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**Hamada et al.**

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(54) **SHIELDED ELECTRICALLY CONDUCTIVE PATH**

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CPC ..... ***H01R 4/18*** (2013.01); ***H01B 7/18*** (2013.01); ***H01R 13/6581*** (2013.01); ***H01R 13/6593*** (2013.01)

(58) **Field of Classification Search**
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See application file for complete search history.

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(57) **ABSTRACT**

It is aimed to reduce a diameter. A shielded electrically conductive path is provided with a shielded cable configured such that a core wire is surrounded with a shield layer, and a shield terminal including an inner conductor to be connected to the core wire and an outer conductor formed with a crimping portion in the form of an open barrel. The crimping portion includes a first crimp portion formed with
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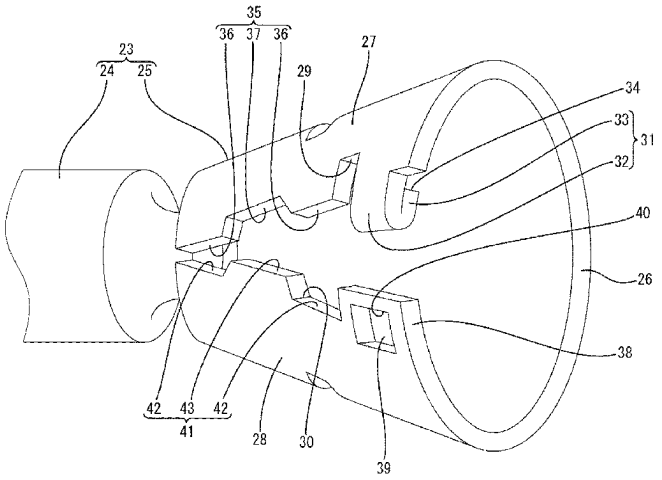

a projection-like first locking portion and a second crimp portion formed with a second locking portion, and is crimped to an outer surface of the shield layer with the first locking portion locked to the second locking portion. A locking margin of the first locking portion and the second locking portion in a radial direction is within a plate thickness range of the second crimp portion.

**6 Claims, 10 Drawing Sheets**

(51) **Int. Cl.**
***H01R 13/6581*** (2011.01)
***H01R 13/6593*** (2011.01)

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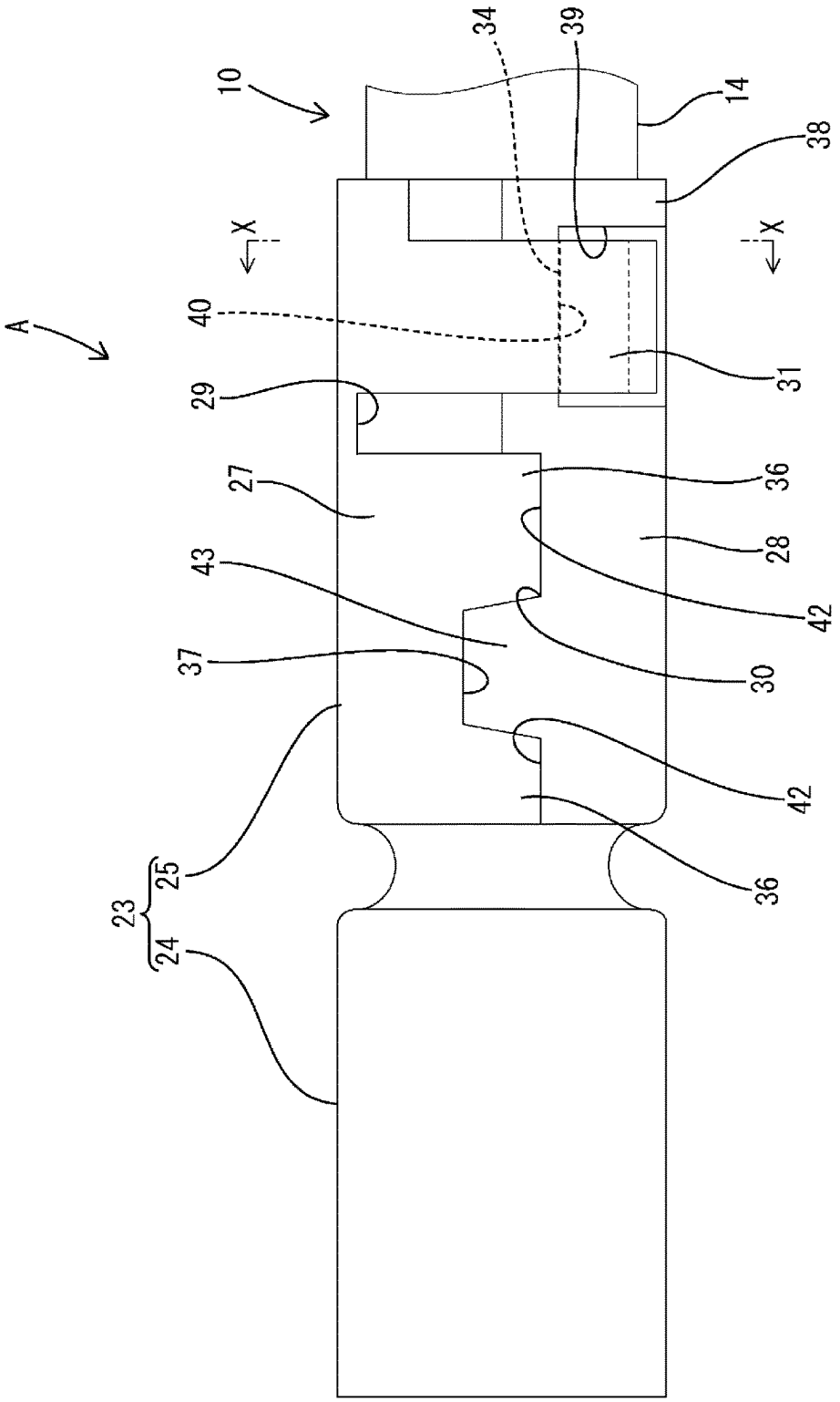



