H. K. PORTER,

CUTTING TOOL.

APPLICATION FILED JAN. 10, 1917.

1,247,716.

Patented Nov. 27, 1917.

2 SHEETS—SHEET 1.

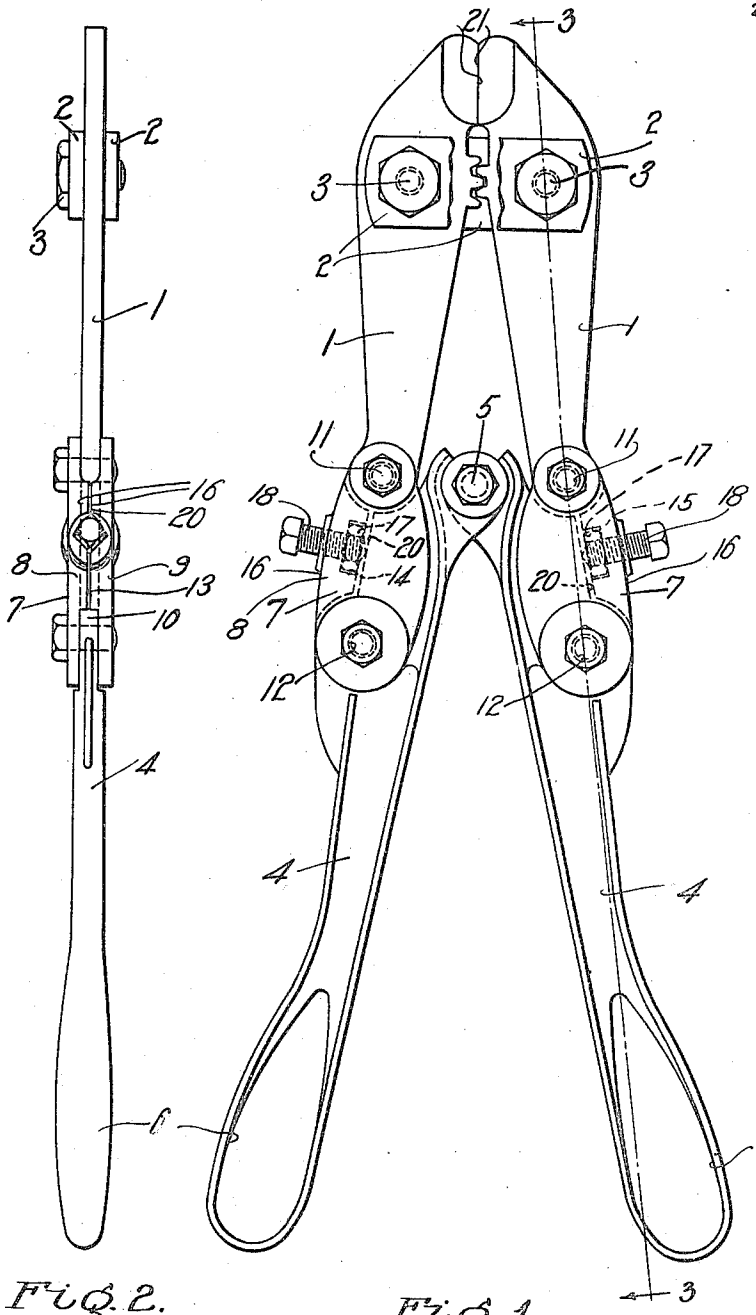


Fig. 2.

Fig. 1.

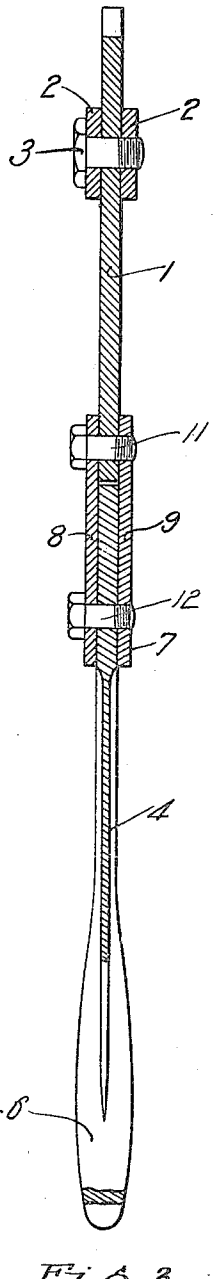


Fig. 3.

Inventor:

Henry K. Porter

By his attorney,

Charles S. Goodhue.

H. K. PORTER.

CUTTING TOOL.

