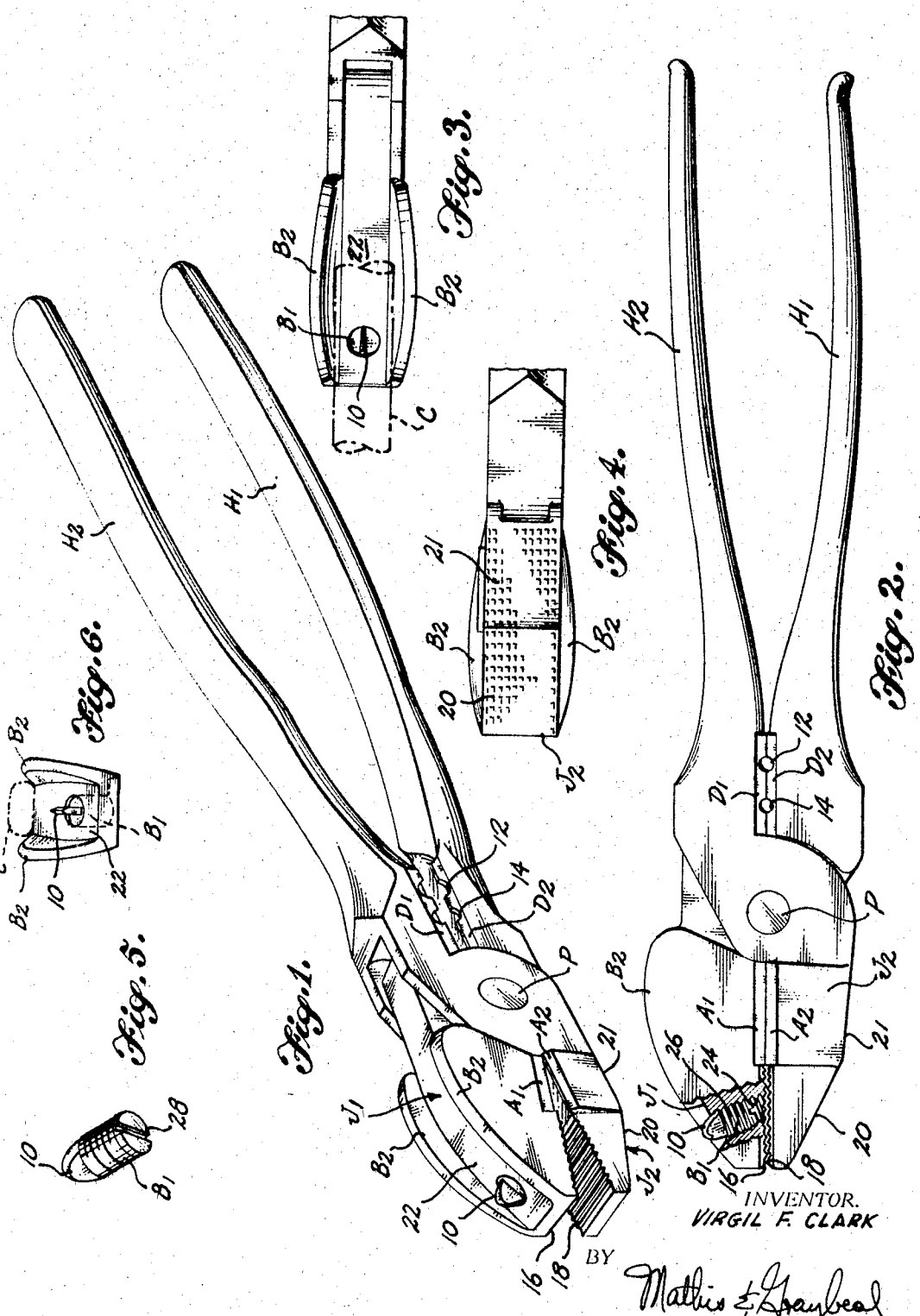
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ELECTRICIAN'S TOOL

