

[54] **WIRE STRIPPER**

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[22] Filed: **June 21, 1971**

[21] Appl. No.: **154,906**

[52] U.S. Cl.81/9.5 R

[51] Int. Cl.H02g 1/12

[58] Field of Search.....81/9.5 R, 9.5 B

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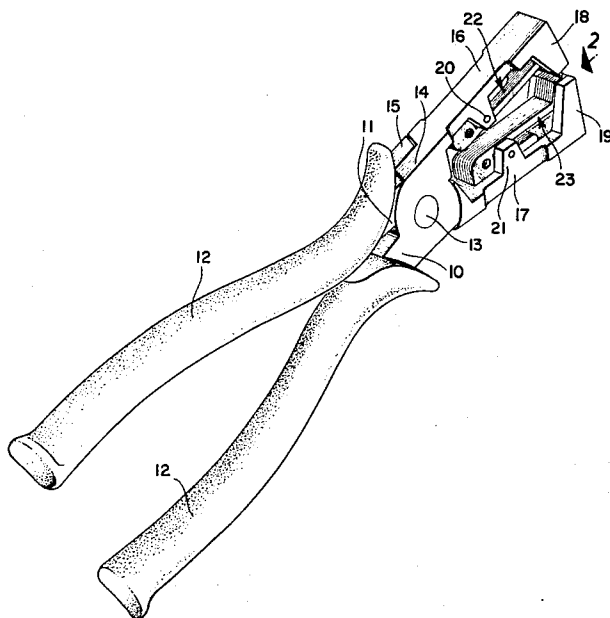
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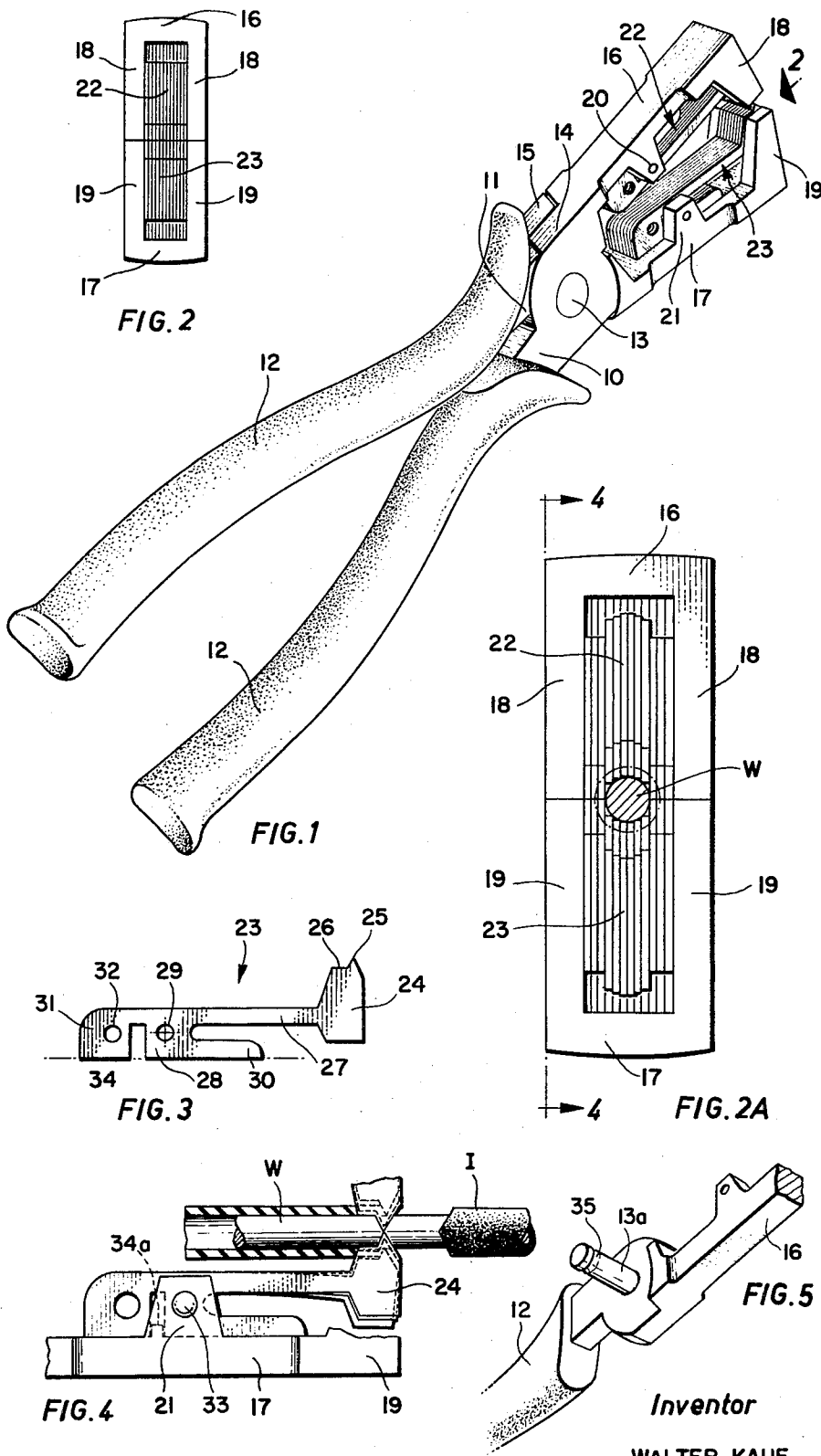
[57] **ABSTRACT**

