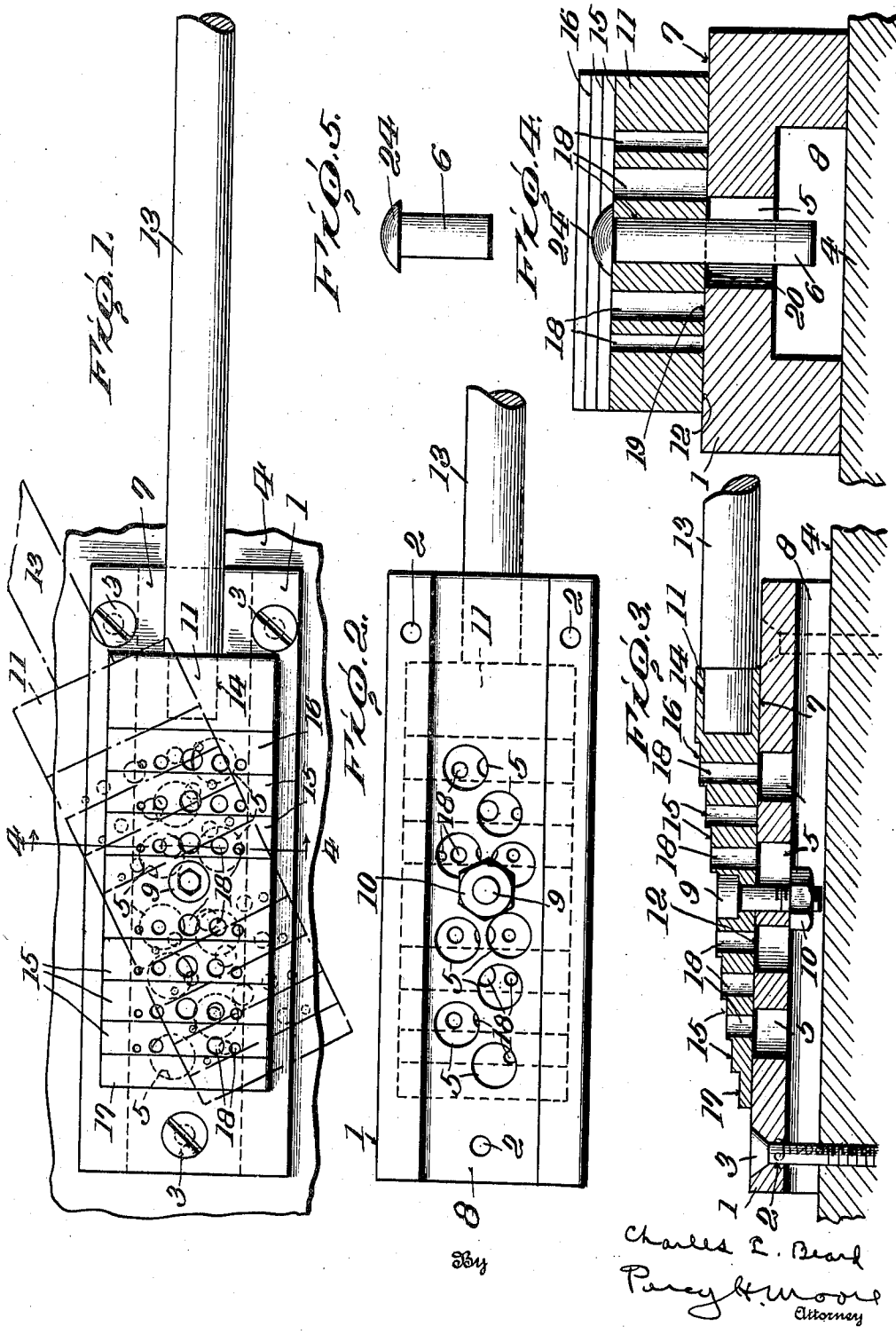
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RIVET CUTTER

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RIVET CUTTER

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2 Claims. (Cl. 164—40)

My invention relates to a rivet cutter particularly adapted for cutting rivets, bolts, screws etc. employed for riveting or fastening aircraft and other sheet metal.

