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Pertuit

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[54] **ELECTRIC CABLE CONNECTOR**

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Related U.S. Patent Documents

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Appl. No.: **116,761**
Filed: **Feb. 19, 1971**

[52] **U.S. Cl.** ..... **339/213 R;** 339/242; 339/272 A

[51] **Int. Cl.²** **H01R 13/50**

[58] **Field of Search** ..... 339/213 R, 74 R, 241, 339/242, 248, 249 R, 249 A, 250, 253, 254, 263 R, 266, 200 R, 201, 205, 272 R, 272 A

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[57] **ABSTRACT**

An electric cable connector which will accept cable ends of the type having a connector lug secured thereto. The connector lugs are clamped into a conducting body portion which is covered by a cylindrical insulating cover detachably secured thereon. In one form of the invention the body is solid and has opposed slots for receiving the lugs. In the other form of the invention the body is split and is forced together by rotating the insulator sleeve with respect to the body. In another form of the invention the body is split and is clamped together by a transverse bolt to clamp the lugs therebetween.

5 Claims, 11 Drawing Figures

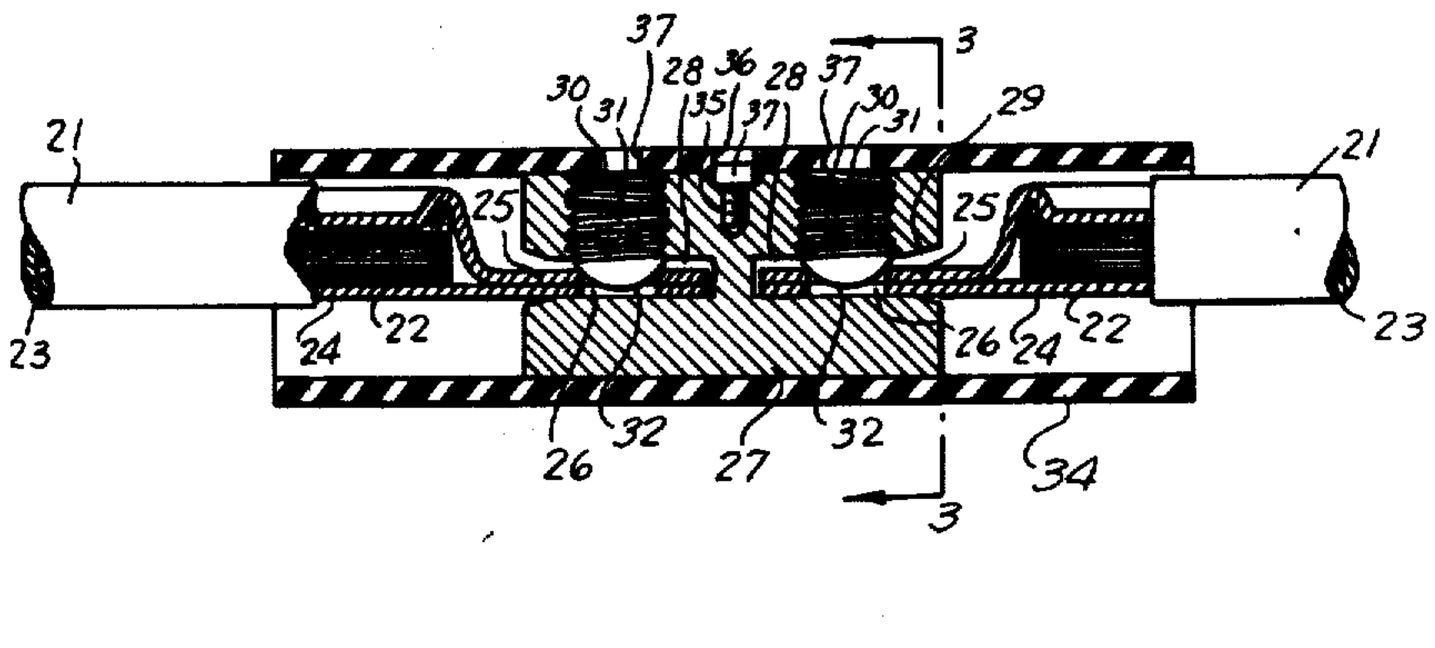


FIG. 1.