A wire stripper having a pair of relatively movable jaws provided with a plurality of thin blade-like members mounted on spring arms so that they may flex, and move relative to one another when closed around a piece of metal such as a wire. The spring means is such that the blade-like members will sever any electrical insulation around such wire, but will not sever the wire.

4 Claims, 5 Drawing Figures



PATENTED NOV 28 1972



WIRE STRIPPER

The invention relates to a device for stripping electrical insulation and the like from wires.

BACKGROUND OF THE INVENTION

The stripping of electrical insulation from wires is often effected by means of a knife, or a pair of conventional wire cutting pliers. Frequently, one or more strands of the wire itself are severed, or alternatively, the insulation is incompletely removed, wasting valuable time. Various wire strippers have been devised to overcome these problems. The commonest type in use consists of a scissor-like device provided with a series of indentations in the blades, the indentations being dimensioned to correspond to the dimensions of various different gauges of the wire. In theory, all that the operator has to do, is to select the right indentation for the right gauge of wire, close the scissors over the wire thereby severing the insulation, and pull. However, in practice, what often happens is that the wrong pair of indentations is chosen with the result that either the insulation is not completely severed, or alternatively, the wire is partially severed. Either result is undesirable and time consuming. In many cases, the gauges of electrical wire will not correspond exactly with the size of the indentations, with the result that the device can never be operated satisfactorily. In addition, it requires some knowledge of the different gauges of wire in order to be able to select the right pair of indentations correctly the first time.

BRIEF SUMMARY OF THE INVENTION

According to the present invention, a wire stripper device is provided essentially similar to a pair of wire cutters in which the jaws of the wire cutters are replaced by a plurality of thin blade-like members mounted on spring arms so that they may flex, and move relative to one another when closed around a piece of metal such as a wire. The spring means is such that the blade-like members will sever any electrical insulation around such wire, but will not sever the wire.

More particularly, it is an objective of the present invention to provide a device of the type described having the foregoing advantages in which the blade-like members are provided in both jaws of the device and are adapted to close against one another when no wire is present, but which may move away from one another when a piece of wire is interposed therebetween.

More particularly, it is an objective of the present invention to provide an apparatus of the type described, having the foregoing advantages in which the thin blade-like members are provided with cutting edges adapted to cut and sever the electrical insulation around a piece of wire.

More particularly, it is an objective of the present invention to provide a device of the type described having the foregoing advantages in which the thin blade-like members are stamped out of sheet metal, and are formed integrally together with the spring means which is also stamped out of the same piece of sheet metal, thereby providing a less expensive method of manufacture, and effective and reliable operation.

