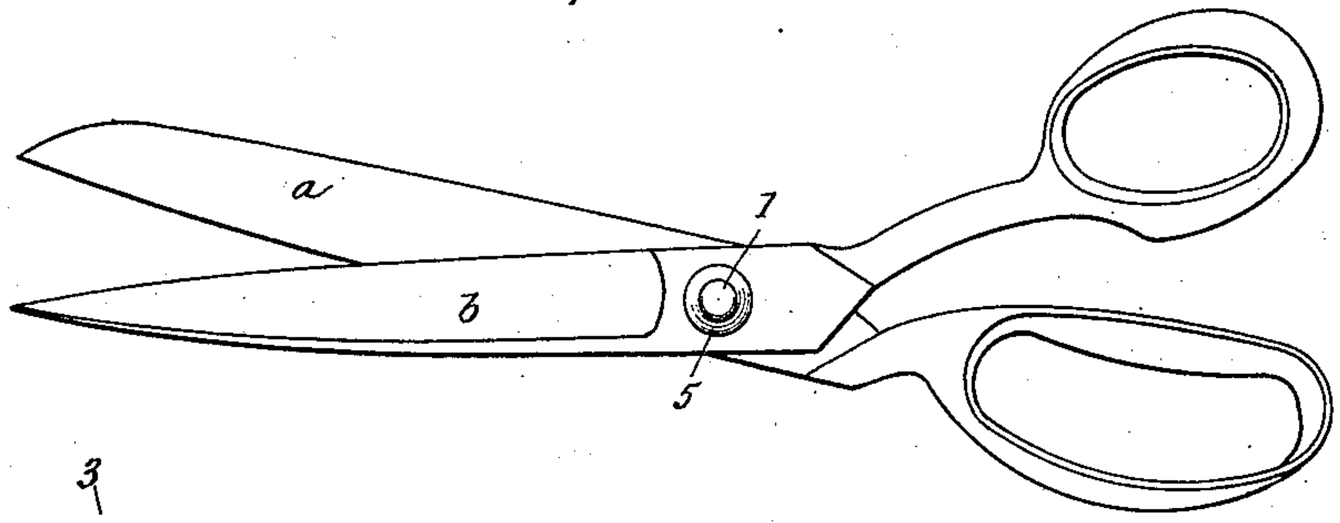
F. D. DAVIES.

SHEARS.

APPLICATION FILED FEB. 5, 1909.

975,515. **Patented Nov. 15, 1910.**

Fig. 1.



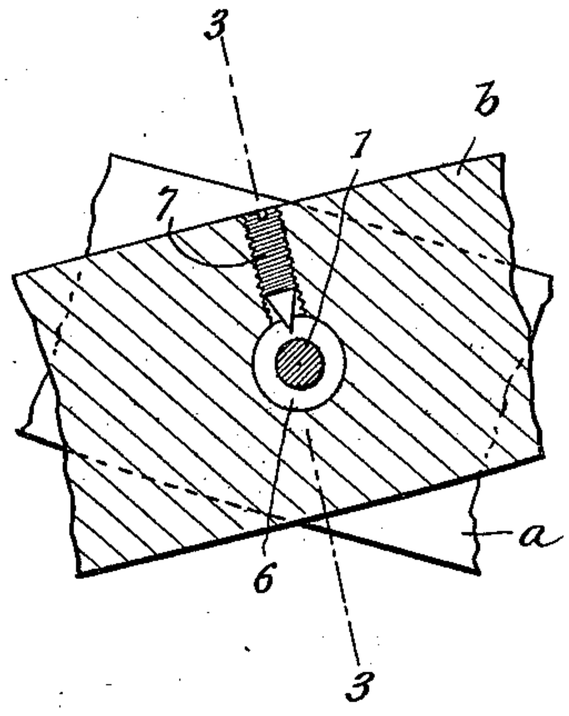


Fig. 2.

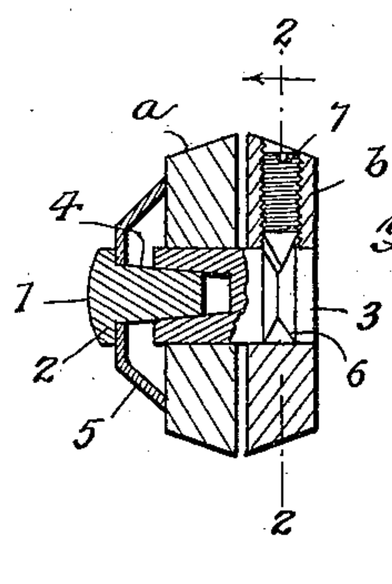
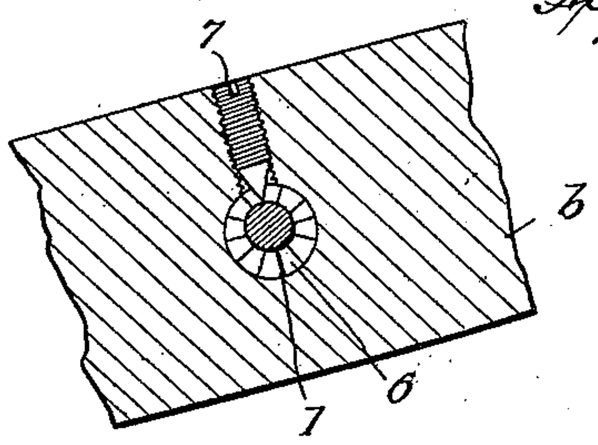


Fig. 3.

