

- [54] **CONNECTING ELEMENT FOR CONDUCTORS**
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- [22] Filed: **Oct. 20, 1972**
- [21] Appl. No.: **299,321**
- [30] **Foreign Application Priority Data**  
 Oct. 23, 1971 Germany..... 2152954  
 Oct. 23, 1971 Germany..... 7140267
- [52] **U.S. Cl.**..... **339/98**
- [51] **Int. Cl.**..... **H01r 9/08**
- [58] **Field of Search**..... 339/97, 98, 99; 174/88 R
- [56] **References Cited**  
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[57] **ABSTRACT**

A connector for connecting conductors without soldering includes a blade portion and a contact portion. The blade portion has a blade which will sever the ends of the wires when the connector is assembled. A comb is positioned within the contact portion for receiving the wires and cutting through their insulation. The two portions are constructed so that they can be pressed together to form a completed connector.

**5 Claims, 7 Drawing Figures**

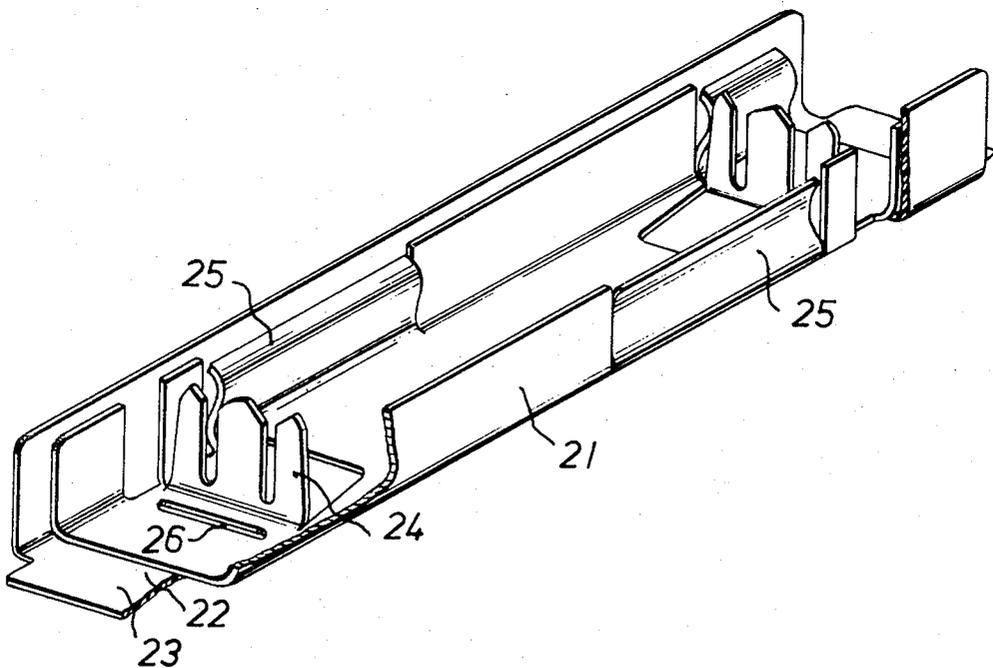


FIG. 1

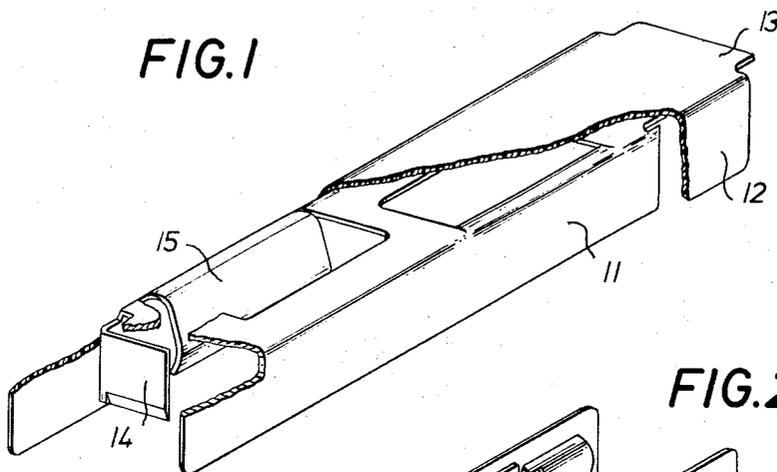


FIG. 2

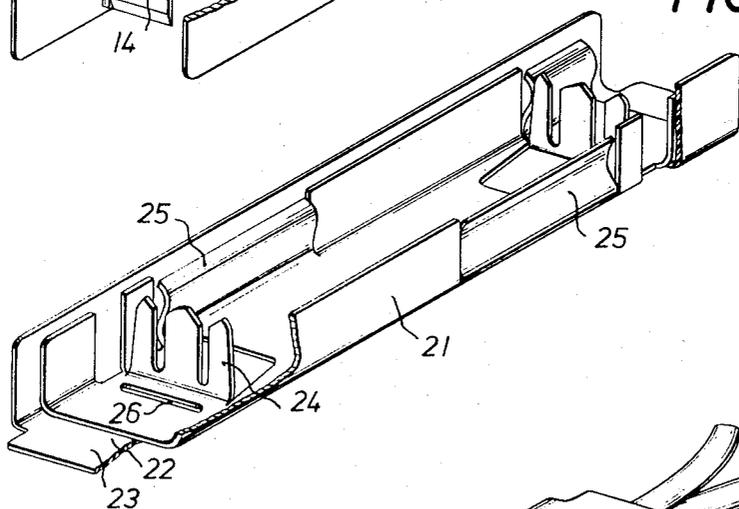
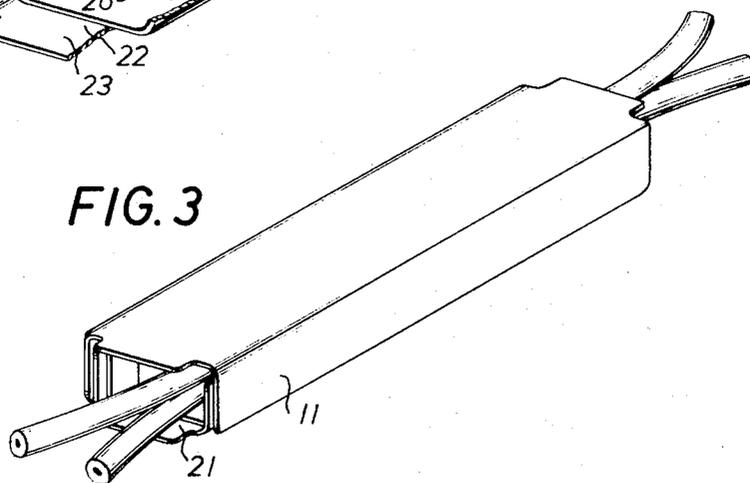


FIG. 3



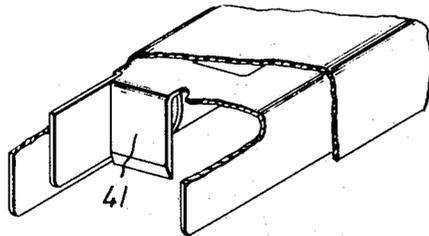


FIG. 4

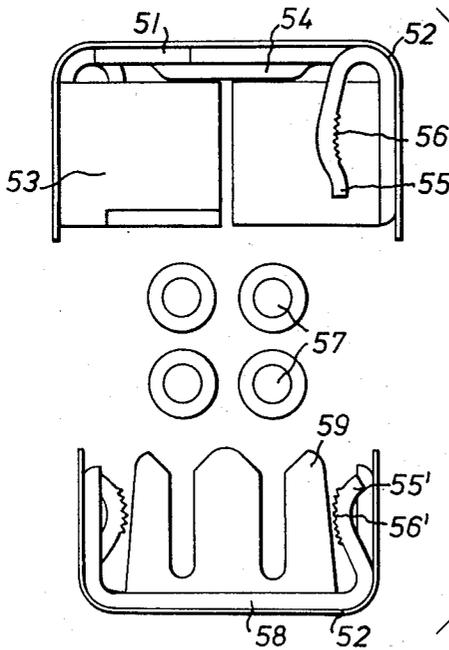


FIG. 5

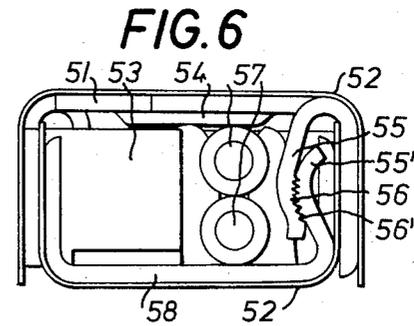
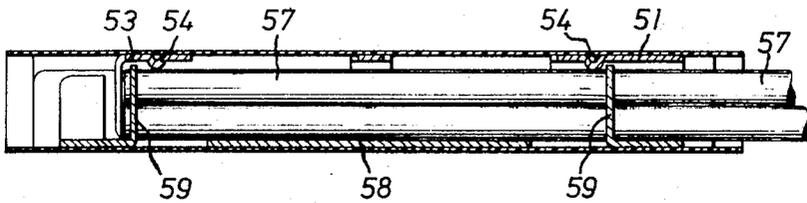