FIG. 1

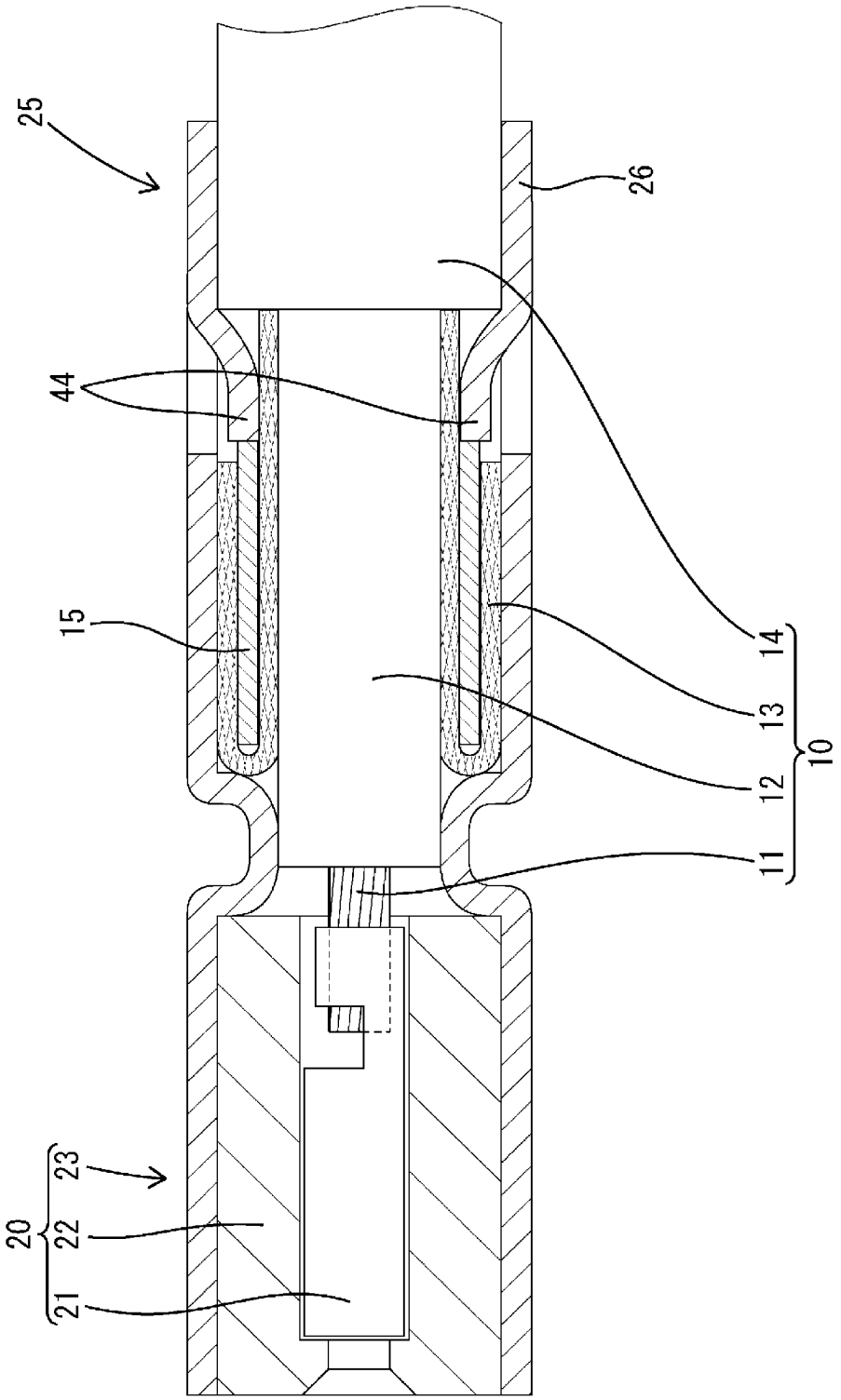
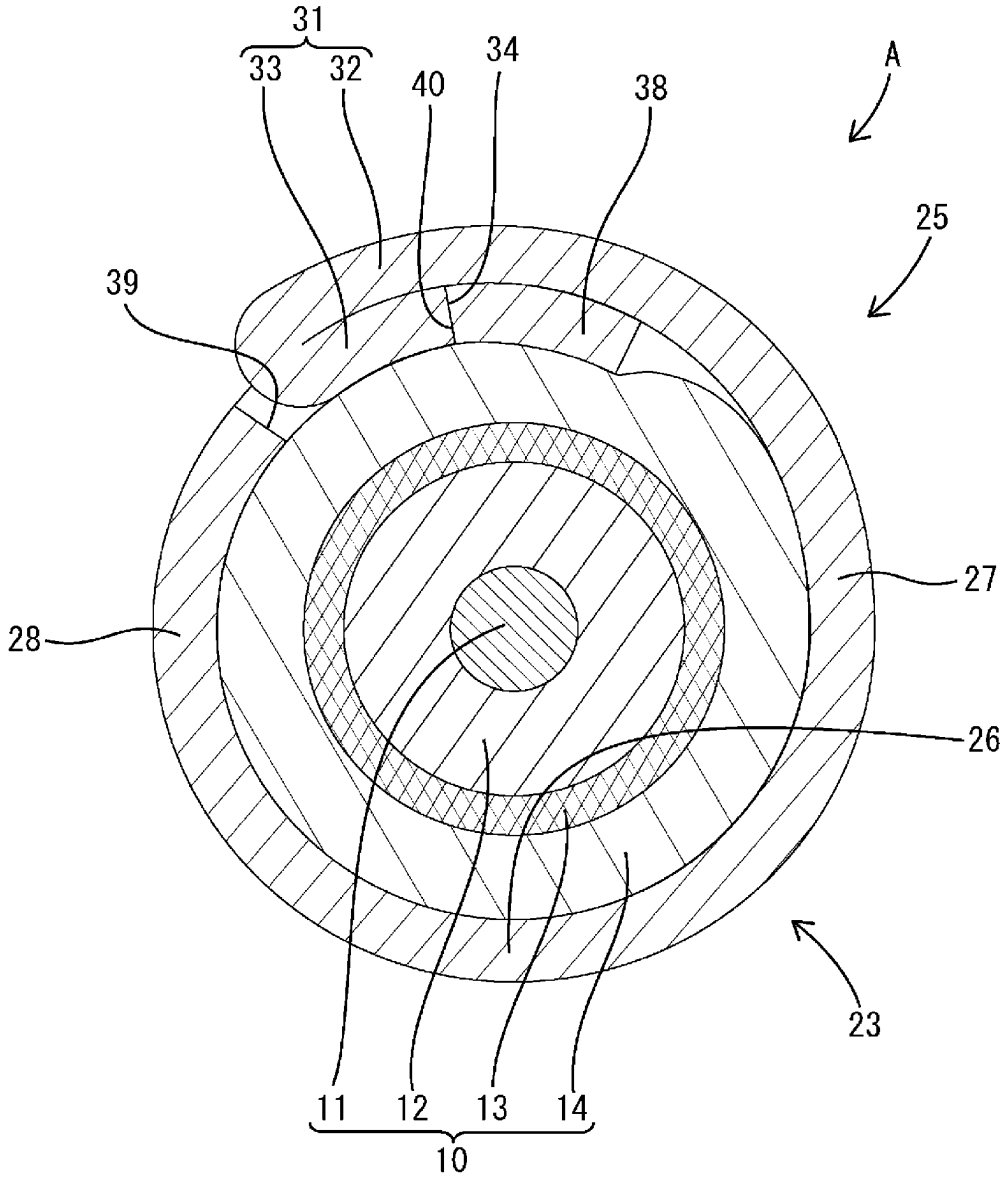



FIG. 2

*FIG. 3*



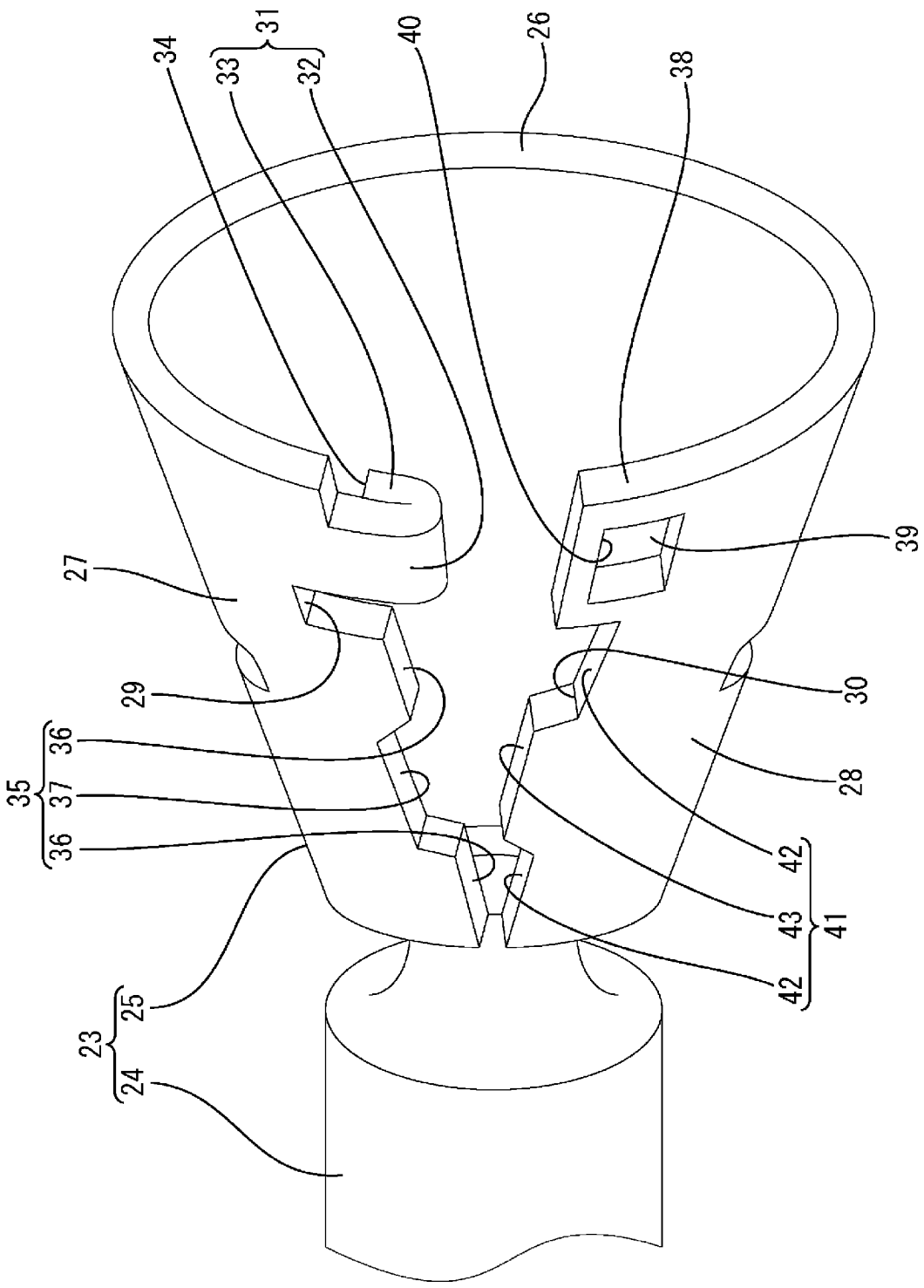
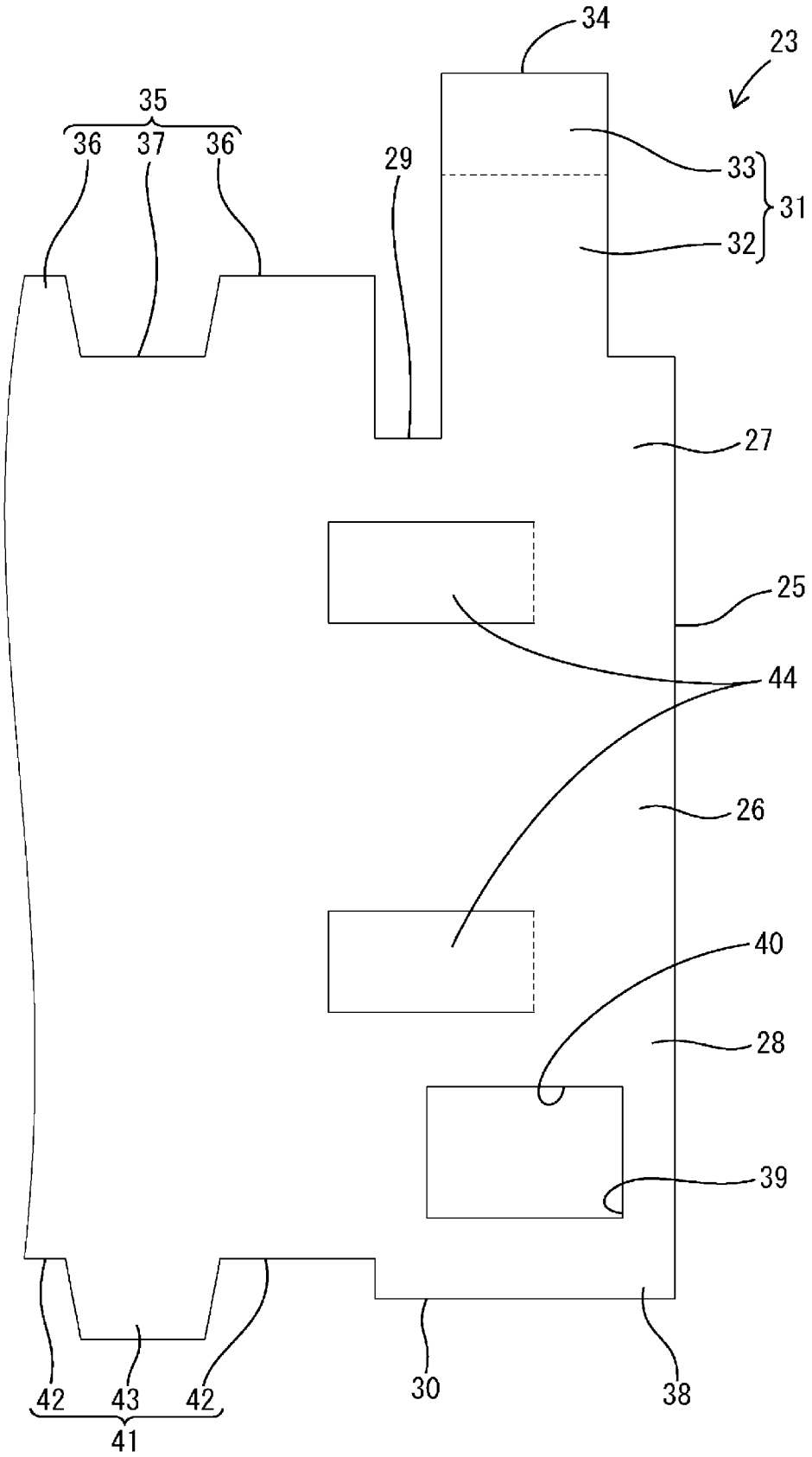



