Sept. 7, 1943. H. SCHWEIDLER 2,328,747

CUTTING AND SHAPING TOOL

Filed March 6, 1940

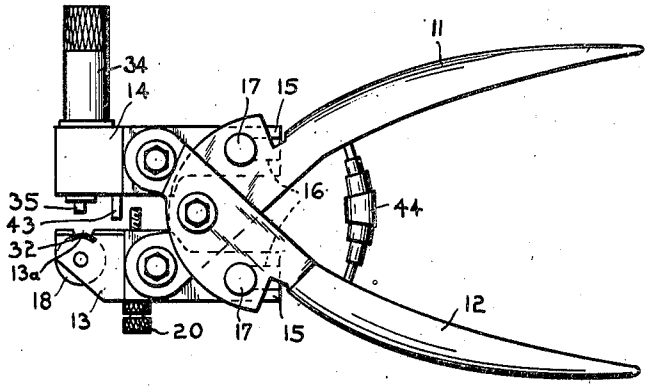


Fig. 1.

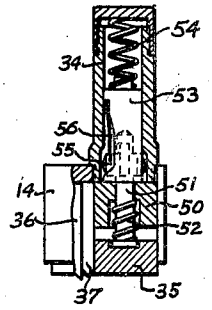


Fig. 4.

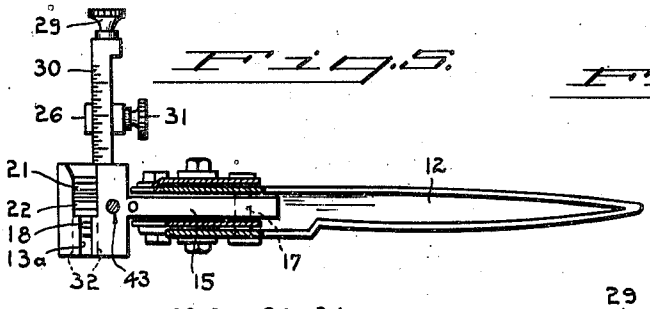
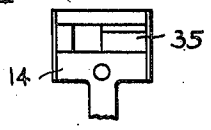


Fig. 5.



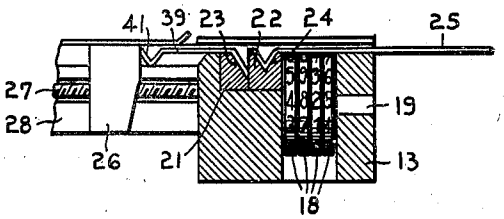


Fig. 6.

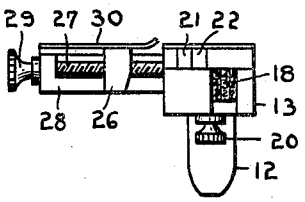


Fig. 3.

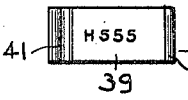


Fig. 2.

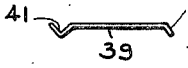


Fig. 8.



Fig. 9.

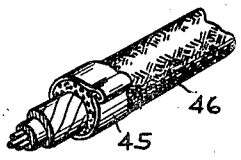


Fig. 10.

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CUTTING AND SHAPING TOOL

Hubert Schweidler, Berlin-Pankow, Germany; vested in the Alien Property Custodian

Application March 6, 1940, Serial No. 322,634
In Germany December 6, 1935

3 Claims. (Cl. 7—14.1)

This invention relates to tool apparatus and more particularly to a manually operable tool for performing a sequence of operations on a strip of material.

An object of the invention is to provide a novel device whereby a marker ring blank is marked and shaped.

Another object is to mount a novel apparatus of the above type in a supporting structure constructed for convenient and easy manual operation.

A further object is to provide a novel tool adapted to perform several operations such as cutting, shaping and embossing a blank in a single stroke.

A still further object is the provision of a novel tool having adjustable means in combination therewith for measuring off a predetermined strip of blank material.

The above and other objects and novel features of this invention will more fully appear from the following detailed description when the same is read in connection with the accompanying drawing. It is to be expressly understood, however, that the drawing is for the purpose of illustration only and is not intended as a definition of the limits of the invention, reference being primarily had for this latter purpose to the appended claims.

In the drawing wherein like reference characters refer to like parts throughout the several views,

Fig. 1 is a view in side elevation of an embodiment of the present invention;

Fig. 2 is a view in front elevation showing a jaw member of the above embodiment;

Fig. 3 is a view in front elevation illustrating the other jaw member of the device;

Fig. 4 is a bottom plan view of the jaw of Fig. 2;

Fig. 5 is a top plan view, partly in section, of the jaw of Fig. 3;

Fig. 6 is an enlarged view, partly in section, of a portion of the mechanism illustrated in Fig. 5;

Fig. 7 is a plan view of a blank created by the operations performed according to the present invention;

Fig. 8 is a view in elevation of said blank;

Fig. 9 is a view in elevation of the marker ring into which the above blank is readily formed

Fig. 10 is a view in perspective showing one manner in which said marker ring may be utilized.

