June 11, 1963 L. E. DEERING 3,092,906

TOOL FOR STRIPPING INSULATION FROM WIRE OR CABLE

Filed July 17, 1961

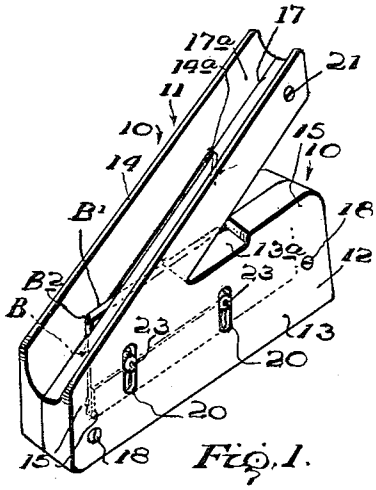


Fig. 1.

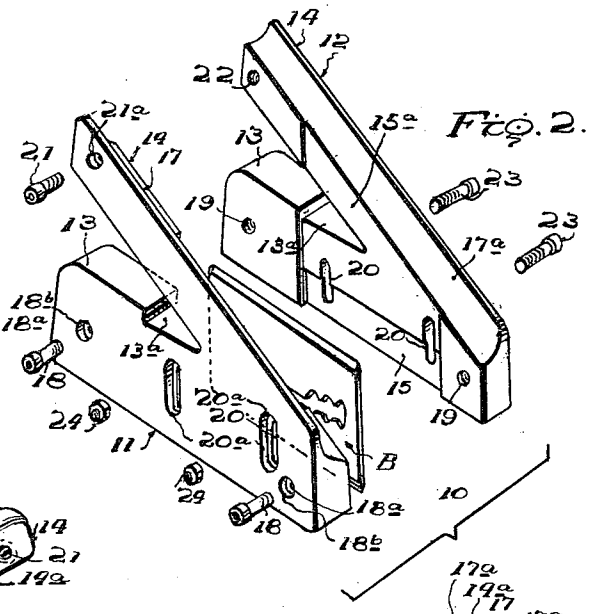


Fig. 2.

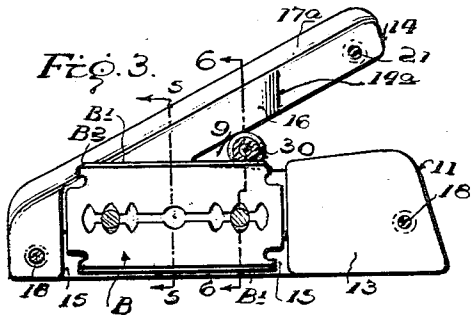


Fig. 3.

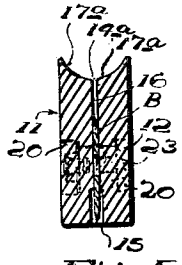


Fig. 5

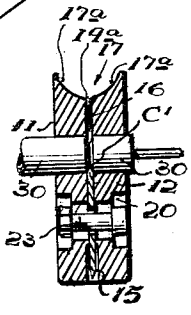


Fig. 6.

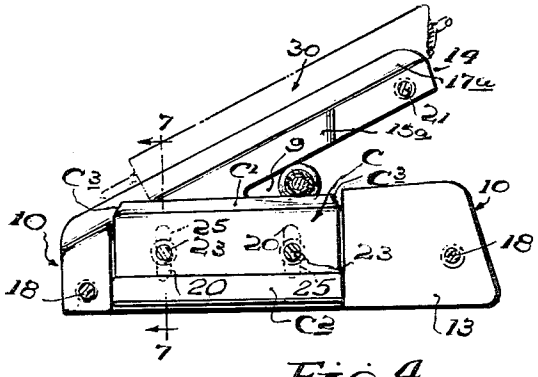


Fig. 4.

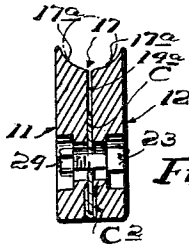


Fig. 7.