FIG. 4

FIG. 5



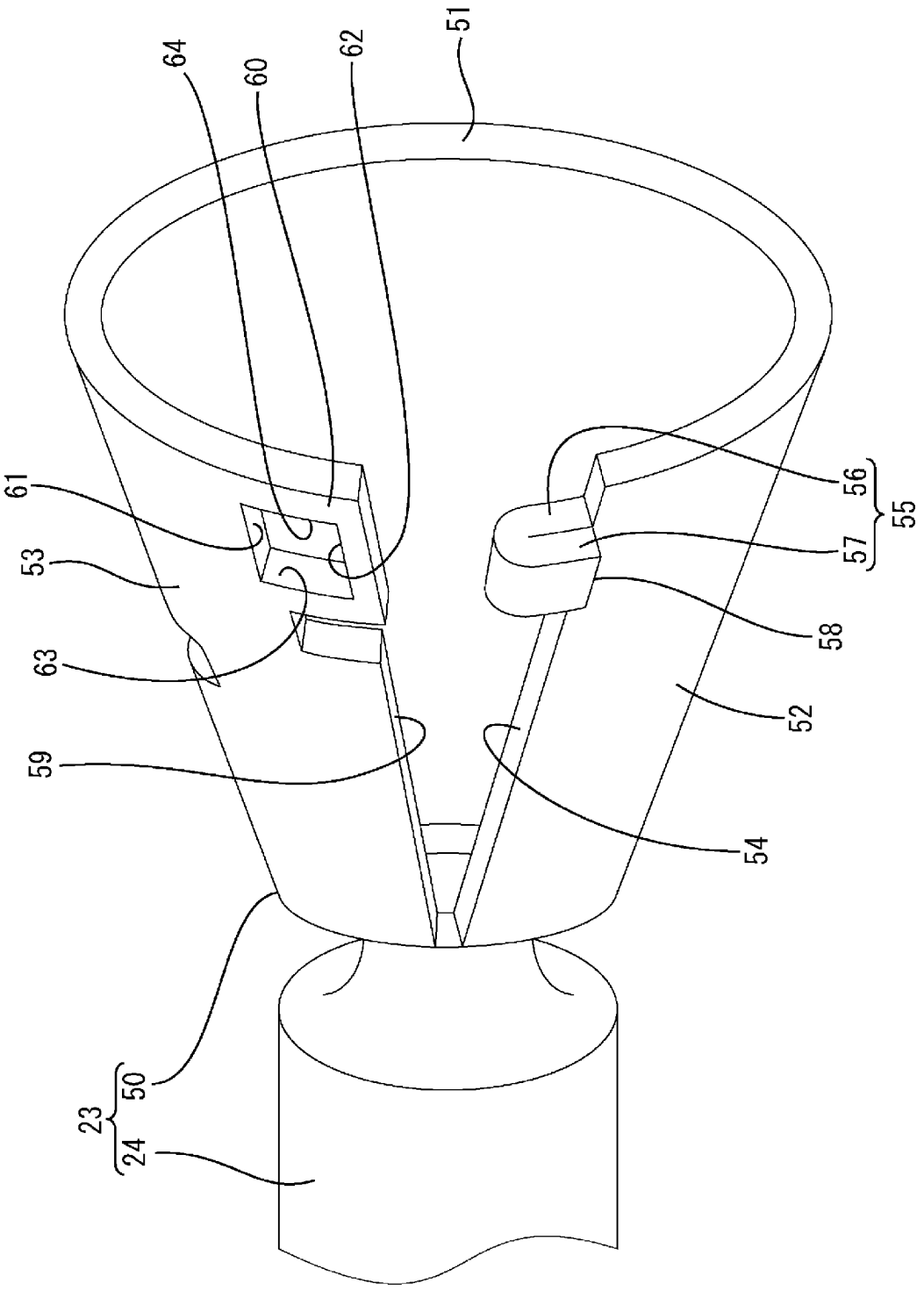



FIG. 6

*FIG. 7*

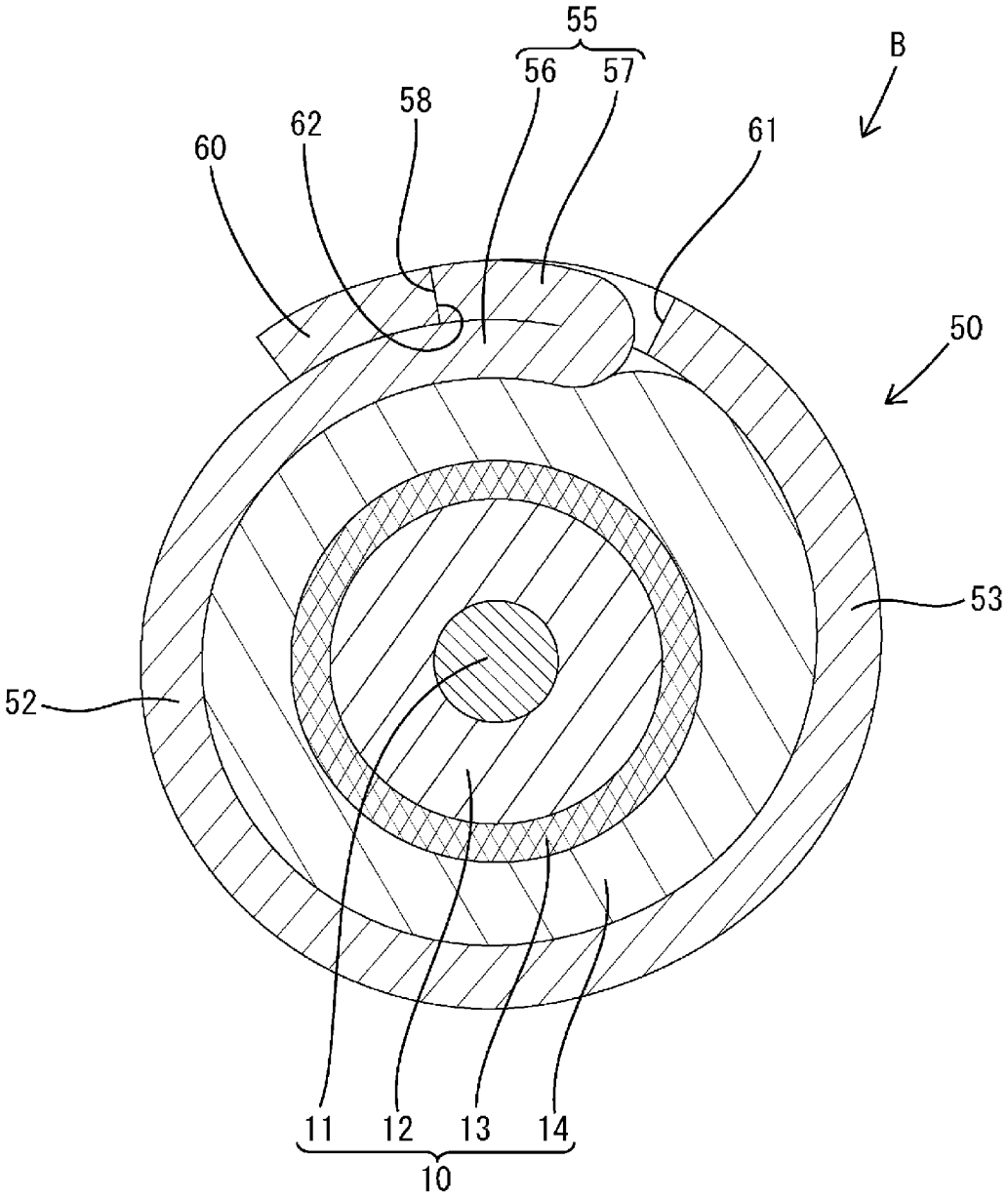


*FIG. 8*

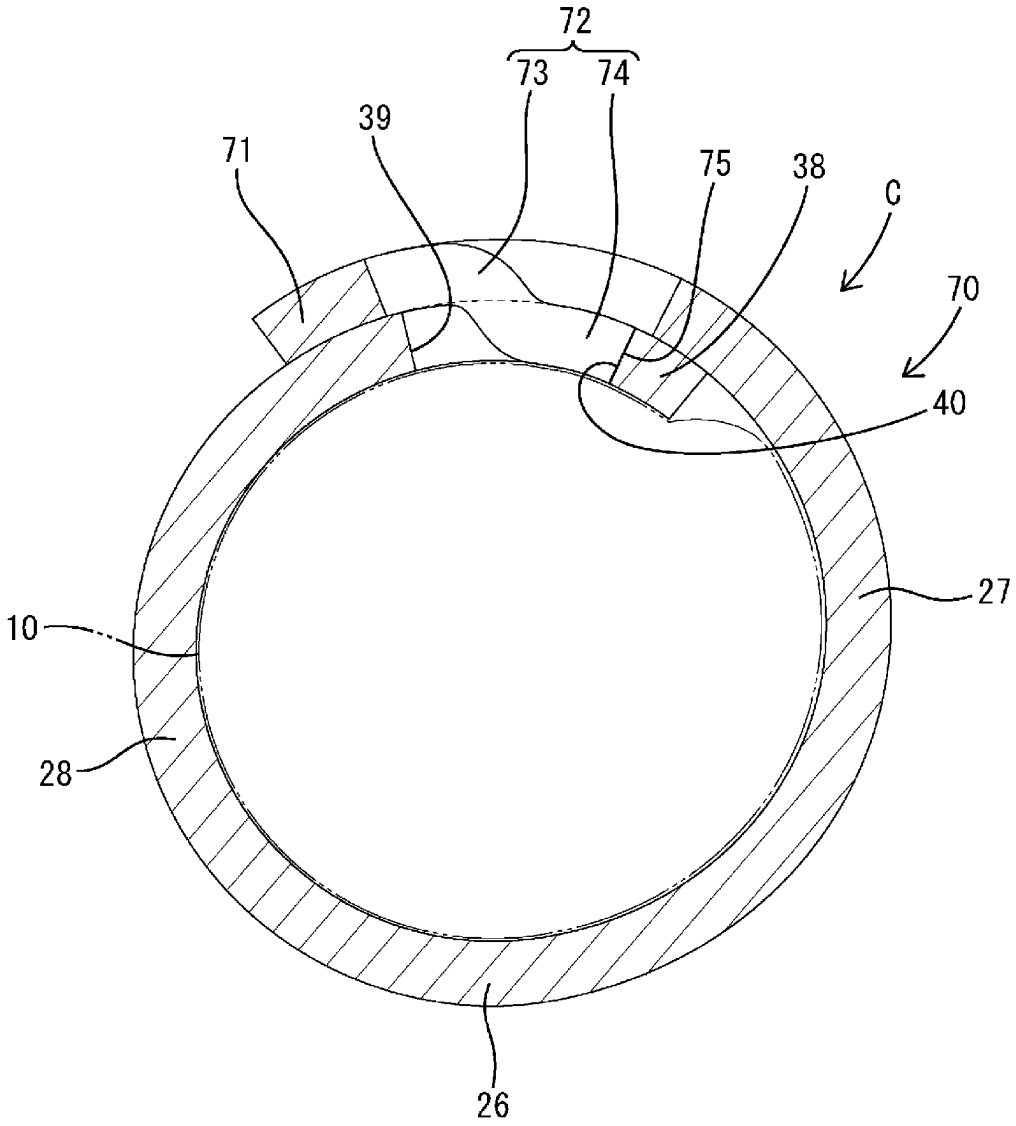


*FIG. 9*

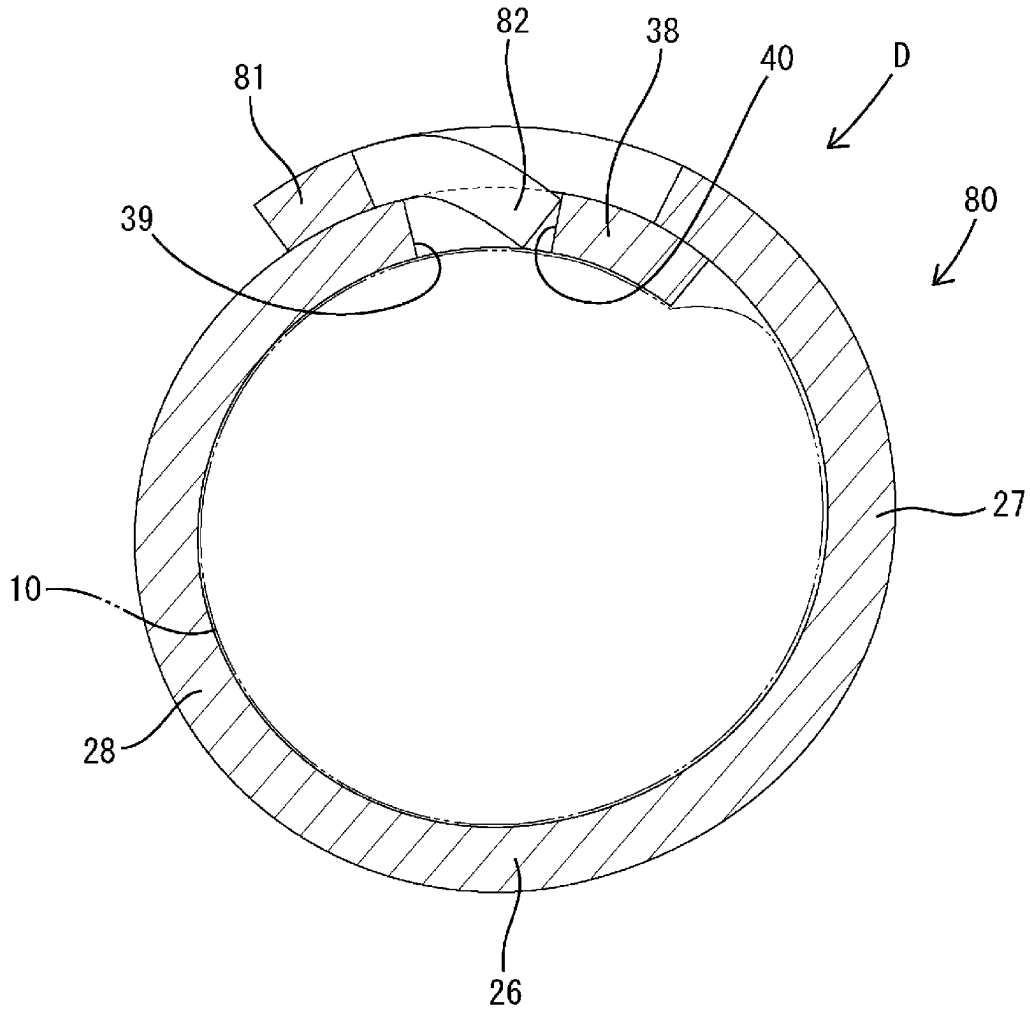


FIG. 10

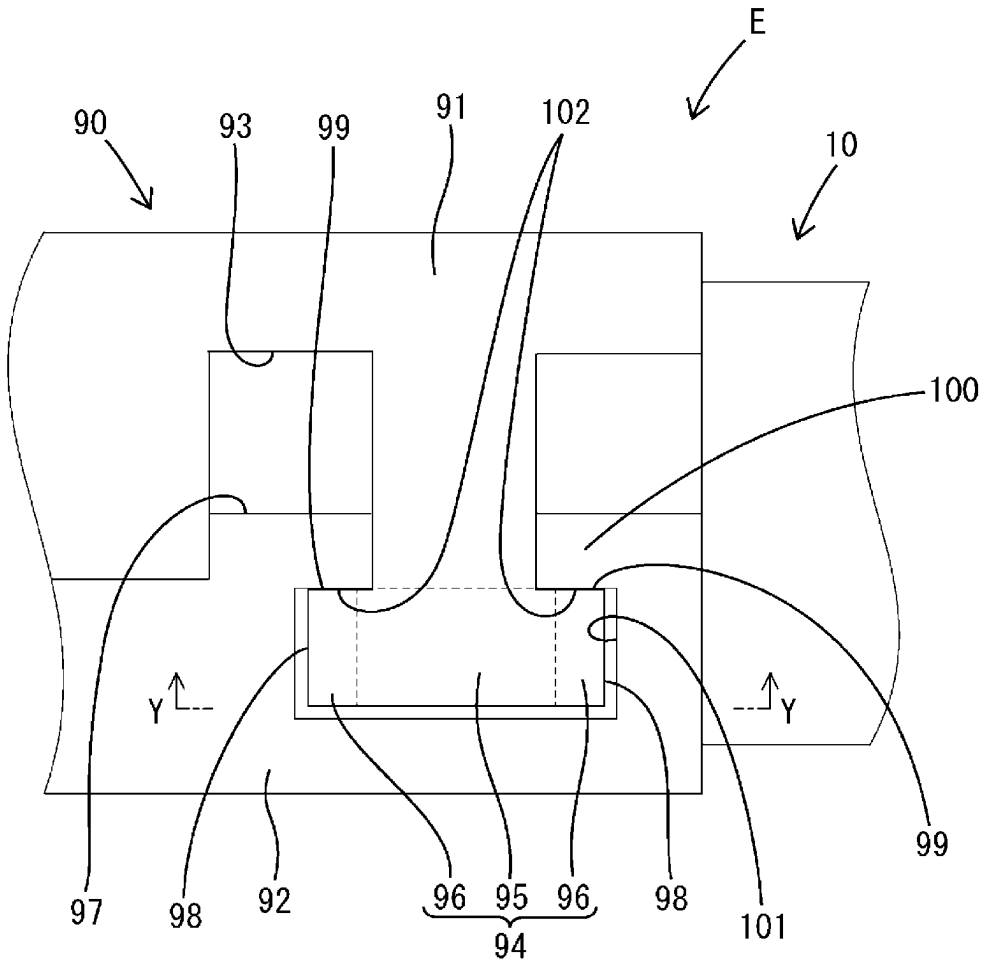

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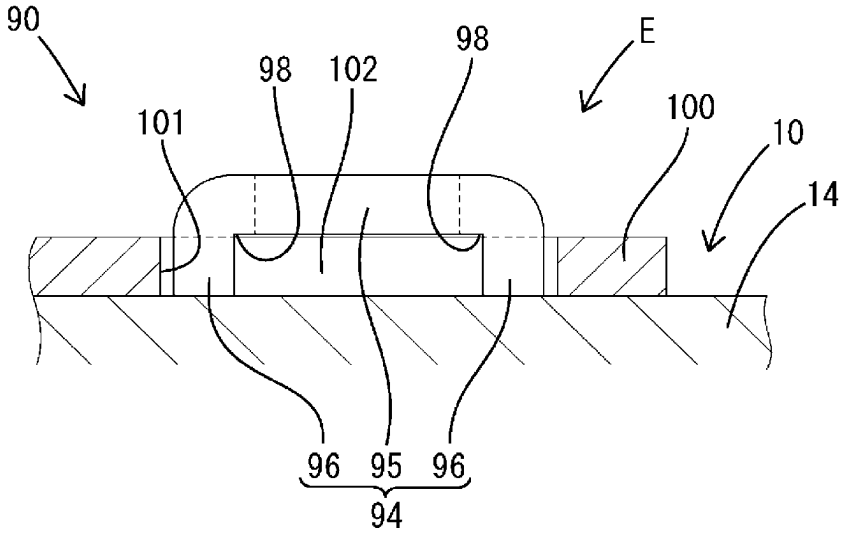
FIG. 11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# SHIELDED ELECTRICALLY CONDUCTIVE PATH

## CROSS REFERENCE TO RELATED APPLICATIONS

This application is a national phase of PCT application No. PCT/JP2021/017320, filed on 6 May 2021, which claims priority from Japanese patent application No. 2020-092133, filed on 27 May 2020, all of which are incorporated herein by reference.

## TECHNICAL FIELD

The present disclosure relates to a shielded electrically conductive path.

## BACKGROUND

Patent Document 1 discloses a structure for crimping a U-shaped crimp portion formed in an outer conductor terminal to the outer periphery of a shield conductor of a shielded cable. A first hook-like piece bent into a folded state is formed on one end part of the crimp portion, and a second hook-like piece bent into a folded state is formed on the other end part of the crimp portion. With the crimp portion crimped to the shielded cable, the expansive deformation of the crimp portion is prevented by the engagement of the first and second hook-like pieces.

## PRIOR ART DOCUMENT

### Patent Document

Patent Document 1: JP 2014-060105 A

## SUMMARY OF THE INVENTION

### Problems to be Solved

Since the first hook-like piece in the folded state and the second hook-like piece in the folded state are engaged to overlap in four layers in a radial direction, there is a problem that a crimped part by the crimp portion is enlarged in the radial direction.

A shielded electrically conductive path of the present disclosure was completed on the basis of the above situation and aims to reduce a diameter.

### Means to Solve the Problem

The present disclosure is directed to a shielded electrically conductive path with a shielded cable configured such that a core wire is surrounded with a shield layer, and a shield terminal including an inner conductor to be connected to the core wire and an outer conductor formed with a crimping portion in the form of an open barrel, the crimping portion including a first crimp portion formed with a projection-like first locking portion and a second crimp portion formed with a second locking portion, the crimping portion being crimped to an outer surface of the shield layer with the first locking portion locked to the second locking portion, and a locking margin of the first locking portion and the second locking portion in a radial direction being within a plate thickness range of the second crimp portion.