APPLICATION FILED JAN. 10, 1917.

1,247,716.

Patented Nov. 27, 1917.

2 SHEETS—SHEET 2.

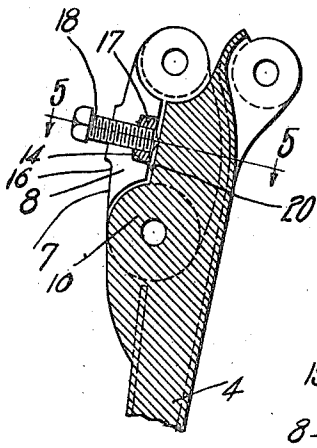


Fig. 4.

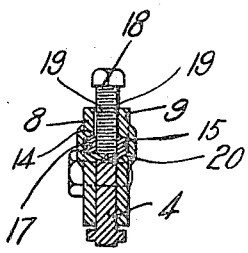


Fig. 5.

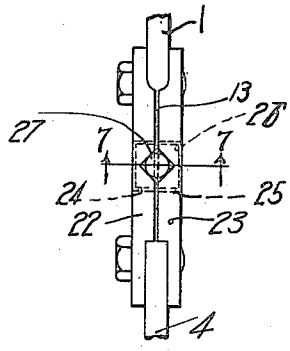


Fig. 6.

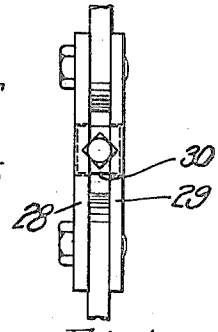


Fig. 8.

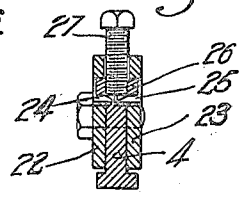


Fig. 7.

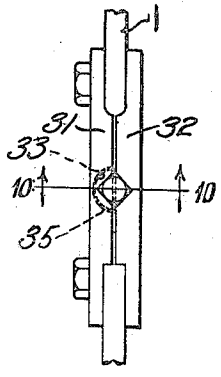


Fig. 9.

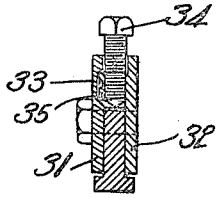


Fig. 10.

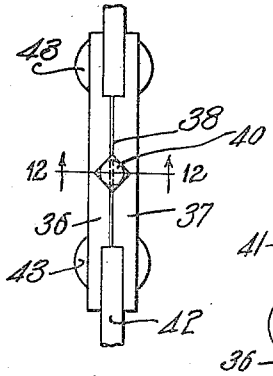


Fig. 11.

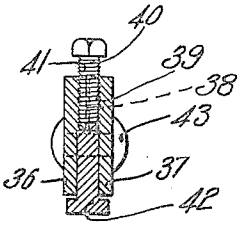


Fig. 12.

Inventor:
Henry K. Porter,
By his attorney, Packard S. Goodwin.

UNITED STATES PATENT OFFICE.

HENRY K. PORTER, OF BROOKLINE, MASSACHUSETTS.

CUTTING-TOOL.

1,247,716. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed January 10, 1917. Serial No. 141,529.

To all whom it may concern:

Be it known that I, HENRY K. PORTER, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Cutting-Tools, of which the following is a specification.

This invention relates to improvements in cutting tools of the type set forth in the United States Patents Nos. 862,279, patented August 6, 1907, and 909,663, patented January 12, 1909. In both of the patents referred to adjusting levers are arranged between the operating levers and the cutting levers. These adjusting levers are forked at opposite ends to engage the ends of said cutting levers and said operating levers respectively.

Furthermore, said adjusting levers are usually constructed of malleable iron and in order that the forked ends thereof may exactly fit the male ends of the cutting levers it is necessary that considerable milling and finishing of the contact surfaces be done. In high class or expensive tools such an amount of work may be warranted, but in the cheaper grades of tools it is not.

The object of the present invention is to provide a powerful and durable cutting tool embodying a construction which eliminates the necessity of finishing the contacting faces of the adjusting levers, operating levers and cutting levers without sacrificing the efficiency and necessary features of the more expensive tools.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings:

Figure 1 is a plan view of a cutting tool embodying my invention.

Fig. 2 is a side elevation of the same.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a detail section of the pivoted end of one of the operating levers of the tool and one of the links attached thereto, said operating lever being shown in section.

Fig. 5 is a section taken on the line 5—5 of Fig. 4, showing the means for adjusting the links relatively to the operating lever.

