

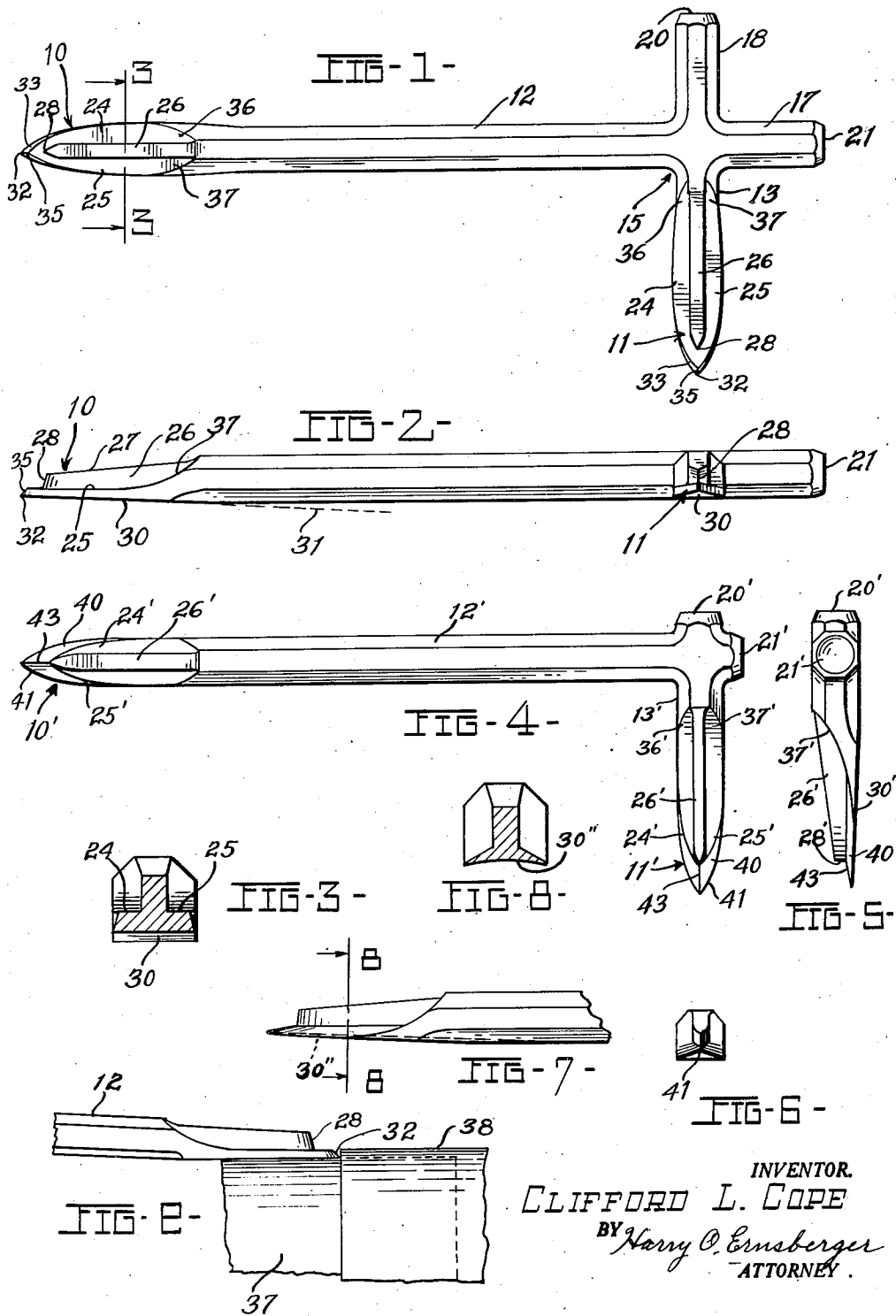
March 22, 1949.

C. L. COPE

2,465,305

CUTTING INSTRUMENT

Filed Dec. 9, 1944



INVENTOR
CLIFFORD L. COPE
BY *Harry O. Ernberger*
ATTORNEY

UNITED STATES PATENT OFFICE

2,465,305

CUTTING INSTRUMENT

Clifford L. Cope, Toledo, Ohio, assignor to The
A P Parts Corporation, Toledo, Ohio, a corpora-
tion of Ohio

Application December 9, 1944, Serial No. 567,341

3 Claims. (Cl. 30—91)

1

This invention relates to cutting instruments and more particularly to tools for severing and separating sheet metal tubular members or the like.

