Sept. 23, 1952 M. SCHIFFBAUER 2,611,288

MESH JOINT FOR PLIERS AND LIKE INSTRUMENTS

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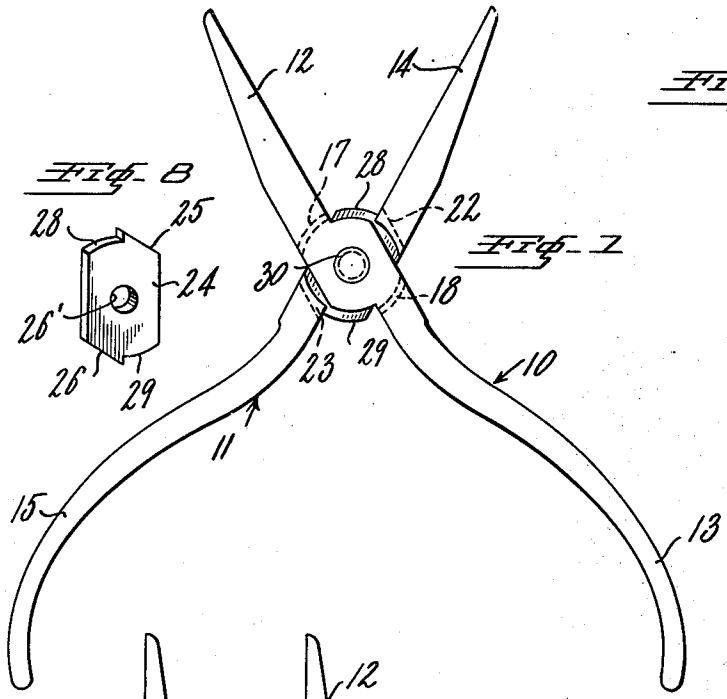


Fig. 1

Fig. 8

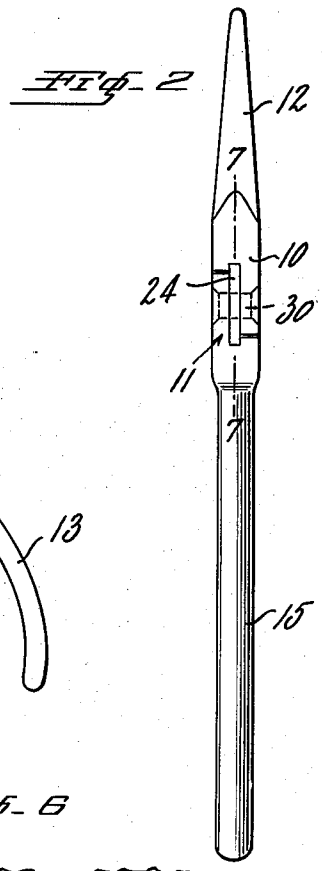


Fig. 2

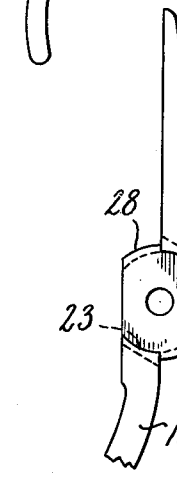


Fig. 3

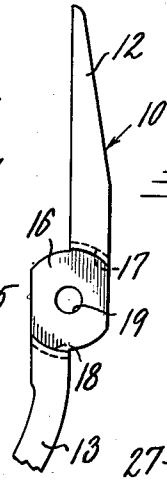


Fig. 4

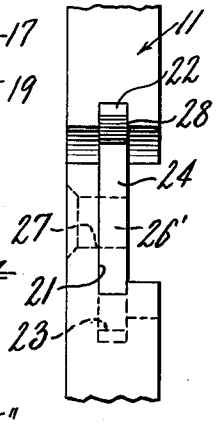


Fig. 5

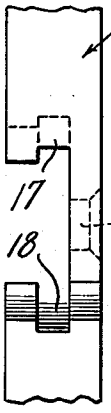


Fig. 6

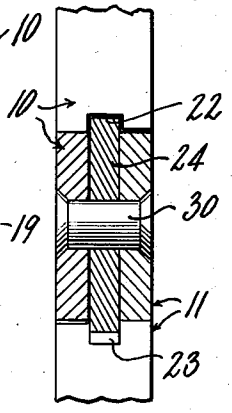


Fig. 7

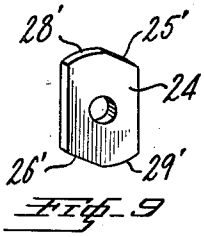


Fig. 9

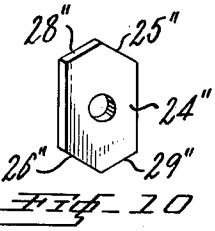


Fig. 10

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MESH JOINT FOR PLIERS AND LIKE INSTRUMENTS

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4 Claims. (Cl. 81—51)

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This invention relates to pliers, and similar tools, having two main parts pivotally connected together and adapted to be operated by manipulation of their handles.

