Aug. 31, 1954 J. CRISANTI 2,687,539

COMBINATION TOOL

Filed March 18, 1952

2 Sheets-Sheet 1

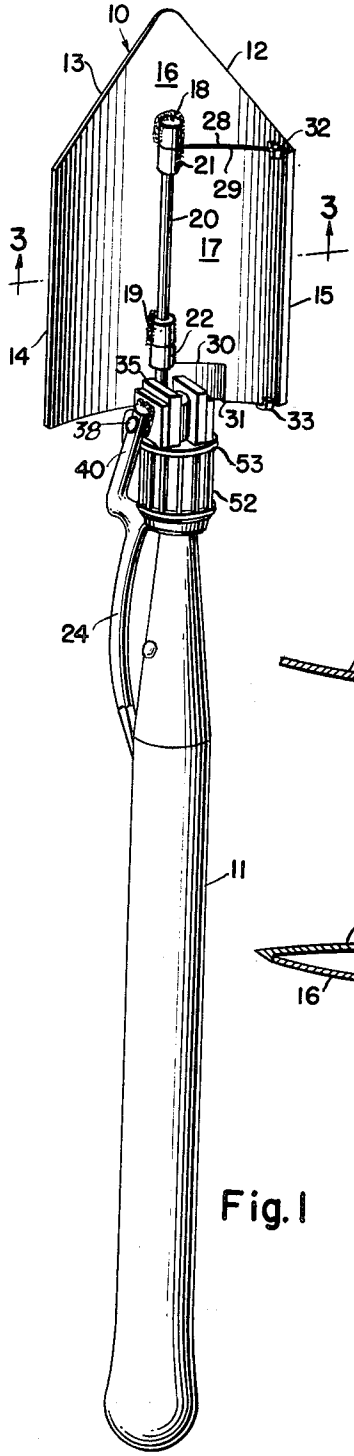


Fig.1

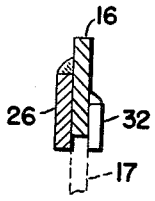


Fig.5

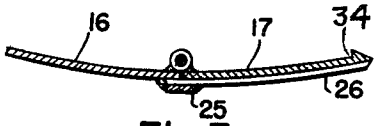


Fig.3

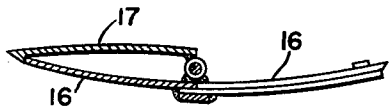


Fig.4

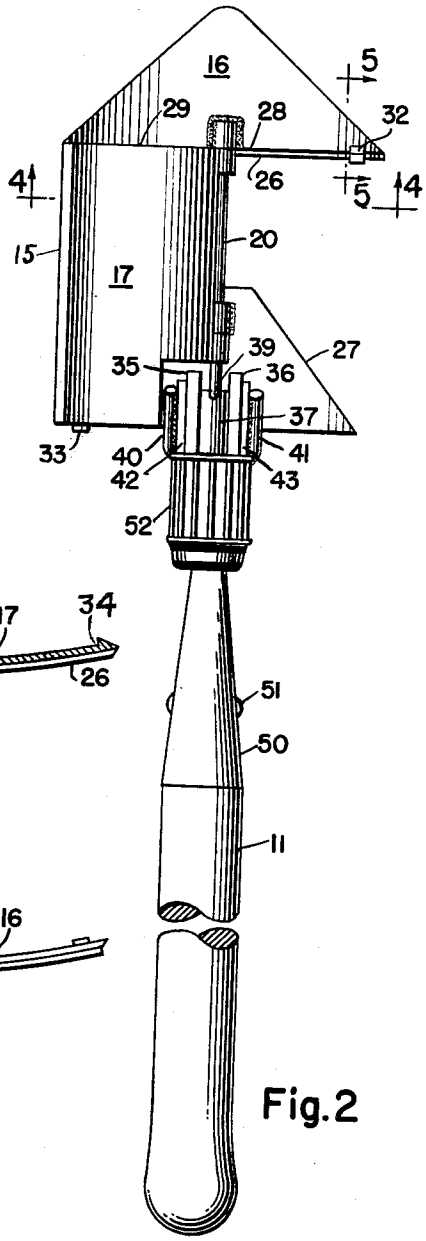


Fig.2

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2 Sheets-Sheet 2

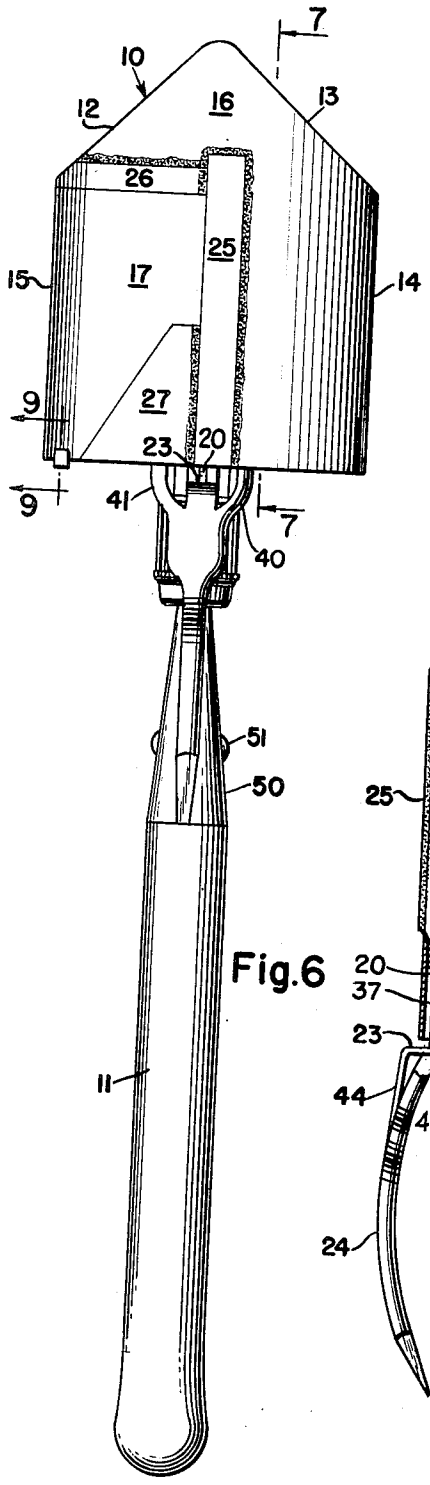


Fig.6

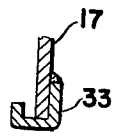


Fig.9

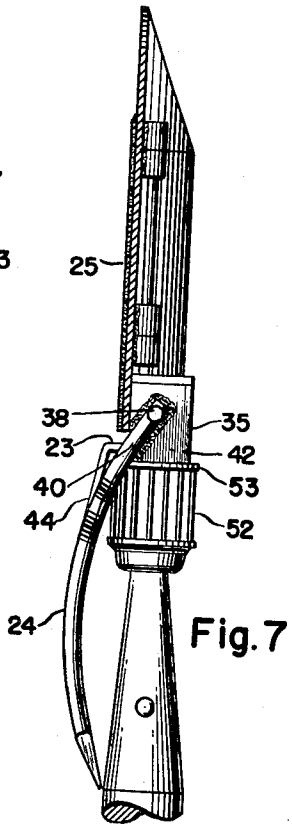


