

F. D. DAVIES.
SHEARS OR THE LIKE.

APPLICATION FILED OCT. 18, 1906. RENEWED MAR. 20, 1909.

938,042.

Patented Oct. 26, 1909.

Fig. 1.

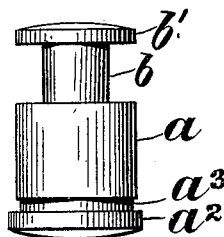


Fig. 2.

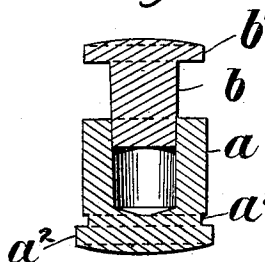


Fig. 3.

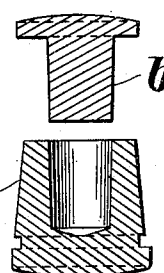


Fig. 4.

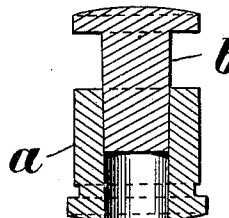


Fig. 5.

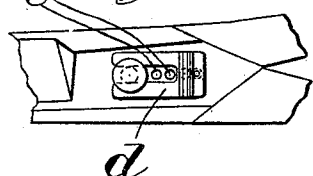


Fig. 9.

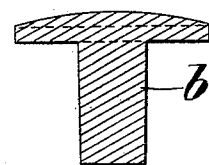
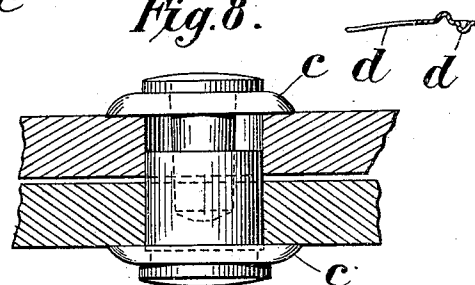


Fig. 7.



Fig. 6.

Fig. 8.



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UNITED STATES PATENT OFFICE.

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SHEARS OR THE LIKE.

938,042.

Specification of Letters Patent.

Patented Oct. 26, 1909.

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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, county of Kings, and State of New York, have invented new and useful Improvements in Shears or the Like, of which the following is a specification.

In the manufacture of shears and like implements having a pivotal connection it is necessary to have at hand pivots of different lengths, because the thickness of the members to be united varies, so that a pivot suitable for one pair of shears would be too long or too short for another pair. Therefore the workman engaged in riveting shears must pick out a pivot of the correct length for each pair of shears. The same trouble has been experienced by me in fitting rotatable pivots in shears employing tensional retaining devices.

Hence, the purpose of the present improvement is to provide, in conjunction with tensional devices for shears, a pivot characterized by the ability to be contracted as to its length to a greater or less extent, as found requisite, to enable it to serve in uniting pairs of shear or like members of varying thickness.

My invention further includes certain novel means whereby the pressure between the tensional retaining devices and the pivot may be varied to afford the proper degree of adjustment thereof. In brief my improved pivot is formed in two parts,—one hollow, and the other solid—the latter being driven into the former to unite them, while my improved adjusting means for the tensional device comprises the provision of a longitudinal row of cup-like depressions in the nail or pivot portion of a shear member, and a protuberance on the underside of the tensional device capable of fitting within any one of said depressions.

In the accompanying drawings, Figure 1 is a much enlarged elevation of my improved pivot. Fig. 2 is a vertical section thereof. Fig. 3 is a similar view showing the parts before connection. Fig. 4 is a similar view of a modification. Fig. 5 is a partial plan view on a smaller scale, of a pair of shears, united by my improved pivot and tensional devices. Fig. 6 is a detail side sectional view, enlarged, of the tensional plate. Fig. 7 is a plan view of a tensional washer. Fig.

8 is a partial view of shears having my improved pivotal connection, with a tensional washer at each side, this being a modification of the form of my invention shown in Fig. 5, and Fig. 9 is a section through one of the pivot members.