The foregoing and other advantages will become apparent from the following description of the preferred embodiment of the invention which is given here by way of example only with reference to the following

drawings in which like reference devices refer to like parts thereof throughout the various views and diagrams.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective illustration of a wire stripper device according to the invention;

FIG. 2 is an end elevational view of the device along the direction of the arrow 2 in FIG. 1;

FIG. 2A is an enlarged end elevational view corresponding to FIG. 2 but showing some of the blade members displaced by a piece of wire;

FIG. 3 is a side elevational view of one of the blade-like members shown in isolation;

FIG. 4 is a side elevational view, partially cut away of one of the jaws of the stripper device, shown along the line 4-4 of FIG. 2A; and

FIG. 5 is a partial perspective illustration of a further embodiment of the invention, particularly adapted for manufacturing by injection moulding techniques.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, it will be seen that this preferred embodiment of the invention has the general appearance of a pair of pliers or wire cutters, and is provided with a pair of handles, covered by insulation 12 in the conventional manner. A pivot pin 13 provides for the pivoting of handles 10 and 11 relative to one another in the conventional manner, and handles 10 and 11 are preferably formed with complementary hinge formations 14 and 15, to enable the same to be swung apart and together, the details of which are essentially common to the art relating to pliers and the like and require no further description.

According to the invention, the stripper device is preferably provided with a pair of stripper jaws 16 and 17 formed integrally with respective handles 10 and 11 as shown. The jaws 16 and 17 are formed identically to one another, and are provided with spaced apart teeth 18 and 19, at their free ends, which when the jaws 16 and 17 are closed, make contact with one another as shown in FIG. 2. Jaws 16 and 17 are further provided with mounting lugs 20 and 21, on either side thereof spaced apart from one another, the lugs 20 and 21 being spaced approximately mid-way between the pivot pin 13, and the teeth 18 and 19 at the free ends of jaws 16 and 17 as shown in FIG. 1.

As shown in FIG. 1, jaws 16 and 17 define a substantial spacing therebetween, and, in fact, only make contact at the tips of the teeth 18 and 19, even when the jaws 16 and 17 are closed together.

In order to sever the electrical insulation around a piece of wire, there are mounted within jaws 16 and 17 a plurality of thin blade-like cutter members 22 and 23, which are of identical construction. As shown in FIG. 3, a cutter 22 or 23 will be seen to comprise a cutter head 24, having at its inner end a cutter edge 25, there being a notch 26 immediately behind the edge 25, to permit the edge 25 to enter into the insulation on a piece of electrical wire or the like. The cutter head 24 is itself mounted on an arm member 27 through which is provided a pivot hole 29. A spring arm member 30 is formed integrally with the bracket 28, and is dimensioned so that it will lie snugly against the interior of the

jaw 16 or 17. In order to facilitate the assembly of a plurality of blades 22 or 23 together for insertion into position in their respective jaws 16 and 17, an extension member 31 may optionally be provided with a reference opening 32 therethrough, by means of which the blades 22 and 23 may be aligned and held together while they are inserted into position.

Preferably, a retaining pin 33 is passed through the lugs 20 and 21, and through the pivot holes 29, holding a group of blades 22 or 23 in position as shown in FIG. 1, while permitting the same to flex individually, against their respective spring arms 30, substantially as shown in FIGS. 2A and 4.

Optionally, it may be helpful to provide additional security for the thin blade-like members 23 in the form of the slotted keyways 34 which are shaped and dimensioned to fit snugly over the locating key members 34a formed on the jaws 16 and 17, between the respective pairs of lugs 20 and 21, as shown in FIG. 4.

Referring now to FIGS. 2A and 4, it will be seen that in operation, the jaws 16 and 17 are closed around a piece of wire W, having insulation I thereon. As the jaws 16 and 17 close around the insulation I, the cutter edges 25 will enter the insulation I and sever it. As the cutter edges 25 contact the metallic wire W, they will then be prevented from closing any further together. However, since the jaws 16 and 17 will still continue to move together, until, in fact, the teeth 18 and 19 contact one another, the various blades 22 and 23 actually in contact with the wire W, must flex apart as shown in FIGS. 2A and 4, while the surrounding blades 22 and 23 which are not in contact with the wire W will not flex apart, but will, in fact, meet and close together on either side of wire W, thereby severing the insulation all around the wire W. When the jaws 16 and 17 are closed, all that has to be done is simply to pull the device by means of the handles 10 and 11 away from the end of the wire W and the piece of severed insulation I will then be removed. The jaws 16 and 17 can then be released, and the piece of insulation discarded.