Fig. 4.



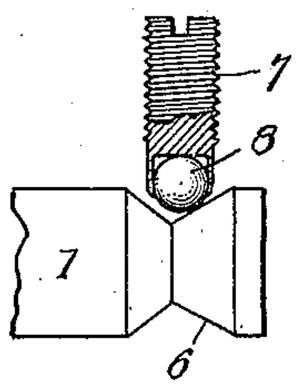


Fig. 5.

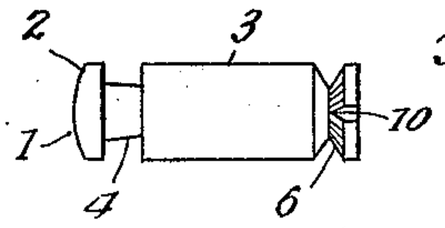
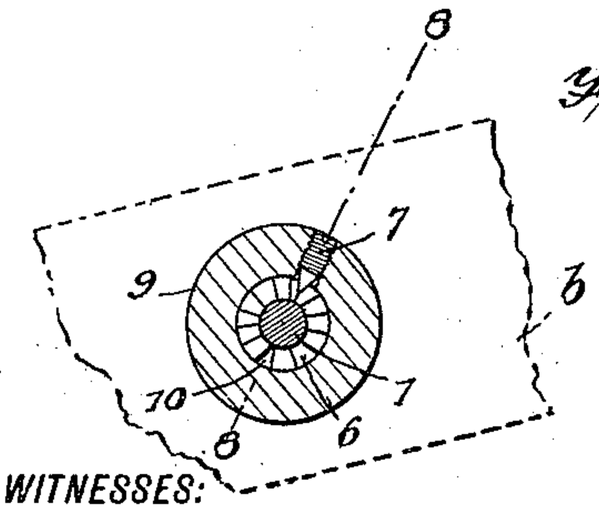


Fig. 6.

Fig. 7.



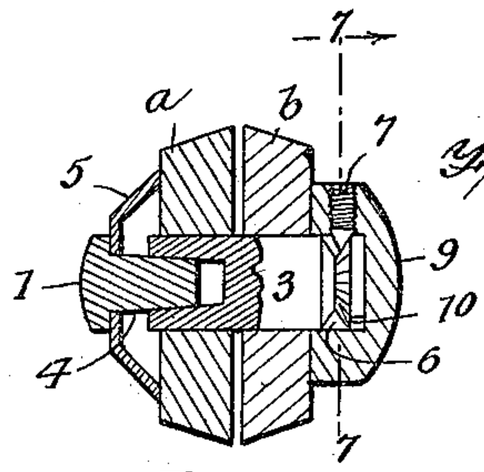


Fig. 8.

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SHEARS.

975,515. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed February 5, 1909. Serial No. 476,218.

To all whom it may concern:

Be it known that I, FREDERICK D. DAVIES, a citizen of the United States, and a resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Shears, of which the following is a specification.

The objects of my invention are to simplify and cheapen the construction of shears and scissors, to improve the shear action, and to provide for adequate adjustment, both at the time of making and afterward.

The principles of the invention will be applicable, more particularly, to trade shears, that is, tailors' shears, barbers' shears, paperhangers' shears, dental snips, tinners' snips, etc.; but it will be obvious that the invention may also be embodied in family shears and scissors. The term "shear" as used hereinafter will be understood, of course, as referring to any of these, whether commonly known as shears, scissors or snips.

In its primary phase the invention comprises a shear pivot having a resilient head bearing against one shear blade and having also a lateral recess, and an adjusting screw pertaining to the other blade disposed angularly with reference to the pivot, the end portion of this screw and the outer wall of said recess having bevel contact. Tightening of the screw, thus, pulls upon the resilient head and draws the blades together, but not positively.

Other features of the invention will be described and claimed hereinafter.

At this point I wish to emphasize the direct and peculiar coöperation between such an adjusting screw and the resilient head. Heretofore, there have been various forms of screw-connected shears; but with these, either the screw is purposely set so hard at the factory that it is impossible for the user to make any adjustment, or else, for such users, for example tailors, as have to make adjustment from time to time, the screw is put in so that it may be manipulated, but with the result that a meddlesome person may at any time ruin the shear by overtightening.

