

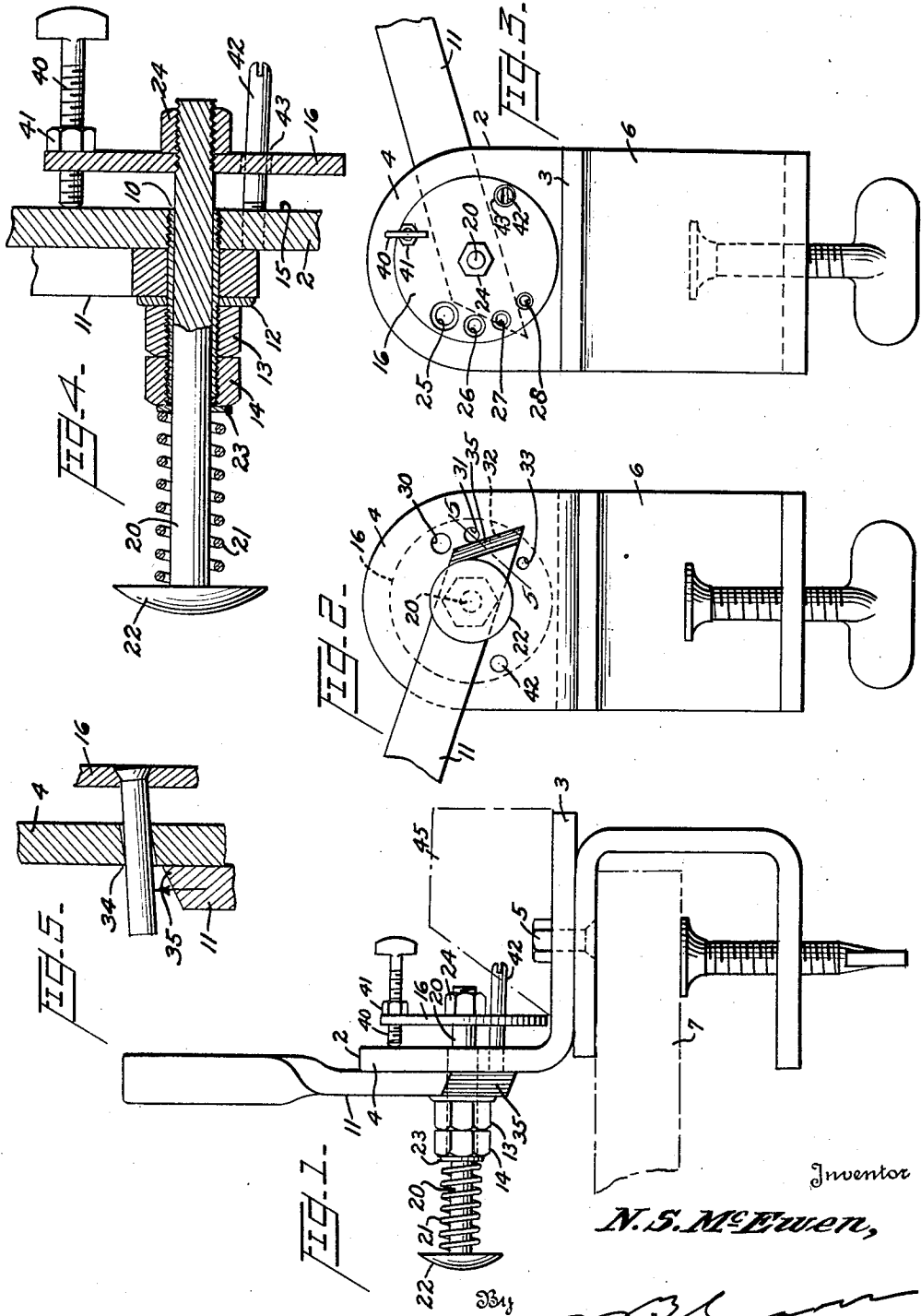
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RIVET CUTTER

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RIVET CUTTER

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This invention relates to rivet cutters and has for its object to provide a construction which is simple in parts, less costly to manufacture and more efficient in use than those heretofore proposed.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts as will be disclosed more fully hereinafter and particularly covered by the claims.

