Nov. 10, 1925. 1,561,082

O. H. JUNG.

PLIERS

Filed Aug. 9, 1924

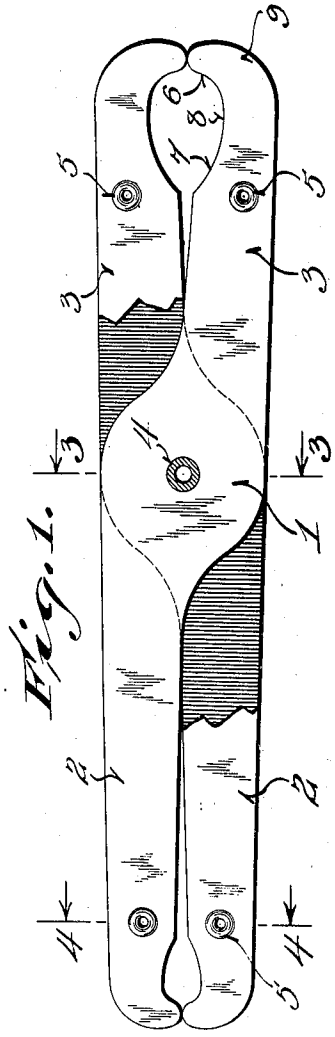


Fig. 1.

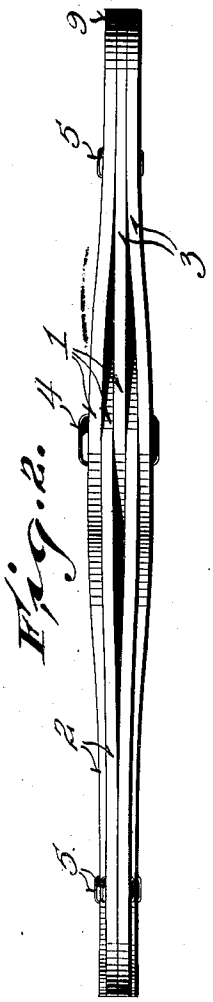


Fig. 2.

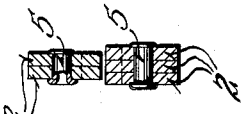


Fig. 4.

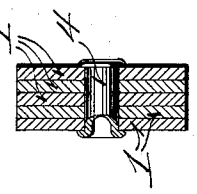


Fig. 3.

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UNITED STATES PATENT OFFICE.

OSCAR HENRY JUNG, OF MILWAUKEE, WISCONSIN.

PLIERS.

Application filed August 9, 1924. Serial No. 731,145.

To all whom it may concern:

Be it known that I, OSCAR HENRY JUNG, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Pliers; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to pliers broadly and is particularly directed to fuse pulling pliers.

Objects of this invention are to provide a pair of pliers which have handles formed of a plurality of separate, distinct and flat laminations.

Further objects are to provide a pair of fuse pulling pliers which are formed of a plurality of separate and distinct laminations, with the laminations of one jaw alternating with the laminations of the other jaw.

In fuse pullers of the plier type, as heretofore employed, the material has been milled out or thinned at the point of pivotal union, and consequently the pliers have been greatly weakened at this point. Inasmuch as they are made of insulating material which has a relatively low inherent strength, it is necessary to conserve all of the material possible at this point of greatest stress. Instead of this, however, the usual type of pliers were weak at this point and frequently broke in service.

This invention is designed to overcome the above noted defects, and further objects of such invention are to provide pliers for pulling fuses which are formed from insulating material, which are strongest at their pivotal point, which do not require any milling or cutting at such point, which are formed from a plurality of laminations, and which may be readily punched by a single die.

Further objects are to provide fuse pulling pliers in which the curved or cut away portion adapted to grip the fuse are so formed that it will rigidly bind or lock upon any of the usual types of fuses although varying widely in size, and to provide fuse pulling pliers which, although made of insulating material, are nevertheless protected against warping, and which are so constructed that they may be used to pry the fuse loose during the initial operations of removing a fuse.

For the purpose of illustrating this invention, it has been shown as applied to fuse pulling pliers, although it is to be understood that the detailed disclosure is for the purpose of illustration only.

Figure 1 is a view of the pliers with parts broken away to more clearly show the construction.

Figure 2 is an edge view thereof.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

The pliers are formed wholly from a plurality of identical stampings of sheet fiber preferably of a hard variety commonly known as horn fibre, although other varieties of fiber could obviously be used. These laminations each comprise an enlarged central portion 1 of greater width than any other portion thereof and tapering arms 2 and 3 which terminate in recessed ends. These laminations are arranged alternately, as shown in Figures 1 and 2, and a central pivot pin 4 is passed through the apertured central portion. Adjacent the ends of the stampings other apertures are formed during the punching and rivets 5 are passed therethrough and rigidly clamped to lock the laminations forming the half parts of the pliers rigidly together.

It is preferable to provide an odd number of laminations for one of the plier sections or elements and an even number for the other half, as shown in Figure 2. It is to be noted that in drawing the rivets 5, that the laminations are bowed and are held tensioned against warping. This tensioning stress is very much greater than any stress that would occur when warping impended and would thus resist any warping stresses.

Further than this the warping is very effectively resisted due to the fact that any warping would cause relative shifting between each element of the composite unit, and as these units are rigidly bound together, such relative shifting is impossible. In forming the cut out ends, it is preferable to form the outer portion of the cut out on the small radius 6 and the rear portion on the large radius 7, the two being joined by a slanting surface 8 (see Figure 1). This provides relatively sharply curving outer portions adapted to bind one size of fuse, and gradually tapering rear surfaces which, when the larger size of fuse is gripped causes such fuse to wedge between the outer portion or sharper curved portion 6 and

the gradually curved portion 7. In other words, it is impossible for any fuse to seat freely within the device, but instead, the several sizes of fuses are caused to bind in the cut out portions.

It is to be noted that a heel or thickened portion 9 is left adjacent the upstanding tongues defining the cut outs. This heel portion not only provides strength but aids in prying the fuse loose during the initial stages of the fuse removing operation. For example, after a fuse has been gripped, the fuse pulling device is rocked to cause the heel portion 9 to bear against the base plate of the fuse block. This gives a great leverage and causes the easy starting of the fuse from the grips. Thereafter, the fuse may be bodily pulled outwardly with relatively little exertion.

It is preferable to tumble the laminations with chips of soapstone. This operation breaks off all rough corners, fills the pores of the fiber with an insulating material, and also provides a lubricant for the contacting surfaces of the pliers and for the heel portion 9 to reduce friction when the pliers operate.

It will be seen therefore, that the fuse pulling pliers may be very cheaply produced, are highly serviceable in operation, may be easily manipulated, and are of substantial and rugged construction, and have a maximum of strength.

Pliers of this type may be made of other materials, for instance steel or wood, and may with advantage be used for other purposes such as pickle tongs or pipe pliers.

It is further to be noted that the laminations need not all be of the same size. For instance the laminations may be arranged with one leaf of heavy stock on one side and two leaves of thinner stock on the other.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

A pair of pliers having jaws provided with manipulating portions, each of said jaws comprising a plurality of distinct and separate sheets of insulating material, the sheets of one jaw alternating with the sheets of another jaw, a pivot pin passing through the overlapping portion of said sheets, and securing means passing through the sheets of each jaw adjacent its ends.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

OSCAR HENRY JUNG.