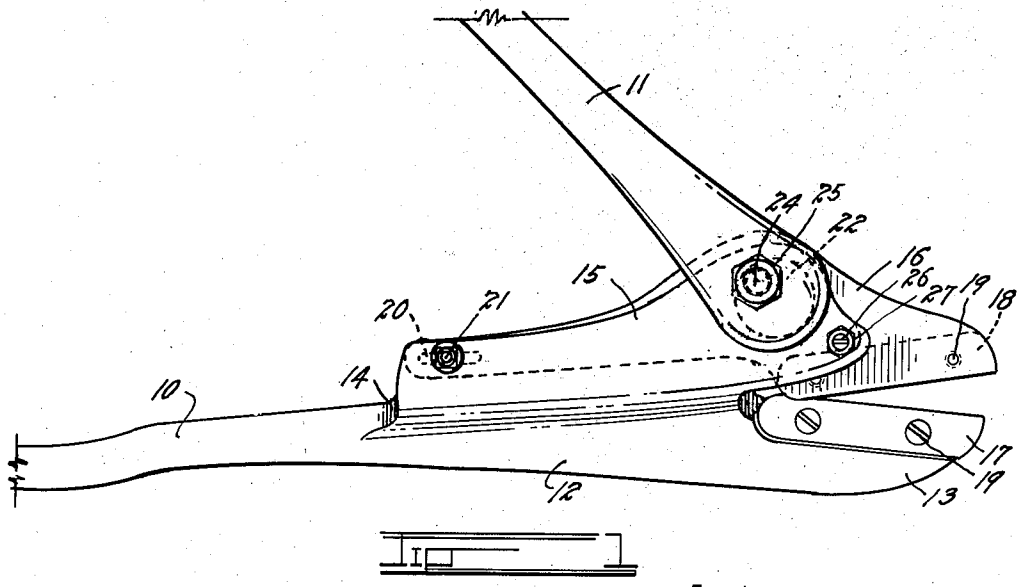
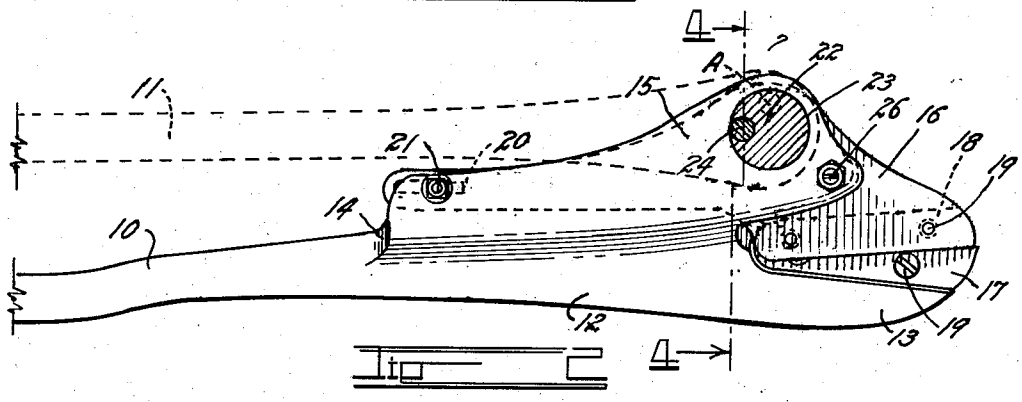
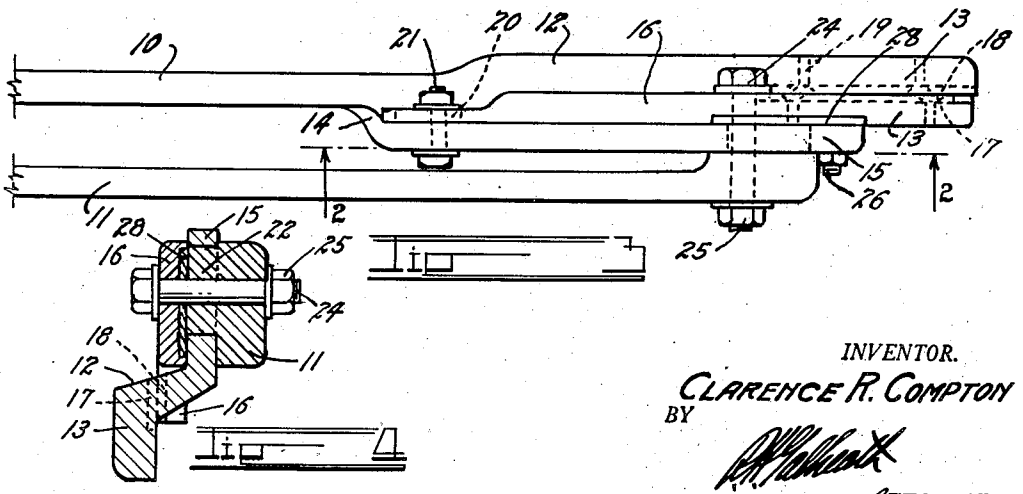
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HEAVY METAL SHEARS