FIG. 6

FIG. 7



## CONNECTING ELEMENT FOR CONDUCTORS

## BACKGROUND OF THE INVENTION

The present invention relates to a connecting element for the connection of conductors without solder and insulation and with simultaneous severing of the wire ends, preferably for cable splices in telecommunications cables.

Various components are known which can be utilized for connecting conductors. The conventional method of connecting a cable is to strip the insulation off of the conductors, which are to be connected, twist the conductors together, bend the twisted portion, solder the portion, and then cover it with a paper sleeve. This method is still widely used today, although simplified connectors are commonly available. Those simplified connectors that are in general use, however, have several disadvantages.

Thus, for example, a cable connector can consist of a sleeve closed at one end for connecting two wires, the sleeve being provided with metal strips on its inside, the strips having inwardly pointing teeth or edges. After introducing the ends of the wires to be connected into the sleeve, the sleeve is pressed together by means of a pair of pliers thus causing the teeth to penetrate the insulation and make contact with the conductors. In this type of connector extremely accurate tolerances must be maintained with respect to the wire diameter in order to assure perfect contact between the teeth and the wire. This is particularly important to insure that the contact does not become worse with time due to the influence of corrosion. Moreover, these connectors cannot be used with conductors having paper insulation which is the situation with almost all telecommunications cables. Pinching the sleeve with the pliers must also be done with the utmost care in order to assure the retention of accurate tolerances.

Another type of connector for cables which is commonly used is known as a comb. Such connectors are made, for example, by the AMP, 3M and Plassey companies. In such connectors, the insulated conductor is placed between the comb teeth and the comb portions penetrate the insulation. These methods are more or less complicated and, probably the decisive factor, they are very expensive.

## SUMMARY OF THE INVENTION

An object of the present invention is to provide a connecting element which simplifies the operation of connecting cables.

Another object of the invention is to provide a connector in which the amount of time required for splicing the cable conductors is reduced.

A further object is to provide a connector which is inexpensive and versatile in its application. A primary application of this type of connector is in splicing of telecommunication cables.

According to the present invention, these objectives are accomplished by the construction of a connecting element which consists of two U-shaped portions including a blade portion and a contact portion. These portions resiliently and meshingly engage one another with their open sides. The blade portion of the connecting element has a portion which is bent inwardly and which acts as the actual blade so as to act in the direction of movement. In the contact portion the connector has a rectangularly bent comb which is provided with

slits corresponding to the thickness of the conductor.

An improved contact is obtained if the contact portion is provided with combs having slits at both of the openings of the connector. The manufacturing process for the contact portion is simplified in that the comb or combs are formed by pieces cut out of the contact portion and bent inwardly at an angle. In order to insulate the connector against adjacent connectors, the blade and the contact portions are coated with an insulating film. To enable the connector to be easily guided into a tool required for pressing the two parts of the connector together, insulated guide tongues are disposed at the blade and contact portions. In order to securely cut off the wire ends, a crimped portion or a slit is provided in the contact portion into which the blade enters when the two portions are pressed together.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partly cut-away perspective view of an embodiment of the blade portion of a connector according to the invention.

FIG. 2 is a perspective view of an embodiment of the contact portion of a connector according to the invention.

FIG. 3 is a perspective assembled view of the two portions of the connector shown in FIGS. 1 and 2 joined together.

FIG. 4 shows another embodiment of the blade portion of the connector according to the invention.

FIG. 5 is a front view of the elements of an embodiment of the connector prior to assembling the blade and contact portions.

FIG. 6 is a front view of the connector of FIG. 5 with all of the elements assembled.