Fig. 6 is a detail view, illustrating another method of operatively connecting the adjusting screw with the links.

Fig. 7 is a section taken on the line 7—7 of Fig. 6.

Fig. 8 is a view similar to Fig. 6 and shows a slight variation in the construction of links which connect the operating lever with the cutting lever.

Fig. 9 is a detail view similar to Fig. 6, illustrating another modified form of link.

Fig. 10 is a section taken on the line 10—10 of Fig. 9.

Fig. 11 illustrates still another modified form of link.

Fig. 12 is a section taken on the line 12—12 of Fig. 11.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 1, 1 are cutting levers pivotally connected together by straps 2, 2 placed upon opposite faces of the cutting levers 1, 1 and united by studs 3, 3 which form the pivots for said cutting levers. 4, 4 represent operating levers which are pivotally connected together at 5, said levers having handles 6 by means of which they may be operated relatively to each other about the axis of the pivot 5.

The cutting levers 1 are each connected to one of the operating levers 4 by means of an adjusting section 7, consisting preferably of a pair of links 8 and 9. The links 8 and 9 of each of said sections are arranged against opposite faces of one of the cutting levers 1 and against opposite faces of a boss 10 formed upon the operating lever 4 and are connected thereto by suitable connecting means, such as studs 11 and 12 respectively.

The links 8 and 9 are separated from each other between the studs 11 and 12 by a slight space 13 so that there will be substantially no contact between said links. By providing such a space between the members of the adjusting section the faces of said members, which engage the cutting levers 1 and bosses 10, will be permitted to lie flat against said cutting levers and said bosses, thus providing a substantial bearing surface for each of the links when the studs 11 and 12 are operated to draw the links together.

In other words, the inner faces of the links 8 and 9 will lie parallel with the adjacent faces of the cutting levers 1 and operating levers 4, making a much more satisfactory and durable connection than would be possible were the adjusting section made in one

piece by being joined together along the slot 13, but having slots at opposite ends to receive the ends of the cutting and operating levers. When the latter form is employed and the inner faces of the forks are not finished more or less clearance must be provided between the adjacent surfaces of the connected part, to allow for irregularities in the surface of the metal due to the casting thereof. To make a tight joint the extremities of the forked ends would ordinarily be the only portion thereof which would contact with the male sections of the operating and cutting levers and this would result in an uneven wearing of the inner faces of the adjusting section and the studs which draw said ends together would more than likely be bent by reason of the deflection of the ends of said section, but as hereinbefore stated, all such objections will be eliminated by employing the links as hereinbefore described.

There are numerous ways in which the adjustment of said adjusting sections relatively to their respective operating levers may be accomplished, one means being shown in Figs. 1 to 5 inclusive and consists of recesses 14 and 15 formed upon the inner faces of the links 8 and 9 respectively, said recesses being located at substantial distances from the outer edges 16 of said links.

The recesses 14 and 15 are directly opposed to each other and are adapted to partially inclose a nut 17. A screw 18 is arranged between the links 8 and 9 of each of the adjusting sections 7 and in screw-threaded engagement with the nut 17, said links 8 and 9 being recessed at 19, 19 to provide space for said screw.

The inner end of each of the screws 18 is adapted to engage the edges 20 of the operating lever adjacent thereto, and upon the rotation of the screws 18 and adjusting sections 7 may be rocked about the axes of the studs 12 and thus vary the distance between the studs 11 and stud 5. The joint, including the stud 12, is purposely made exceptionally tight so as to require considerable force to move the adjusting sections relatively to their respective operating levers; thus the ordinary pressure applied to said adjusting sections when the handles 6 are separated will not produce any movement of said adjusting sections relatively to the operating levers. Such a movement of said handles will result, under the conditions stated, in the drawing together of the pivots or studs 11, 11, thus causing the cutting edges 21 of the cutting levers to be separated, said cutting levers rocking with the studs about their pivots 3.

During the operation of the cutting tool to cut material placed between the cutting edges of the cutting levers the handles 6 are forced toward each other rocking the operating levers 4 about the axis of the stud 5. During this operation the screws 18 will be contacting with the edges 20 of said levers 4 and sustain the weight transmitted through said adjusting sections to the cutting levers from the operating levers.

To compensate for wear between the cutting edges of the cutting levers the screws 18 may be rotated to rock the adjusting sections about the axes of their pivots 12 in one direction, that is, to separate the studs 11. Should it become necessary to move the adjusting sections in the opposite direction, that is, to cause the studs 11, 11 to be moved toward each other after said screws have been adjusted, pressure may be applied to the handles 6 to force said handles toward each other until the cutting edges 21 contact when further pressure on said handles will result in closing the gap between the ends of the screws 18 and the edges 20 of the operating levers.