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HEAVY METAL SHEARS

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2 Claims. (Cl. 30—238)

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This invention relates to a heavy metal shear, and has for its principal object the provision of a shear which can be operated by hand to accurately cut steel plates exceeding ⅛ of an inch in thickness.

Another object of the invention is to so construct the shear that the shearing blades will have a double motion, that is, they will have a relative, longitudinal movement as they close laterally upon the plate.

A further object is to provide mechanism in a shear of this type which will greatly multiply the manual effort applied to the shearing handles of the tool.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a side elevation of the improved shear in the partially opened position;

Fig. 2 is a side longitudinal section, taken on the line 2—2, Fig. 3 with the shear in the closed position;

Fig. 3 is a top view of the improved shear in the closed position; and

Fig. 4 is a cross-section, taken on the line 4—4, Fig. 2.

The improved tool employs a lower handle 10 and an upper handle 11. The lower handle is formed with an outwardly extending shelf 12 terminating in a lower jaw 13. It is also provided with an inwardly extending portion 14 terminating in a vertical plate 15.

An upper jaw member 16 is secured against the outer face of the vertical plate 15, and at its extremity passes on the inside of the lower jaw 13. The upper jaw member 16 and the lower jaw 13 are provided with hardened metal jaw plates 17 and 18, respectively, secured thereto by means of counter-sunk attachment screws 19.

The actual cutting is done by a shearing action between the jaw plates 17 and 18. The rear extremity of the upper jaw member 16 contains an elongated bolt slot 20, through which an attachment bolt 21 passes. The bolt 21 also extends through the plate 15 to secure the upper jaw member in place on the plate.

A cylindrical bearing boss 22 is formed on the

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inner face of one extremity of the upper handle 11. This bearing boss rotatably fits a circular bearing opening 23 in the plate 15 so that the upper handle 11 may be rotated about the plate. The upper handle 11 is held against the plate 15, and the boss 22 is maintained in its bearing opening 23 by means of an eccentric bolt 24.

The bolt 24 passes completely through the handle 11 and its boss 22 and through a bolt hole in the upper jaw member 16, and is clamped in place therein by means of a clamp nut 25. The bolt 24 is positioned eccentrically in the boss 22, as shown in Fig. 2, so that when the handle 11 is in the closed position of Fig. 2, the bolt will be at the rear side of the boss, and the upper jaw member 16 will have overlapped the lower jaw 13, as shown in Fig. 2.

When the handle 11 is raised to the full vertical position, or 90°, the bolt 24 will have moved to the uppermost side of the boss 22 as indicated by the broken line position A of Fig. 2, fully opening the jaws.