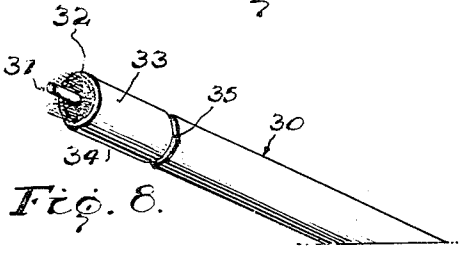


Fig. 8.

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3,092,906
TOOL FOR STRIPPING INSULATION FROM WIRE OR CABLE

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The invention described herein, if patented, may be manufactured and used by and for the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention relates to a tool for stripping insulation from wire or cable. It has to do particularly, although not exclusively, with a stripper which combines, in a single relatively small hand tool, removable and interchangeable cutting means for slitting cable or wire insulation longitudinally thereof and also for cutting it transversely or crosswise.

An important object of the present invention is to provide an improved hand tool of the foregoing character which is so formed and proportioned as to receive and removably support a single cutting blade which blade serves to perform the dual operations of longitudinally slitting insulation on a wire or cable and of cutting it crosswise, or transversely, to permit removal of the desired length of said insulation.

Another object of the invention is to provide an improved tool or holder for stripping insulation which accommodates, with equal facility, a standard double edge safety razor blade, a conventional single edge safety razor blade having an enlarged reinforcing or heel portion, or an ordinary conventional single edge flat blade, in which each type of blade is rigidly, though releasably, held against movement in the holder.

A further object is to provide an improved and safe stripping tool or holder in accordance with the preceding paragraph, in which the blade is so located and held in the holder as to guard the cutting edge, or edges thereof in a manner which entirely eliminates the danger of the user's hand coming into contact therewith.

Another object of the present invention is to provide an improved blade-holding frame, holder, or tool, which is of strong and durable, yet relatively simple and lightweight construction, having generally like parts, halves, or sections, which are easily assembled and disassembled to fixedly hold therebetween and/or release, a cutting blade.

The foregoing and other objects and advantages of the present invention will appear from the following description and appended claims when considered in conjunction with the accompanying drawing forming a part of this specification, wherein like reference characters designate corresponding parts in the several views:

In said drawing:

FIG. 1 is a perspective view of one form of wire or cable insulation dual-acting stripping tool, frame, or holder, embodying the present invention, having a cutting blade therein;

FIG. 2 is an exploded view, in perspective, of the novel tool of the preceding figure;

FIG. 3 is an inside face, or elevational view, of one half, or section, of the holder, with a conventional double-edge cutting blade held therein, and showing a piece of insulated wire in a so-called cross-cutting position in the crotch portion of the holder half, or section;

FIG. 4 is a view of the tool similar to FIG. 3, showing a slotted and heeled, or reinforced, single edge conventional razor blade therein, and also showing a length of insulated wire disposed lengthwise in the trough-containing part or half of the holder;

FIG. 5 is a vertical section taken substantially along

the lines 5—5 of FIG. 3, looking in the direction of the arrows;

FIG. 6 is a vertical sectional view along the line 6—6 of FIG. 3, also looking in the direction of the arrows;

FIG. 7 is a vertical section similar to FIGS. 5 and 6, but taken substantially along the line 7—7 of FIG. 4, looking in the direction of the arrows; and

FIG. 8 is a fragmentary perspective view of a piece of insulated wire which has been slit lengthwise and cross cut by the dual-action tool of the preceding views.

Before explaining in detail the present invention, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. It is to be understood also that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring now to the drawing and particularly to FIGS. 1, 2, 3 and 5 thereof, there is shown one form of cable or wire stripper embodying the present invention, the device being indicated as a whole at **10**. As best seen in FIG. 2, the tool or stripper is formed from two like, or substantially like, parts or sections, one part thereof being designated **11**, with the other cooperating part being shown as a whole at **12**. Each of these parts **11** and **12**, whether assembled, as seen in FIG. 1, or disassembled, as shown in FIG. 2, is preferably generally V-shaped in contour (see FIG. 2).

Each half or section has a base or lower blade holding portion **13** and an upper integral diverging portion **14**, the latter being hollowed out longitudinally to provide one half or portion **17***a* of a cable or wire-receiving trough or channel **17**, see FIGS. 1, 5, 6 and 7.

