

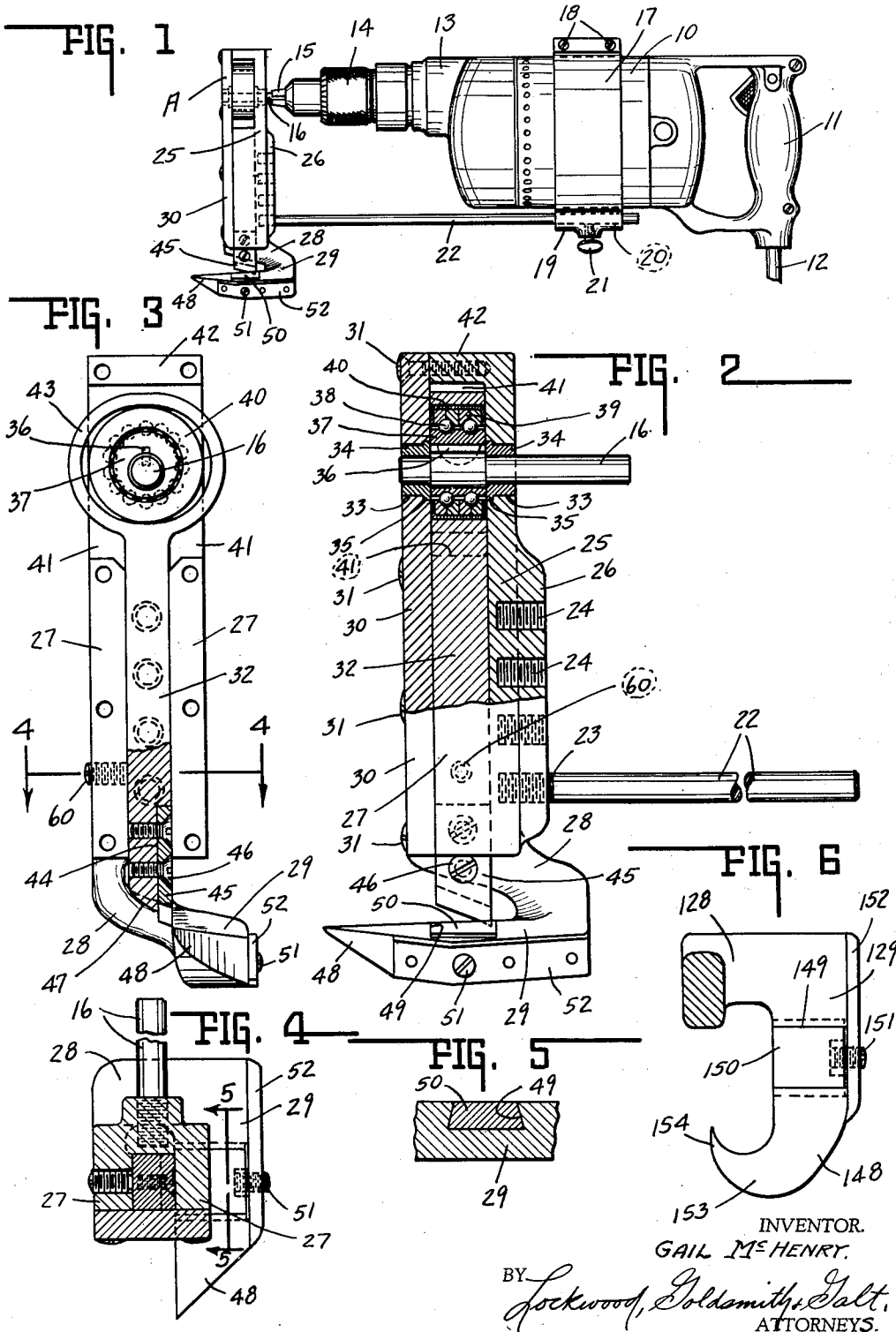
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G. McHENRY

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SHEAR ATTACHMENT FOR POWER UNITS

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SHEAR ATTACHMENT FOR POWER UNITS

Gall McHenry, Muncie, Ind.