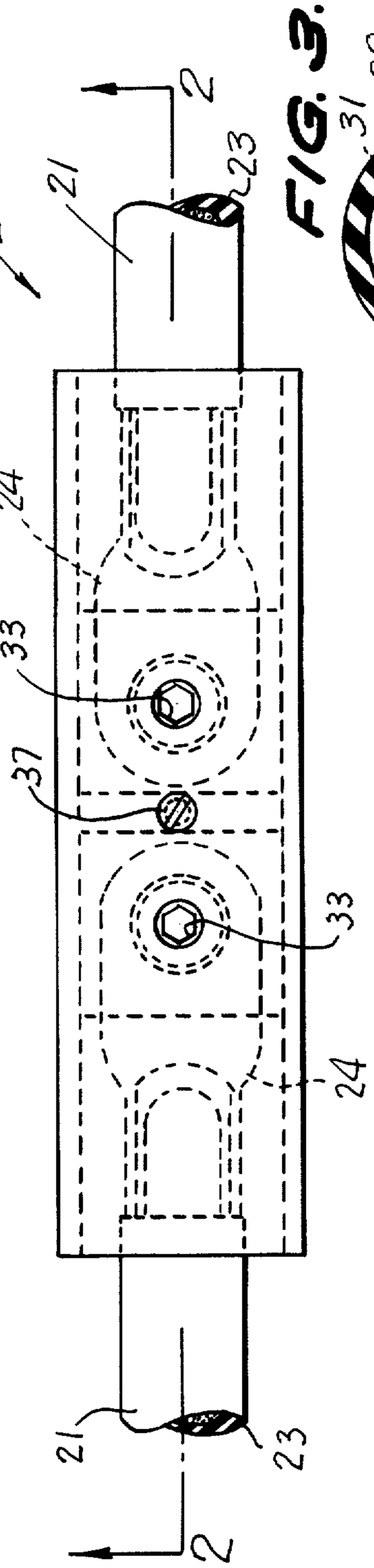


FIG. 3.

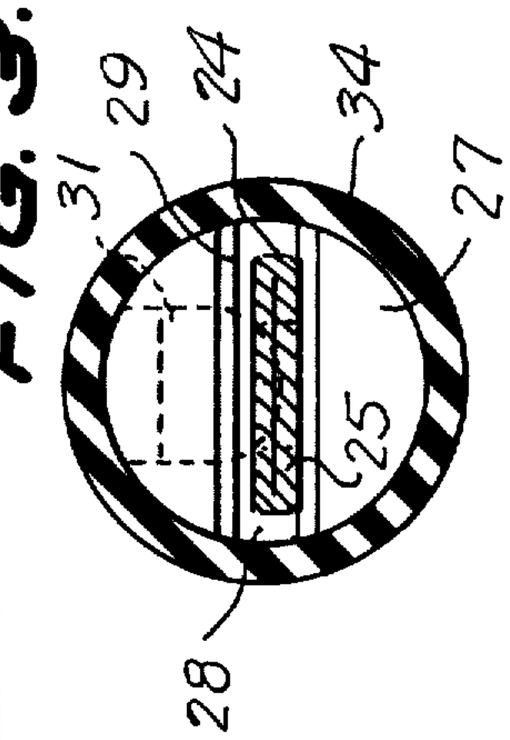
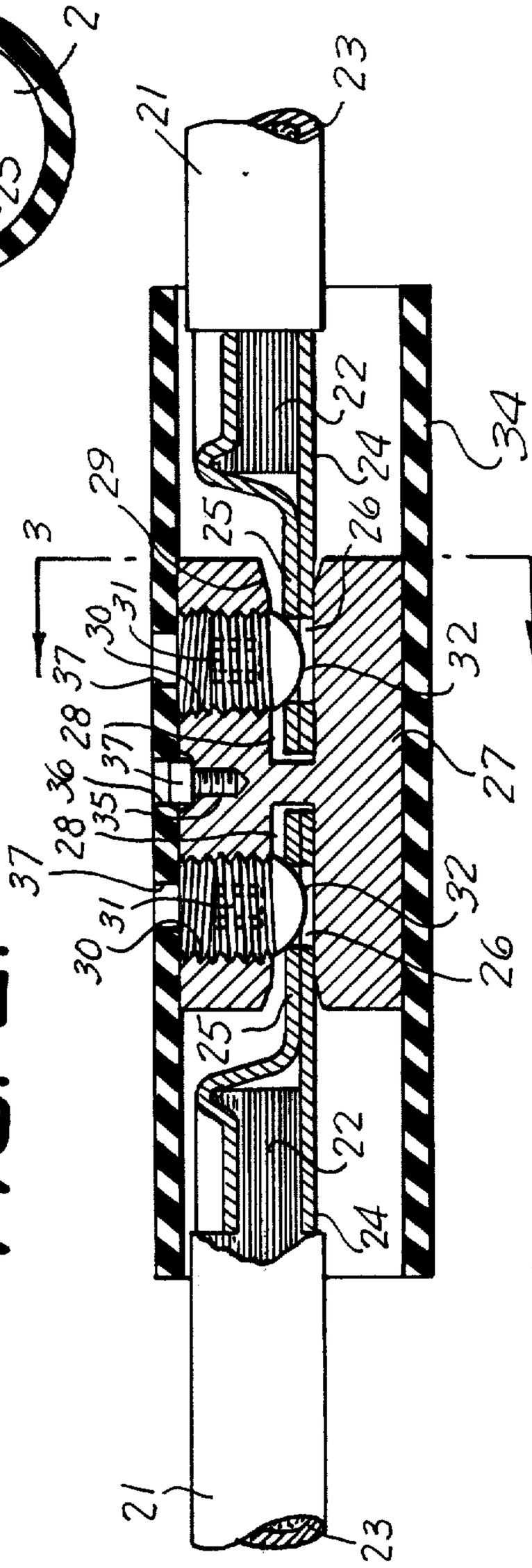


FIG. 2.