The base or blade-holding portion **13** of each half or part of the tool **10** is somewhat wider in its upright dimension than is the trough-containing upper portion **14**. The top side of said base portion **13** is preferably notched out, or relieved, to provide a depression **13***a* which increases the upright dimension of the crotch-like area or portion **9** adjacent the juncture of the divergent leg-like members **13** and **14**.

Each half or section **11** and **12** is provided on its inner face with a depression **15**, see particularly FIG. 2. These depressions **15** are adapted to register when the two halves are assembled in their normal flatwise condition of use (FIG. 1). Together, the depressed portions or recesses **15, 15** provide a cutter blade-receiving space or pocket (FIGS. 5, 6 and 7) which is of sufficient width and size generally to accommodate blades of different types, including a normal flat double-edge blade, as shown at B in FIGS. 3 and 5, or another conventional blade C having a single cutting edge C′ and a heel or reinforcing portion C^2 as shown in FIGS. 4 and 7.

The halves or sections **11** and **12** are separably held together by means of bolts, cap screws, or studs **18** which are passed through plain drilled holes or bores **18***a* in the base portion **13** of section **11** which bores are countersunk or recessed at **18***b*. They are then threaded into holes or sockets **19** in the base of the opposite tool section **12**. A similar third screw **21** is passed through a drilled countersunk bore **21***a* in the outer end portion of upper leg **14** of the frame section **11** and threaded into another drilled bore **22** in the opposite upper leg **14** of frame section or half **12**. Thus, the parts are held firmly together to clamp a blade therebetween in operative position.

The tool frame or body of the present invention is adapted to receive and firmly grip a suitable cutter blade. It is important that the holder **10** be such that said blade is capable of easy application to and removal from it and

that it be held firmly in position so that there is no relative movement between the blade and the said supporting frame or holder. Moreover, it is desirable that the blade be supported in a manner which permits its adjustment relative to its pocket or socket in the frame so that the amount of cutting edge which extends into the crotch-like portion **9** of the tool **10** can be controlled in accordance with the particular gauge of the cable or wire to be stripped. As shown, a pair of parallel slots or openings **20** is provided in the base portions of each of the sections **11** and **12**. The slots **20** are surrounded by cut-out, or countersunk portions **20***a* in the outer faces or surfaces of the base portions **13**, **13** (FIG. 2) to provide, in effect, to receive blade engaging and adjusting means or bolt members **23** and their hexagonal securing nuts **24**. Thus, the heads of screws or bolts **23** and the nuts **24** lie flush with the outer surfaces or faces of both of the base portions **13**, see FIGS. 5, 6 and 7.

In the novel insulation stripper of FIGS. 1, 2 and 3, a double-edge blade B is employed. This blade is of the commonly known "Gillette" type and has the usual two cutting edges B^1 and cutting edge corners B^2. After a blade is assembled with the frame portions **11** and **12** and the securing bolts **18** and **21** threaded into position, the bolts or screws **23** are passed through the parallel slots or openings **20** and likewise through the conventional openings located generally in the center of blade B. The hexagonal nuts **24** which are located within the grooved openings **20** at the opposite side of the stripper body and which fit with sufficient closness to prevent their turning when the bolts **23** are screwed down, receive said bolts and hold the parts **11** and **12** and the blade B rigidly together as a unit.

It is to be understood that when blade B is positioned in pocket **15** and between the two halves **11** and **12**, the top cutting edge B^1 of said blade is disposed in the space between the upper and lower portions of the tool body and will thus extend into the so-called crotch-like portion **9** thereof, as may be seen clearly in FIGS. 1 and 3.

As may be seen clearly in FIG. 1, when the parts **11** and **12** are assembled, there remains a relatively narrow longitudinal slot or space **14***a* between the two halves **17***a*, **17***a* of the trough or channel **17**. By virtue of the presence of this lengthwise slot **14***a*, one corner, in this instance, corner B^2 of the cutting edge of blade B projects upward into said trough. This may be seen clearly in FIGS. 1 and 3.

If it is decided to adjust blade B so as to vary the amount of projection or extension of the corner B^2 into the channel or trough **17**, as well as the amount of projection of the cutting edge B^1 into the crotch-like portion **9**, it is simply necessary to back off the bolts **23** and to shift them up or down lengthwise of the slots **20**, **20***a*, until the cutting edge B^1 has assumed the desired position, after which the bolts **23** are again tightened down to hold the blade B fixed in position against accidental shifting movement relative to its supporting frame or holder **10**.