### Effect of the Invention

According to the present disclosure, it is possible to reduce a diameter.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view of a shielded electrically conductive path of a first embodiment.

FIG. **2** is a side view in section of the shielded electrically conductive path.

FIG. **3** is a section along X-X of FIG. **1**.

FIG. **4** is a perspective view showing the form of a crimping portion before being crimped.

FIG. **5** is a development of the crimping portion.

FIG. **6** is a perspective view showing the form of a crimping portion before being crimped in a second embodiment.

FIG. **7** is a section along X-X of a shielded electrically conductive path of the second embodiment.

FIG. **8** is a section along X-X of a shielded electrically conductive path of a third embodiment.

FIG. **9** is a section along X-X of a shielded electrically conductive path of a fourth embodiment.

FIG. **10** is a partial plan view of a shielded electrically conductive path of a fifth embodiment.

FIG. **11** is a section along Y-Y of FIG. **10**.

## DETAILED DESCRIPTION TO EXECUTE THE INVENTION

### Description of Embodiments of Present Disclosure

First, embodiments of the present disclosure are listed and described.

(1) The shielded electrically conductive path of the present disclosure is provided with a shielded cable configured such that a core wire is surrounded with a shield layer, and a shield terminal including an inner conductor to be connected to the core wire and an outer conductor formed with a crimping portion in the form of an open barrel, the crimping portion including a first crimp portion formed with a projection-like first locking portion and a second crimp portion formed with a second locking portion, the crimping portion being crimped to an outer surface of the shield layer with the first locking portion locked to the second locking portion, and a locking margin of the first locking portion and the second locking portion in a radial direction being within a plate thickness range of the second crimp portion. Since the locking margin of the first locking portion and the second locking portion in the radial direction is within the plate thickness range of the second crimp portion in the shielded electrically conductive path of the present disclosure, a diameter can be reduced as compared to the case where the locking margin of the first locking portion and the second locking portion in the radial direction is secured outside plate thickness ranges of the first and second crimp portions.

(2) Preferably in (1), the first locking portion is formed by bending a tip part of the first crimp portion into a folded state. According to this configuration, locking strength is high as compared to a first locking portion formed by bending a tip edge part of the first crimp portion at a right angle.