In the links 8 and 9, shown in Figs. 1 to 5 inclusive, the space 13 is less than the thickness of the boss 10 and the portion of the cutting lever arranged between said links. This difference increases the thickness of the links between the studs 11 and 12 and thus greatly strengthens said links. The space 13 being very slight, it may, if desired, be filled with enamel after the tool has been properly adjusted so that all traces of said slot will be obliterated, thus making the adjusting section appear as a single piece.

In Figs. 6 and 7 another form of adjusting section is shown. In this form the links 22 and 23 are made substantially like the links 8 and 9 of the form hereinbefore described, with the exception that the recesses 24 and 25 extend entirely through the links 22 and 23, said links being adapted to partially inclose a nut 26 which has screw threaded engagement with a screw 27. The operation of this is the same as in the form previously described. The links of both forms hereinbefore described are usually constructed of malleable iron or any other suitable material.

In Fig. 8 is shown a construction similar to that illustrated in Figs. 6 and 7 with the exception that the links 28 and 29 are shown of uniform thickness throughout their length, thus permitting the same to be stamped from sheet steel or any suitable material of similar nature. A nut 30 is arranged between the links 28 and 29 in the same manner as is the nut 26 shown in the forms embodied in Figs. 6 and 7.

Figs. 9 and 10 illustrate still another method of providing for the adjustment of the adjusting section. In this form a pair of links 31 and 32 are employed which are substantially like the links illustrated in Figs. 1 and 2 with the exception that the

link 32 has a projection 33 formed upon the inner face thereof, large enough to receive an adjusting screw 34, said screw having screw threaded engagement with said projection. The link 31 is recessed at 35 to receive said projection so as to permit the links to be drawn together sufficiently to engage the cutting lever 1 and operating lever 4.

In Figs. 11 and 12 still another means of adjustment is illustrated. In this form the links 36 and 37, constituting the adjusting section 6, are arranged so that they very nearly contact with each other at 38, as in the form shown in Figs. 1 and 2. The adjacent portions of said links forming, as it were, a single section, are tapped at 39 to receive an adjusting screw 40, the thread of said screw being of the type known to those skilled in the art as a ratchet thread, that is to say, the upper side of the thread at 41 is flat, so that, as said screw is turned to engage the operating lever 42, there will be no tendency of the thread of said screw to force apart the two secetions 36 and 37 of the adjusting member 5, but the pressure applied to said sections will be longitudinal of said screw.

Also in this form, instead of studs, as in the previous forms, rivets 43, 43 are employed to secure the links 36 and 37 together. These rivets have exceptionally large heads and consequently provide an ample bearing surface for said links to retain said links firmly together.

For the cheaper grade of cutting tools this means of securing the links together will probably be more generally employed. However, in so far as the invention is concerned either the studs or rivets may be employed without affecting the important features of the invention.

Having thus specifically described my invention what I claim and desire by Letters Patent to secure is:

1. A cutting tool having, in combination, cutting levers, pivotally connected operating levers, a pair of links connecting each of said cutting levers with one of said operating levers, said links having recesses formed therein, a nut arranged between the links of each of said pairs and extending into said recesses, and a screw having screw threaded engagement with each of said nuts adapted to engage the operating lever adjacent thereto, to adjust said links relatively to said operating lever.

2. A cutting tool, having, in combination, cutting levers, pivotally connected operating levers, a pair of links connecting each of said cutting levers with one of said operating levers, a nut partially inclosed within the links of each of said pairs, and a screw arranged between the links of each of said pairs and engaging said nuts, adapted to be operated to move said links relatively to the operating levers adjacent thereto.

3. A cutting tool having, in combination, a cutting lever, a pivoted operating lever, an adjusting section pivotally connecting said cutting lever with said operating lever, said adjusting section including a pair of links separated one from the other by a thin space extending from said operating lever to said cutting lever, and an adjusting screw arranged between and operatively connected with said links adapted to adjust said links relatively to said operating lever.

4. A cutting tool having, in combination, a cutting lever, a pivoted operating lever, an adjusting section pivotally connecting said cutting lever with said operating lever, said adjusting section including a pair of parallelly disposed links, the joint between said links and said adjusting lever being substantially tight, and means for adjusting said adjusting section relatively to said operating lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY K. PORTER.

Witnesses:
CHARLES S. GOODING,
SYDNEY E. TAFT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."