The present shear is designed to be adjustable in the hands of the user and at the same time proof against mischievous and unskilful manipulation. Shears constructed according to my invention possess this character for the following reasons: First, the screw is inconspicuous and does not readily attract the fingers of meddlesome or thoughtless persons; and, second, the adjustment secured by the bevel contact is comparatively slow and delicate, so that too sudden tightening is avoided. But these features are insufficient; the shear would still not be a safe one to put on the market, for the reason that a slight degree of overtightening on the screw would be calculated, either to ruin the shear edges or to injure the adjusting screw or pivot, or both. The provision of the resilient head, preferably in the form of a spring washer, marks the last step in a shear of this kind. It transforms the adjusting action from a positive to a cushioned one, and protects the shear in a dual capacity, first making it practically impossible to injure the shear edges, and second preserving the contacting surfaces of screw and pivot from wear or breakage. In this connection, I would call attention to the importance of the slight rocking action permitted by the spring washer, which insures that, in the use of the shear, too great strain will not be brought upon the point of the small adjusting screw.

In the accompanying drawings illustrating certain forms of my invention, Figure 1 is a side elevation of a shear showing the resilient head and means for rotating the pivot; Fig. 2 shows a vertical longitudinal section through the farther blade at the pivot on the line 2—2 of Fig. 3, looking in the direction of the arrow; Fig. 3 is a transverse section on the line 3—3 of Fig. 2; Fig. 4 is a section corresponding to Fig. 2, but looking in the reverse direction, showing a development of the invention; Fig. 5 is a detail view showing the relation of a screw with ball to the pivot; Fig. 6 is a detail view of the pivot as it may be constructed; Fig. 7 is a section on the line 7—7 of Fig. 8, looking in the direction of the arrow illustrating a further development of the invention; and Fig. 8 is a cross-section on the line 8—8 of Fig. 7.

The numeral 1 indicates the shear pivot, rotatable in both blades *a* and *b*. Preferably, this pivot is made in two parts, a headed male part 2 and a female part 3. These parts are united frictionally, the taper of the joint being very slight. Between the head of the male part and the socket of the

female part is left an annular recess 4, in which is held a spring washer 5, constituting the resilient head of the pivot. A two-part construction for the pivot avoids the necessity of providing in the factory pivots of many different sizes; in other words, it permits of an adjustment during the construction of the shear. It will be understood that the two parts of the pivot are forced together so tightly that there will be no danger of separation in use. The female part 3 is provided with a lateral recess 6, preferably in the nature of an annular recess, the outer wall of which is inclined. In fact, the annular recess or groove may be V-shaped, as shown. The groove 6 coöperates with the end of an adjusting and connecting screw 7 disposed angularly with reference to the pivot 1. Preferably, this screw will be pivot-pointed; but, as shown in Fig. 5, it may carry a ball 8 in its end to reduce friction.

In describing the relation of the parts in the appended claims I state that the resilient head or washer 5 bears against one shear blade, and that the screw 7 pertains to the other shear blade; and this language should be interpreted as applying to all the views of the drawing. In Figs. 1 to 5, the screw is shown as threaded through the shear blade itself. In Figs. 7 and 8 I show it threaded through a collar 9 mounted on the pivot outside the shear blade. The result, as to adjustment is, of course, the same.

There is a distinct advantage in forming the lateral recess 6 in the form of an annular groove; since, the pivot being rotatable in both shear blades, the wear is distributed along the outer wall of the groove. This, together with the cushioning effect contributed by the resilient head 5, reduces practically to a minimum the effect of the wear of the bevel contact between the screw 7 and the outer wall of the lateral recess 6. There is also a peculiar advantage in constructing this pivot, provided with the resilient head and the lateral recess for engagement by the adjusting screw, in two parts, telescopically connected, namely, the male part 2 and the female part 3. This bi-part, frictionally-united structure has a peculiar function in this assemblage; since, without it, the greatest difficulty would be experienced in forming the groove 6 in the pivot and the tapped opening in the blade or collar 9 for the reception of the screw 7, so that they would register in proper relation when the shear was assembled. It is a known fact that there is always some variation in the shear blades, and this variation is often considerable, comparatively speaking; so that, with a one-piece pivot, it would probably be only in the minority of instances that the groove 6 and tapped opening for the adjusting screw 7 would upon assembling the shear be found to be in proper relation. The bi-part, frictionally-united form of pivot enables the groove 6 to be adjusted with reference to the screw 7 during assembling of the shear; so that proper cooperation is assured.

