the two detachable blades will then be located in alignment so that the pivot pin 23, which is carried by one of the frames, namely, that indicated at 1, may be inserted through the aligned holes and located in position in the manner presently described.

It will be noted that the frame member 1 has a pivot hole 21 extending through it and through which the pivot pin 23 passes. Said pin has a head 24 at one end, slotted at 25 for the reception of a screw driver or a coin or other object or tool by which the pin may be turned to place it either in locked position or to loosen it. The head 24 normally seats in a recess in the outer face of the frame 1 and surrounding the pin 23 and confined between the head 24 and the inner end of the recess 22 is a spring washer 26 or similar resilient means setting up a force tending to urge the pin axially or out of the aligned pivot pin openings. At its opposite end, the pivot pin 23 is provided with a cross pin 35 providing diametrically opposite radial projections at the last-mentioned end of the pivot pin.

In inserting the pivot pin 23 through the frame member 1, it will be noted that this is done before the cross pin 35 is inserted through the pivot pin. Once the cross pin 35 is inserted through the pivot pin, it acts as a retaining means for holding the pivot pin attached to the frame member 1 and it will not become separated therefrom except by removing the cross pin, since the aperture 21 extending through the frame member 1 closely conforms in shape to the cylindrical contour of the pin 23 and will not pass the cross pin 35. However, it will be seen in Figs. 6 and 7 that the aperture 21 through the frame member 1 is provided with a pair of radially extending, diametrically opposite recesses 27 conforming in shape to the projecting ends of the cross pin 35 so that the pivot pin can be drawn outwardly to such an extent as to cause the end of the pivot pin and the cross pin, including the projecting end portions thereof, to be counter-sunk as clearly seen in Fig. 6, thus allowing the blade 11 mounted on the frame 1 to be freely slid in place or removed without interference from any parts of the pivot pin or the cross pin fitted therethrough. During this removal and replacement of a blade, the pivot pin will remain attached to the frame member 1 and thus cannot fall out of the same and become lost or mislaid.

As will be seen in Fig. 2, each of the removable blades 11 has a pivot pin opening 28 and each of these openings 28 has diametrically opposite extensions 29 through which the cross pin 35 will freely pass. The frame member 2 is provided with a pivot pin opening 30 having two radial extensions 31 and 32 also permitting the passage of the cross pin 35. The arrangement described is such that when the blades 11 have been fitted on the shanks 3 of the scissor frames 1 and 2, the pivot pin holes 21, 28 and 30 will all be in alignment and the pivot pin 23 will extend through them as seen in Fig. 5. A slight axial pressure imposed by a screw driver or a coin inserted in the slot 25 in the head 24 of the pivot pin 23, coupled with a turning movement of the pivot pin, will cause the projecting ends of the cross pin 35 to ride on a pair of inclined cam surfaces 33 and 39 provided in the outer face of

the frame member 2 and extending arcuately around the pivot hole 30 therein, until the ends of the cross pin seat in the diametrically opposite recesses 34 and 36 in the face of the frame member 2 at the ends of the cam surfaces and substantially at right angles to the apertures 31 and 32.

Since the pivot pin 23 is under axially-exerted spring thrust by means of the spring washer 26, such thrust tends to keep the cross pin 35 seated in the recesses 34 and 36 when it enters the same, thus locking the pin 23 in position and holding it against rotation, and also holding the blades under the constant correct shearing pressure.

Since the depth of the recesses in which the cross pin seats determines the compression imposed on the spring washer and hence determines the shearing pressure applied to the blades, this pressure may be regulated by providing a number of radially extending recesses of different depth extending from the pivot pin aperture 30. For example, it will be noted in Figs. 1, 4, 8 and 9 that recesses 37 and 38 are provided, and which may be of less depth than those shown at 34 and 36. Thus, when the cross pin 35 seats in the recesses 37 and 38 it will compress the spring washer to a greater extent than is the case when it seats in the recesses 34 and 36. As a result, the pressure between the blades of the scissors will be greater. Accordingly, by the provision of a plurality of pairs of recesses around the aperture 30, the tension between the scissor blades can be increased or decreased as required for any particular work by merely turning the pivot pin to an extent required to seat the cross pin in any selected set of recesses. The recesses can be suitably marked or designated to indicate the result secured. Since the cross pin 35 positively seats in each pair of recesses and is held therein by the tension of the spring washer 26, the adjustment when once obtained will be maintained indefinitely or until altered by manual rotation of the pivot pin.

The replacement of the detachable blades of this scissors is extremely simple. A screw driver or a coin is inserted in the slot 25 and the pivot pin 23 is turned until the cross pin 35 aligns with the apertures 31 and 32 and the pin is pushed therethrough until it reaches the position shown in Fig. 5 wherein the end of the pivot pin and the cross pin 35 carried thereby will be counter-sunk in the frame member 1. Since the pivot pin will at this time have been withdrawn through both of the detachable blades 11, both blades can then be removed by sliding them longitudinally in a direction toward their tips to bring the head of each stud 4 into the enlarged part 16 of each of the button-hole openings 15 whereupon the blades will literally fall off. New blades are quickly slid in place on the frame members; the pivot pin 23 is then pushed through the aligned pivot pin apertures in the frame members and blades, and a turn of the pivot pin will seat the ends of the cross pin 35 in the selected pair of recesses 34, 36 or 37, 38 or any additional pairs which may be provided, to obtain the required cutting pressure between the blades. Since the pivot pin can always be returned to the same position, the detachment and replacement of a pair of blades will never result in the loss of a satisfactory adjustment of the scissors.