(3) Preferably in (1), the first locking portion is formed by cutting and raising a part of the first crimp portion in a plate thickness direction of the first crimp portion. According to this configuration, manufacturing cost can be reduced as compared to the case where the first locking portion is formed by bending a part flush with and extending from an outer peripheral edge of the first crimp portion.

(4) Preferably in (1), the first locking portion is formed by bending the first crimp portion along a folding line extending in a circumferential direction. According to this configuration, since the first locking portion has high rigidity against an external force in the circumferential direction, it is possible to prevent the expansive deformation of the crimping portion due to the deformation of the first locking portion.

(5) Preferably, the first crimp portion is layered on an outer peripheral side of the first crimp portion. According to this configuration, since a locked part of the first locking portion to the second locking portion is not exposed on the outer peripheral surface of the second crimp portion, the locked part of the first locking portion to the second locking portion can be prevented from being separated from the second locking portion due to the interference of an external matter.

(6) Preferably, the first crimp portion and the second crimp portion are formed with displacement restricting portions capable of restricting relative displacements of the first crimp portion and the second crimp portion in an axial direction by coming into contact with each other. According to this configuration, since relative displacements of the first and second crimp portions in the axial direction are prevented by the displacement restricting portions, a locked state of the first and second locking portions can be maintained.

## DETAILS OF EMBODIMENTS OF PRESENT DISCLOSURE

### First Embodiment

A first specific embodiment of the present disclosure is described below with reference to FIGS. **1** to **5**. Note that the present invention is not limited to these illustrations and is intended to be represented by claims and include all changes in the scope of claims and in the meaning and scope of equivalents. In this embodiment, a left side in FIGS. **1** and **2** is defined as a front side concerning a front-rear direction. Upper and lower sides shown in FIGS. **2** and **3** are directly defined as upper and lower sides concerning a vertical direction.

A shielded electrically conductive path A of the first embodiment is provided with a shielded cable **10**, a sleeve **15** externally fit to the shielded cable **10** and a shield terminal **20** connected to a front end part of the shielded cable **10** using the sleeve **15**. The shielded cable **10** is such that a core wire **11** is surrounded with an insulation coating **12**, a tubular shield layer **13** is overlapped on the outer periphery of the insulation coating **12** and the outer periphery of the shield layer **13** is surrounded with a sheath **14**.

