This invention relates to a wrench and it is primarily an object of the invention to provide a wrench of a toggle type and wherein is embodied wire cutting means making it possible to cut very heavy wire ordinarily impossible to sever by a squeezing action.

The invention also has for an object to provide a tool of this kind wherein one of the cutting elements projects beyond the associated working face of a jaw of the wrench.

It is also an object of the invention to provide a tool of this kind including relatively movable jaws one of which carrying an anvil and the other having a cutting edge opposed to the anvil and wherein the anvil is provided with a flat working surface whereby is eliminated the necessity of keeping the anvil and cutting edge in perfect sidewise alignment in order to effect the cutting of a wire.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved wrench, whereby certain advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in section and partly in elevation illustrating a tool constructed in accordance with an embodiment of the invention;

Figure 2 is an enlarged detailed sectional view taken substantially on the line 2—2 of Figure 1, a second position of certain of the parts being indicated by broken lines;

Figure 3 is a view similar to Figure 2 but illustrating another embodiment of the invention; and

Figure 4 is also a view similar to Figure 3 but illustrating a still further embodiment of the invention.

In the embodiment of the invention as illustrated in Figures 1 and 2, A denotes an elongated handle member of channel formation but having its outer end portion 1 closed and formed to provide a sleeve 2 through which threads a shank 3. The outer end portion of the shank 3 is provided with a head 4 to facilitate rotation of the shank to effect the adjustment desired for a purpose to be later referred to.

The opposite or outer end portion of the handle A is provided with a stationary jaw 5 and inwardly of the jaw 5 and particularly the serrated working jaw face 6 thereof, the handle A is open.

The body of this anvil 7 projects a predetermined distance beyond the working face 6 of the jaw 5 and has a longitudinally flat working face 9 directed toward the other jaw, with which is adapted to directly coat the cutting edge of a blade 10 positioned at the inner portion of the working face of the movable jaw 12.

The blade 10 is oppositely beveled to provide an elongate cutting edge 14, which has cutting coaction with the face 9 of the anvil 7. The face 9 extends on a line oblique to the jaw face 6 while the edge 14 is substantially parallel to the jaw face 11, adjacent thereto.

The jaw 12 has its rear portion pivotally mounted as at a within the forward portion of the handle A. The pivotal mounting includes an inwardly directed wing or flange 16 at the inner portion of the jaw 12. The inner end portion of the jaw 12 has pivotally engaged therewith as at 16, a section 17 of an articulated lever L. This lever L comprises two sections 17 and 18, the second section 18 of which extends within the handle A and has direct contact with the inner or inserted end of the shank 3. The section 17 extends beyond the pivotal connection 19 between the sections 17 and 18 and said extended portion constitutes a hand grasp 23 whereby the jaw 12 may be readily moved toward the jaw 5 either to clamp an article between the jaws 5 and 12 or to effect the cutting or severing of a wire.

It is to be noted that the outer or flat face 9 of the anvil is disposed at such an angle as to have the same parallel to the knife or cutting edge 14 of the blade 10 when the jaw 12 is at substantially the limit of its movement toward the jaw 5.

Engaged with the inner or rear end portion of the jaw 12 as at 21, is an end portion of a retractile member 22, the opposite end portion of which being anchored or operatively engaged, as at 23, to the handle member A. This retractile member 22 provides means whereby the jaw 12 is automatically moved into open position.

The operation of the tool as a wrench is believed to be readily apparent from the foregoing description in connection with the accompanying drawings but it is to be stated that in the cutting of the wire or kindred strands it often occurs.
that such wire or strands are of such gauge whereby it is impossible to effect the desired severing by a squeezing operation. However, with the tool as herein embodied, the cut of the strand can be readily effected by adjusting the shank 3 so that the blade 10 and anvil 7 can be brought closer together. In other words, when the wire or strand is unusually heavy, the shank 3 may be adjusted to so readily position the cutting element or blade 10 and anvil 7 that the wire is only partially cut by the first closing of the toggle lever. After this operation, the lever is opened, the adjusting screw turned in slightly, and the lever again closed thus making further cut into the wire or strand. These operations will be repeated until the heavy wire or strand is entirely cut through.

In the embodiment of the invention as illustrated in Figure 3, the blade 24 carried by the jaw 25 is substantially the same as the jaw 12 as embodied in Figures 1 and 2.

Coacting with the blade 24 is a cutter member 26 which is also disposed beyond the working face of the associated jaw, the same as the anvil 7 in Figure 1. The cutting edge b of this member 26 is in direct alignment with the cutting edge c of the blade 24 and it is to be stated that the cutting edge b of the member 26 is disposed on an angle similar to the angle of the outer or flat face of the anvil 7 for the same purposes.

In the embodiment of the invention as illustrated in Figure 4, the cutting blade or member 27 carried by the jaw 28 is reduced by cutting away as at 29, a portion of the side face of the jaw 28 inwardly so that the same may have close contact with the cutting blade or member 30 carried by the second or stationary jaw 31 of the wrench.

As is illustrated in Figure 4, this blade or cutting member 30 is formed by cutting out a side face of the member and that portion thereof which projects outwardly beyond the jaw 31. The cut-out portion 32 of the member 30 is at the side disposed through the blade or member 27 so that said blades or members 27 and 30 may pass one another and in substantially close contact, whereby a shearing cutting action is produced.

The outer faces of the members or blades 27 and 30 are flat and relatively broad and the outer face d of the member or blade 30 is inclined similarly to the outer face of the anvil 7 of Figure 1 for the same purposes.

From the foregoing description it is thought to be obvious that a wrench constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

A tool of the class described, comprising two jaws, a handle rigid with one jaw, the other jaw being pivotally coupled to the handle adjacent to the rigid jaw, a lever means connected with said other jaw for moving the latter relative to the first jaw; in combination with wire cutting elements positioned at the inner portions of the working faces of the jaws, one of said elements constituting a knife having its cutting edge in the plane of and parallel with the working face of the adjacent jaw and the other element having a part coacting with said cutting edge and positioned in a plane lying in advance of the working face of the jaw with which it is associated, and means for varying the extent of movement of one of the jaws toward the other comprising a pivot coupling forming the connection between the lever and said other jaw, a toggle link pivoted at one end to said lever behind said pivot coupling and a screw threadably carried by said handle for adjustment longitudinally thereof and having the other end of the toggle link in thrust connection with its forward end the said coacting part of said other element being disposed at an acute angle to the plane of the working face of the jaw with which it is associated to bring the said cutting edge and the said coacting part substantially into parallelism when the jaws are at the limit of their swinging movement one toward the other, and the said other element having a long flat anvil face lying in a plane perpendicular to the plane of movement of the said knife cutting edge, said cutting edge contacting the longitudinal center of the anvil face when said elements are closed together.

CHRISTIAN FETTERSEN.

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