FIG. 7 is a longitudinal side view of the finished connection of the embodiment of FIGS. 5 and 6.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a connector blade portion 11 which is coated with an insulating film, or layer, 12. The film 12 is provided with a tongue 13, at the two open ends of the connector, for guiding pliers to press the two parts together. A blade 14 which serves as the cutting blade for the wire ends of the conductors which are introduced from the opposite side of the connector, is formed as part of blade portion 11 at one end thereof. Blade 14 is laterally bent in the form of a tongue from a side leg of portion 11. Tongue-type spring portions 15 are cut out from the body of blade portion 11 and provided with teeth to serve to attach the blade portion 11 to the contact portion 21 (FIG. 2). The teeth are on the inside of each spring and are so designed that they engage in corresponding counterteeth of the contact portion when both parts are pressed together.

FIG. 2 is a perspective view of the contact portion 21 which is also covered with an insulating film 22. Again guide tongues 23 are provided at both ends of the film and also serve to guide the pliers tool used to press the two parts together. On the side of portion 21 which will be directed toward the blade portion, a contact comb 24 provided with slits is arranged. The slits are adapted to the size of the conductor wires which are to be employed. The slit edges serve the purpose of penetrating the insulation of the respective conductor to produce a perfect contact with the core of the conductor. Thus

the slit width must be very accurately dimensioned. Bent springs 25 formed from body 21 and provided with teeth constitute the countersprings for the respective springs 15 in the blade portion 11. Blade 14 of the blade portion 11, upon assembly with contact portion 21, will enter into a crimped portion 26 which may also be designed as a slit in the body of contact portion 21. This is to effect perfect cutting off of the conductor ends.

FIG. 3 is a perspective view of a connector in its assembled form. The two parts, blade portion 11 and contact portion 21, are shown.

FIG. 4 shows a modification of the blade portion in which the blade 41 is formed differently from the blade 14 of FIG. 1. Blade 41 is formed by downwardly bending a cut-out portion of the blade portion from the base of the blade portion.

FIG. 5 is a front end view of a blade portion 51, a contact portion 58 and four conductors 57 just prior to assembly of the connector. In this connector it is also possible to connect together a plurality of wires, as for example in this case four, this constituting an advantage over other connectors. The insulating film 52 which is identical on both portions can also be seen, as well as one blade 53, stamped-in crimping 54, which may also be a slit, for receiving the contact comb ends, stamped-in teeth 56, 56', in springs 55, 55', the springs of the blade portion and of the contact portion meshing with one another during assembly, and cable comb 59.

The elements of FIG. 5 are shown in FIG. 6 in their assembled form.

FIG. 7 is a longitudinal section through the finished connection with the corresponding details, blade portion 51, blade 53, stamped crimping 54 for receiving the contact combs, contact portion 58, contact combs 59 and conductors 57 being shown.

With this connector a component is provided which offers the possibility of using wires with all types of insulation, the component being reusable and most of all easy to manipulate.

It will be understood that the above description of the present invention is susceptible to various modifications, changes and adaptations, and the same are intended to be comprehended within the meaning and

range of equivalents of the appended claims.

We claim:

1. In a connector for connecting conductors such as telecommunication cables without solder and insulation while simultaneously severing the ends of the connected conductors, the improvement wherein the connector comprises a U-shaped blade portion and a U-shaped contact portion each having an open side, said portions being arranged to resiliently and meshingly engage with one another through their open sides, said blade portion is provided with a blade extending inwardly at an angle to said blade portion to act in the meshing direction of movement of said two portions, said contact portion is provided with a comb extending perpendicular to said contact portion and having slits which correspond to the thickness of the conductors to be connected, and said contact portion is provided with a crimped region located for receiving said blade.

2. Connector as defined in claim 1 wherein said connector is open at each end and said contact portion is provided with two slitted combs each at a respective open end of said connector.

3. Connector as defined in claim 1 further comprising an insulating layer covering the exterior of each of said blade portion and said contact portion.

4. Connector as defined in claim 1 further comprising guide tongues at the ends of said blade portion and said contact portion.

5. In a connector for connecting conductors such as telecommunication cables without solder and insulation while simultaneously severing the ends of the connected conductors, the improvement wherein the connector comprises a U-shaped blade portion and a U-shaped contact portion each having an open side, said portions being arranged to resiliently and meshingly engage with one another through their open sides, said blade portion is provided with a blade extending inwardly at an angle to said blade portion to act in the meshing direction of movement of said two portions, said contact portion is provided with a comb extending perpendicular to said contact portion and having slits which correspond to the thickness of the conductors to be connected, and said contact portion is provided with a slit located for receiving said blade.

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