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ELECTRICIAN'S TOOL

Virgil F. Clark, Rte. 2, Box 222, Burton, Wash. 98013

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ABSTRACT OF THE DISCLOSURE

A plier type tool with a cable sheath slitter incorporated in the outer portion of one jaw thereof; a hammer surface on the other jaw thereof; a pair of coacting gripper jaws; a side placed pair of coacting cutter blades on the jaw side of the pivot; and a side placed pair of coacting stripper blades on the opposite side of the pivot. The slitter includes an open channel that is convexly curved longitudinally of the jaw, and concavely curved laterally of the jaw. An adjustable blade threaded into the jaw at a forward central position in the channel. Thumb pressure is used to press the blade relatively into the sheath.

CROSS-REFERENCES TO RELATED APPLICATION

This application is a continuation of my copending application Ser. No. 393,208, now abandoned, filed Aug. 31, 1964, and entitled Electrician's Tool.

BACKGROUND OF THE INVENTION

Field of the invention

The present invention relates to the field of compound tools, and more particularly to a compound plier type tool which includes gripper means, wire cutter means, cable sheath slitter means, cable sheath stripper means, and hammer means.

Description of the prior art

A combined tool of the plier type comprising gripper means, wire cutter means, cable sheath slitter means, and cable sheath stripper means is disclosed by Ocko 1,699,805. The gripper jaws of such tool are formed by lateral extensions of a side placed scraper blade. The nose of the tool is flat. The cable sheath slitter means is merely a sharp spur projecting outwardly from an outer portion of one of the jaws. In use, it is drawn along the sheath, in similar fashion to the way a linoleum knife is used. At other times it constitutes a dangerous sharp obstacle projecting beyond the normal contour of the plier tool. The stripper means is located at the extreme end of the tool, intermediate the gripper means and the scraper.

Plier type tools comprising gripper means, cutter means, and sheath slitter means are disclosed by Saylor 1,939,574 and Medlin 3,014,387. In Saylor 1,939,574 the slitter means is in one form located on the handles side of the pivot, and is directed laterally of the plier, so that the cable must be moved relatively laterally of the plier, and in a second form constitutes a lateral protuberance on the tool. In both forms the cable is enclosed at top and bottom during slitting, and the slitting knife is pressed into the cable sheath by the user squeezing the handles together. In the latter form, the lateral protuberance constitutes an obstacle to placement of the plier in a sheath or pocket. In Medlin 3,014,387 the cutter and stripper blades are located side by side at the extreme end of the jaws, and the sheath slitter means is formed by complementary channels carried at inside locations on the plier handles, with one of the channels including a fixed blade. The cutter is pressed into the sheath by squeezing the handles together.

Courtney 918,972 discloses a plier tool comprising gripper means, cutter means, and slitter means. The slitter means is formed by a knife carrying channel member projecting laterally from one jaw and a cable supporting shelf projecting laterally from the other jaw below the knife carrying channel member. The knife is pressed into the sheath by squeezing the handles together. The slitter means constitutes a protuberance extending beyond the normal contour of the plier, to constitute an obstacle to placement of the plier in a sheath or a pocket, and making it vulnerable to damage or breakage in the event the tool is dropped.

Cook, Jr. 2,697,956 and French Patent No. 1,109,137 disclose combined tools of the plier type equipped with a gripper means, cutter means and stripper means. In Cook, Jr. 2,697,956 the stripper means is in the nature of a two part attachment for the jaws of a plier tool that is equipped with gripper surfaces at the ends of the jaws and side placed cutters between the gripping surfaces and the pivot. One portion of the stripper attachment projects laterally from the upper jaw and the other projects laterally from the lower jaw.

Combined tools of the plier type comprising gripper means, cutter means and hammer means, all incorporated in the jaw members of the tool, are disclosed by Haeberli 871,585 and Berg 1,364,829.

