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STAPLE PULLER

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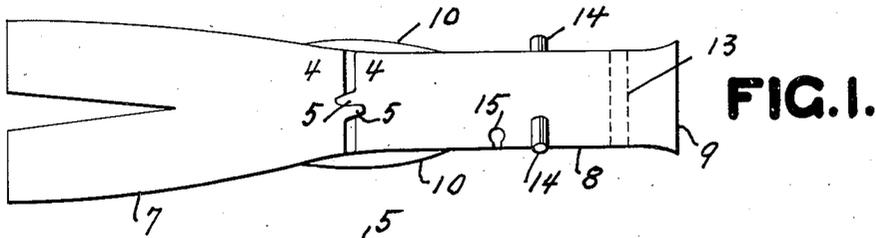


FIG. 1.

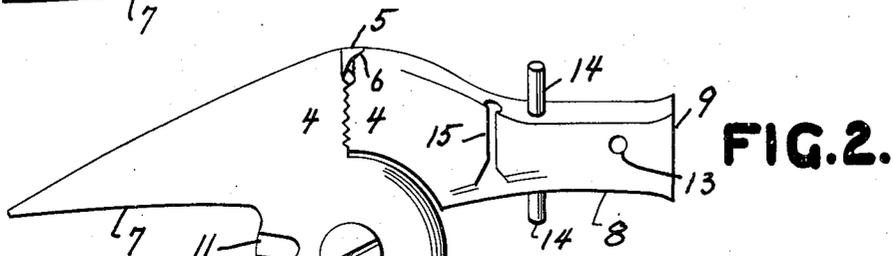


FIG. 2.

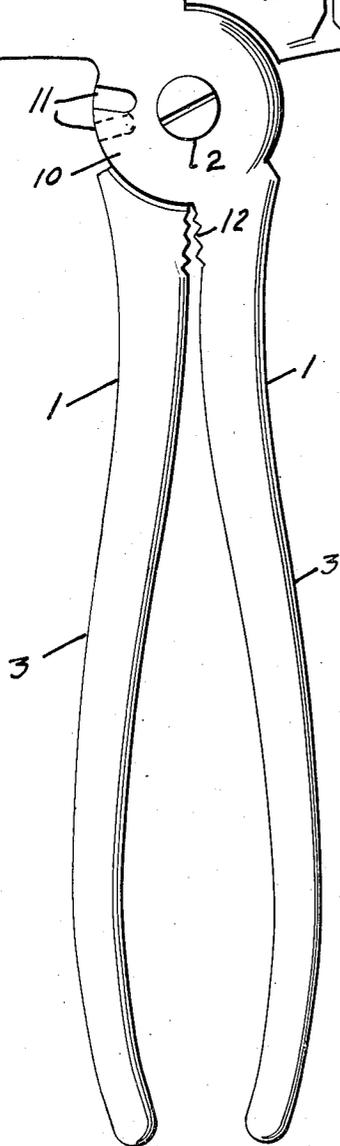


FIG. 3.

FIG. 4.

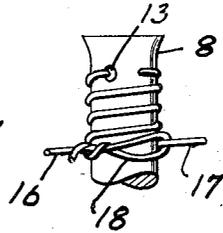
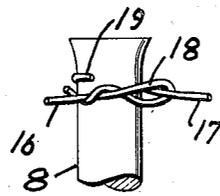


FIG. 5.

FIG. 6.

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# UNITED STATES PATENT OFFICE

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## STAPLE PULLER

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2 Claims. (Cl. 254-28)

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The present invention relates to a combination tool, and its principal object is to provide a tool particularly useful in the erection and repair of wire fences.

My invention is particularly directed to a tool that combines in the single structure the features of a hammer for driving nails or staples, of a pair of pliers for handling wire and for other purposes, of a special staple puller, a wire cutter, and of a means for splicing and stretching wires.

The principal feature of the invention is the arrangement, in the combination set forth, of the staple pulling means which comprises two cooperative teeth mounted upon the ends of the pliers, on opposite sides of the median plane thereof, and adapted to be received in cooperative recesses when the jaws of the pliers are closed upon one another, the teeth being arranged to exert outward pull upon the staple while the jaws are being closed.

It is further proposed to provide a combination structure of the character described in which the jaws of the pliers are formed with lateral extensions shaped to form a hammer head and in which the said extensions may be used to form fulcrum on which the tool may be turned for continued outward pull upon the handle.

Further cooperative effects of the various features of my combination tool and further objects and advantages of the invention will appear as the specification proceeds.

The preferred form of my invention is illustrated in the accompanying drawing, forming part of this application, in which:

Figure 1 shows an end view of my combination tool;

Figure 2, a side view of the same; and

Figures 3-6, inclusive, illustrating successive steps in the use of my combination tool as a wire stretcher.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the claims hereto attached, without departing from the spirit of the invention.

In its preferred form my combination tool comprises a pair of tongs 1 pivoted together as at 2 to form a pair of handles 3 and a pair of cooperative jaws 4 on opposite sides of the pivot.

The handles 3 are shaped in such a manner that they may be used individually for separating and for clamping the jaws, or together as an operating means for the tool as a whole.

The jaws 4 may be of any suitable form and have confronting faces which may be corrugated

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as shown in the drawing for better gripping effect. They are formed, in their extreme outer ends, with projecting and overlapping teeth 5 adapted for interlocking engagement underneath the head of a staple, the teeth being tapered in the under-faces, as at 6, so as to pry the staple away from its support when the teeth press toward one another. The tooth of each jaw is received in a registering recess in the other jaw, as shown, and the side faces of the jaw are substantially parallel up to the outer end to bring the full width of the jaw to the extreme end thereof. This gives ample bearing surface against the wood in which the staple is embedded to cause the teeth to pull out the staple, rather than to dig into the wood.