Referring first to the contractible pivot which forms a part of this invention, it is seen, in Figs. 1 to 3 inclusive, to consist of a hollow member *a*, and a solid or stud-like member *b* capable of being driven tightly within member *a*, and to comprise therewith a unit in pivot form. While not absolutely essential to the uniting of the above-mentioned two pivot members, yet the union is greatly facilitated by the provision of certain tapers in the various parts. Thus in Fig. 3, where the parts *a* and *b* are shown separated, it will be observed in their exaggerated appearance that the part *a* has a slight external taper toward its open end, while the stud *b* is slightly tapered at its end. An important point in the manufacture of these studs and socket portions with the desired taper, lies in the fact that no special tools are needed to provide these tapers, as they are the result of the manipulation which the said parts receive in a certain process of construction. The machines in ordinary use for making screws and studs from screw rod produce them with this taper, without any special effort being made to provide it, and in fact the taper is difficult to avoid with the tools generally used in the construction of these parts. The lower end of stud *b*, where its sectional area is the least, fits snugly within the mouth of hollow member *a*. It therefore follows that upon forcing said stud farther into said hollow member, the wall of the latter must be distended slightly to accommodate the increasing bulk of the stud. Such distention serves to render truly cylindrical the initially tapered outer wall of member *a*, better enabling said member to fulfil its pivotal function. While the tapers in the hollow member and stud are so slight as to be hardly perceptible, in the enlarged drawing, (Fig. 3) they are clear to the naked eye. In Figs. 1, 2 and 4, however, where the studs are shown as pressed into the hollow members, the outer contour of the latter is seen to be cylindrical as having been spread by the stud. The main advantage due to this bi-part form of stud is that one size of such

studs will serve in fitting all shears of a certain size, irrespective of whatsoever irregularities that are sure to exist in the thickness of the parts. Thus the pivot parts are united within the alined holes in a pair of shear members, and, with a proper gage as to the desired length of the pivot, are tapped or pressed together according to that gage. Although the pivot may be thus contracted with comparative ease, the union effected is so perfect as to preclude any possibility of accidental dismemberment. In fact it most efficiently takes the place of riveting, but with the advantage of having an ample range of variability as to length.

The hollow member a' of Fig. 4 differs only in being open throughout its length, instead of being closed at one end, as in Figs. 1, 2 and 3. The hollow member a , or a' , has a shoulder a^2 to form a stop for a washer, as c , that may be sprung over the cylindrical portion of said member a or a' , and serves as a tensional head for the pivot at one side of the shears. Just anterior to shoulder a^2 I also provide a very shallow annular groove a^3 , that forms a lodgment for said washer. The head b' of stud b may be of no greater diameter than that of the body of member a , whereby said head may pass through the pivot holes in the shears when desired to assemble or disunite the shears. In adjusting the pivot in the shears the stud is driven so far into the hollow member that sufficient space is left between the inner surface of head b' and the nail surface as to receive the forked ends of a tensional device d , that thus straddles the stud b and holds the pivot in place. The tensional device, which is a thin spring plate with one end slightly elevated, and having a slight longitudinal bow that straightens out by pressure between the stud and the shears, exerts a tension that draws the blade edges together in their cutting action. Near its elevated end, the plate is provided, at its under side, with a protuberance d' , which may fit within any one of a longitudinal row of cavities e that are formed in the nail of a shear member, and which are in form of conical cups. In this manner the tensional device is prevented from shifting when set. But when it is desirable to change the degree of tension imparted to the shears, I shift the device d longitudinally and cause the protuberance d' to rest in another of the cavities e . The particular form of protuberance d' is conical to render it capable of serving the purpose described, and is produced by forming a depression in the upper surface of plate d , with a round pointed tool end. A correspondingly round pointed conical tool end may be used in forming the cavities e in the nail surface, to receive said protuberance, said cavities being sunk to a sufficient depth to contain a protuberance. On account of

the conical form of both the protuberance and its seating cavities the former may be removed from the latter with facility, because yielding to combined sidewise and upward pressure. Instead of the tensional plate d I may employ another washer, as c , between the head b' of stud b and the nail surface, in which case however the tension afforded is of a fixed character. Since in this case the washer is not readily detached, as is the tensional plate a , the size of the head b' of stud b may be larger than the body of member a . I may employ two such washers, one at each end of the pivot, as shown in Fig. 8, or I may employ a single washer, held by the head of the stud against a shear member, or a single washer, at the opposite end of the pivot, held by the retaining shoulder of the socket portion of the pivot.