Clearly, within very wide limits, the blades 22 and 23 can accommodate a very wide variety of different sizes of wire insulation without any need for adjustment whatever. In the event that the cutter edges 25 eventually become dull, it is a simple matter to knock out the pins 33 and insert new groups of cutter blades 22 and 23.

It will, of course, be understood that in the foregoing description, no reference has been made to the materials from which the various members may be constructed. Obviously, the cutter blades 22 and 23 must necessarily be made of metal, preferably of relatively hard steel so as to ensure a reasonable working life, and at the same time, to ensure a fairly strong spring action between the arms 27 and the spring arms 30 of the blades 22 and 23. The construction of the remainder of the device may be of mild steel or tool steel as is conventional in the art relating to pliers and the like, or alternately, they may be cast of non-ferrous metal or even, in fact, injection moulded out of any suitable synthetic thermo-plastic material. Clearly, a device of this kind is not required to have the same strength as a pair of pliers or wire cutters since they will not be subjected to the same stresses, and therefore, it is not absolutely essential that they should be constructed out of

steel at all. In fact, construction of synthetic thermo-plastic materials may present many advantages including the fact that it will be completely insulated, without the requirement for the additional insulating sleeves 12. Additionally, of course, the method of construction will be greatly simplified and rendered more economical.

One way in which a more economical form of construction may be achieved, is shown in FIG. 5. This illustration shows one half of a wire stripper designed and adapted for construction out of thermo-plastic material by injection moulding. It will be seen to comprise the same handle 12 and jaws 16 or 17 as shown in relation to the embodiment of FIG. 1. However, the pivot pin 13A in this embodiment of the invention will be seen to be moulded in one piece with the handle 12. The other such handle 12 (not shown) will, of course, be formed of a complementary mating recess, provided with any suitable formation such as an annular ridge or the like (not shown) adapted to fit into a corresponding groove 35 formed in the end of the pivot member 13A, thus enabling the two parts simply to be snapped together. Alternatively, the pin 13A can be secured by any other fastening means known per se, such as a spring locking washer or the like (not shown) fitting in groove 35.

Clearly, while the invention has been described specifically in relation to a device for stripping insulation from wires, it is not restricted specifically to such application, but is applicable to any such similar purpose, where a metallic or hard core member is surrounded with a jacket of soft severable material, the only limitation being that there should be sufficient difference between the core and the jacket material that the blade-like members will be capable of cutting through the jacket without cutting into the core.

The foregoing is a description of a preferred embodiment of the invention which is given here by way of example only. The invention is not to be taken as limited to any of the specific features described, but comprehends all such variations thereof as come within the scope of the appended claims.

What I claim is:

1. Apparatus for cutting and stripping insulation or the like jacket material from a hard core member such as electrical wire or the like and comprising:

a pair of jaw members adapted for movement towards and away from one another;

handle means connected to said jaw members, for operatively moving said jaw members as aforesaid;

a plurality of thin blade-like member hingeably mounted in side by side relation on respective said jaw members, in opposition to one another;

cutting edge means on said blade-like members, arranged in opposition to one another, and adapted to be closed together when said apparatus is not in use; and

spring means normally urging said blade-like members into a predetermined extended position, and being yieldable under stress, by contact between said cutting edge means and a hard core member as aforesaid, to permit said blade-like members to move into a retracted position.

2. The apparatus as claimed in claim 1, wherein said jaw members are pivotally mounted for swinging action

towards and away from one another, said handle means being formed integrally with respective said jaw members and forming endwise extensions thereof.

3. The apparatus as claimed in claim 1, including tooth members formed at the free ends of said jaw members, and dimensioned and oriented to contact one another when said jaw members are closed together, and defining a predetermined spacing for

mounting of said blade-like members therebetween.

4. The apparatus as claimed in claim 1 including mounting lug means formed on respective said jaw members, and pivot pin means extending between said mounting lug means, and passing through respective said blade-like members hingeably mounting the same in position as aforesaid.

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