In many mechanical assemblies, elements are telescoped together, and over a period of time the elements become oxidized or rusted together making separation a difficult procedure. This is especially evident in installations of mufflers in the exhaust system of an internal combustion engine of an automotive vehicle. In this type of assembly, the tail pipe and exhaust conduits are usually telescoped into fittings at each end of a muffler construction. Due to the effects of moisture and other factors, the telescoped members become rusted, and as the useful life of a muffler is limited, periodic replacement becomes necessary. In some installations, various frame members of the vehicle and other adjuncts restrict the working space about the joint thus aggravating the difficulties of muffler replacement.

An object of the present invention is the provision of a simple yet effective instrumentality or tool for separating telescoped members embodying means for severing one of the members.

Another object is the provision of a tool of this nature incorporating a plurality of cutting configurations, the tool being of such contour as to render it readily adaptable for separating telescoped members in various installations.

Still another object is the provision of a cutting tool unit embodying a plurality of angularly disposed spaced cutting configurations which may be easily manufactured at low cost.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

Figure 1 is a top plan view showing one form of the cutting tool of my invention;

Figure 2 is a side elevational view of the tool shown in Figure 1;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a view similar to Figure 1 showing a modified form of my invention;

Figure 5 is an end view of the tool illustrated in Figure 4;

Figure 6 is an end view of one of the cutting

2

configurations of the construction shown in Figure 4;

Figure 7 is a side view showing a modified form of cutting configuration; and

Figure 8 is a sectional view of one form of cutting configuration, the view being taken on line 8—8 of Figure 7.

Figure 9 is a view illustrating a use of the tool in effecting a separation of a muffler and tail pipe connection.

While I have illustrated the cutting instrument of my invention as especially configured for use in severing and separating one tube telescoped with another, for example, separating a muffler connection from a tail pipe on an automotive vehicle, it is to be understood that the instrument may be employed for any purpose where it may be found to have utility.

Referring to the drawings and particularly Figures 1 to 3, the tool is inclusive of a plurality of cutting configurations 10 and 11 formed respectively upon an elongated body portion or bar 12 and a short bar or body portion 13. The body portions or bars 12 and 13 are integrally joined as at 15, each bar having an aligned extension 17 and 18 as particularly illustrated in Figure 1 providing a cross-like formation. The extremities 20 and 21 of the extensions 17 and 18 form anvils adapted to receive blows of a hammer or other striking instrumentality during cutting operations. As illustrated in Figure 1, the portions 12 and 13 carrying the cutting configurations 10 and 11 are arranged substantially at right angles, but it is to be understood that the portions 12 and 13 and their respective aligned extensions 17 and 18 may be disposed in other angular relationships without departing from the spirit of the invention.

The bars 12 and 13 are preferably of polygonally shaped cross section to facilitate gripping the tool during use. Each of the cutting configurations 10 and 11 is formed with a pair of spaced parallel lands 24 and 25 separated by a longitudinally extending rib 26 having a tapered upper surface 27. The lands 24 and 25 are joined adjacent the end of the rib 26 and form a flange portion at the base of the rib. The extremity of each rib 26 is configured to provide an upwardly extending cutting edge 28.

The bottom portion of the cutting configuration is formed to a flat surface 30 and is preferably angularly disposed to the plane of the lower surfaces of bars 12 and 13 as indicated by the dotted line 31. The outside walls of the lands 24 and 25 converge to an apex or point 32, the con-

verging walls of the lands being beveled or chamfered as at 33 forming at the place of convergence an angularly disposed cutting edge 35. The upper surfaces of the lands 24 and 25 blend into the body portions 12 and 13 by means of the curved surfaces 36 and 37.