Tomsick 2,400,177 discloses a combined tool of the plier type comprising jaw portions arranged to form a shears type of cutter, and cable sheath slitter means incorporated in the tool between the pivot and the handles. The slitter means comprises a cable passageway which is closed both top and bottom, and is directed laterally of the tool. The cutter element is pressed into the sheath by squeezing the handles of the tool together.

Collins 744,167 and Singer 1,225,723 disclose plier type tools which include cutter means, gripper means and a pulling spur, for use in withdrawing staples, cotter pins, or the like.

Klinger 1,739,972, Deering 3,092,906, and Cook, Jr., 3,238,618 disclose hand held cable sheath slitting implements which include an open channel for receiving the sheathed cable, the operation of which involves using thumb pressure to press the knife relatively into the sheath. These implements are not combined with a plier type tool.

Wachstein 2,089,744, Torrence 2,410,252, and Eyles 2,819,520 disclose other types of hand held electrical cable sheath slitting implements, each of which involves a sheathed cable passageway that is closed both at top and bottom.

SUMMARY OF THE INVENTION

The present invention relates to an electrician's tool of the plier type, expressly designed to permit a user to perform with a single tool all operations incident to multiconductor electrical cable installation.

As is well known, building codes and like regulations commonly require a form of electrical wiring for use in house construction and the like which is known by the brand name "Romex," a multiple conductor, sheathed cable with at least two parallel arranged copper or like conductors, each with its own rubber or plastic covering, which covers are in turn surrounded by an external rubber, plastic or fibrous sheath. In general, the installation procedure for such electrical wiring involves the following steps:

(A) Cutting the Romex cable to appropriate length to extend from one wiring point to another.

(B) Slitting the external sheath.

(C) Cutting off the slit portion of the sheath.

(D) Stripping the ends of the individual conductor wires.

(E) Twisting each bare wire conductor end and the bare end of a connecting wire to form the appropriate circuit connections.

(F) Hammering staples at points along the Romex cable to mount it to the supporting structure.

It is a principal object of the present invention to provide a single tool by which the user can perform all of the above steps.

It is a further object of the present invention to provide in such a tool a sheath stripper means arranged on the outside of one of the jaw portions of the tool.

A related somewhat more specific object of the present invention is to provide a plier type tool with raised ridges standing out from the sides of a jaw of the tool, and with a sheath stripper blade also standing out from the tool jaw, between said raised ridges, the lateral configuration of such sheath stripper means being such that the wide lateral dimension of the Romex cable is snugly received between such raised ridges and held against the jaw and against the stripper blade by the thumb of one hand of the user while the handles of the tool are gripped by the other hand of the used and the cable drawn past the stripper blade.

Yet another object of the present invention is to provide in a tool of the character indicated a combination of two pairs of cutter blades, respectively arranged on opposite sides of the pivot means of the tool, one such pair of cutter blades providing sheath cutoff means and the other such pair of blades being configured to include one or more stripper notches and serving to strip an appropriate length off the ends of each of the individual wire conductors.

Still another object of the present invention is to provide, in an electrician's tool of the character indicated, a hammer face on the outside surface of the jaw of the tool other than the jaw thereof mounting the cable sheath stripper means.

Yet another object of the present invention is to provide in an electrician's tool involving a multiple combination of stripper, cutter, gripper and hammer elements, an arrangement of such elements so that the configuration of any one such element does not interfere with the effectiveness of any other such element, and does not result in a basic change in the tool's shape or contour.

Yet a further object of the present invention is to provide a sheath stripper means on the outside surface of the jaw of a plier type tool, wherein such stripper means includes an upstanding knife blade and side placed upstanding ridges, with such ridges being at least about as high as such knife blade in order to at least partially protect the blade and prevent the blade from cutting objects not placed between the ridges.

These and other inherent objects, features, advantages and characteristics of the present invention will be apparent from the following description of a typical and therefore nonlimitive embodiment of the invention, as described below in conjunction with the accompanying illustrations.