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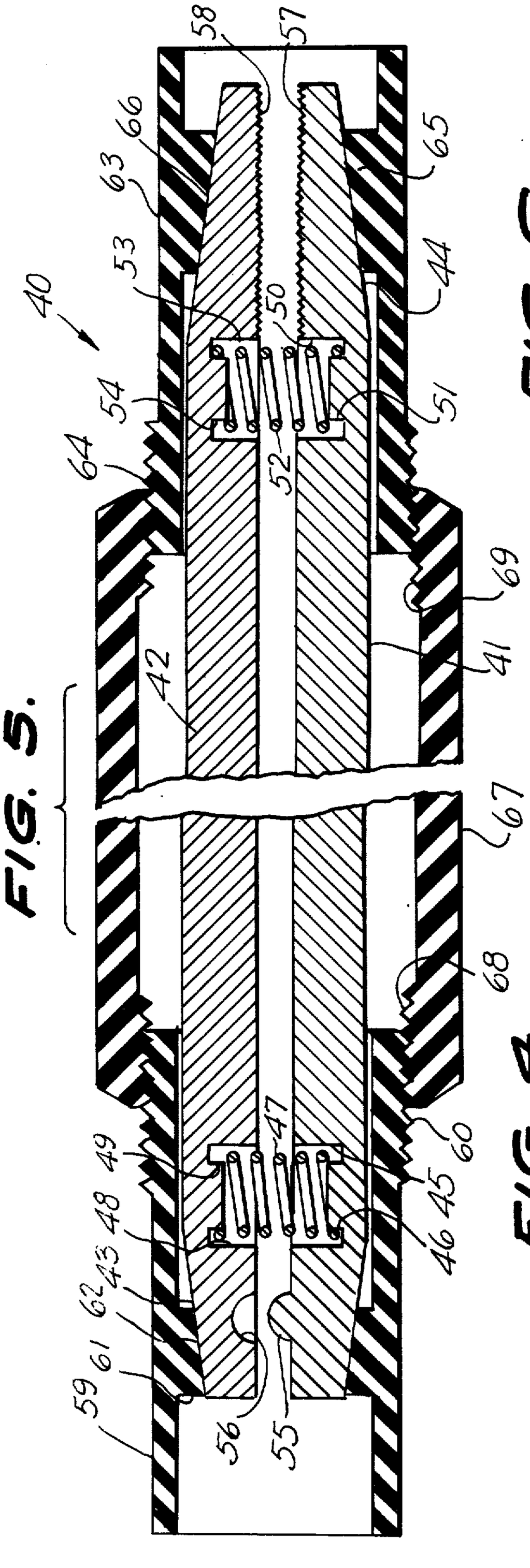

FIG. 5.

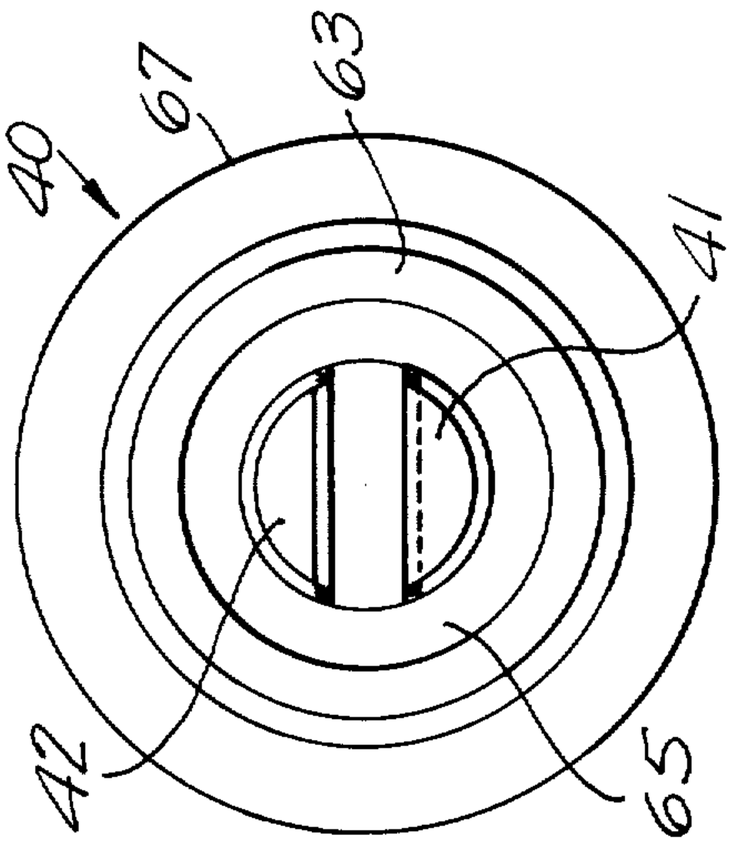

FIG. 6.