For quick assembling or the reverse the pivot 1 may be provided with a longitudinal passage or groove 10 extending from the annular groove 6 to the end of the stud, so that the point of the screw 7 may be passed through it, without withdrawing the screw so that its point clears the groove 6. Such an arrangement is indicated in Figs. 7 and 8, where it will be seen that the collar 9 may be removed or replaced when the point of the screw 7 is brought in alinement with the groove 10. Fig. 6 shows a pivot made in this way, and illustrates the fact that, under such circumstances, it is preferable to knurl or roughen the outer wall of the groove 6, so that the tension of the washer 5 will hold the point of the screw 7 in one of the notches and, thus, prevent the collar 9 from slipping around accidentally to bring the point of the screw into alinement with the passage 10. Of course, this quick assembling feature may be embodied in the forms of the invention in which the screw 7 passes directly through one of the shear blades, as well.

Fig. 4 illustrates an important form, wherein the annular groove 6 is made slightly eccentric, so that a fine adjustment, in addition to the adjustment of the screw 7, may be had by turning the pivot 1. In this case, also, it is desirable to knurl the outer wall of the groove 6, so that the screw 7 and the groove 6 will maintain their relative positions after adjustment by turning of the pivot. To facilitate turning the pivot, one end of the latter may be provided with a slot for a screw-driver, as illustrated in Fig. 1. In the operation of turning the pivot, endwise force will first be exerted on the screwdriver, so as to move the pivot 1 endwise against the tension of the washer 5, thus releasing the point of the screw 7 from the notches or indentations in the outer wall of the annular groove 6, after which the pivot may be turned freely. Of course, the pivot may be turned in any other way; but as a screwdriver will be required to operate the screw 7 it may also be applied to the pivot 1.

It will be apparent from the foregoing that I have produced a shear that may be quickly and easily assembled and is highly desirable in practical use.

By "bevel contact" herein I refer to a construction of pivot and screw wherein one or both of the contacting or bearing surfaces formed on the end portion of the screw and the outer wall of the pivot-recess are inclined or beveled.

What I claim as new is:—

1. Shears having a pivot provided with a

resilient head bearing against one blade and a lateral recess, and an adjusting screw for fine adjustment pertaining to the other blade, disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

2. Shears having a pivot rotatable in both blades provided with a resilient head bearing against one blade and an annular groove the outer wall of which is inclined, and an adjusting screw pertaining to the other blade disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

3. Shears having a pivot rotatable in both blades provided with a resilient head bearing against one blade and an eccentric annular groove the outer wall of which is inclined, and an adjusting screw pertaining to the other blade disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

4. Shears having a pivot rotatable in both blades provided with a resilient head bearing against one blade and an eccentric annular groove the outer wall of which is inclined and knurled, and an adjusting screw pertaining to the other blade disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

5. Shears having a pivot provided with a resilient head bearing against one blade and an annular groove, and an adjusting screw for fine adjustment pertaining to the other blade, disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the groove whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head, said pivot having also extending between said groove and the end of the pivot a longitudinal passage through which the end portion of the screw may be withdrawn.

6. Shears having a pivot provided with a resilient head bearing against one blade and a lateral recess, an unthreaded collar encircling the pivot outside the other blade, and an adjusting screw for fine adjustment threaded through said collar angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

7. Shears having a pivot provided with a resilient head bearing against one blade and a lateral recess, said pivot comprising two slightly-tapering, frictionally-united parts, a male part and a female part, and an adjusting screw for fine adjustment pertaining to the other blade disposed angularly with reference to said pivot, its end portion bearing against the outer wall of the recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient head.

8. Shears having a pivot consisting of a female member and a headed male member united frictionally, there being afforded an annular recess between the head of the male member and the socket end of the female member, and said female member being provided with a lateral recess, a spring washer held in said annular recess and bearing against the outside of one of the blades, and an adjusting screw for fine adjustment pertaining to the other blade disposed angularly with reference to said pivot, its end portion bearing against the outer wall of said lateral recess whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed spring washer.

9. Shears having a pivot rotatable in both blades and provided on one end with an annular groove, an adjusting screw for fine adjustment pertaining to one of the blades and disposed angularly with reference to said pivot, having its end bearing against the outer wall of said annular groove, whereby adjustment of said screw varies the tension between the blades and whereby the wear of the adjusting screw on the pivot is distributed along the entire length of said outer wall.

10. Shears having a pivot provided with a lateral wall, resilient means interposed between said pivot and one of the shear blades, an adjusting screw for fine adjustment pertaining to the other blade, being disposed

angularly with reference to said pivot and having its end portion bearing against said lateral wall, whereby movement of the screw varies the tension between the blades, and whereby damage to the shear edges and to the screw and pivot is prevented by the cushioning action of the interposed resilient means.

Signed at New York in the county of New York and State of New York this 3rd day of February A. D. 1909.

FREDERICK D. DAVIES.

Witnesses:
FREDERICK C. BONNY,
J. F. BRANDENBURG.