Fig.7

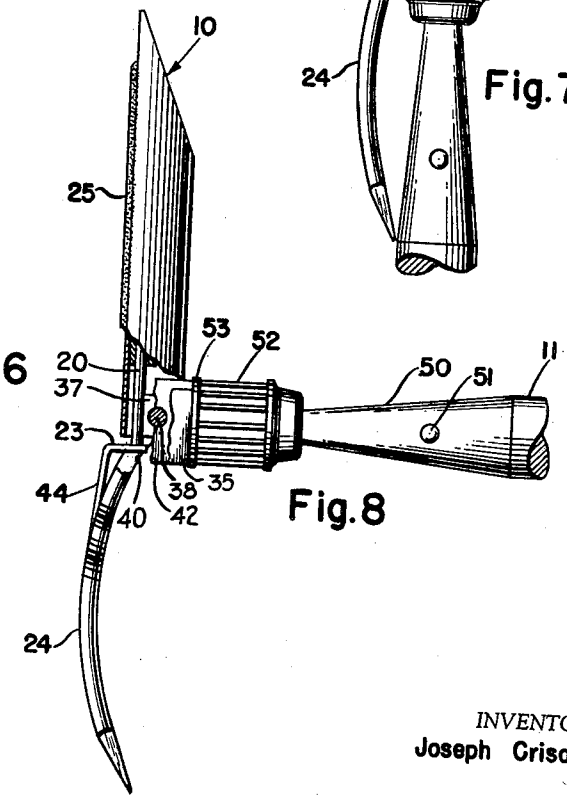


Fig.8

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UNITED STATES PATENT OFFICE

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COMBINATION TOOL

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Application March 18, 1952, Serial No. 277,228

3 Claims. (Cl. 7—14.55)

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This invention relates to combination hand tools, and in particular to a combination tool suitable for use by military personnel, as well as by hunters and others.