It is an object of the present invention to provide pliers and similar tools which consist principally of two complementary parts, which are pivotally connected together in box joint fashion wherein each of these parts may be made from two identical forgings, are consequently formed with one and the same die and have the same shape thereby eliminating the necessity of different or of a plurality of dies, whereby great saving is attained in time and labor.

It is a further object of the invention to provide means affording the transformation of one of said parts to a male part by simply applying and fixing to said one part a mesh plate forming projections to serve as guides which cooperate and engage recesses of the other part.

Other objects of the present invention are to provide pliers and similar tools made of like parts and assembled with a guide plate or mesh plate, conductive to simple construction, inexpensive production and minimum number of parts. This construction is durable, convenient to use and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawings, in which

Fig. 1 is a top plan view of a pair of pliers embodying the invention, the parts of the pliers being assembled together and shown in open position.

Fig. 2 is a side elevational view of the pliers of Fig. 1 with the parts closed upon one another.

Fig. 3 is a fragmentary plan view of one of the parts of the pliers with the mesh plate according to the invention tightly fitted therein.

Fig. 4 is a fragmentary plan view of the other part of said pair of pliers.

Fig. 5 is an enlarged fragmentary end view (looking from the left of Fig. 3) of the one part fitted with the mesh plate.

Fig. 6 is an enlarged fragmentary end view (looking from the right of Fig. 4) of the other part.

Fig. 7 is a fragmentary vertical sectional view taken generally along line 7—7 of Fig. 2.

Figs. 8, 9 and 10 are respectively perspective views of various forms of guide or mesh plates according to the invention and which may be used in the operation of the parts of the pliers.

Referring now more particularly to the drawing, 10 and 11 designate complementary plier parts perforated and adapted to be pivotally connected together. The part 10 has a jaw portion 12 and a handle portion 13 integral therewith and made from a single forging. The part 11 has a jaw portion 14 and a handle portion 15 made from a single forging as that of part 10. The part 10 is made, as shown in Fig. 4, with a flat bearing face or portion 16 and curved undercut guide recesses 17 and 18 disposed diametrically opposite each other and respectively in the jaw portion 12 and handle portion 13 of the part 10. An opening or perforation 19 extends through this bearing portion 16 of the part 10.

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The part 11 is formed, as shown in Figs. 3 and 5 with a bearing surface or portion 21 with substantially straight undercut recesses 22 and 23 extending respectively into jaw and handle portions 14 and 15 of the part 11. These straight recesses are cut after the forging is made and are adapted to receive with press fit a guide plate 24 and particularly straight edges 25 and 26, respectively, thereof (Figs. 3 and 8). A perforation 26' is provided in mesh plate 24 adapted to register with the perforation 27 of the part 11 and perforation 19 of the part 10.

The plate 24 has preferably curved edge portions 28 and 29 adapted, when the plate is fixed to the part 11 and within the recesses 22 and 23 thereof, to move into engagement with respective recesses 17 and 18 of the part 10. This is effected when the parts are coupled together by pivot pin or rivet 30 extending through the registered perforations or holes of the parts 10 and 11 and mesh or guide plate 24. The guide plate 24 is preshaped to tightly engage with press fit the recesses of the part 11.

A positive guiding action is effected at curved edge portions 28 and 29 which enter the recesses 17, 18 as the parts 10, 11 are closed upon one another to bring the jaw portions 12 and 14 thereof together. The two edge portions 25, 26 of plate 24 tightly engage recesses 22, 23 in the respective plier parts 10 and 11. The shape and number of these edge portions can be varied, as clearly illustrated in Figs. 9 and 10.