BRIEF DESCRIPTION OF DRAWING FIGURES

In the drawing like element designations refer to like parts, and:

FIG. 1 is a perspective view of such embodiment;

FIG. 2 is a view in side elevation of the tool shown in FIG. 1, with a portion of one jaw of the tool being cut away to show further detail of the stripper blade arrangement therein;

FIG. 3 is a fragmentary top view of the tool shown in FIGS. 1 and 2;

FIG. 4 is a fragmentary bottom view of the tool shown in FIGS. 1 and 2;

FIG. 5 is a detail perspective view on an enlarged scale further showing the construction of the stripper blade member of the tool shown in FIGS. 1 and 2; and

FIG. 6 is a front view of the upper jaw portion of the tool shown in FIGS. 1 and 2, providing a further showing of the configuration thereof.

DETAILED DESCRIPTION OF INVENTION

The embodiment of the invention shown in the accompanying illustrations is usable to perform the above wiring installation steps in the following manner. Cutting step (A) is performed by side placed cutter blades A1, A2; sheath slitting step (B) is performed by the blade **10** of the stripper blade member B1 situated between the outstanding guide ridges B2 on the upper jaw portion J1 of the tool, with said ridges B2 being laterally spaced and of a height so that the recessed area therebetween snugly accommodates the wide lateral dimension of the Romex cable; the sheath cutting step (C) is performed by cutter blades A1, A2; the stripping step (D) to remove the covering from each of the conductor wires of the Romex cable is performed by a selected pair of stripper notches **12** (for 12 gage wire), or **14** (for 14 gage wire) in side placed stripper blades D1, D2; twisting step (E) is performed by the gripper surfaces **16, 18** on the respective jaw portions J1, J2; and the hammering step (F) is performed by the knurled outer faces **20, 21** on the lower jaw J2. In the preferable form shown, the handle portions H1, H2 of the tool when closed are configured to lie relatively closer together than are the handles of a conventional pair of pliers, to make the handle portions relatively easier to grasp and manipulate, particularly when the cable sheath is being slit (step (B)) and when the tool is used as a hammer (step (F)).

As will be apparent, the tool shown can in general be categorized as being of the plier type, comprising two members pivotally interconnected by a pivot means P, with each of such members having a handle portion H1 (or H2) at one end and a jaw portion J1 (or J2) at the other end.

As will also be apparent, the combination of elements making up what is generally termable the sheath stripper means includes as component elements the stripper blade member B1 with the edge of its blade **10** facing substantially parallel to the longitudinal dimension of the tool, and further includes the outer surface **22** of the jaw J1 intermediately of the guide ridges B2, together with guide ridges B2. When using such sheath stripper means in the performance of the above step (B), the user for example grips the handles H1, H2 in his right hand, places the cable end to be desheathed between his thumb and forefinger of the left hand, and then grips the jaw portions of the tool with the left hand and by thumb pressure urges a wide face of the cable against surface **22** of jaw J1 between ridges B2 so that blade **10** pierces the cable sheath at the desired point where slitting of the cable sheath is to begin. A typical placement of the cable C between the ridges B2 so as to be bisected by knife edge **10** is shown fragmentarily by broken line in FIGS. 3 and 6. With the Romex cable thus emplaced and held by the left thumb so as to maintain cutting engagement with the blade **10**, the user then simply pulls the cable end and its sheath past the blade **10** whereupon the sheath becomes slit from the point of insertion of the blade **10** out to its end.

The stripper blade member B1, and particularly the blade **10** thereof, is preferably removable from its mounting jaw J1 (as for sharpening), and also is preferably adjustable as to height (to accommodate sheath thickness or wear). To provide such removability and adjustability, the illustrated tool includes a threaded hole **24** in jaw J1 and mating threads **26** on the surface of the stripper blade member B1, as well as screwdriver blade receiving recess **28**.