An object of this invention is to provide a combination tool which is so constructed that rapid conversion from one type of tool to the other is possible.

A further object of this invention is to provide a novel means of rigidly connecting combination tool elements to a handle therefor. The connecting means is nonetheless simple in construction.

Still other objects and advantages will become apparent from the following description and the accompanying drawings, in which:

Figure 1 is a plan view of the invention;

Figure 2 is a plan view of the invention showing a segment of the shovel blade in position for use of the tool as an axe;

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

Figure 4 is a sectional view taken on line 4—4 of Figure 2;

Figure 5 is a sectional view taken on line 5—5 of Figure 2;

Figure 6 is a plan view of the invention showing the rear thereof;

Figure 7 is a plan view partly in section taken on line 7—7 of Fig. 6;

Figure 8 is a side view with portions broken away for clarity, and with some of the elements shown in relative positions different from those shown in the other views.

Figure 9 is a sectional view taken on line 9—9 of Fig. 6.

Similar reference characters represent similar parts in the several figures.

The present invention has been developed to answer a need for a light multi-purpose tool which embodies a hoe, pick, root cutter and axe which is so constructed as to adequately perform the various functions of such tools. The combination tool herein disclosed is also formed so that it is compact and can be easily carried.

Previously developed combination tools of the type herein disclosed have a common fault in that the means for connecting the tools to a handle therefor fails to provide adequate strength and rigidity, and in addition fails to provide a convenient manner of converting from one type of tool to another.

It will be obvious from the following description that I have devised a tool which has none of the objectionable features of prior similar tools.

The present tool comprises a shovel blade 10 and a handle 11. Blade 10 is provided with the usual camber and includes tapered forward edges 12 and 13 with parallel side edges 14 and 15. The forward edges may be sharpened to facilitate their entry into the soil.

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The blade further comprises a main portion 16 and a movable segment 17. Main portion 16 has mounted thereon hinge members 18 and 19 which pivotally and slidably receive shaft 20. Segment 17 has mounted thereon bosses 21 and 22 which are secured to shaft 20. Shaft 20 extends downwardly and with the elements in the position shown in Figure 1, seats on ledge 23 (see Fig. 7) which forms a part of pick 24 mounted on handle 11. Shaft 20, it should be noted, extends longitudinally of the blade and acts as a stiffening element thereof.

Main portion 16 has mounted at the rear thereof (see Figures 2 and 6) a reinforcing strip 25, a sharpened cutting element 26 and a supporting element 27. Cutting element or knife 26 parallels edge 28. Segment 17 when in the position shown in Figures 1 and 6, abuts against elements 26 and 27, and edge 29 is in alignment with edge 28 of portion 16. Segment 17 is cut away at 30, 31, for a reason hereinafter explained.

As seen in Figures 1 and 5, segment 17 is engaged by locking bar 32, which is affixed to main portion 16, when in the position shown in Figure 1. Segment 17 is also provided with lock bar 33 (Figures 1, 2, 6 and 9). Edge 15 can be triangular in shape, as shown in Figure 3, and can be undercut at 34. Main portion 16 has fork-like block elements 35 and 36 attached thereto, which are generally rectangular in shape. Members 35 and 36 are pivotally connected to projection 37 by pin 38. Projection 37 has a groove 39 formed on the upper surface thereof. When the blade is pivoted to the position shown in Figure 8, shaft 20 which extends parallel to the blade is received within groove 39. This results in additional strengthening of the blade for use as a pick or hoe.

Pick 24 has forked elements 40 and 41 which have attached thereto rectangular block members 42 and 43, respectively. The blocks are pivotally connected to pin 38. Pin 38 may be peened on its ends to form heads which serve to maintain the pin in position. Of course other securing means, such as nuts, may be used. A central projecting member 44 is attached to the pick and supports ledge element 23.

Handle 11 tapers at its upper end and receives a sleeve or ferrule 50, which may be held in place by rivet 51. At its upper end the ferrule is provided with threads and is threadingly engaged by collar 52 which supports washer 53. When in the position shown in Figures 1, 2, 6 and 7, the bottom edges of block elements 35, 36, 42 and 43 abut against washer 53. Collar 52 can be threaded upwardly on handle 11 so as to securely fix shovel 10 and pick 24 in the position shown in the last-mentioned figures. Collar 52 can also be moved downwardly so as to permit rotation

of elements 35, 36, 42 and 43, and the connected shovel and pick to the position shown in Figure 8. Collar 52 can then be moved upwardly to force washer 53 firmly against the elements at their side edges. Thus the shovel and pick are securely retained, as shown in Figure 8. When in this position the shovel can be used as a hoe. Shaft 20 seats in indentation 39 when in this position. The indentation or groove 39 not only makes it possible to hold the size of elements 35 and 36 to a minimum since shaft 20 will be received in the indentation, but also, as previously pointed out, serves to strengthen the blade when the blade is moved to the position shown in Figure 8.