Referring to the accompanying drawing forming a part of this specification and in which like numerals designate like parts in all the views—

Fig. 1 is a side elevation of a device made in accordance with this invention;

Fig. 2 is a rear elevation of the device;

Fig. 3 is a front elevation of the device;

Fig. 4 is an enlarged sectional view to illustrate the mounting of the cutter, plunger, and stripper plate with respect to the work support; and

Fig. 5 is a detail sectional view illustrating a rivet in the work support and about to be cut by the cutter, said view being taken as on the line 5—5 of Fig. 2.

This rivet cutter comprises a work support generally identified by the numeral 2 which may conveniently be formed from a structural member such as an angle, or from a plate of steel bent substantially to form a right angle, there thus being provided a horizontal member 3 and a vertical member 4, the former preferably having pivotal connection as by the bolt 5 to a clamp device 6 by means of which the rivet cutter may be secured to a bench or table indicated at 7. Pivotal connection 5 permits various angular positions of the work support to suit the convenience of the operator.

Centrally of the vertical member 4 of the work support there is provided a threaded bore to receive a sleeve 10 which sleeve has a smooth portion intermediate its ends serving as a bearing for the cutter generally identified by the numeral 11, said cutter being secured in place against the rear face of the member 4 as by the washer 12, nut 13 and lock nut 14 as clearly illustrated in Fig. 4. Said sleeve preferably is of a length such that no portion thereof extends beyond the face 15 of the work support, in order to permit the stripper plate 16 to assume a position if desired in substantial surface contact with said face.

A plunger 20 is disposed slidably within said sleeve, a coil spring 21 being provided around the stem of said plunger between its head 22 and

a washer 23 abutting the lock nut 14. This plunger is of a length to extend entirely through the work support and is externally threaded at its free end to screw the stripper plate 16 thereon in conjunction with a locking nut 24, said plunger engaging said plate at substantially its center.

The stripper plate may be circular or otherwise formed with the plunger disposed at its approximate center, and is provided with a series of apertures such as 25, 26, 27 and 28 which apertures are arranged circularly so that their axes are substantially equidistant from the axis of the plunger, and each aperture is counter sunk as indicated in Fig. 3 to receive the heads of flat-headed rivets such as illustrated in Fig. 5. These apertures are of different sizes corresponding to the diameters of standard rivets, although it will be understood that each aperture is slightly larger than the rivet in order to permit a slight play as will be referred to hereinafter.

The vertical member 4 of the work support, has a corresponding series of apertures formed therethrough such as indicated at 30, 31, 32 and 33 which are in substantial registry with the respective apertures 25, 26, 27 and 28 of the stripper plate, but each of the apertures in the member 4 is appreciably larger than the diameter of the rivet intended to be placed therethrough, and said apertures have their axes inclined approximately eighty-five degrees to the rear face of the work support as clearly illustrated in Fig. 5 to provide an acute shearing edge 34 coacting with the blade 35 of the cutter. The inclination of the axes of these apertures 30, 31, 32 and 33 is downwardly in a direction from the front face to the rear face of the member 4, as well as downwardly in a circular path with respect to the cutting edge of the cutter blade, so that the force applied by said cutting edge when severing a rivet is exerted positively against the acute shearing edge 34 of each aperture, in the arcuate travel of the cutter blade, all as should be readily apparent from Figs. 2 and 5.

The stripper plate 16 is provided with any suitable means for adjusting its spaced relation with respect to the work support 2, thereby accommodating this device to the trimming or cutting of rivets of any desired length, and one such means is illustrated as comprising a screw 40 threaded through the stripper plate with its end bearing against the front face of the work support, and a lock nut 41 for insuring by jamming action a locked relation between said screw and

said plate, the setting of said screw being in accordance with the length of cut rivet desired.

The work support 2 and the stripper plate 16 are provided with coengaging means for imparting a slight rotary motion to said plate when the plate is moved by the plunger 20 in a direction away from the work support, in the act of ejecting a cut rivet from this device. In the drawings one such means is illustrated in an exaggerated manner, for clearness of understanding, as comprising a post 42 carried by the work support and extending through a slightly over-sized aperture 43 provided therefor through the stripper plate whereby the said plate has a snug sliding fit on said post. This means also serves to keep the stripper plate apertures in substantial registry with the corresponding apertures in the work support. However, the post 42 has its axis inclined to the face of the work support substantially coangularly with the inclination of a rivet aperture such as 30, but the direction of inclination of the post is opposite to the direction of inclination of the axis of said apertures.