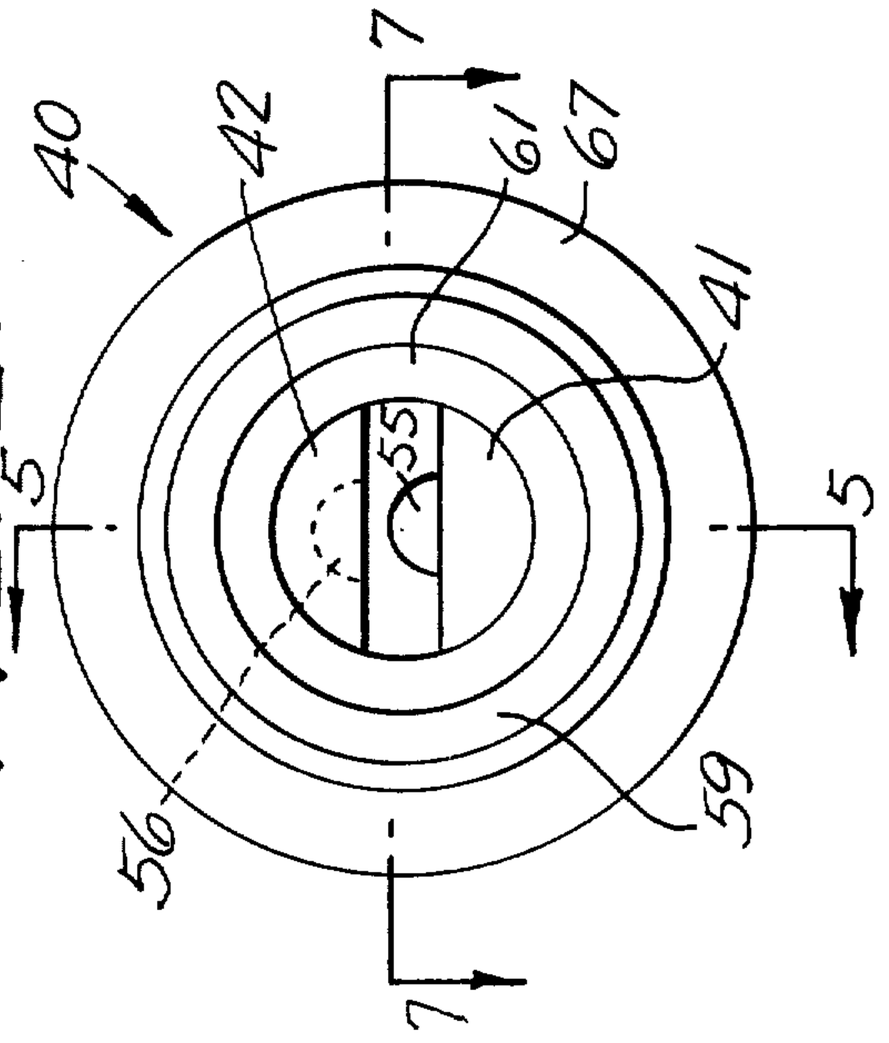

FIG. 4.

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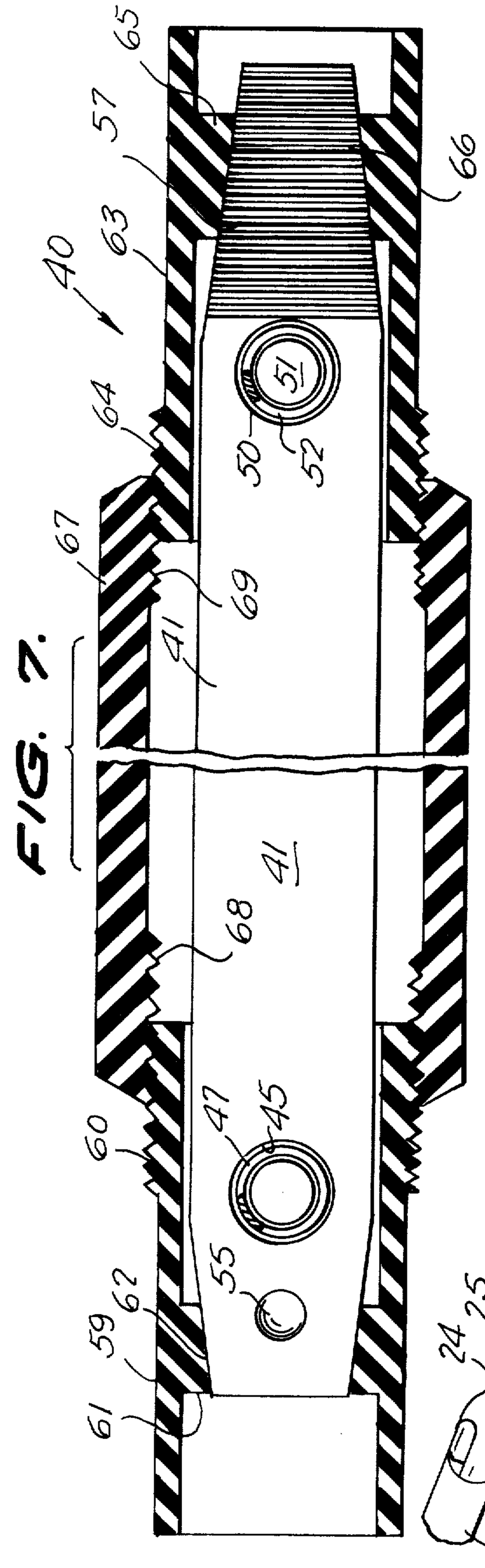