The amount of projection of the cutting edge B^1 of the blade B into the space **9** between the legs or arms of the stripper is determined and controlled in accordance with the over-all diameter or gauge of the cable or wire **30** whose insulation is to be stripped.

Referring now especially to FIGS. 4, 6 and 7, the stripper body **10** is shown supporting a cutter blade C of the single-edge type, having a cutting edge C', a thickened reinforcing heel or portion C^2, and two sharp corners C^3. As mentioned above, the lower portion of pocket **15** is of ample width to loosely receive the thickened portion C^2 of the single-edge blade C. As in the above described use of the device **10** with a double-edge type of blade B, the single-edge blade C is placed between the halves **11** and **12** of the tool and the bolts **23** and their hexagonal nuts **24** are applied in the same manner as described above except for this difference: As seen in FIG. 4, blade

C has a pair of spaced parallel transverse slots, or openings **25**, through which the bolts **23** are passed. As in the preceding form, cutting edge C' extends upwardly from the pocket **15** and into the crotch-like space **9** (see FIG. 4) between the upper and lower parts of portions **14** and **13**, respectively, of the stripper, while one sharp corner C^3 of the cutting edge of the blade projects through the slot **14***a* in the trough or channel **17**, see FIG. 4.

The novel stripper of the instant invention provides a single, common cutting means to perform the dual functions of both slitting the insulation of a wire or cable longitudinally, and of crosscutting, or severing, the slit portion of said insulation, with the same stripping device or unit. The position of the parts and the insulated cable or wire are perhaps best illustrated in FIGS. 3, 4 and 6. In FIG. 4, a length of cable or wire **30** is shown positioned lengthwise of trough **17** and in readiness to have the sheath of insulation thereon slit longitudinally. The same cable or wire **30** is shown in position in the stripper, crosswise thereof, in FIGS. 3, 4 and 6, with the insulation on the cable being in contact with the upper leg **14** and the cutting edges B' or C' of the blades B and C.

The application of thumb pressure on the cable **30** as it is positioned in the trough **17**, see FIG. 4, and the relative movement of the cable and the stripping tool **10**, will cause the sharp corner C^3 at the left end of blade C to slit the insulation on the cable. Such a longitudinal slit is shown at **34** in FIG. 8.

When the cable **30** is placed crosswise in the crotch-like portion **9**, between the upper and lower portions or members of the stripper, as shown in FIGS. 3, 4 and 6, rotation of said cable **30** relative to the stripping tool, or the rotation of the stripping tool **10** around the cable **30**, will cross-cut the same and thus produce the circumferential cut or severed portion **35** in the sheath of insulation as shown in FIG. 8.

Merely by way of illustration, FIG. 8 shows a short length of one type of insulated cable with which the tool of the present invention is used. In this view the cable is shown as a whole at **30** and comprises preferably a fibre core **31**, surrounded by a multiple of twisted insulated wires **32** which are enclosed by a sheath-like covering or jacket **33** of insulating material such, for example, as rubber, plastic, or the like.

As stated above, FIG. 8 shows the relative positions of the longitudinal slit **34**, made by the blade edge corner B^2, or C^3, of either blade B, or C and the intersecting circumferential cross-cut **35**, which is made by the cutting edge B' or C'.

I claim:

1. A tool having a body adapted to be provided with detachable cutting means for the successive operations of longitudinally slitting and for cross cutting the insulation from a length of insulation-covered wire or cable, said body having a cutter blade holding portion and a wire or cable receiving trough containing portion extending therefrom in diverging relationship thereto to provide a wedge-like crotch portion therebetween, said blade holding portion having a pocket formed therein opening toward the trough-containing portion to receive and removably support a cutting blade, means for holding the blade rigidly in position, and said trough containing portion having a longitudinally extending slot therethrough opposite and in alignment with the pocket opening, whereby when a cutter blade is disposed in said pocket a portion of a cutting edge thereof extends into said crotch portion while a corner of said cutting edge projects through the longitudinally extending slot in said trough containing portion and into the trough to provide, respectively, means for cross cutting the insulation and for slitting the same longitudinally.