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3 Claims. (Cl. 30—228)

This invention relates to shear attachment for portable power units.

The chief object of this invention is to provide a sheet cutting attachment, adapted for ready attachment to and detachment from such portable power units, such as electric drills and like which have a chuck for the interchangeable reception of different size drills, bits, taps, screw drivers and the like.

One chief feature of this invention resides in the incorporation of a driven element in the attachment which is receivable by the electric power unit chuck.

Another chief feature of this invention resides in the incorporation of universally adjustable means for rigidly associating the major portion of the attachment to any one of many styles and kinds of electric power units of the character indicated and now upon the market.

A further chief feature of the invention resides in incorporating in the major portion of the attachment first, a reduction drive devoid of gears and having a minimum of friction, and second, a reciprocating type shear.

A further feature of the invention resides in incorporating with the stationary shear, an extension at one end, and another portion oppositely positioned relative to the stationary shear portion, whereby the sheet metal being sheared is held straight and is prevented from binding upon or twisting the movable shearing member.

Other objects and features will be set forth more fully hereinafter.

The full nature of the invention will be understood from the accompanying drawing and the following description and claims:

In the drawing, Fig. 1 is a side elevation of a conventional portable or hand held and if desired controlled power unit with the attachment embodying the invention applied thereto.

Fig. 2 is an enlarged side elevation of the major portion of the attachment, parts being broken away and shown in vertical section to show more clearly other and interior parts.

Fig. 3 is a front view of the attachment shown in Fig. 2 with cover plate removed and similar parts are broken away to show other parts in section.

Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 3 and in the direction of the arrows.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4 in the direction of the arrows.

Fig. 6 is a view similar to Fig. 4 and of a modified form of sheet support.

In Fig. 1, the numeral 10 indicates the main body portion of a hand or portable type power unit enclosing an electric motor, not shown. A handle or hand grip 11, herein serves as a guard and support for the current supply 12 to the motor. An extension 13 rotatably supports the motor rotatable chuck 14 having the jaws 15. All of the aforesaid constitutes an illustrative embodiment of a conventional or standard portable power unit of the character indicated.

The major portion of the shear attachment is indicated by letter A in Fig. 1 and from it projects shaft 16 receivable by chuck jaws 15 for rotation by the motor. Enveloping the body 10 is an adjustable clamp-on type of band 17, see adjustment 18, which includes the socket portion 19 having bore 20 therethrough and a locking thumb screw 21.

A support rod, or the like, 22 has one end slidably receivable by the bore 20 and rigidly anchored in the socket by the thumb screw. The opposite end of the rod is detachably and rigidly connected to the attachment proper A by being threaded at 23 and interchangeably receivable by any one of the threaded sockets or recesses 24 in the body portion 25 of said attachment. The body portion 25 at the recesses is enlarged or reenforced as at 26.

Reference now will be had more especially to Figs. 2 to 5, inclusive. In said figures, the body portion 25 includes two side walls 27 from one of which extends downwardly a rearwardly and inwardly directed extension 28. The latter then extends forwardly as at 29 and constitutes a foot structure.

A cover plate 30 is suitably secured to the body portion as at 31. This forms a guide channel in which is slidably mounted reciprocable member 32. The cover plate and back wall are apertured as at 33 and therein is mounted aligned case-hardened bushings 34 which rotatably supports spaced portions of shaft 16, see Fig. 2.

Between the opposed flange portions 35 of bushings 34 and keyed to shaft 16 as at 36 is an eccentric 37. The outer periphery is suitably formed to seat balls 38 and these bear upon the exterior ring structure 39 retained by cage 40, the exterior of which may be hardened, if desired.