When the collar 52 is rotated and moved downwardly on handle 11 sufficiently, shovel 10 can be rotated independently of pick 24 and brought to rest against handle 11 in a position similar to that of pick 24, as shown in Figure 1. The collar can then be moved upwardly to hold the two main elements 10 and 24 in a collapsed position for convenience in carrying.

When the collar is moved downwardly blade 10 can be pivoted to disengage shaft 20 from ledge 23. When this is done shaft 20 and attached segment 17 can be moved downwardly in hinge members 18 and 19 to disengage 17 from lock bar 32. Segment 17 can then be rotated so as to overlie the solid portion of the blade [16]. When in the latter position, the segment and shaft 20 can be moved upwardly until the segment is in the position shown in Figure 2. In this latter position lock bar 33 engages main portion 16 and edge 14 seats in the detent formed by undercut portion 34.

Blade segment 17 is cut away as shown at 31, to permit pivotal movement of the segment over the elements 35, 36 and 40—43. The segment is further cut away as shown at 30 to enable the segment to be moved downwardly with respect to the main portion 16, and then pivoted.

After the segment has been thus positioned, with respect to the main portion of blade 10, the blade is rotated back to the position shown in Figure 2, or to that of Figure 8, and the collar moved upwardly so as to force ledge 23 to engage shaft 20 and maintain the elements 10 and 24 in position (see Figs. 6 and 8). An additional lock bar or bars can be provided on segment 17 and main portion 16 to assist in holding segment 17 in any desired position.

With the blade-elements 16 and 17 in the position shown in Figure 2, cutting blade 26 can function as a root or general purpose cutter, and edge 15 can function as a machette or axe.

It is obvious from the foregoing description that I have devised a tool of great utility. It is also apparent that the combination tool elements can be conveniently positioned to perform each tool function. In addition, I have disclosed a means of mounting the tool elements which insures adequate strength and durability.

While I have shown and described a preferred form of my invention, it is obvious that variations in details of form may be made without departure from the invention as defined in the appended claims.

I claim:

1. A combination tool comprising a blade, a handle, means forming a projection on said handle, a pin mounted in said projection, a block connected to said blade and pivotally connected to said pin, a collar in threaded engagement with said handle movable thereon toward said block so as to engage said block and maintain said blade in a pivoted position, said blade comprising a blade stiffening element extending parallel to said blade and attached thereto, said projection being provided with means to receive said stiffening element when said blade is positioned laterally of said projection.

2. In a multiple-purpose tool comprising a number of implements movably interconnected and including a blade comprising a main portion element and a movable segment element as well as a pick-like element, means for interconnecting the various implements including means for pivotally connecting said segment to said main portion comprising hinge members mounted on said main portion, a shaft connected to said segment and slidably and pivotally received by said hinge members, a lock bar connected to one of said blade elements and engageable with the other of said blade elements so as to maintain said segment in a first position with respect to said main portion, said segment being movable to a second position with respect to said main portion upon sliding and pivotal movement of said shaft in said hinge members, forked elements connected to said blade, forked elements connected to said pick-like element, a ledge formed on said pick-like element and engageable with said shaft so as to prevent said sliding movement, a handle, a pin mounted on said handle, said forked elements being pivotally mounted on said pin, said blade being pivoted on said pin to a position in which said shaft can be slidingly moved in said hinge members, a collar movably mounted on said handle and movable to a position in which said collar engages said forked elements so as to prevent pivotal movement of said blade on said pin and maintain said shaft in contact with said ledge.

3. In a multiple-purpose tool comprising a number of implements movably interconnected and including a blade comprising a main portion element and a movable segment element as well as a pick-like element, means for interconnecting the various implements including hinge members mounted on one of said elements, a shaft connected to the other of said elements and pivotally and slidably received by said hinge members, a lock bar mounted on one of said elements and engageable with the other of said elements so as to maintain said segment in a first position with respect to said main portion, said segment being movable to a second position with respect to said main portion upon sliding movement of said shaft in said hinge members, a ledge formed on said pick-like element and normally in engagement with said shaft so as to prevent sliding movement thereof in said hinge members, a handle, said blade and said pick-like element being independently pivotally mounted on said handle, said blade being movable to a position in which said shaft can be slidingly moved in said hinge members, a collar mounted on said handle and movable to a position in which said collar engages said blade so as to prevent pivotal movement of said blade on said handle.

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