It is realized that whereas the inclinations of the axes of the post 42 and the aperture 30 may be of equal amount though in opposite directions, this relationship will not be true with respect to the axis of said post and the axis of each of the remaining apertures, because as shown in Fig. 2 the post is substantially diametrically opposite to the aperture 30 whereas the remaining apertures 31, 32 and 33 are disposed progressively nearer to said post. However, this situation is not serious nor does it provide inoperativeness of the device, because, as hereinabove stated, each aperture is of a diameter appreciably larger than the diameter of the rivet it is to receive whereby a positive play is permitted of the rivet in the aperture to the end that no rivet will bind and hence prohibit the stripper plate from having the slight rotary motion imparted thereto by the inclination of the post 42. The purpose of this rotation is to permit the stripper plate to bring the cut rivet into substantial coaxial relation with the aperture occupied by the rivet in the work support, whereby the cut rivet will be easily expelled from said aperture and not have the tendency to "hang" or bind in said aperture.

The operation of the device is as follows with respect for example to a rivet of one inch length which is desired to be cut to have a length of three-quarters of an inch. The screw 40 is manipulated to adjust the stripper plate to a position spaced from the work support such a distance that, when the one inch rivet is inserted through the registered apertures, there will be one-quarter of an inch of the end of the rivet extending beyond the rear face of the work support. The handle of the cutter 11 is then manipulated to cause its cutting blade to sever the extending portion of the rivet, and then a sharp quick blow is given to the plunger 20 which causes a bodily movement of the stripper plate in a direction away from the work support to expel the cut rivet from the device. The spring 21 is of considerable strength and thereby holds the cutter 11 firmly against the rear face of the work support, and the bodily movement of the stripper plate due to the sliding effect of said plate upon the post 42, causes the slight rotary movement to be imparted to said plate which is sufficient to bring the cut rivet into substantial coaxial relation with the aperture occupied by it, to cause a clean and sure ejection of the rivet from said aperture. A cup or box indicated at

45 may or may not be provided to catch the expelled rivet.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of this invention and therefore it is desired not to be limited to the exact foregoing disclosure except as may be required by the claims.

What is claimed is:

1. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

2. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support; adjusting means for spacing said plate from said support in accordance with the length of rivet desired; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

3. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support, said plate provided with a rivet receiving aperture in substantial registry with the aperture of said support, said plate having positive engagement with the head of a rivet when passed through its aperture; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

4. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet, said aperture being inclined to a face of said support to provide an acute shearing edge for cooperation with a cutter; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

5. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet, said aperture being inclined to a face of said support to provide an acute shearing edge for cooperation with a cutter; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support, said plate provided with a rivet receiving aperture in substantial registry with the aperture of said support; means carried by said support and cooperatively engaging said plate to impart rotary movement to said plate upon actuation of said plunger the such rotary movement being in amount only sufficient to break any possible freeze of the cut rivet in the aperture of said support; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

6. In a rivet cutter the combination of a work support provided with an aperture to receive a rivet, said aperture being inclined to a face of said support to provide an acute shearing edge for cooperation with a cutter; a plunger reciprocally mounted in said support; a stripper plate carried by said plunger and disposed on one side of said support, said plate provided with a rivet receiving aperture in substantial registry with the

aperture of said support; means carried by said support and cooperatively engaging said plate to impart rotary movement to said plate upon actuation of said plunger, said means comprising a post inclined to the said face of said support, the inclinations of said post and said aperture being opposite; and a cutter pivotally mounted on said plunger and disposed on the opposite side of said support.

7. A rivet cutter comprising a work support having a bore therethrough for the shank of a rivet, said bore having its axis inclined to the face of said support, a stripper plate adjustable toward and away from said support in accordance with the length of rivet desired, said plate

adapted to engage the head of a rivet and movable away from said support to expel the cut rivet, and coengaging means carried by said support and said plate to impart rotary motion to said plate upon its movement away from said support, said means comprising a guide member inclined to said face of said support, the inclinations of said member and said bore being opposite.

8. A rivet cutter comprising a stripper plate reciprocable to expel a cut rivet, said plate mounted for rotary motion while being reciprocated.

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