I claim:—

1. A pivot for shears or the like comprising a socket portion and a stud portion, the stud fitting within the socket portion setting up lengthwise frictional union therewith, and said members thus united being contractible to a suitable length.

2. A pivot for shears or the like comprising a socket portion and a stud portion, the stud portion tapering slightly toward its inner end and fitting within the socket portion setting up lengthwise frictional union therewith, the taper on the stud being so graduated that the said members thus united are contractible to a suitable pivot length.

3. A pivot for shears or the like comprising a socket portion whose outer peripheral surface tapers slightly toward its inner end, and a stud portion tapering slightly toward its inner end, whereby when forced into the socket portion to set up lengthwise frictional union therewith it distends said socket portion into true cylindrical form.

4. A pivot for shears or the like comprising a socket portion having at one end a slight annular shoulder, together with a stud adapted to be driven to varying depths within said socket portion to set up lengthwise frictional union therewith; the head of said stud being of no greater diameter than the socket portion.

5. A pivot for shears or the like comprising a socket portion having at one end a slight annular shoulder, and, anterior thereto, a shallow annular groove, together with a stud adapted to be driven to varying depths within said socket portion, to set up lengthwise frictional union therewith; and a head upon said stud, of no greater diameter than the socket portion.

6. In shears or the like, a pivot uniting the shear members; said pivot having retaining means at each end, the retaining means at one end comprising a pivot head and an adjustable tensional plate fitting between said head and the shear surface, said plate

having a conical protuberance at its under surface near one end, and the shear surface having a longitudinal series of conical cavities, each adapted to seat said protuberance.

5 7. In shears or the like, a pivot uniting the shear members, said pivot having a groove near one end and a head at the other end, together with an adjustable tensional plate fitting within said groove and bearing
10 against a shear member, said plate having a conical protuberance at its under surface near one end, and the shear surface having a longitudinal series of conical cavities, each adapted to seat said protuberance.

15 8. In shears or the like, a pivot uniting the shear members, said pivot having a groove near one end and a retaining shoulder at the other end, together with a tensional washer retained by said shoulder and exerting tension against one side of the shears,
20 and an adjustable tensional plate fitting within said groove and bearing against a shear member, said plate having a conical protuberance at its under surface near one end, and the shear surface having a longitudinal series of conical cavities, each adapted to seat said protuberance.

9. In shears or the like, a pivot uniting the shear members, said pivot comprising a
30 socket portion and a stud to fit contractibly therein, the socket portion having a shoulder at its outer end and a shallow groove anterior thereto, and the stud having a head of no greater diameter than the socket portion; together with a tensional washer fitting within said shallow groove, and exerting tension between said shoulder and one
35 side of the shears, an adjustable tensional plate fitting between said head and the other side of the shears, said plate having a conical

protuberance at its under surface near one end, and the shear surface having a longitudinal series of conical cavities, each adapted to seat said protuberance.

10. A pivot for shears or the like, comprising a socket portion and a stud portion,
45 the stud fitting within the socket portion thereby setting up lengthwise frictional union therewith, and said members thus united being contractible to a suitable pivot
50 length, the stud portion having a head and the socket portion a retaining shoulder, together with tensional means retained by said head and retaining shoulder and exerting tension against adjacent shear members.

11. A pivot for shears or the like, comprising a socket portion and a stud portion,
55 the stud fitting within the socket portion setting up lengthwise frictional union therewith, and said members thus united being
60 contractible to a suitable pivot length, the stud portion having a head and the socket portion a retaining shoulder, together with a tensional washer held by said retaining shoulder and exerting tension against a
65 shear member.

12. A pivot for shears or the like, comprising a socket portion and a stud portion,
70 the stud fitting within the socket portion setting up lengthwise frictional union therewith, and said members thus united being contractible to a suitable pivot length, the stud portion having a head and the socket portion a retaining shoulder, together with
75 a tensional washer held by said head and exerting tension against a shear member.

FREDERICK D. DAVIES.

In presence of—

F. W. BARKER,

FREDERICK C. BONNY.