In Fig. 9 there is shown an elevated curved edge portion 28' on the upper end and a diagonally disposed curved edge portion 29' on the opposite end. The edge portions of the plate 24' for engagement with the recesses of the part 11 as shown in Fig. 9 are indicated at 25' and 26'.

As shown in Fig. 10, the guide or mesh plate, as indicated at 24'' has edge portions 25'', 26'' which are straight and adapted to enter respective

straight recesses 22 and 23 of the part 11, but the recesses of the part 10 must be altered to receive straight edge portions 28'' and 29'' instead of curved edge portions. The plates 24' and 24'' will be tightly fitted in part 11 and in the same manner as described above and in which the plate 24 is connected to the part 11. It can be seen that by the use of the plate 24'' having straight marginal edge portions, the parts 10 and 11 will have the same recesses therein and can be made from the same die. The recesses of the one part will thus be the same as the recesses of the other part. This makes possible the forming of the plier parts from the same die and affords a great saving in labor expense and production cost.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims. For example, one of the guide edges of the mesh plate, say, 28, may be entirely eliminated and edge 29 may then have any desired extent and configuration.

Instead of press fit, the mesh plate may be welded in place or otherwise affixed to one of the parts 10 or 11 by any known securing means.

It can thus be seen that there has been provided according to this invention a plier or similar tool comprising complementary parts, each of said parts having jaw and handle portions, said jaw and handle portions of each part having undercut recesses, a guide plate having edge portions adapted to cooperate with the respective recesses of the parts and fixed to the recesses of one part, and a pivot pin connecting the plier parts and the guide plate together, and the edge portions of the guide plate being straight and inclined with respect to each other, the recesses of the respective parts being of similar contour and adapted to receive the respective straight edges of the guide plate, the plier parts thereby being of the same shape and adapted to be formed with the same die, the shape being the same even to the recesses.

Although the invention has been described with reference to a certain specific embodiment thereof, it is to be distinctly understood that various modifications and adaptations of the arrangements herein disclosed may be made as may readily occur to persons skilled in the art without constituting a departure from the spirit and scope of the invention as defined in the objects and in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. A plier or similar tool comprising complementary parts, each of said parts having jaw and handle portions, said jaw and handle portions of each part having like undercut recesses arranged diagonally opposite each other, a guide plate having edge portions adapted to cooperate with the respective undercut recesses of the parts and fixed to the undercut recesses of one part, and a pivot pin connecting the plier parts and the guide plate together.

2. A plier or similar tool comprising complementary parts, each of said parts having jaw and handle portions, said jaw and handle portions of each part having similar undercut recesses, a guide perforated plate having edge portions adapted to cooperate with the respective recesses of the parts and fixed to the recesses of one part, and a pivot pin connecting the plier parts together and passing through the perforations of the guide plate, the edge portions of the guide plate being adapted to fit the recesses of one part being straight and tight fitted into the recesses of the one part, the remaining edge portions being adapted to fit the recesses of the other part and being curved, said other part having its recesses curved to receive the curved edge portions of the guide plate whereby to effect a guiding action upon the parts as they are closed upon one another.

3. A plier or similar tool comprising complementary parts, each of said parts having jaw and handle portions, said jaw and handle portions of each part having diagonally arranged undercut recesses, a guide plate having diagonally disposed pairs of edge portions adapted to cooperate with the respective recesses of the parts, one pair of said edge portions being fixed to the corresponding recesses of one part, and a pivot pin connecting the plier parts and the guide plate together, the other pair of edge portions of the guide plate being straight and inclined with respect to each other, the recesses of the respective parts being of similar contour and adapted to receive the respective straight edges of the guide plate, the plier parts thereby being of the same shape and adapted to be formed with the same die, the shape being the same even to the recesses.

4. A pair of pliers comprising complementary parts, each part including a jaw portion and a handle portion and being substantially of the same shape, a substantially flat bearing portion positioned intermediate each jaw portion and handle portion, said jaw portions and said handle portions being arranged diametrically opposite with respect to said flat bearing portions and being provided with respective undercut recesses extending adjacent the bearing portions, a substantially flat mesh plate defined by a pair of marginal edge portions shaped to fit said undercut recesses in one of said parts, said mesh plate being further provided with another pair of marginal edge portions adapted to engage the undercut recesses of the other part when the latter is moved toward said one part, said bearing portions and said mesh plate being provided with registering perforations, and a pivot pin passing through said perforations and connecting said plier parts and said mesh plate.

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