E. KOEHLER.

SHEARS,

APPLICATION FILED JUNE 2, 1919.

1,324,598. Patented Dec. 9, 1919.

Fig. 1

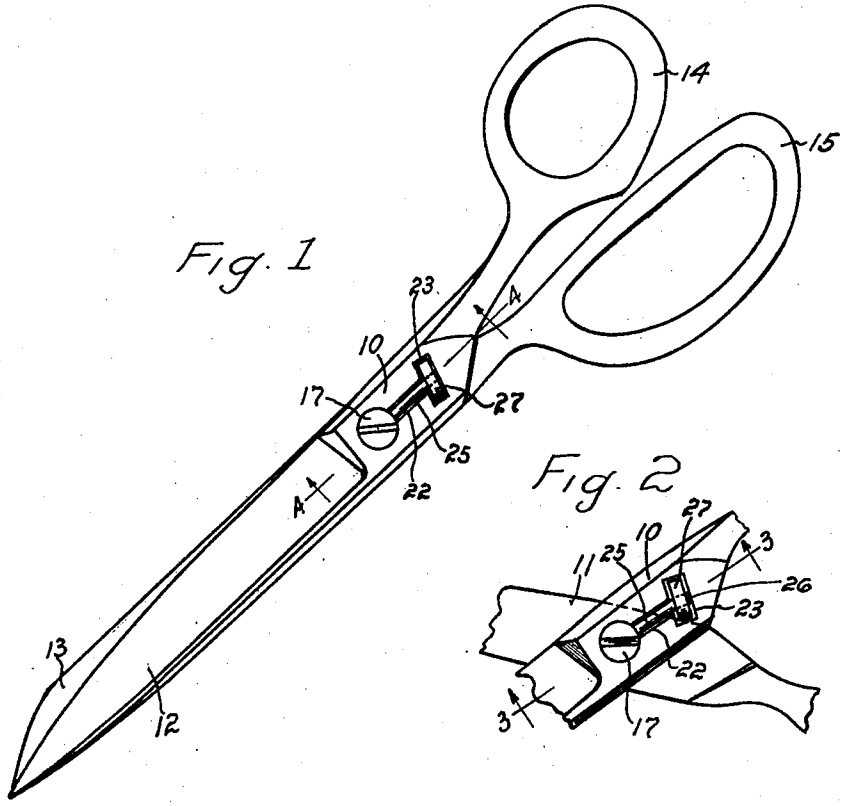


Fig. 2

Fig. 3

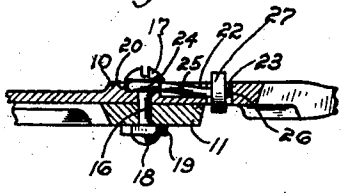


Fig. 4

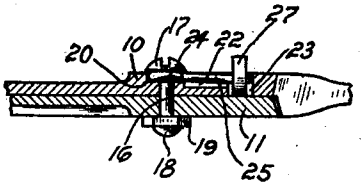
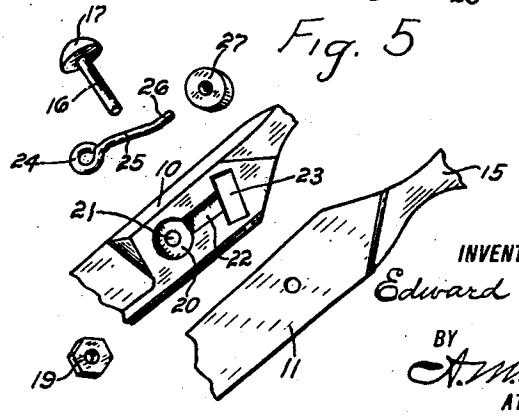


Fig. 5



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SHEARS.

1,324,598. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed June 2, 1919. Serial No. 301,186.

To all whom it may concern:

Be it known that I, EDWARD KOEHLER, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Shears, of which the following is a specification.

This invention relates to cutting shears and has for its object to provide a novel tension device for holding the cutting edges of the shear blades in close engagement with one another preferably with a yielding pressure, during the shearing operation, which tension device is of simple and inexpensive construction, neat and inconspicuous appearance, and compact arrangement, and which is adapted to perform its intended function in an efficient and reliable manner.

The foregoing and other objects of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of one form of embodiment thereof illustrated in the accompanying drawings, in which:

Figure 1 is a complete plan view of a pair of shears having the invention applied thereto, showing the shears in closed position;

Fig. 2 is a fragmentary plan view of the joint portion of the shears shown in Fig. 1, showing the shear blades separated;

Fig. 3 is a section taken substantially on the line 3—3, Fig. 2;

Fig. 4 is a similar section taken substantially on the line 4—4, Fig. 1;

Fig. 5 is a detail view showing the several parts of the device disassembled and separated from one another.