The present invention constitutes an improvement over my Patent No. 2,288,385, dated June 30, 1942. In the patented tool a stepped top shearing plate is superimposed upon and pivoted to a base shearing plate, both plates being formed with transverse rows of rivet holes, the holes of each row being graduated in size and the holes of the top plate being similar in size to and registering with the corresponding holes of the bottom plate when the plates are longitudinally aligned. This construction proved objectionable due to the fact that the rivet holes of one plate must be in complete register with the corresponding holes of the companion plate, thus necessitating perfect centering of plates. Furthermore, the shearing action, due to the tight fit of the rivets in the top and bottom registering holes of the two plates, is not sufficiently smooth to meet certain manufacturing requirements. Moreover, the necessity for duplicating in the base plate the large number of rivet holes required in the top plate materially increased the cost of manufacture.

The objects of the present invention are to obviate the foregoing objections. This is accomplished by providing the bottom or base plate with two longitudinal rows of staggered openings, of considerably greater size than the corresponding rivet holes of the top plate, and two or more of the rivet holes of the latter plate being adapted to be conveniently moved into operative registering relation with a corresponding hole in the bottom plate, thus reducing the number of holes required in the bottom plate, eliminating the necessity of accurately centering the plates one with respect to the other and insuring a free and smooth shearing cut.

The foregoing objects and advantages will be apparent as the specification is considered with the accompanying drawing, wherein:

Figure 1 is a plan view of the rivet cutter in rivet receiving position, and showing, in dotted lines, the position it assumes after performing the rivet cutting operation;

Figure 2 is a bottom plan view of the rivet cutter showing the top and bottom cutting plates in substantial alinement;

Figure 3 is a longitudinal sectional view of the rivet cutter.

Figure 4 is a section on the line 4—4 of Figure 1 showing a rivet in place and before being cut; and

Figure 5 is a side view of a rivet after being severed by the rivet cutter.

Referring more particularly to the drawing, wherein like reference characters refer to similar parts throughout the several views, numeral 1 designates a relatively flat, substantially rectangular base cutting plate having the openings 2 for the reception of screws 3 to enable the plate to be removably secured to a flat work bench 4, or other suitable surface. If desired, the plate 1 may also be clamped in a bench vise and the like of airplane field service trucks, in an obvious manner not shown. The plate 1 is provided with two substantially longitudinally extending rows of rivet holes 5, there being preferably four spaced holes in one row, and five spaced holes in the other and the holes of one row being irregularly staggered with respect to the holes of the other row. The holes 5 are preferably of equal size and are relatively large, that is, much larger than would be necessary to snugly accommodate a standard aircraft rivet of maximum size. The holes extend from the flat top face 7 of the plate 1 downwardly therethrough and terminate in a substantially U-shaped, longitudinal slot or groove 8, in the underside of the plate, which provides clearance for the lower ends of the rivets and permits of the severed ends thereof dropping onto the working surface 4.

Pivotally mounted on the base plate 1, by means of an inset screw 9 and nut 10, is a substantially rectangular, top cutter or size plate 11, somewhat smaller in area than the base plate. The bottom face 12 of the plate 11 is relatively flat and slidably engages with the flat top face 7 of the base plate and is adapted to be pivotally moved or rotated thereover either in a counter-clockwise or clockwise direction, viewing Figure 1, by means of a suitable rod or handle 13, mounted in a recess 14 in one end of the plate 11. The top face of the cutter plate 11 is provided with a series of preferably seven, substantially flat steps or offsets 15 ranging in depth from the rearmost one 16 which is approximately nineteen thirty-seconds to the forwardmost one 17 which is approximately five thirty-seconds of an inch. A series of transversely arranged spaced relatively small rivet holes 18 are formed in each of the steps 15, the holes of each series or transverse row being in substantial alinement with each other and of considerably smaller diameter than the larger rivet holes 5, in the base cutting plate 11. There are preferably seven such trans-

verse rows and each row contains from four to five holes 18, and when the top plate 11 is centered or substantially centered with respect to the base plate 1, at least one of the small holes 18 of each transverse row will be directly above and therefore will register with one of the large holes 5. By manipulating the handle 13 in an appropriate direction any one of the small holes 18 can be caused to register with one of the larger holes 5. When this has been effected, the two communicating holes 5 and 18, constitute an opening for the insertion of a standard size rivet 6, or bolts and screws of corresponding size. As the steps 15 vary in height from approximately five thirty-seconds to approximately seventeen thirty-seconds of an inch, it will be noted that each of the coinciding or registering holes 5 and 18 correspondingly vary in height to accommodate the standard sizes of aircraft rivets.