If desired, and as will be apparent, stripper blades D1, D2 can be made to be demountable and interchangeable, as by being mounted in longitudinally extending keyways, to enable use of blades with various size stripper notches **12, 14**.

A detail feature of the stripper blade **10** of considerable practical advantage is its rounded configuration. Such rounded configuration has been found to be considerably superior in terms of non-clogging characteristics as compared with a knife edge standing out at a right angle from surface **22**.

From the foregoing, various further modes of use, applications, and structural modifications of tools embodying the principles of the invention will readily occur to those skilled in the art to which the invention is addressed, and are to be considered within the scope of the invention as defined by the following claims.

What is claimed is:

1. In an electrician's tool of the plier type having a pair of handle parts and a pair of forwardly converging jaw portions including coacting gripping inner surfaces, the improvement consisting of cable sheath slitter means integrated into the outer portion of one of said jaw portions, entirely outwardly of the gripping surface thereon, said sheath slitter means comprising a pair of laterally spaced, slightly raised, longitudinally extending side walls forming a longitudinally extending open channel of convex curvature longitudinally and concave curvature laterally, and a stripper blade in said channel near the forward end of said jaw portion, said blade being generally centered in said channel and having a cutting edge facing generally toward the handle end of the tool, said channel being of a size to snugly receive the wide lateral dimension of a sheathed multiple conductor cable pressed thereinto by a thumb of the user, and said side walls being at least about as high as said stripper blade and having a smoothly curved profile longitudinally considered.

2. A tool as in claim **1**, wherein the stripper blade of said stripper means is anchored in the jaw portion and comprises means for height adjustment thereof in said channel.

3. A tool as in claim **1**, wherein said height adjustment means comprises coacting threads between said jaw portion and such stripper blade member.

4. An electrician's tool of the plier type, comprising: two members pivotally interconnected by pivot means, and each having a handle portion at one end thereof and a jaw portion at the other end thereof, said tool further including coacting gripping inner surfaces on said jaw portions, a first pair of coacting cutter blades on said jaw portion, between said gripping surfaces and said pivot means, a second pair of coacting cutter blades on the opposite side of said pivot means, with at least one pair of said cutter blades including a set of stripper notches, and a sheath slitter means integrated into the outer portion of one of said jaw portions, said sheath slitter means comprising a pair of laterally spaced, slightly raised, longitudinally extending side walls forming

a longitudinally extending open channel of convex curvature longitudinally and concave curvature laterally, and a stripper blade in said channel near the forward end of said jaw portion, said blade being generally centered in said channel and having a cutting edge facing generally toward the handle end of the tool, said channel being of a size to snugly receive the wide lateral dimension of a sheathed multiple conductor cable pressed thereinto by a thumb of the user, and said side walls being at least about as high as said stripper blade and having a smoothly curved profile longitudinally considered.

5. A tool as in claim **4**, wherein the stripper blade member has a threaded base and a screwdriver slot at the end of said base, and a threaded through opening extends completely through the stripper blade carrying jaw, said through opening making said slot accessible from the inside of said jaw.

6. A tool as in claim **4**, wherein the second jaw portion comprises a generally flat outside surface extending generally parallel to the gripping surface of said second jaw portion, such flat outside being of a size to serve as a hammer face when the tool is used for driving staples and the like.

7. A tool as in claim **6**, wherein said handle portions are configured to be relatively close together when gripped, as compared with the handle interspacing of a conventional side cutter type pair of pliers when gripped, so as to facilitate gripping of such handles when the tool is used as a hammer.

8. A tool as in claim **1**, wherein the stripper blade member has a threaded base and a threaded through opening extends completely through the stripper base carrying jaw, said through opening including threads which mate with the threads on the base of said stripper blade member.

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MYRON C. KRUSE, *Primary Examiner.*

R. V. PARKER, JR., *Assistant Examiner.*

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