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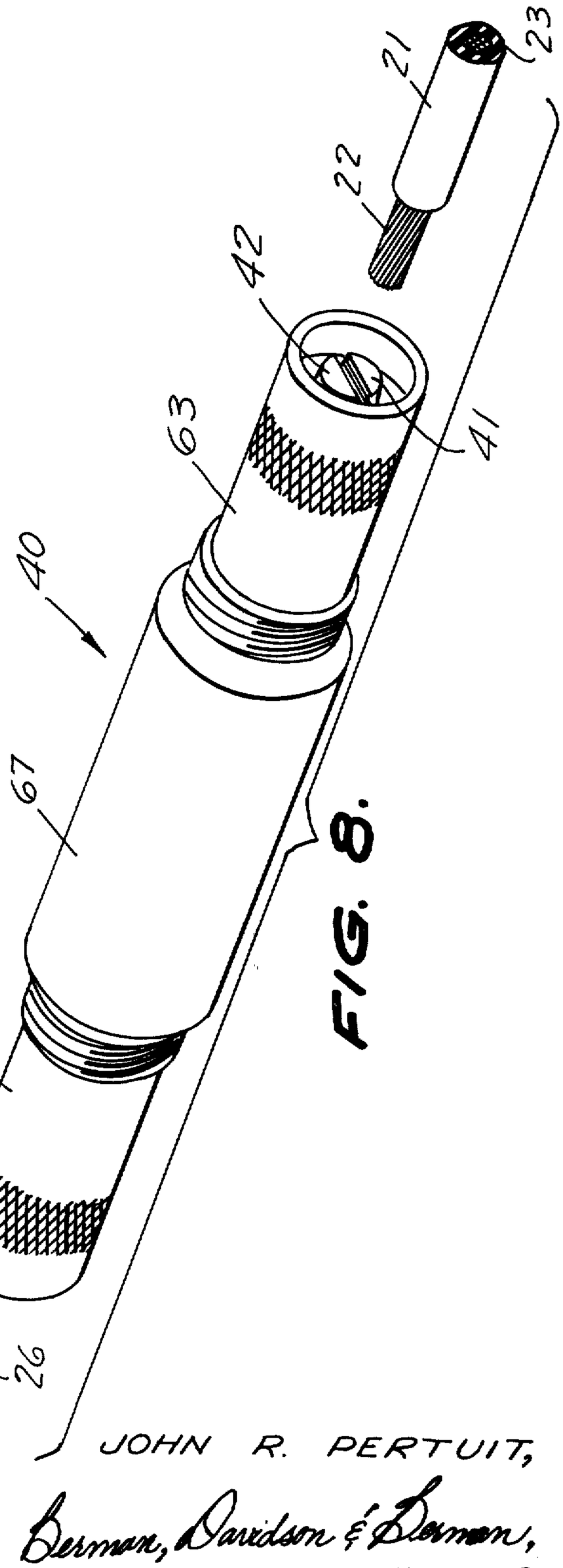

FIG. 8.

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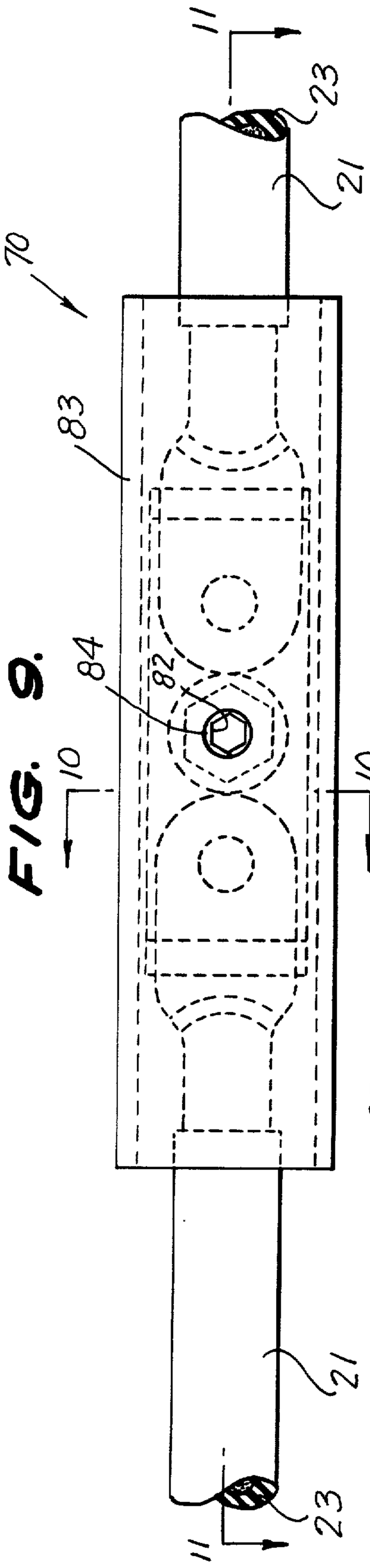

FIG. 9.