The present invention is embodied in a novel tool which is shaped like a pair of pliers having jaws provided with a plurality of dies and punches whereby a predetermined number of operations are performed on a piece of material by a single clamping of said jaws. The blank created by the tool is one from which a marker ring may be readily shaped. Means for easily and accurately measuring off the length of material necessary for a blank are operatively fixed to the tool, said means being adjustable for a variety of lengths in the event marker rings of different diameters are desired.

In the embodiment illustrated, by way of example, in the drawing the tool apparatus comprises a pair of handles or arms 11 and 12 pivotally mounted relative to each other in the manner of plier handles. A jaw member 13 is carried by handle 11 being pivotally mounted about the end of said handle and a second jaw member 14 is similarly mounted about the end of arm 12. It is desirable to maintain said jaws in parallel relation to each other as said arms are gripped and compressed, and to accomplish this a parallel motion mechanism is created preferably by providing each of said jaws with an extension 15 having a slot 16 in the end thereof slidably engaging a pin 17 carried by the arm upon which the opposing jaw member is pivotally mounted.

Jaw member 13 (Figs. 3 and 6) is provided with a plurality of rollers 18 rotatably mounted about a shaft 19 and having suitable indicia embossed thereon, any desired combination of said indicia being adapted to be exposed in a plane parallel to the face of member 14 through an opening 13a in the face of jaw member 13. The knob 20 provides an adjustable stop member for the opposed jaws when the punch is squeezed. A pair of dies 21 and 22 is mounted in said jaw member, to produce a pair of triangular indentations 23 and 24, adapted to shape and cut a strip 25 (Fig. 6) of material such as aluminum in a manner to be more fully described hereafter. Strip 25 is fed into said jaw member until a desired length thereof has become suitably positioned, said length being determined by a stop 26 threadedly secured to a shaft 27. The latter is journalled for rotation in a bracket 28 rigidly fixed to jaw member 13 and stop 26 is slidably associated with said bracket so as to be axially displaced by rotation of said shaft. Stop 26 is thus adjustable by rotation of said shaft, the latter having a knurled head 29 to facilitate manual operation thereof and a graduated scale 30 is preferably provided above said stop to readily

measure the length for which said stop is set. When said stop is suitably positioned, the same may be fixed against inadvertent and accidental movement by a set screw 31 threaded therein and adapted to engage shaft 27. Grooves 32 (Figs. 1 and 5) are provided in the edges of opening 13a, said grooves serving to guide and fix strip 25 against lateral movement as the latter is fed into the tool.

Jaw member 14 (Figs. 2 and 4) carries a barrel 34 containing a snap action device of the type well known in the art adapted when a given pressure is attained between jaws 13 and 14 to actuate a punch member 35 operatively connected to said device, said punch being adapted, when actuated, to strike the portion of strip 25 directly above rollers 18. The impact of member 35 causes the embossed indicia on said rollers exposed through opening 13a to be engraved on strip 25, the snap action device insuring a uniform engraving because of the fixed impact imparted thereby.

The snap action device supported by barrel 34 of Figure 2, comprises, more particularly, a piston 50 movably mounted within the jaw member 14 and having a perforation formed therethrough for reciprocally mounting a stud 51 therein, the latter being urged against the inner side of punch member 35 by means of a coil spring 52 surrounding the stud 51 and secured to the latter at one of its ends and to the piston 50 at its other end. The stud 51 has an extension adapted to pass into a bore formed in the impact piston 53 which is reciprocally mounted in the barrel 34 and urged downwardly by a spring 54. The piston 53 is provided with a transverse bore for receiving a slide member 55 therein which has a cross-bore cooperating with the piston bore when the slide 55 is centered whereby the extension of stud 51 passes therethrough into the piston bore. A spring 56 contacts and urges lateral displacement of slide 55 relative to piston 53 when the latter is in the position shown in Figure 2.

When the jaws 13 and 14 are brought together initially, the punch 35 is pressed against the metal strip 25 and the rollers 18. As the jaws are squeezed, the punch member 35 is moved upwardly against the spring 52 and since the cross-bore of slide member 55 is off-centered at this point the stud 51 engages the underside of the slide member and urges the piston 53 upwardly against the spring 54 until the slide 55 is centered by contacting the upper inner periphery of the barrel 35 whereupon the stud 51 passes through the cross-bore of the slide member into the piston bore. The piston is now released, the spring 54 causing downward acceleration thereof so that it strikes the piston 50 which in turn forces the punch 35 to urge the metal strip against the rollers 18.

When the jaws 13 and 14 are opened, punch member 35 drops downwardly carrying stud 51 therewith, the latter passing from out of the bore of piston 35 whereupon spring 56 engages and laterally displaces the slide member 55.

Jaw member 14 is also provided with a pair of punches 36 and 37 shaped to conform substantially to the configuration of indentations 23 and 24, punch 36 having a vertical edge which cooperates with the vertical edge of indentation 23 to cut a fixed length 39 of blank from strip 25. The remaining faces of said punches and indentations cooperate to form an angularly disposed end 40 on the blank and to form a V-shaped bend 41 in the end of strip 25, said bend being formed by punch 37 and die 22 and said strip being simultaneously marked by the operation of punch 35 and rollers 18. Jaw member 14 is, additionally, provided with a guide pin 43.