It will be noted that the bolt in moving from the broken line position A to the full line position of Fig. 2, it will not only lower the upper jaw member 16, but will also swing the upper jaw member rearwardly substantially one-half the diameter of the boss 22. This rearward movement of the upper jaw member is accommodated by the elongated bolt slot 20 sliding on the bolt 21.

It has been found that by closing the jaws on an inclined shearing angle, as shown in Figs. 1 and 2, highly efficient cutting results are obtained. It has also been found that if the upper jaw is moved rearwardly as it descends, a double shearing action is obtained which draws the material being sheared between the jaws so that exceedingly thick steel plate can be sheared with very little effort.

The usual shear consists of two crossed members pivoted together so that the lower jaw is on the extremity of the upper handle and the upper jaw is on the extremity of the lower handle. This places the upper handle in the direct path of material passing rearward along the top of the lower jaw and similarly places the lower handle in the direct path of material passing rearward beneath the upper jaw. Therefore the sheared edges must bend upwardly and downwardly to provide clearance for the shear which makes it impossible to shear thick stiff plates.

Attention is called to the fact that in this improved shear the upper jaw is operated by the upper handle and the lower jaw is operated by the lower handle. There is no crossing of the

members. Therefore an open throat is provided so that the sheared edges may move straight back from the top of the lower jaw and the bottom of the upper jaw without interference from the handles, see Fig. 4.

Occasionally restricted spaces will be encountered where it is impossible to swing upper handle rearwardly down onto the lower handle as shown in Fig. 2. Under such conditions the upper handle 11 may be swung forward from the vertical position A of Fig. 2 causing the upper jaw member to close with a forward and downward motion.

A set screw 26 is provided for forcing the upper jaw member into cutting engagement with the lower jaw. The set screw is threaded through the plate 15 and contacts a wear plate 28 set in the upper jaw 16. A jam nut 27 is provided to lock the set screw in its set position.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention what is claimed and desired secured by Letters Patent is:

1. A shear comprising: a lower handle; an outwardly extending shelf portion on said lower handle; a lower jaw supported by said shelf; an inwardly extending portion on said lower handle; a vertical plate formed on said inwardly extending portion; an upper jaw member positioned against the outer face of said vertical plate and passing on the inside of said lower jaw; an attachment bolt hingedly securing the rearward extremity of said upper jaw member to said vertical plate, said bolt passing through an elongated opening in said upper jaw member to allow longitudinal movement of the latter; an upper handle pivotally mounted on the inner face of said plate; a cylindrical boss formed on said upper handle and being rotatably mounted in and extending through said plate; and a jaw-operating member projecting eccentrically from the extremity of said boss and extending through said upper jaw member to communicate the upper handle movement to the upper jaw member.

2. A sheet metal shear comprising: a lower handle; an integral lower jaw extending forwardly from said lower handle; a cutting edge on the right hand side of said lower jaw; a shelf extending longitudinally of the upper edge of said lower handle rearward of said lower jaw and projecting outwardly to the right hand side thereof; a vertical plate extending along and projecting upwardly from the outer edge of said shelf; an upper jaw member positioned against the left hand face of said plate; a cutting edge on the left hand side of said upper jaw member extending below and forwardly of said shelf into cutting relation with the cutting edge on said lower jaw member; a hinge bolt hingedly securing the rear extremity of said upper jaw member against the left hand side of said vertical plate, said hinge bolt extending through an elongated slot in said upper jaw member so as to allow longitudinal movement of the latter; an upper handle lying against the right hand face of said vertical plate; a cylindrical pivot boss extending from said upper handle, through said vertical plate with its extremity terminating adjacent said upper jaw member; and a clamping bolt extending from the extremity of said boss through said upper jaw member and acting to secure the latter to the former, said clamping bolt being positioned eccentrically of and parallel to the axis of rotation of said boss so as to impart a combined vertical and longitudinal movement to said upper jaw member.

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