

A. J. KRANK.
JOINT FOR SHEARS.

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UNITED STATES PATENT OFFICE.

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JOINT FOR SHEARS.

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To all whom it may concern:

Be it known that I, ALFRED J. KRANK, a citizen of the United States, residing at St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Joints for Shears; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in joints for shears, scissors, and the like.

The object of my invention is to produce a joint that will keep the blades in contact throughout the entire length, thereby rendering the blades self-sharpening, and which will at the same time permit the ready adjustment of the pressure on the joint, so that the wear may be easily taken up.

My invention consists in the features, details, and combinations of parts which will first be described in connection with the accompanying drawings, and then particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of one form of shears embodying my invention, the blades being in their closed position. Fig. 2 is a similar view taken from the opposite side, the handles being broken away. Fig. 3 is a view similar to Fig. 1, but showing the blades in their open position, the handles being broken away. Figs. 4 and 5 are detail views of portions of the blades, showing the slot in one blade and the segmental block attached to the other blades. Fig. 6 is a perspective view of the spring-plate. Fig. 7 is a detail view of the pins and block taken apart, and Figs. 8 and 9 are detail sections of the joint. Fig. 10 is a transverse section on the line 10 10, Fig. 2.

Referring to the drawings, A B are two blades of a pair of scissors or shears, to one A of which is attached a segmental block *a*, preferably by means of a screw *a'* at one end, which passes through the block and is threaded into the blade A. The other end of the said block is provided with a pin-hole which registers with a hole in the blade A, through which holes (indicated at *a''*, Fig. 4) is passed a pivot-pin C.

The blade B has a segmental or arc-shaped slot *b* arranged to receive the block *a* and longer than the latter—*i. e.*, containing more degrees of curvature than the latter. The pin C, which passes through the holes in the block *a* and through the blade A, is provided with a head *c*, which may be made large enough to extend beyond the segmental slot, in order to hold the blade B to the blade A, or a washer *c'* may be provided, as shown in the drawings, this washer resting between the blade B and the head *c*.

In order to hold the opposite end *c''* of the pin against withdrawal and at the same time draw up on it, I provide the said end *c''* of the pin with notches *c'''* *c''''*, engaged by tongues *d* *d'*, respectively, these tongues being formed on a spring-plate D, which has a hole *d''*, through which passes the end *c''* of the pin C. The spring-plate D is provided with an arm *d'''*, which has its end reduced and bent downward and under, as shown in Fig. 6, to form a dog *d''''*, which is arranged to engage the top surface of the blade A, which may be roughened to hold the spring-plate, the dog being adapted, preferably, to enter any one of a series of notches *a'''* cut on the outer surface of the blade for a purpose hereinafter described. The front end of the spring-plate is bent downward and is sloped or beveled, as shown at *d''''*, and the blade A is provided with an inclined surface *a''''*, adapted to be engaged by the inclined surface of the downward-bent end *d''''* of the spring-plate D. By moving the dog *d''''* from one notch to another the tension of the spring-plate may be adjusted, since it causes the inclined surface *d''''* of the spring-plate to move up or down on the inclined surface *a''''* on the blade, whereby the plate is pushed farther away from the blade or allowed to come nearer to it, thus, of course, putting more or less outward strain on the pin C and determining the tension with which the blades are held together.

It will be observed from Fig. 9 that the pivot-pin C is not at right angles to the blades, but instead is slightly tilted forward, whereby the front edge of the head or washer bears on the surface of the blade B forward of the pivotal point, thereby always keeping the

blades with their cutting-edges in close contact throughout their whole length. By thus holding the blades closely against each other along their cutting-edges the wear which takes place sharpens the cutting-edges. The segmental slot and blade acting together cause the blade B to move forward and backward during its operation of opening and closing, thus producing a shear or draw cut.

As the blades wear from continued use the lost motion may be taken up by moving the spring-plate, as before described, to increase the tension on the pin C, and when the wear becomes so great that the lost motion cannot be taken up in this way the spring-plate may then be arranged with its tongues in engagement with the second pair of notches, thus practically shortening the length of pin employed and giving a greater tension, which effectually takes up all the wear until the shears are entirely worn out.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a pair of blades, one of which has a segmental slot, of a segmental block shorter than the slot in the blade and located therein, said block being secured, at one end, to the other blade, a pin passing through both blades and through the block, said pin being provided with a head engaging the slotted blade, and a fastening device at the opposite end of the pin, substantially as set forth.

2. The combination, with a pair of blades, of a pin passing through both blades, and a spring plate engaging the pin and provided with an inclined surface bearing on the surface of one of the blades, substantially as set forth.

3. The combination, with a pair of blades, one of which has an inclined surface, of a pin passing through both blades and provided with notches at one end, and a spring plate engaging the notches in the pin and provided with an inclined surface engaging the inclined surface on the blade and movable thereon, whereby the tension of the spring plate may be adjusted, substantially as set forth.

4. The combination, with a pair of blades, one of which has an inclined surface, of a pin passing through both blades and provided with notches at one end, a spring plate engaging the notches in the pin and provided with an inclined surface engaging the inclined surface on the blade and movable thereon,

said spring plate also having an arm arranged to rest in frictional contact with one of the blades, substantially as set forth.

5. The combination, with a pin provided with notches, and a pair of blades through which the pin passes, one of which is provided with an inclined surface on one side of the pin, and a roughened surface on the other side of the pin, of a spring plate provided with tongues engaging the notches in the pin and with an inclined surface engaging the inclined surface on the blade, said spring plate also having an arm engaging the roughened surface on said blade, substantially as set forth.

6. The combination, with a pin provided with notches, and a pair of blades through which the pin passes, one of which is provided with an inclined surface on one side of the pin and a series of notches on the other side of the pin, of a spring plate provided with tongues engaging the notches in the pin and with an inclined surface engaging the inclined surface on the blade, said spring plate also having an arm engaging any one of the notches on said blade, substantially as set forth.

7. The combination, with a pair of blades, of a pin passing through said blades at an angle and provided with a head at one end and with notches at the other end, and a spring plate provided with tongues engaging said notches and with a cam surface engaging one of the blades, substantially as set forth.

8. The combination, with a pair of blades, one of which has a cam surface, of a pin passing through both blades at an angle and provided with a head at one end and with notches at the other end, and a spring plate engaging the notches in the pin and provided with a cam surface engaging the cam surface on the blade, substantially as set forth.

9. The combination, with a pair of blades, one of which has a cam surface and a series of grooves, of a pin passing through both blades at an angle and provided with a head at one end and a series of notches at the other end, a spring plate having tongues engaging the notches, a cam surface on the blade, and an arm engaging the grooves in the blade, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED J. KRANK.

Witnesses:

F. O. HAMMER,
A. E. HAMMER.