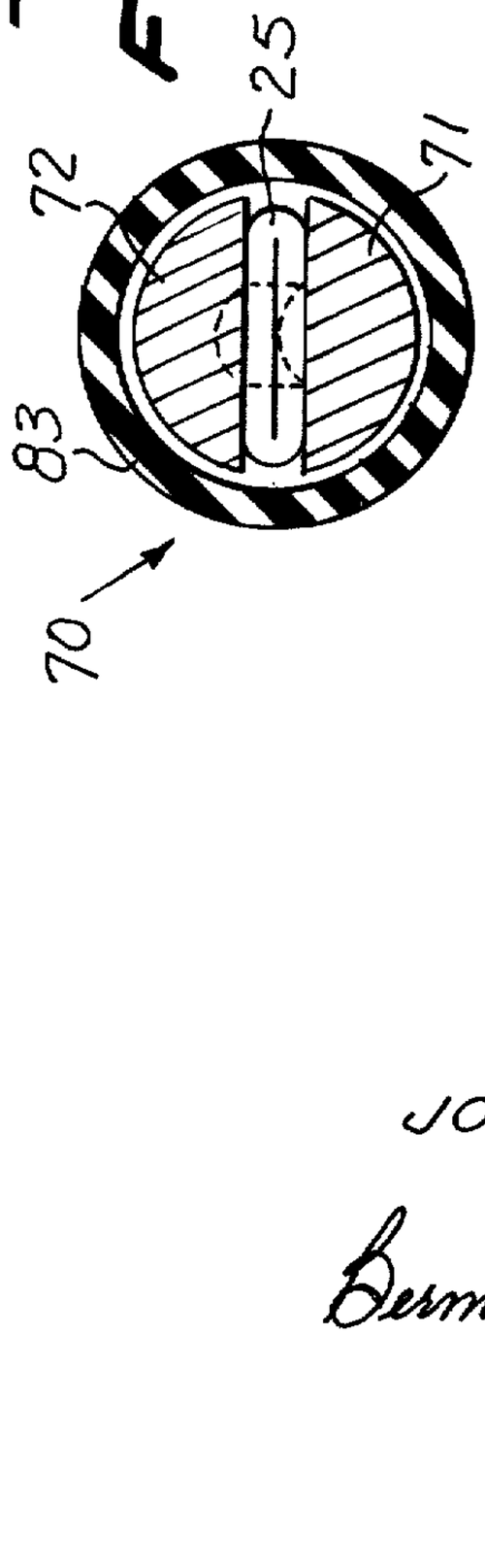

FIG. 10.

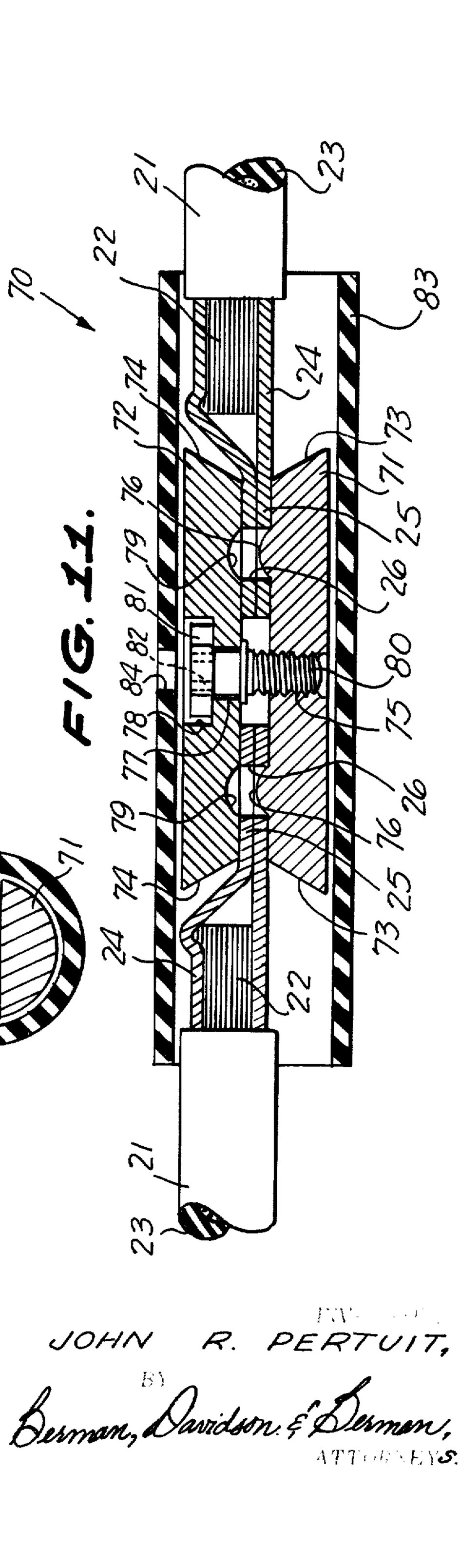

FIG. 11.

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ELECTRIC CABLE CONNECTOR

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to electric cable connectors particularly those which are used in electric welding.

2. Summary of the Invention

In the present invention electric cables having connector lugs secured thereto are inserted into a body and clamped therein by clamp set screws, by rotating the insulator sleeve to clamp body halves together or by a transverse bolt to clamp body halves together. In the form of the invention having the body halves clamped together by rotation of the insulating sleeve, the clamping jaws may optionally clamp on the connector lug or directly on the wire.