While I have herein described the improved pivotal construction as especially adapted for use in connection with scissors of the detachable blade type because of the manifest advantages of such a construction for that type of scissors, it

will nevertheless be obvious that the pivotal arrangement described need not necessarily be limited to use in connection with that type of scissors since its positiveness of adjustment and its ability to maintain any selected adjustment will render it useful on any type of scissors, shears, and in fact on numerous kinds of tools and cutting implements wherein such desirable requisites are sought.

What I claim is:

1. In a scissors, a pair of frames pivotally connected by a pivot pin extending through them, means at one end of the pin for preventing axial displacement of the pivot pin when the pin is manually rotated to a position other than that in which it was inserted through the frames, said pin being movable axially but only partly through one of the frames whereby said pin remains attached to said frame even when it is separated from the other frame.

2. In a scissors, a pair of scissor frames each provided with a pivot pin aperture, a pivot pin extending through said apertures, means for urging the pivot pin axially, one end of the pin having an enlargement, a seat in one of the frames in which said enlargement is maintained, said pin being capable of complete withdrawal through the aperture in the last-mentioned frame and capable of being moved only partly through the other frame whereby the pin remains attached to the last-mentioned frame even when the frames are separated.

3. In a scissors, a pair of blades pivotally connected together, a pivot pin extending through the blades, spring means for exerting axial force on the pin, means projecting radially from the pivot pin, cam means on one of the blades for engaging said projecting means to cause axial pull on the pin in opposition to the force exerted by the spring means, and a seat on the last-mentioned blade for receiving the radially projecting means to hold the pivot pin against inadvertent rotation.

4. In a scissors, a pair of frames pivotally secured together, a pivot pin uniting the frames, a head on one end of the pin and a radial projection at its other end, one of the frames being apertured to permit the passage of the end of the pin provided with the radial projection, the other frame having an aperture through which said end of the pin cannot pass, resilient means for urging the last-mentioned end of the pin toward the face of the frame that is provided with the larger aperture, and a recess in the face of said frame into which the radial projection rests.

5. In a scissors, a pair of scissor frames, each of said frames being provided with a pivot pin aperture, a pivot pin extending through said apertures, said pin having lateral parts at one end, the aperture in one of the frames being of a shape and size to permit the passage of the end of the pin carrying the lateral parts, said frame being provided with a seat adjacent to its aperture in which the lateral parts on the pin are brought to rest when the pin is rotated after having been extended through the aligned apertures in the frames, and means tending to urge the pivot pin axially to hold the lateral parts thereof in engagement with the seat.

6. In a scissors, a pair of scissor frames each provided with a pivot pin aperture, a pin extending through the apertures, said pin having lateral extensions at one of its ends, a head at the other end, one of the frames having recesses radiating from its aperture and into which the lateral ex-

tensions are brought to rest on rotative movement of the pin, and spring means tending to urge the pin axially to thereby hold the lateral extensions in the recesses.

7. In a scissors as called for in claim 6, and wherein inclined surfaces are provided adjacent to the recesses to guide the lateral extensions into said recesses on manual rotative movement of the pivot pin.

8. In a scissors as called for in claim 6, wherein a plurality of groups of recesses extend from the pivot pin aperture, said groups being of different depth and the lateral extensions being adapted to be selectively placed in any desired group of recesses.

9. In a scissors, a pair of scissor frames each provided with a pivot pin aperture, a pin extending through the apertures, a detachable blade on each frame, said blades having apertures through which the pivot pin extends, a detachable connection between each blade and its frame for holding the blade in closed contact with its frame but releasable therefrom by longitudinal sliding movement of the blade when the pivot pin is withdrawn, seats on one of the frames, lateral extensions on the pin adapted to rest in said seats, spring means for urging the pin axially to thereby hold said lateral extensions in the seats, and recesses in one of the frames in which the lateral extensions can be brought to rest to permit the detachable blade on that frame to be moved longitudinally along the face of said frame without interference from the pivot pin, but without requiring separation of the pivot pin from said frame.

10. In a scissors, a pair of scissor frames, each frame having a pivot pin aperture, a pivot pin extending through said aperture, a cross-pin extending through the pivot pin adjacent to one of its ends, the aperture in one of the frames being of a shape to permit the passage of the cross pin through it, said aperture being provided with at least one pair of radially extending recesses into which the cross pin may be rested, inclined cam surfaces on one of the frames for guiding the cross pin into said pair of recesses on manual rotation of the pivot pin, and spring means placed under compression by said inclined surfaces as the cross pin rides on the inclined surfaces to seat the cross pin in the recesses.

11. In a scissors as called for in claim 8, in which the aperture in the frame in which the recesses are located is also provided with additional recesses of different depth into which the cross pin may be selectively seated.

12. In a scissors, a pair of frames each having a pivot pin aperture, a pivot pin extending through said apertures, a head on one end of the pin, a recess in the face of one of the frames into which the head rests, a spring washer surrounding the pin and confined between the inner end of the recess and the head, a cross pin extending through the opposite end portion of the pivot pin, the second frame having radially extending recesses in its outer face projecting from its pivot pin aperture and so located as to seat the cross pin when the pivot pin is rotated in the aligned pivot pin apertures through the frames, and inclined surfaces located between parts of the pivot pin aperture in the second frame and said recesses whereby the spring washer will be compressed as the pin is manually rotated and moved over said inclined surfaces to bring the cross pin into engagement with the seats.

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