Each of the jaws has an outward transverse extension 7-8, the two extensions being shaped to resemble, in their overall appearance, the head of a hammer, and to be substantially balanced on opposite sides of the centerline of the handle.

One of the extensions 7 may be made in the form of a claw, and the other 8 may be generally round, as shown in Figures 3-6, or some slight departures from the round form, as in Figure 2, and terminates in a transverse striking face 9 for driving nails, staples and other objects.

The two tongs 1 may be formed with suitable enlarged bearings 10 about the pivot 2, and the two bearings may be provided with cooperative slots 11 to serve as wire cutters in a conventional manner.

The handles 3 may also be provided with corresponding corrugated surfaces 12 near the pivot for gripping objects, particularly if it is desired to produce a strong turning effect, with the handles held in one hand and the head in the other hand.

The extension 8 is used particularly for wire tightening, especially when it is desired to join or splice the two loose ends of a broken wire fence. It is provided, for this purpose, with anchoring means for the loose end of the wire, which may consist of a plain hole 13 extending through the extension in a transverse direction, or in a post 14 projecting transversely from the extension, in opposite directions, or both.

I also, preferably, add an undercut slot 15 in one face of the extension 8 to serve as a guide and additional anchoring means in cooperation with the post and possibly the hole, as circumstances may call for.

In operation, my tool lends itself to many different uses in fence construction and fence maintenance, as well as in other connections.

As a fencing tool it performs substantially all the functions desired in fencing tools, and takes the place of a complete tool kit containing a hammer, pliers, staple puller and a wire stretcher, and it performs various functions to better advantage than the conventional individual tools.

One operation is particularly illustrated in the drawing, namely that of splicing a broken fence wire, and of stretching the wire to a desired tension.

In this operation, it is assumed that a wire between two fence posts has broken down, and that it is desired to re-connect them. Since the total length of the two wires is insufficient for bridging the gap and to furnish length for the splicing, it is assumed that one of the lengths has been extended by splicing an extra piece thereto. The two pieces of wire now to be connected are identified by the numerals 16 and 17.

To join the two wires the operator forms a loop 18 in one of the wires, then guides the free end of the other wire 17 through the loop and through the hole 13 in the head of the hammer, preferably bending over the extreme end, as at 19.

Next, he turns the hammer a number of turns to wind the wire upon the extension 8 in the manner shown in Figure 4. In this operation the user will employ the handle 1 of the tool as a crank and the claw extension 7 of the tool will form a hand hold about which the turning movement may be executed.

The handle of the tool, being so much longer than the diameter of the extension 8, gives the operator tremendous purchase and enables him to stretch the wires as tightly as he desires. It will be noted that in this operation both wires are tightened in the direction of their lengths, with relatively little bending or cutting effect.

After the desired tension has been obtained, the operator swings the tool around, substantially in the manner indicated in Figure 5, to turn the projecting end of wire 17 back upon the wire, and then finishes the operation by twisting the end of the wire upon the body as shown in Figure 6.

If the hole in the slot is deemed insufficient for certain operations, the operator may feed a longer piece of wire through the hole and turn the extreme end upon one of the posts 14.

Or, in other cases, he may thread the wire through the undercut slot 15 and around the post, or through the undercut slot and the hole, depending upon circumstances and accessibility.

For pulling staples, the operator will engage the teeth 5 underneath the head of the staple, start the staple by squeezing the handles toward one another and continue the pull by pressing the handles sidewise, using the extension 7 or the extension 8 as a fulcrum.

Other uses of my combination tool will readily suggest themselves. Often it is desirable to use a pair of pliers for producing a twisting effect. In that case an object may be gripped in the usual manner between the jaws 4 and the two extensions 7 and 8 may be used as cranks for turning the tool about a longitudinal axis.

Again, it may be desired to flatten an object. In that case, the object may be gripped between the jaws and may then be flattened by striking the hammer against a solid surface.

I claim:

1. In a tool of the character described, a pair of tongs pivoted together to form a pair of jaws

on one side of the pivot and a pair of handles on the other side of the pivot, the jaws having parallel contact faces when the handles are pressed toward one another and having lateral extensions shaped to form a hammer head, one of the jaws having a tooth projecting into the other jaw adjacent to and on one side of the median plane of the head and having a recess adjacent to and on the other side of the said median plane, and the other jaw having a similar tooth mounted opposite the recess and having a recess opposite the first tooth, the teeth being operable for engagement under an embedded staple, and the outer faces of the teeth lying in the end surface of the head while the under faces of the teeth are tapered for exerting outward pull on the staple when the handles are pressed toward one another.

2. In a tool of the character described, a pair of tongs pivoted together to form a pair of jaws on one side of the pivot and a pair of handles on the other side of the pivot, the jaws having parallel contact faces when the handles are pressed toward one another and having lateral extensions shaped to form a hammer head, one of the jaws having a tooth projecting into the other jaw adjacent to and on one side of the median plane of the head and having a recess adjacent to and on the other side of the said median plane, and the other jaw having a similar tooth mounted opposite the recess and having a recess opposite the first tooth, the teeth being operable for engagement under an embedded staple, the outer faces of the teeth lying in the end surface of the head while the under faces of the teeth are tapered for exerting outward pull on the staple when the handles are pressed toward one another, and the extensions being shaped to curve away from the jaws to serve as fulcrum for continued pull on the staple upon a turning movement of the handles.

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