The primary object of the invention is to provide an electric cable connector for use with electric welding cable of the type normally having connector lugs attached thereto for quickly, conveniently and efficiently connecting the lugs through a conductor body.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top plan view of the invention;

FIG. **2** is a vertical sectional view taken on the line **2—2** of FIG. **1,** looking in the direction of the arrows;

FIG. **3** is a transverse sectional view taken along the line **3—3** of FIG. **2,** looking in the direction of the arrows;

FIG. **4** is an end elevation of a modified form of the invention;

FIG. **5** is a longitudinal sectional view taken along the line **5—5** of FIG. **4,** looking in the direction of the arrows;

FIG. **6** is a view similar to FIG. **4** of the opposite end of the connector;

FIG. **7** is a longitudinal sectional view taken along the line **7—7** of FIG. **4,** looking in the direction of the arrows;

FIG. **8** is a perspective view of the structure illustrated in FIG. **4;**

FIG. **9** is a side elevational of a modified form of the invention;

FIG. **10** is a transverse sectional view taken along the line **10—10** of FIG. **9,** looking in the direction of the arrows; and

FIG. **11** is a longitudinal sectional view taken along the line **11—11** of FIG. **9,** looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures the reference numeral **20** indicates generally an electric cable connector constructed in accordance with the invention.

The electric cable connector **20** is adapted for use with heavy duty electric cables **21** of the type used for electric welding and the like. The electric cable **21** includes a relatively large conductor wire **22** covered by an insulating cover **23.** The wire **22** extends beyond the insulating cover **23** at one end and has a lug **24** of conventional design clamped onto the wire **22.** The lug **24** includes a generally flat tongue **25** having a transverse bore **26** extending therethrough.

The construction of the cable **21** and lug **24** is conventional.

A generally cylindrical body **27** is formed of conducting metal and has a pair of transversely extending slots **28** opening through the opposite ends thereof. The open ends of the slots **28** are flared at **29** to assist in inserting the tongue **25** of the lug **24** into the slot **28.** A transverse threaded bore **30** is formed in the body **27** adjacent each end thereof communicating centrally with each of the slots **28.** A set screw **31** is threaded into each of the threaded bores **30** and has a domed inner end **32** for engaging in the transverse bores **26** of the lug **24** to clamp them in the slots **28.** The set screw **31** has an Allen socket **33** extending axially into the end thereof opposite the dome **32** to permit an Allen wrench to be engaged therewith for tightening the set screw **31** onto the tongue **25** of the lug **24.**

A generally cylindrical insulating sleeve **34** has a length sufficient to cover the body **27,** both lugs **24** and extend over a portion of the insulating cover **23** of each of the cables **21.** The inner diameter of the sleeve **34** engages the outer diameter of the cylindrical body **27** and a set screw **35** extends through a bore **36** in the sleeve **34** and into the body **27.** The head **37** of the set screw **36** extends above the body **27** into the bore **36** to lock the sleeve **34** onto the body.**27.** Bores **37** formed in the sleeve **34** align with the sockets **33** of the set screws **31** to permit the set screws **31** to be loosened or tightened without removing the sleeve **34** from the body **27.**

While the body **27** has been shown as cylindrical and the sleeve **34** also shown as cylindrical it should be understood that any other desired cross-sectional shape may be used such as hexagonal, square and the like when desired.

In the use and operation of the invention illustrated in FIGS. **1** through **3** the sleeve **34** is assembled onto the body **27** and the set screw **35** is inserted through the bore **36** to lock the sleeve **34** to the body **27.** The set screws **31** are backed off in the threaded bores **30** to open the slots **28** to permit tongues **25** of the lugs **24** to be inserted therein. The set screws **31** are then moved downwardly in the threaded bores **30** by means of an Allen wrench (not shown) until they have clamped tightly against the tongues **25** engaging in the transverse bores **26** thereof. When it is desired to disconnect the cables **21** it is only necessary to loosen one of the set screws **31** so that the cooperating lug **24** may be withdrawn therefrom.

Referring now to FIGS. **4** through **8** a modified electric cable connector is illustrated generally at **40.** The electric cable connector **40** is adapted for use with electric cables **21** as described in FIGS. **1** through **3.**

The electric cable connector **40** includes a longitudinal body half **41** and a longitudinal body half **42** which together are of generally cylindrical form and have conically tapering end portions **43, 44.** The body half **41** has a bore **45** adjacent the conical end portion **42** opening through the center face thereof. The bore **45**

as a cylindrical boss **46** formed at its inner end on hich to mount one end of a compression coil spring 7. A bore **48** is formed in the body half **42** in axially ligned relation to the bore **45** and has a boss **49** ormed in its inner end to receive the opposite end of ie compression coil spring **47.** The coil spring **47** norially urges the body halves **41, 42** apart.

A bore **50** is formed in the body half **41** adjacent the onical end **44** thereof and opening through the inner ace of the body half **41.** A cylindrical boss **51** is formed the inner end of the bore **50** and a compression coil pring **52** is mounted thereon. A bore **53** is formed in ie body half **42** in axially aligned relation to the bore **0** and has a boss **54** formed in its inner end and the ompression coil spring **52** has its opposite end ounted thereon. The compression spring **52** normally rges the body halves **41, 42** apart.

The body half **41** adjacent the tapered end **43** is rovided with a dome **55** extending toward the body alf **42** and the body half **42** is provided with a semipherical socket **56** aligned with the dome **55** to receive he dome **55** when the body half **41** is brought into ngagement with the body half **42.**

The conical end **44** of the body halves **41, 42** have heir inner opposed faces serrated at **57, 58** respecively for reasons to be assigned. An insulating generlly cylindrical clamping sleeve **59** is externally hreaded at **60** on one end thereof and has a reduced liameter portion **61** formed internally thereof with a onical opening **62** extending therethrough for engagenent with the conical taper **43** on the body halves **41, 2.**

A clamping sleeve **63** is externally threaded at **64** at ne end thereof and has a reduced diameter portion **65** ormed internally thereof with a conical opening **66** xtending therethrough for cooperation with the coni:al taper **44** of the body halves **41, 42.** The threads **60** nd the threads **64** are formed oppositely for reasons to e assigned.