The side walls 27 are relieved as at 41 and extending forwardly from the body portion is the channel cap portion 42. The reciprocable member 32 projects into this space and rigid

therewith is an elongated and flattened loop portion 43.

As the eccentric rotates with shaft 16, the anti-friction structure tends to rotate so that cage 40 contacting the interior of loop 43 causes member 32 to reciprocate.

The lower end of member 32 is exposed through the lower open end of the channel. Member 32 is cut away as at 44 to detachably mount the movable shear blade 45 by means of screws 46. The cutting edge is inclined upwardly and forwardly as shown in Fig. 2 and rearwardly from the cutting edge as shown in Fig. 3. The extreme and exposed lower end of member 32 is similarly formed as at 47, and forms a reinforcing continuation of blade 45.

The foot portion is extended forwardly beyond shear member 45 and terminates in a tapered point 48. The foot is recessed as at 49 to seat the stationary shear member 50 and the same is adjusted therein by set screw 51 mounted in the foot supported plate 52.

As shown in Fig. 2, the extreme elevated position of member 32 still permits movable shear 45 to maintain contact with stationary shear 50. Thus, the work can be moved from left to right—see Fig. 2—or the attachment can be forced into work being cut but in an opposite direction. In this relative movement the work adjacent the cut is supported by foot 29. The portion 28 divides the pieces and thus interference therewith is eliminated, as the cut is continued. Another adjusting screw 60 is carried by one wall 27 and member 32 rides thereon. Thus, shear blade 45 can also be adjusted relative to shear portion 50.

In Fig. 6 a modified form of foot structure is illustrated. Numerals of the one hundred series similar to those of the primary series indicate like or similar parts.

Herein the toe portion 148 of foot 129 is curled inwardly and thence rearwardly as indicated by numerals 153 and 154, respectively. This type of foot arrangement holds the sheet metal substantially straight and prevents it binding or twisting relative to the shear blades in the cutting operation.

To cut an inside circle, a hole is formed in the sheet of metal and the foot "screwed" through it until the metal is properly positioned for cutting purposes.

While the invention has been illustrated and described in great detail in the drawing and foregoing description, the same is to be considered as illustrative and not restrictive in character.

The several modifications described herein as

well as others which will readily suggest themselves to persons skilled in this art, all are considered to be within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. A shearing attachment, adapted to be driven by a portable, hand-type electric motor, comprising an elongated tubular casing of substantially rectangular outline and including a body and a cover detachably secured thereto, a shaft rotatably supported by the upper end of the casing in both the body and the cover, an eccentric on the shaft and retained thereon within said casing by opposite walls of the latter, an annular member surrounding said eccentric and similarly retained by the aforesaid casing walls, and a reciprocable member having a shear supporting portion at one end and at its opposite end an elliptical portion encircling said annular member for actuation thereby, the lower portion of said casing constituting an elongated four-sided guideway for said reciprocable member and the two intermediate sides being removed adjacent the elliptical portion for clearance purposes, cover removal exposing the members and eccentric for ready removal and replacement and initial assembly.

2. A shearing attachment as defined by claim 1, characterized by said eccentric and annular member being recessed on confronting surfaces and anti-friction means therebetween and seated in the confronting recesses.

3. In a shearing attachment for a portable, hand-type electrical motor, comprising a motor operable reciprocable shear having a slantingly inclined cutting free end and an elongated casing for slidably supporting and guiding the shear, the combination of a work supporting foot rigid with one side of the casing and slantingly extending therefrom in the general direction of the shear end slanting inclination, then laterally, then approximately transverse to the lateral portion and direction of shear reciprocation in an amount to project beyond the cutting position of the shear and then substantially parallel to the first mentioned laterally directed portion for work support fore and aft of the shear, and cooperating shear means on the transverse portion, the latter portion being arranged for work support, the said parallel portion having a rearwardly directed end parallel to the said transverse portion and in alignment with and spaced from the first mentioned extended, inclined casing rigid portion.

GAIL MCHENRY.