The steps 15 and holes 18 are preferably marked or graduated to readily indicate to the operator the proper holes within which to insert a rivet to assure of the same being sheared or severed to the required length. When it is desired to perform the cutting operation, a rivet 6, of the desired standard diameter, is selected and, after determining the length to which the same is to be cut, is inserted in the proper rivet hole 18 which is marked to designate diameter and height. With the rivet in position, the handle 13 is moved either in a clockwise or a counter-clockwise direction, viewing Figure 1, so that the rivet hole 18, having the rivet arranged therein, is moved relative to the corresponding hole 5 in the fixed base plate 1, for example, from the full line to the dotted line position of Figure 1. This rotary movement of the top cutting plate 1, about its pivot 9, causes the bottom and top peripheral edges 19 and 20 of the rivet holes 18 and 5, respectively, to impart a rotary cut around the circumference of the rivet shank, resulting in the rivet being uniformly and evenly cut without leaving any objectionable burr or uneven area on the face or the sides of the cut. In other words, the initial relative rotary movement of the top and bottom cutting plates causes the rivet to be initially scored or slightly sheared circumferentially, which cutting is continued, throughout the rotary movement of the top cutter plate 11, until the rivet is completely sheared. This cutting action is distinguished from that effected by bolt cutters, pliers, shears and other cutting tools.

While in the interest of clarity I have only shown the top cutter plate in the position assumed when the handle 13 has been moved in a counter-clockwise direction, it will be understood that the cutting operation can be accomplished by rotating the top plate in either direction relatively to the base plate.

Due to the steps 15 being formed in the top plate 11, and separating the series of rivets receiving holes 18 the heads 24 of the rivets 6 are caused to overhang the side walls of the adjacent offset thus facilitating removal of the rivets by enabling the operator to engage the extended portion of the head 24 and lift the rivet from its hole.

A rivet 6, sheared in the cutting plate in the manner just described, will be assured of accurately fitting a standard size hole drilled in aircraft metal, without the necessity of driving or otherwise forcing the same through the metal with consequent danger of deforming the latter and creating a weak spot.

It is to be understood that various changes and improvements may be made in the present rivet cutting tool without departing from the scope and spirit of the appended claims.

Having thus described my invention, what I claim is:

1. A cutting tool for rivets and other fasteners comprising a fixed base member having a plurality of longitudinally arranged rows of rivet receiving openings therein, the openings of one row being staggered with respect to the openings of the next adjacent row, a cutting member rotatably mounted on said base and being formed with a plurality of offset portions each having a transverse row of rivet receiving openings therein of varying length and diameter, said openings in the base member being of considerably greater diameter than the largest opening in the cutting member and arranged in the path of movement of said last mentioned openings so that any one of several of the openings of each of said transverse rows of openings can be caused to register with one of the openings in said base member, and means for rotating said cutting member relative to said base member for shearing a rivet arranged in two of said registering openings.

2. A cutting tool for rivets and other fasteners comprising a fixed base member having two longitudinally arranged rows of substantially aligned relatively large rivet receiving openings therein, a cutting member normally longitudinally substantially aligned with and rotatably mounted on said base member and being formed with a plurality of offset portions each having a transverse row of substantially aligned relatively small rivet receiving openings therein, said last mentioned openings being of varying length and diameter and at least one of said openings in each of said transverse rows coinciding and fully registering with one of said relatively large openings in the base member when the cutting member is in substantial longitudinal alignment with the base member, each of the openings in the base member being in the path of movement of a plurality of the openings in each row of openings formed in the cutting member, and means for rotating said cutting member relative to said base member for shearing a rivet arranged in two of said coinciding openings.

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