A generally cylindrical insulating sleeve **67** is interally threaded at **68** with threads to cooperate with the hreads **60** and is internally threaded at its opposite end t **69** to cooperate with the threads **64.** Rotation of the leeve **67** about its axis will draw the clamping sleeve 9 and the clamping sleeve **63** inwardly when rotated in ne direction and force them outwardly when rotated n the opposite direction. Inward movement of the lamping sleeve **59, 63** toward each other causes the onical openings **62, 66** to force the tapered ends **43, 4** toward each other to bring the body halves **41, 42** nto contact. As the clamping sleeve **59, 63** are moved way from each other in an outward direction the prings **47, 52** force the body halves **41, 42** apart rease anything clamped therebetween. The dome **55** on he body half **41** engages through the bore **26** of one of he lugs **24** and as the body halves **41, 42** are drawn ogether the tongue **25** is clamped tightly therebeween. At the opposite end of the connector **40** the vire **22** is engaged between the serrated faces **57, 58** espectively of the body halves **41, 42** and is clamped herebetween by axial movement of the clamping leeve **63** with respect to the body halves **41, 42.**

Referring now to FIGS. **9** through **11** another modified cable connector is illustrated generally at **70.** The able connector **70** is adapted for use with electric ables **21** as described in the preferred form of the nvention, illustrated in FIGS. **1** through **3.**

The cable connector **70** includes a longitudinal extending body half **71** and a longitudinally extending body half **72** which together are generally cylindrical in outer form.

The body half **71** has its opposite end portions inwardly tapered at **73** and the body half **72** has its opposite end portions inwardly tapered at **74.**

The body half **71** has a central threaded bore **75** extending therethrough and has a pair of domes **76** formed thereon adjacent the opposite ends thereof. The body half **72** has a central bore **77** extending therethrough in axially aligned relation with the threaded bores **75** and has a counter bore **78** communicating with the outer end thereof. The body half **72** has a pair of sockets **79** of semi-spherical shape arranged in aligned relation with the domes **76** to encompass the dome **76** when the body halves **71, 72** are in engagement with each other.

A clamping bolt **80** extends through the bore **77** of the body half **72** and into the threaded bore **75** of the body half **71** with its head **81** engaged in the counter bore **78** so that the body halves **71, 72** may be clamped together thereby. The head **81** has an Allen socket **82** formed therein to receive an Allen wrench (not shown) for tightening and loosening and the clamping bolt **80.**

A generally cylindrical insulating sleeve **83** is engaged over the body halves **71, 72** and has a length sufficient to extend over the insulation **23** of the electric cables **21** at each end thereof. The sleeve **83** has a central transverse bore **84** extending therethrough in axially aligned relation to the clamping bolt **80** to permit the clamping bolt **80** to be adjusted with the sleeve **83** in position overlying the body halves **71, 72.**

In the use and operation of the invention lugs **24** are engaged with their tongues **25** between the body halves **71, 72** and with the domes **76** projecting upwardly into the bores **26** in the tongues **25.** The clamping bolt **80** is tightened to establish a clamping relation between the body halves **71, 72** and the lugs **24.**

The body halves **71, 72** in the form of the invention illustrated in FIGS. **9** through **11** and the body halves **41, 42** in the form of the invention illustrated in FIGS. **4** through **8** are formed of highly conductive metal to establish a good connection between the cables **21** connected thereby.

Having thus described the preferred embodiments of the invention it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. An electric cable connector for connecting electric cables of the type having a lug secured to the end thereof with the lug having a flat tongue extending outwardly therefrom and a transverse bore extending through the tongue comprising an elongate conductive body, transverse generally flat slots formed in opposite ends of said body and extending transversely thereacross to receive the tongues of the lugs said slots having flared outer ends for guiding said tongues on inserting said tongues in said slots, a pair of set screws threaded in said body for clamping said tongue in said slot, said set screws having domed inner ends for engagement in the transverse bores of said tongues, a generally cylindrical insulating sleeve encompassing said body and said lugs, and set screw means for locking said sleeve to said body.

2. An electric cable connector for connecting electric cables of the type having a lug secured to the end thereof with the lug having a flat tongue extending outwardly therefrom and a bore extending through the tongue, comprising an elongate conductive body, a generally flat slot formed in one end of said body and extending transversely thereacross to receive the tongue of a lug, said flat slot extending completely across and opening to the sides as well as to the end of said elongate conductive body, clamping means movable in said body for clamping said tongue in said slot, said clamping means having a domed inner end for engagement in the bore of said tongue, a generally tubular insulating sleeve encompassing said body and said lug, and means for locking said sleeve to said body.

3. An electric cable connector according to claim 2, wherein said clamping means comprises a set screw threaded in said body.

4. An electric cable connector according to claim 3, wherein said means for locking said sleeve to said body comprises a set screw.

5. An electric cable connector according to claim 2, wherein said slot has a flared outer end for guiding said tongue on inserting said tongue in said slot.

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