The shears herein shown are, in general, of the usual form, comprising two pivoted members 10 and 11 formed at their outer ends with coöperating shear blades 12 and 13 and at their inner ends with handle or finger receiving portions 14 and 15, said members being pivoted together intermediate their ends, or between their blade and handle portions respectively, by means of the usual pivot stud or rivet 16 having a head 17 at one end and having its opposite end 18 upset against the usual nut or washer 19.

In accordance with the present invention the outer face of one of the shear members, herein the member 10, is formed with a preferably circular recess 20 about the opening 21 for the pivot 16, said recess communicating at its side toward the handle end of the member 10 with a slightly deeper groove 22, which, in turn, communicates with a slot 23 extending entirely through the shear member. Located in the recess 20 and surrounding the pivot member 16 is an eye 24 formed on the end of a spring or resilient arm 25 lying in the groove 22. The arm 25 is bent or offset slightly in such a manner as normally to extend inwardly at a slight angle from the plane of the eye 24 and is free to vibrate in the groove 22, which as above explained, is slightly deeper than the recess 20, the bottom of said recess constituting a shoulder between which shoulder and the head 17 the eye 24 is securely clamped. The end 26 of the spring arm 25, which extends into the slot 23, is slightly angularly offset from the body of said arm so as normally to extend in a direction substantially parallel to the plane of the eye 24. Mounted to rotate on the end 26 of the arm 25 is a roller 27 located in the slot 23 and of a sufficient diameter to project slightly from the opposite face of the member 10 when the arm 25, due to its resilience and its offset form, engages the bottom of the groove 22, as shown in Fig. 3.

In operation, when the shear blades 12 and 13 are brought together to perform the shearing operation, the roller 27 engages and rides over the adjacent inner face of the member 11, as shown in Fig. 4, thereby raising the roller slightly from the position shown in Fig. 3 and placing the arm 25 under a tension which is transmitted through the roller to the member 11. It will be seen that the reaction between the roller 27, which is carried by the member 10, and the member 11, which is engaged by said roller, will tend to separate the handle ends of said members with a yielding pressure and consequently to force the blades 12 and 13 toward one another with a corresponding pressure, thereby holding the cooperating edges of said blades in close engagement.

When the shear blades are widely separated, as shown in Fig. 2, the roller 27 may pass out of engagement with the member 11, as shown in Fig. 3, and, in order to facilitate the reëngagement of said roller and member, the slot 23 may be disposed at

a slight angle to the groove 22 and to the length of the shear member 10, the roller 27 being correspondingly inclined, and the end 26 of the arm 25 being also correspondingly angularly offset into coaxial relationship with said roller. The angularity of the slot 23 is preferably such as to enable the roller 27 to readily ride over the edge of the member 11, without, however, being sufficient to interfere materially with the free rolling movement of said roller upon the face of the member 11 during the normal operation of the device.

Having thus described my invention, I claim:

1. A pair of shears comprising two members having blade and handle ends, a pivot connecting said members intermediate said ends, a resilient arm carried by one of said members, and a roller pivoted on said arm and engaging the other of said members at the side of said pivot toward the handle end of said last named member.

2. A pair of shears comprising two members having blade and handle ends, a pivot connecting said members intermediate said ends, one of said members having a slot therethrough at the side of said pivot toward the handle end thereof, a resilient arm secured to said pivot at the outer side of said member, and a roller pivoted on said arm, extending through said slot, and engaging the other of said members.

3. A pair of shears comprising two members having blade and handle ends, a pivot connecting said members intermediate said ends and having a head at the outer side of one of said members, said last named member having in its outer face a recess surrounding said pivot and a groove of greater depth than said recess extending therefrom in the direction of the handle end of said member, and said member also having a slot extending therethrough at the end of said groove, a resilient arm having one end clamped between the head of said pivot and the bottom of said recess and lying in said groove, and a roller carried by the opposite end of said arm, extending through said slot, and engaging the other of said members.

4. A pair of shears comprising two members having blade and handle ends, a pivot connecting said members intermediate said ends, and a resilient arm carried by one of said members and having a roller engaging the other of said members at the side of said pivot toward said handle ends, said roller being disposed at an inclination to the length of said first named member.

5. A pair of shears comprising two members having blade and handle ends, a pivot connecting said members intermediate said ends, one of said members having in its outer face a groove extending from said pivot in the direction of the handle end of said member and a slot extending through said member at the end of said groove and disposed at an inclination to said groove, a resilient arm secured at one end in said groove, and a roller carried by the opposite end of said arm, extending through said slot, and engaging the other of said members.

In testimony whereof I affix my signature.

EDWARD KOEHLER.