In operation, stop 26 is adjusted in accordance with the graduations on scale 30 to the desired length of blank 39 and the rollers 18 are set to the marking which it is desired to engrave on the blank. Thereafter strip 25 is inserted into grooves 32 and advanced until it reaches stop 26. Arms 11 and 12 are then pressed together against the resistance of a spring 44, mounted therebetween, and a blank is cut from said strip, V-shaped bend 41 being formed in the end of said strip and a marking being engraved on the surface thereof. The next advance of the strip and compression of the jaws completes the formation of blank 39 (Figs. 7 and 8) by cutting off a measured length of said strip which includes inclined end 40, the engraved markings, and bend 41, and thereafter each successive compression produces a complete blank. Blank 39 may be readily formed into a marked ring 45 shown in Fig. 9 by folding together bends 40 and 41 and said ring may be used, for example, to mark an electrical cable or conduit in a switchboard or airplane. The ring may also be used as an end fastening for the insulation on a cable or conduit 46 as shown in Fig. 10.

Although only a single embodiment of the invention has been illustrated and described it is to be expressly understood that the same is not limited thereto. Various changes may be made in the design and arrangement of parts without departing from the spirit and scope of the invention. For a definition of the invention, reference will be had primarily to the appended claims.

What is claimed is:

1. A manually operable device for fabricating metal blanks from a strip of metal feed stock, comprising a pair of normally separated and cooperating opposed jaws, one of said jaws being provided with a recess therein opposing the other of said jaws, cutting and shaping means comprising an inclined cutting die and a V-formed shaping die adjacently mounted within said recess and having their operative surfaces below the surface of said one jaw and exposed to the other of said jaws, means formed in said one jaw providing a guide passage communicating with the recess containing said cutting and shaping means whereby a predetermined strip of metal is inserted therein to pass over the operative surfaces of said cutting and shaping means and maintained against lateral displacement by said passage, punch means comprising an inclined cutting tool and a V-formed shaping tool adjacently mounted and carried by the other of said jaws for cooperation with said cutting and shaping dies, and pivoted handles securing said jaws for movement toward each other whereby said punch means engages said predetermined strip of metal to force the latter against said cutting and shaping means, said cutting tool cooperating with said cutting die for cutting the predetermined strip of metal from the feed stock and providing the severed edge of the severed strip of metal with an inclined end and said shaping tool cooperating with said shaping die for simultaneously forming a V-bend at the severed end of the feed stock so that during a subsequent feed of a second predetermined strip of metal in said guide passage and over the cutting and shaping

means and the next compressing of the jaws a blank is fabricated having a V-bend at one edge formed during the first operation and an inclined end at its opposite edge formed during the subsequent operation.

2. A manually operable device for fabricating metal blanks from a strip of metal feed stock, comprising a pair of normally separated and cooperating opposed jaws, cutting and shaping means comprising an inclined cutting die and a V-formed shaping die adjacently mounted within one of said jaws, means providing a guide passage formed within said one jaw parallel with the other of said jaws and exposing said cutting and shaping means to the other of said jaws whereby a predetermined strip of metal is inserted therein to pass over said cutting and shaping means and held against lateral displacement by said passage, punch means comprising an inclined cutting tool and a V-formed shaping tool adjacently mounted and carried by the other of said jaws for cooperation with said cutting and shaping dies, and pivoted handles securing said jaws for movement toward each other whereby said punch means engages said predetermined strip of metal to force the latter against said cutting and shaping means, said cutting tool cooperating with said cutting die for cutting the predetermined strip of metal from the feed stock and providing the severed edge of the severed strip of metal with an inclined end and said shaping tool cooperating with said shaping die for simultaneously forming a V-bend at the severed end of the feed stock so that during a subsequent feed of a second predetermined strip of metal in said guide passage and over the cutting and shaping means and the next compression of the jaws a blank is fabricated having a V-bend at one edge formed during the first operation and an inclined end at its opposite edge formed during the subsequent operation.

3. A manually operable device for fabricating metal blanks from a strip of metal feed stock, comprising a pair of normally separated and cooperating opposed jaws, one of said jaws being provided with a recess therein opposite the other of said jaws, cutting and shaping dies mounted adjacent to each other within the recess and having operative surfaces thereof below the surface plane of said one jaw and exposed to the other of said jaws, means providing a relatively narrow guide passage formed within said one jaw below the surface plane of said one jaw and communicating with the recess containing said cutting and shaping dies whereby a predetermined strip of metal is inserted therein to pass over the operative surfaces of said cutting and shaping dies and maintained against lateral displacement by said passage, punch means comprising cutting and shaping tools carried by the other of said jaws for cooperation with said cutting and shaping dies, and pivoted handles securing said jaws for movement toward each other whereby said cutting and shaping tools engage said predetermined strip of metal to force the latter against said cutting and shaping dies to shape and cut said predetermined strip of metal from said feed stock.

HUBERT SCHWEIDLER.