A front end part of the shielded cable **10** is arranged to align an axial direction with the front-rear direction. In the following description, the front-rear direction and the axial direction are used as synonyms. As shown in FIG. **2**, the sheath **14** and the insulation coating **12** are removed to expose the core wire **11** forward of the insulation coating **12** and the sheath **14** is removed to expose the shield layer **13**. The electrically conductive and round tubular sleeve **15** made of metal or the like is externally fit to the outer periphery of the shield layer **13**. A front end part of the shield layer **13** is folded rearward to cover the outer periphery of the sleeve **15**.

The shield terminal **20** includes an inner conductor **21** connected to a front end part of the core wire **11**, a dielectric **22** accommodating the inner conductor **21** and an outer conductor **23** mounted on the dielectric **22** while surrounding the outer periphery of the dielectric **22**. The outer conductor **23** includes a body portion **24** in the form of a rectangular tube constituting a front end part of the outer conductor **23** and a hollow cylindrical crimping portion **25** connected to the rear end of the body portion **24** and constituting a rear end part of the outer conductor **23**. An axis of the outer conductor **23** and that of the shielded cable **10** are coaxial and oriented in the front-rear direction. The inner conductor **21** and the dielectric **22** are accommodated in the body portion **24**.

The crimping portion **25** is a part for fixing the outer conductor **23** to the outer periphery of the shielded cable **10**. The crimping portion **25** includes a base plate portion **26** extending rearward from the rear end of the body portion **24**, a first crimp portion **27** extending in one direction along a circumferential direction from the base plate portion **26** and a second crimp portion **28** extending in a direction opposite to the first crimp portion **27** along the circumferential direction from the base plate portion **26**. As shown in FIG. **4**, in a state where the crimping portion **25** is not crimped to the shielded cable **10**, the crimping portion **25** has such a tapered shape to gradually increase a diameter from a front end toward a rear end. A first extending end edge part **29**, which is a tip edge part in an extending direction of the first crimp portion **27**, and a second extending end edge part **30**, which is a tip edge part in the extending direction of the second crimp portion **28**, are separated in the circumferential direction.

A first locking portion **31** and a first displacement restricting portion **35** are formed on the first extending end edge part **29**. The first locking portion **31** is arranged in a rear end part of the first extending end edge part **29**. The first locking portion **31** includes a base portion **32** projecting in the circumferential direction from a rear end part of the extending end edge part **29** toward the second extending end edge part **30**, and a folded portion **33** folded in a direction opposite to the circumferential direction from a projecting end of the base portion **32**. The base portion **32** is flush and continuous with the first crimp portion **27**. In other words, the outer peripheral surface of the base portion **32** and that of the first crimp portion **27** are smoothly continuous, and the inner peripheral surface of the base portion **32** and that of the first crimp portion **27** are smoothly continuous. Therefore, no step is present in the radial direction at a boundary part between the base portion **32** and the first crimp portion **27**.

The folded portion **33** is arranged in a state held in close contact with the inner peripheral surface of the base portion **32** or to proximately face the inner peripheral surface of the base portion **32**. A width in the axial direction of the folded portion **33** is equal to that of the base portion **32**. The folded portion **33** is formed to project further radially inward than the inner peripheral surfaces of the base portion **32** and the first crimp portion **27**. The tip surface of the folded portion **33** is arranged radially inwardly of the first crimp portion **27**, facing the first crimp portion **27** and the base plate portion **26** in the radial direction, and functions as a first locking surface **34** orthogonal to the circumferential direction. The

first locking portion **31** is in the form of a projection projecting radially inward from the first crimp portion **27**.

The first displacement restricting portion **35** is formed in a region of the first extending end edge part **29** forward of the first locking portion **31**. The first displacement restricting portion **35** includes a pair of first protrusions **36** spaced apart in the front-rear direction and a first recess **37** formed between the both first protrusions **36**. The first protrusions **36** are formed to project from the first extending end edge part **29** toward the second extending end edge part **30**. The first recess **37** is formed by recessing the first extending end edge part **29**.

A second locking portion **38** and a second displacement restricting portion **41** are formed on the second extending end edge part **30**. The second locking portion **38** is arranged in a rear end part of the second extending end edge part **30**. The second locking portion **38** projects in the circumferential direction from the rear end part of the second extending end edge part **30** toward the first extending end edge part **29**. The second locking portion **38** is flush and continuous with the second crimp portion **28**. In other words, the outer peripheral surface of the second locking portion **38** and that of the second crimp portion **28** are smoothly continuous, and the inner peripheral surface of the second locking portion **38** and that of the second crimp portion **28** are smoothly continuous. Therefore, no step is present in the radial direction at a boundary part between the second locking portion **38** and the second crimp portion **28**.

The second locking portion **38** includes a rectangular opening **39**. The opening **39** is cut to penetrate through the second crimp portion **28** from an outer peripheral surface to an inner peripheral surface. The inner peripheral surface of the opening **39** has two inner side surfaces spaced apart in the circumferential direction of the crimping portion **25** and a front surface and a rear surface spaced apart in the axial direction. Out of the two inner side surfaces, the inner side surface closer to the first extending end edge part **29** functions as a second locking surface **40**. The second locking surface **40** is arranged only within plate thickness ranges of the second crimp portion **28** and the second locking portion **38**. The second locking surface **40** is a surface orthogonal to the circumferential direction and facing toward the second crimp portion **28** and the base plate portion **26** in the circumferential direction.

The second displacement restricting portion **41** is formed in a region of the second extending end edge part **30** forward of the second locking portion **38**. The second displacement restricting portion **41** includes a pair of second recesses **42** spaced apart in the front-rear direction and a second protrusion **43** formed between the both second recesses **42**. The second recesses **42** are formed by recessing the second extending end edge part **30**. The second protrusion **43** is formed to project from the second extending end edge part **30** toward the first extending end edge part **29**.

The first crimp portion **27** is formed with a stopper **44** by cutting and raising a part of the first crimp portion **27** to extend radially inward and obliquely forward. The stopper **44** of the first crimp portion **27** is arranged at a position closer to the base plate portion **26** than the first extending end edge part **29**. The front end of the stopper **44** of the first crimp portion **27** is located forward of the first locking portion **31**. The second crimp portion **28** is formed with a stopper **44** by cutting and raising a part of the second crimp portion **28** to extend radially inward and obliquely forward. The stopper **44** of the second crimp portion **28** is arranged at a position closer to the base plate portion **26** than the second extending end edge part **30**. The front end of the stopper **44** of the second crimp portion **28** is located forward of the second locking portion **38**.

The crimping portion **25** is crimped to the shielded cable **10** by setting the crimping portion **25** and the front end part of the shielded cable **10** in an applicator (not shown). In a crimping step, the first and second crimp portions **27**, **28** are reduced in diameter and deformed and crimped to wind around the outer periphery of the shielded cable **10**. With the crimping portion **25** crimped to the shielded cable **10**, rear end parts of the first and second crimp portions **27**, **28** where the first and second locking portions **31**, **38** are formed are externally fit to a front end part of the sheath **14**.

In a part of the crimping portion **25** crimped to the sheath **14**, the first extending end edge part **29** is overlapped on the outer peripheral surfaces of the second extending end edge part **30** and the second locking portion **38** as shown in FIG. **3**. In particular, a base end part of the first locking portion **31** closest to the base plate portion **26** in the circumferential direction is overlapped on the outer periphery of a tip part of the second locking portion **38** most distant from the base plate portion **26** in the circumferential direction. The folded portion **33** is accommodated in the opening **39**, and the first and second locking surfaces **34**, **40** are in surface contact with each other in the circumferential direction. By a locking action achieved by the contact of the both locking surfaces **34**, **40**, the first and second crimp portions **27**, **28** are prevented from being relatively displaced to be separated in the circumferential direction, and the crimping portion **25** is reliably fixed to the outer periphery of the shielded cable **10**.

Regions of the first and second crimp portions **27**, **28** forward of the first and second locking portions **31**, **38**, i.e. regions where the first and second displacement restricting portions **35**, **41** are formed, are externally fit to a region forward of the sheath **14** where the shield layer **13** is exposed. With the first protrusions **36** and the second recesses **42** fit and the first recess **37** and the second protrusion **43** fit, the first and second crimp portions **27**, **28** are crimped to the outer periphery of the shield layer **13**. By the fitting of the first protrusions **36** and the second recesses **42** and the fitting of the first recess **37** and the second protrusion **43**, the first and second crimp portions **27**, **28** are restricted from being relatively displaced in the axial direction.

The shielded electrically conductive path A of the first embodiment is provided with the shielded cable **10** configured such that the core wire **11** is surrounded with the shield layer **13**, and the shield terminal **20**. The shield terminal **20** includes the inner conductor **21** to be connected to the core wire **11** and the outer conductor **23** formed with the crimping portion **25** in the form of an open barrel. The crimping portion **25** includes the first crimp portion **27** formed with the projection-like first locking portion **31** and the second crimp portion **28** formed with the second locking portion **32**. The crimping portion **25** is crimped to the outer surface of the shield layer **13** with the first locking portion **31** locked to the second locking portion **32**. A locking margin of the first and second locking portions **31**, **32** in the radial direction, i.e. a locking range of the first and second locking surfaces **34**, **40** in the plate thickness directions of the both locking portions **31**, **38**, is limited within the plate thickness range of the second crimp portion **28** (second locking portion **38**).