2. A tool according to claim 1, wherein said body is of substantially V-shaped contour.

3. A tool according to claim 2, wherein the generally

V-shaped body thereof is formed from two like portions separably held together.

4. A tool according to claim 2, wherein the generally V-shaped body thereof is formed from two substantially like portions, wherein the cutter blade receiving and supporting pocket is disposed between the two substantially like portions, and wherein means is provided for separably holding said two portions together as a unit.

5. A tool according to claim 4, wherein said means includes bolts and nuts engageable with a blade in said pocket and adjustable transversely of the cutter blade holding portion for varying the amount of exposure of the blade edge within the crotch portion and the amount of projection of said blade corner into said trough.

6. A tool for stripping insulation from a wire or cable, comprising, in combination, a substantially V-shaped body formed from two substantially like parts releasably held together and adapted to receive and support a cutter blade therebetween, releasable means for holding the two parts together, one leg of said V-shaped two-part body being wider in one dimension than the other leg and having a blade receiving pocket therein, the other leg having a longitudinal wire or cable-receiving trough in its outer face, the legs of said body providing a crotch-like space in the vicinity of their juncture, the inner abutting faces of the two parts forming the body having registering recessed portions which together provide said blade receiving pocket, and means for maintaining a blade in the pocket with a cutting edge thereof disposed within said crotch-like space and having a corner of said edge projecting beyond said pocket and into said trough, whereby said cutting edge and said corner provide, respectively, means for cross cutting the insulation on a wire placed in said crotch-like space and for slitting the same longitudinally when placed in said trough.

7. A wire insulation stripping tool according to claim 6, wherein said last-named means is adjustable transversely of the wider leg so as to adjust the blade to expose more or less of its cutting edge and said corner in said crotch-like space and in said trough, respectively.

8. A wire insulation stripping tool according to claim 6, wherein said last-named means is adjustable and includes a pair of spaced parallel transverse slots in the wider leg of the two-part body, said slots being in registry when the parts are assembled, and bolt and nut assemblies in said pairs of slots engageable with the blade and being adjustable lengthwise of the said slots.

9. A tool according to claim 8, wherein the pairs of pairs of parallel slots have exposed countersunk marginal portions to receive the bolt heads and nuts of the assemblies so as to lie flush with the outer faces of said wider leg.

10. A portable insulation stripping tool having, in combination, a body of generally V-shaped contour, comprising divergent leg portions providing a crotch-like space therebetween, one of said legs having a longitudinal concavity therein forming a trough to receive a length of insulated wire or cable, the other leg having a cutter blade-receiving pocket therein opening into said crotch-like space, and stripping means comprising a cutter blade removably but firmly disposed in said pocket and having a portion of a cutting edge thereof extending into the crotch-like space for cross-cutting the insulation on a wire placed in said space, with an end of said cutting edge projecting into the trough for longitudinally slitting the insulation on a wire when placed lengthwise therein and moved relatively thereto.

11. A stripping tool according to claim 10, wherein means is provided for releasably locking the stripping means in said pocket.

12. A stripping tool according to claim 10, wherein adjustable means is provided for releasably locking the stripping means in the blade-receiving pocket, and wherein said adjustable means includes slots in the tool body and bolt and nut assemblies cooperable with said slots and stripping means whereby to control the extent of exposure of the cutting edge of the blade into the crotch-like space and the amount of projection of the end of said cutting edge into said trough in direct proportion to the gauge of the insulated wire or cable to be stripped.

13. A stripping tool according to claim 12, wherein the tool body is formed from two substantially identical parts releasably held together in flatwise relationship by means of studs having countersunk heads.

14. A tool for stripping insulation from a wire or cable, comprising in combination, a body having angularly disposed portions joined together so as to provide a crotch therebetween, one of said portions having an external wire-receiving trough formed therein, and the other body portion having a blade-receiving and supporting pocket therein opening toward said crotch and in alignment with said trough, and a single cutter blade in said pocket, said body being so proportioned and arranged that when the cutter blade is located in the pocket a cutting edge thereof extends into said crotch and a corner of said cutting edge projects into the trough.

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