The tool of my invention is particularly usable in removing a muffler from a tail pipe of an exhaust system of an internal combustion engine especially where the telescoped portions of the muffler and tail pipe have become "rusted" together. To effect a separation of the telescoped members either of the cutting configurations 10 and 11 may be employed dependent upon the working space available or position of other parts adjacent the juncture of the tail pipe and muffler which may impede the use of the long bar 12 and its cutting configuration 10.

In using the tool employing the cutting configuration 10, it is disposed with the flat surface 30 substantially parallel with the tail pipe 37 and adjacent its exterior surface with the angular edge 35 in contact with the end wall of the telescoped portion of a muffler connection 38 as shown in Figure 9. The anvil 21 is then struck repeated blows with a hammer or other instrument driving the edges 35 and 28 into the metal of connection 38, severing the same. As the tool progresses under the hammer blows the rib 26 and the lands 24 and 25 elevate and separate the severed portions of connection 38 thus providing a simple yet effective means of disconnecting a worn out muffler from tail and exhaust pipes. As the tool of my invention does not injure the tail pipe 37 or the exhaust pipe, a new muffler may be installed after the old one has been removed in the manner above described. If working space for the use of the tool is limited then the cutting configuration 11 is used, the anvil 20 receiving the hammer blows to disrupt the connection. It should be noted that the placing of surface 30 in contact with the exterior surface of the tail pipe, results in the anvil end of the tool being elevated above the tail pipe to facilitate the use of a hammer against the anvil.

In the form of the invention illustrated in Figures 4 through 6, the cutting configurations 10' and 11' are of different formation. In this form the lands 24' and 25' at each side of rib 26' have their forward portions beveled or chamfered as at 40 to form with the flat surface 30' an acute angle the line of juncture being a sharp edge 41. The juncture of the beveled surfaces of the lands results in an angularly arranged line 43 terminating at the cutting edge 28'. The anvils 20' and 21' are also formed very close to the juncture of body portions 12' and 13' as shown in Figure 4.

In the use of this form of tool, the line 43 in conjunction with the convergent portions 40 of lands 24' and 25' first slightly separates the engaging portions of the telescoped members, causing the end portion of the outside telescoping member to be guided into engagement with the cutting edge 26' to sever the member, after which the rib 26' in conjunction with the curved surfaces 37' distort the severed portions to effect a disconnection of the telescoped members.

Figures 7 and 8 illustrate an arrangement

wherein the lower surface 30'' of the cutting configuration is curved transversely as particularly shown in Figure 8. By forming the lower surface in this manner, this guiding surface during use, more nearly coincides with the curved exterior surface of the tail pipe with which it is in contact.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:

1. A tool of the character disclosed, in combination, a member having a body portion and an end portion formed with a cutting configuration; said cutting configuration being formed with a pair of lands; a rib formed between said lands; said rib terminating in a cutting edge; the outer edges of said lands converging in advance of said cutting edge; the converging edges of said lands being beveled, and the lower surface of said cutting configuration being substantially flat and arranged at an acute angle with respect to the body portion.

2. A tool of the character disclosed, in combination, a member having a body portion of non-circular cross section and an end portion formed with a cutting configuration; the other end of the member being shaped to provide an anvil portion; said cutting configuration being formed with a pair of lands; a rib formed between said lands; said rib terminating in a cutting edge; the outer edges of said lands converging in advance of said cutting edge; the converging edges of said lands being beveled, and the lower surface of said cutting configuration being substantially flat and arranged at a slight angle with respect to the body portion.

3. A tool of the character disclosed, in combination, a member having a body portion and an end portion formed with a cutting configuration; the other end of the member being flattened to form an anvil portion; said cutting configuration being formed with a pair of lands; a rib formed between said lands; said rib terminating in a cutting edge; the outer edges of said lands converging in advance of said cutting edge; the converging edges of said lands being beveled; and the lower surface of said cutting configuration being arranged at an acute angle to the body portion and concavely curved in a transverse direction.

CLIFFORD L. COPE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|-----------|---------|---------------|
| 25,308 | Neff | Mar. 31, 1896 |
| 851,351 | Hanley | Apr. 23, 1907 |
| 1,293,394 | Fiori | Feb. 4, 1919 |
| 1,387,316 | Schmidt | Aug. 9, 1921 |
| 2,203,158 | Klein | June 4, 1940 |