If the locking margin of the first and second locking portions **31**, **38** is secured outside the plate thickness ranges of the first and second crimp portions **27**, **28** on an outer peripheral side of the shielded cable **10**, a three-layer laminated structure is formed in which a layer of the locking

margin of the both locking portions **31**, **38** is added to a layer of the first crimp portion **27** and a layer of the second crimp portion **28**. Thus, an outer diameter of the shielded electrically conductive path A increases.

In contrast, since the locking margin of the first and second locking portions **31**, **38** is secured within the plate thickness range of the second crimp portion **28** in the first embodiment, a two-layer laminated structure composed only of the first and second crimp portions **27**, **28** is formed on the outer periphery of the shielded cable **10**. Therefore, a reduction in the diameter of the shielded electrically conductive path A is realized in the crimped part of the shielded cable **10** and the crimping portion **25**. Since the first locking portion **31** is formed by bending the tip part of the first crimp portion **27** into a folded state, locking strength is high as compared to a first locking portion formed by bending a tip edge part of the first crimp portion **27** at a right angle.

The first extending end edge part **29** of the first crimp portion **27** is layered on an outer peripheral side of the second extending end edge part **30** of the second crimp portion **28**. According to this configuration, a locked part (folded portion **33** and first locking surface **34**) of the first locking portion **31** to the second locking portion **38** is not exposed on the outer peripheral surface of the second crimp portion **28**. Therefore, the locked part (folded portion **33** and first locking surface **34**) of the first locking portion **31** to the second locking portion **38** can be prevented from being separated from the second locking portion **38** (second locking surface **40**) due to the interference of an external matter.

The first crimp portion **27** is formed with the first displacement restricting portion **35**, and the second crimp portion **28** is formed with the second displacement restricting portion **41**. By the mutual contact of the first and second displacement restricting portions **35**, **41**, relative displacements of the first and second crimp portions **27**, **28** in the axial direction are restricted, wherefore the locked state of the first and second locking portions **31**, **38** can be maintained.

With the crimping portion **25** crimped to the shielded cable **10**, a pair of the stoppers **44** are arranged to come into contact with the sleeve **15** from behind or proximately face the sleeve **15** from behind. According to this arrangement, even if the shielded cable **10** is pulled rearward, the rear end of the sleeve **15** butts against the stoppers **44**, whereby a relative rearward displacement of the shielded cable **10** with respect to the shield terminal **20** can be prevented.

## Second Embodiment

A second specific embodiment of the present disclosure is described with reference to FIGS. **6** and **7**. A shielded electrically conductive path B of the second embodiment differs from the first embodiment in the configuration of a crimping portion **50**. Since the other configuration is the same as in the first embodiment, the same components are denoted by the same reference signs and structures, functions and effects thereof are not described.

The crimping portion **50** includes a base plate portion **51** extending rearward from the rear end of a body portion **24** of an outer conductor **23**, a first crimp portion **27** extending in one direction along a circumferential direction from the base plate portion **51** and a second crimp portion **53** extending in a direction opposite to the first crimp portion **52** along the circumferential direction from the base plate portion **51**. As shown in FIG. **6**, in a state where the crimping portion **50** is not crimped to a shielded cable **10**, the crimping portion **50** has such a tapered shape to gradually increase a diameter from a front end toward a rear end.

A first extending end edge part **54**, which is a tip edge part in an extending direction of the first crimp portion **52**, is formed with a first locking portion **55**. The first locking portion **55** includes a base portion **56** projecting in the circumferential direction from a rear end part of the extending end edge part **54** toward a second extending end edge part **59** of the second crimp portion **53**, and a folded portion **57** folded in a direction opposite to the circumferential direction from a projecting end of the base portion **56**. The base portion **56** is flush and continuous with the first crimp portion **52**.

The folded portion **57** is arranged in a state held in close contact with the inner peripheral surface of the base portion **56** or to proximately face the inner peripheral surface of the base portion **56**. The folded portion **57** is formed to project further radially outward than the inner peripheral surfaces of the base portion **56** and the first crimp portion **52**. The tip surface of the folded portion **57** is facing toward the first crimp portion **52** and the base plate portion **51** in the circumferential direction and functions as a first locking surface **58** orthogonal to the circumferential direction. The first locking portion **55** is in the form of a projection projecting radially outward from the first crimp portion **52**.

The second extending end edge part **59**, which is a tip edge part in an extending direction of the second crimp portion **53**, is formed with a second locking portion **60**. The second locking portion **60** extends in the circumferential direction from a rear end part of the second extending end edge part **59** toward the first extending end edge part **54**. The second locking portion **60** is flush and continuous with the second crimp portion **53**. The second locking portion **60** includes a rectangular opening **61**. The opening **61** is cut to penetrate through the second crimp portion **53** from an outer peripheral surface to an inner peripheral surface.

The inner peripheral surface of the opening **61** has two inner side surfaces spaced apart in the circumferential direction of the crimping portion **50** and a front surface **63** and a rear surface **64** spaced apart in an axial direction. Out of the two inner side surfaces, the inner side surface closer to the first extending end edge part **54** functions as a second locking surface **62**. The second locking surface **62** is arranged only within plate thickness ranges of the second crimp portion **53** and the second locking portion **60**, facing toward the second crimp portion **53** and the base plate portion **51** in the circumferential direction, and orthogonal to the circumferential direction.

With the crimping portion **50** crimped to the shielded cable **10**, rear end parts of the first and second crimp portions **52**, **53** where the first and second locking portions **52**, **60** are formed are externally fit to a front end part of a sheath **14**. As shown in FIG. **7**, the second locking portion **60** is overlapped on the outer peripheral surface of the first locking portion **55**. A tip part of the second locking portion **60** most distant from the base plate portion **51** in the circumferential direction is overlapped on the outer periphery of a base end part of the first locking portion **55** closest to the base plate portion **51** in the circumferential direction.

The folded portion **57** is accommodated in the opening **61**, and the first and second locking surfaces **58**, **62** are in surface contact with each other in the circumferential direction. By a locking action achieved by the contact of the both locking surfaces **58**, **62**, the first and second crimp portion **52**, **53** are prevented from being relatively displaced to be

separated in the circumferential direction and the crimping portion **50** is reliably fixed to the outer periphery of the shielded cable **10**.

A front edge part of the folded portion **57** is proximately facing the front surface **63** of the opening **61** from behind, and a rear edge part of the folded portion **57** is proximately facing the rear surface **64** of the opening **61** from front. If an external force for relatively displacing the first crimp portion **52** forward is applied to the first and second crimp portions **52**, **53**, the front edge part of the folded portion **57** comes into contact with the front surface **63** of the opening **61**, thereby preventing a relative displacement of the first crimp portion **52**. If an external force for relatively displacing the first crimp portion **52** rearward is applied to the first and second crimp portions **52**, **53**, the rear edge part of the folded portion **57** comes into contact with the rear surface **64** of the opening **61**, thereby preventing a relative displacement of the first crimp portion **52**.

## Third Embodiment

A third specific embodiment of the present disclosure is described with reference to FIG. **8**. A shielded electrically conductive path C of the third embodiment differs from the first embodiment in the configuration of a first locking portion **71** constituting a crimping portion **70**. Since the other configuration is the same as in the first embodiment, the same components are denoted by the same reference signs and structures, functions and effects thereof are not described.

The first locking portion **71** of the third embodiment includes a cut-and-raised piece **72** formed by cutting a part of a first crimp portion **27** (first locking portion **71**) and raising the cut part radially inwardly. The cut-and-raised piece **72** includes a bent portion **73** and a butting portion **74**. The bent portion **73** projects in a circumferential direction from a tip part of the first locking portion **71** and is bent to project further radially inward than the tip part of the first locking portion **71**. The butting portion **74** is formed to extend in the circumferential direction from the projecting end of the bent portion **73** toward a base plate portion **26**. A radially inward projection dimension of the butting portion **74** from the first locking portion **71** is equal to a plate thickness of a second locking portion **38** of a second crimp portion **28**. The extending end surface of the butting portion **74** functions as a first locking surface **75** orthogonal to the circumferential direction.

With the crimping portion **70** crimped to a shielded cable **10**, the first locking portion **71** is overlapped on the outer periphery of the second locking portion **38** and a part of the bent portion **73** and the entire butting portion **74** are accommodated in an opening **39** of the second locking portion **38**. The first locking surface **75** butts against a second locking surface **40** of the opening **39** in the circumferential direction. By this butting, the first and second crimp portions **27**, **28** are prevented from being expanded and deformed in the circumferential direction and a crimped state of the crimping portion **70** to the shielded cable **10** is maintained.

The first locking portion **71** is formed by cutting and raising a part of the first crimp portion **27** in a plate thickness direction of the first crimp portion **27**. The shielded electrically conductive path C of the third embodiment can reduce manufacturing cost as compared to the case where a part flush with and extending from the outer peripheral edge of the first crimp portion **27** is bent.

## Fourth Embodiment

A fourth specific embodiment of the present disclosure is described with reference to FIG. **9**. A shielded electrically conductive path D of the fourth embodiment differs from the first embodiment in the configuration of a first locking portion **81** constituting a crimping portion **80**. Since the other configuration is the same as in the first embodiment, the same components are denoted by the same reference signs and structures, functions and effects thereof are not described.

The first locking portion **81** of the fourth embodiment includes a cut-and-raised piece **82** formed by cutting a part of a first crimp portion **27** and raising the cut part radially inwardly. The cut-and-raised piece **82** projects in a circumferential direction from a tip part of the first locking portion **81** toward a base plate portion **26** and is bent to project further radially inward than the tip part of the first locking portion **81**. A radially inward projection dimension of the cut-and-raised piece **82** from the first locking portion **81** is equal to a plate thickness of a second locking portion **38** of a second crimp portion **28**.

With the crimping portion **80** crimped to a shielded cable **10**, the first locking portion **81** is overlapped on the outer periphery of the second locking portion **38** and a part of the cut-and-raised piece **82** is accommodated in an opening **39** of the second locking portion **38**. The projecting end edge of the cut-and-raised piece **82** butts against a second locking surface **40** of the opening **39** while being held in line contact with the second locking surface **40**. By this butting, the first and second crimp portions **27**, **28** are prevented from being expanded and deformed in the circumferential direction and a crimped state of the crimping portion **80** to the shielded cable **10** is maintained.

The first locking portion **81** is formed by cutting and raising a part of the first crimp portion **27** in a plate thickness direction of the first crimp portion **27**. The shielded electrically conductive path D of the fourth embodiment can reduce manufacturing cost as compared to the case where a part flush with and extending from the outer peripheral edge of the first crimp portion **27** is bent.

## Fifth Embodiment

A fifth specific embodiment of the present disclosure is described with reference to FIGS. **10** to **11**. A shielded electrically conductive path E of the fifth embodiment differs from the first embodiment in the configuration of a crimping portion **90**. Since the other configuration is the same as in the first embodiment, the same components are denoted by the same reference signs and structures, functions and effects thereof are not described.

The crimping portion **90** of the fifth embodiment includes a base plate portion (not shown), a first crimp portion **91** extending in one direction along a circumferential direction from the base plate portion and a second crimp portion **92** extending in a direction opposite to the first crimp portion **91** along the circumferential direction from the base plate portion.

A first extending end edge part **93** of the first crimp portion **91** is formed with a first locking portion **94**. The first locking portion **94** includes a base portion **95** and a pair of front and rear bent portions **96**. The base portion **95** is formed to project in the circumferential direction from a rear end part of the first extending end edge part **93** toward the second crimp portion **92**. The base portion **95** is flush and continuous with the first crimp portion **91**.

The pair of bent portions **96** are formed by bending front and rear end parts of the base portion **95** at a right angle. A boundary line between the base portion **95** and the bent portion **96**, i.e. a folding line **98** of the bent portion **96**,

extends along the circumferential direction. The bent portion **96** is formed to project further radially inward than the inner peripheral surfaces of the base portion **95** and the first crimp portion **91**. A radial projection dimension of the bent portion **86** is equal to plate thicknesses of the second crimp portion **92** and a second locking portion **100**. A surface of the bent portion **96** facing the base plate portion in the circumferential direction functions as a first locking surface **99** orthogonal to the circumferential direction. The first locking portion **94** is in the form of a projection projecting radially inward from the first crimp portion **91**.

A second extending end edge part **97** of the second crimp portion **92** is formed with the second locking portion **100**. The second locking portion **100** projects in the circumferential direction from a rear end part of the second extending end edge part **97** toward the first crimp portion **91**. The second locking portion **100** is flush and continuous with the second crimp portion **92**. The second locking portion **100** includes a rectangular opening **101**. The opening **101** is cut to penetrate through the second crimp portion **92** from an outer peripheral surface to an inner peripheral surface. The inner peripheral surface of the opening **101** has two inner side surfaces spaced apart in the circumferential direction of the crimping portion **90** and a front surface and a rear surface spaced apart in an axial direction. Out of the two inner side surfaces, the inner side surface closer to the first extending end edge part **93** functions as a second locking surface **102**. The second locking surface **102** is arranged only within plate thickness ranges of the second crimp portion **92** and the second locking portion **100**, facing toward the second crimp portion **92** and the base portion **95** in the circumferential direction, and orthogonal to the circumferential direction.

In a part of the crimping portion **90** crimped to a sheath **14**, the first locking portion **94** is overlapped on the outer peripheral surface of the second locking portion **100**. The both front and rear bent portions **96** are accommodated in the opening **101**, and the first and second locking surfaces **99**, **102** are in surface contact with each other in the circumferential direction. By a locking action achieved by the contact of the both locking surfaces **99**, **102**, the first and second crimp portion **91**, **92** are held in a state not to be separated in the circumferential direction. In this way, the crimping portion **90** is reliably fixed to the outer periphery of a shielded cable. Since being formed by bending the first crimp portion **91** along the folding lines **98** extending in the circumferential direction, the first locking portion **94** has high rigidity against an external force in the circumferential direction. Therefore, the expansive deformation of the crimping portion **90** due to the deformation of the first locking portion **94** can be prevented.

## Other Embodiments

The present invention is not limited by the above described and illustrated embodiments, but is represented by claims. The present invention is intended to include all changes in the scope of claims and in the meaning and scope of equivalents and also include the following embodiments.

Although the first and second crimp portions are formed with the displacement restricting portions in the above first embodiment, the first embodiment may not include the displacement restricting portions.

The displacement restricting portions of the above first embodiment may be formed in the second to fifth embodiments.

Although the second locking portion is in the form of a window hole having an opening edge continuous over an entire periphery in the above first to fifth embodiments, the second locking portion may be cut to be open in an outer edge part of the second crimp portion.

## LIST OF REFERENCE NUMERALS

A . . . shielded electrically conductive path
B . . . shielded electrically conductive path
C . . . shielded electrically conductive path
D . . . shielded electrically conductive path
E . . . shielded electrically conductive path
**10** . . . shielded cable
**11** . . . core wire
**12** . . . insulation coating
**13** . . . shield layer
**14** . . . sheath
**15** . . . sleeve
**20** . . . shield terminal
**21** . . . inner conductor
**22** . . . dielectric
**23** . . . outer conductor
**24** . . . body portion
**25** . . . crimping portion
**26** . . . base plate portion
**27** . . . first crimp portion
**28** . . . second crimp portion
**29** . . . first extending end edge part
**30** . . . second extending end edge part
**31** . . . first locking portion
**32** . . . base portion
**33** . . . folded portion
**34** . . . first locking surface
**35** . . . first displacement restricting portion
**36** . . . first protrusion
**37** . . . first recess
**38** . . . second locking portion
**39** . . . opening
**40** . . . second locking surface
**41** . . . second displacement restricting portion
**42** . . . second recess
**43** . . . second protrusion
**44** . . . stopper
**50** . . . crimping portion
**51** . . . base plate portion
**52** . . . first crimp portion
**53** . . . second crimp portion
**54** . . . first extending end edge part
**55** . . . first locking portion
**56** . . . base portion
**57** . . . folded portion
**58** . . . first locking surface
**59** . . . second extending end edge part
**60** . . . second locking portion
**61** . . . opening
**62** . . . second locking surface
**63** . . . front surface of opening
**64** . . . rear surface of opening
**70** . . . crimping portion
**71** . . . first locking portion
**72** . . . cut-and-raised piece
**73** . . . bent portion
**74** . . . butting portion
**75** . . . first locking surface
**80** . . . crimping portion
**81** . . . first locking portion
**82** . . . cut-and-raised piece
**90** . . . crimping portion

**91** . . . first crimp portion
**92** . . . second crimp portion
**93** . . . first extending end edge part
**94** . . . first locking portion
**95** . . . base portion
**96** . . . bent portion
**97** . . . second extending end edge part
**98** . . . folding line
**99** . . . first locking surface
**100** . . . second locking portion
**101** . . . opening
**102** . . . second locking surface

What is claimed is:

**1**. A shielded electrically conductive path, comprising:

a shielded cable configured such that a core wire is surrounded with a shield layer and the shield layer is surrounded with a sheath; and

a shield terminal including an inner conductor to be connected to the core wire and an outer conductor formed with a crimping portion in the form of an open barrel,

the sheath being removed and the shield layer being exposed only in a region forward of a front end of the sheath in a front end part of the shielded cable,

the crimping portion including a first crimp portion formed with a projection-like first locking portion and a second crimp portion formed with a second locking portion,

the first locking portion being formed in a rear end part of the first crimp portion,

the second locking portion being formed in a rear end part of the second crimp portion,

regions of the first crimp portion and the second crimp portion forward of the first locking portion and the second locking portion being externally fit to an exposed part of the shield layer and the first locking portion and the second locking portion being locked in a circumferential direction while being externally fit to an outer peripheral surface of the sheath with the crimping portion crimped to the shielded cable, and

a locking margin of the first locking portion and the second locking portion in a radial direction being within a plate thickness range of the second crimp portion.

**2**. The shielded electrically conductive path of claim **1**, wherein the first locking portion is formed by bending a tip part of the first crimp portion into a folded state.

**3**. The shielded electrically conductive path of claim **1**, wherein the first locking portion is formed by cutting and raising a part of the first crimp portion in a plate thickness direction of the first crimp portion.

**4**. The shielded electrically conductive path of claim **1**, wherein the first locking portion is formed by bending the first crimp portion along a folding line extending in a circumferential direction.

**5**. The shielded electrically conductive path of claim **1**, wherein the first crimp portion is layered on an outer peripheral side of the first crimp portion.

**6**. The shielded electrically conductive path of claim **1**, wherein

the first crimp portion and the second crimp portion are formed with displacement restricting portions capable of restricting relative displacements of the first crimp portion and the second crimp portion in an axial direction by coming into contact with each other, and

the displacement restricting portions are externally fit to the region forward of the sheath where the shield layer is exposed.

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