United States Patent

Barski

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[45] **Aug. 22, 1972**

[54] **SECUREMENT DEVICE**

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[52] **U.S. Cl.** .....**339/21 R,** 339/244 U, 339/264 R, 66/163

[51] **Int. Cl.** **H01r 7/08**

[58] **Field of Search**.....339/21, 263, 264, 266, 270, 339/227, 136, 247, 244; 66/153, 163, 161

[56] **References Cited**

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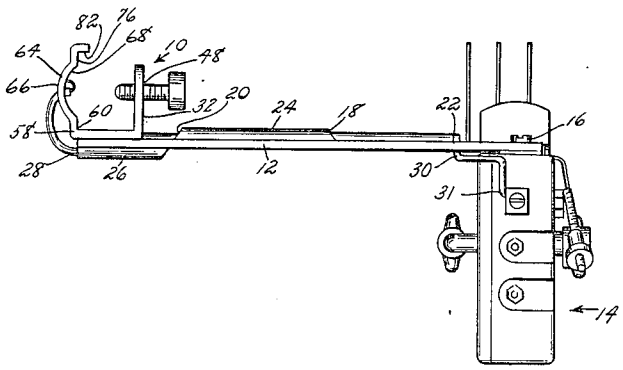
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Assistant Examiner—Robert A. Hafer
Attorney—Meyer A. Gross

[57] **ABSTRACT**

A securement device for retaining a unit in a predetermined position proximate to a support, while the unit maintains isolated electrical contact with the support. The device includes a bracket with one or more electrical contacts in opposed alignment with a stop bolt. The contacts are connected to the unit. Surrounding the contact is the receiving portion of the bracket forming a channel within which the support is located. The stop screw securely positions the support, the contact abutting an isolated electrical line in the support.

8 Claims, 9 Drawing Figures



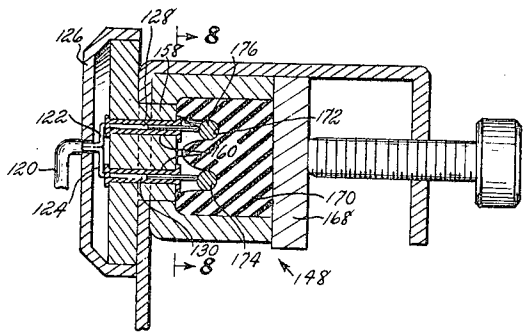


Fig. 1

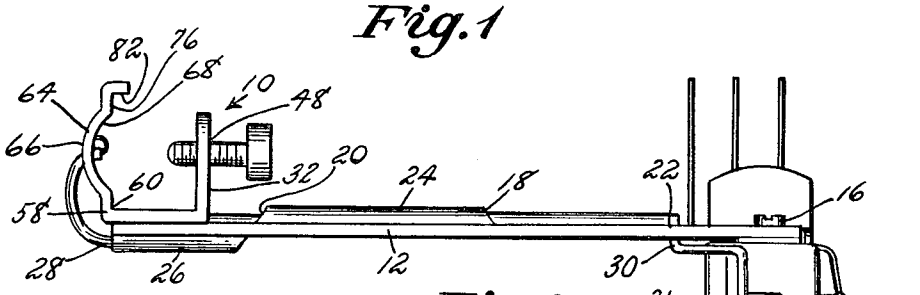


Fig. 2

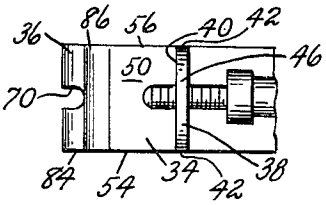


Fig. 3

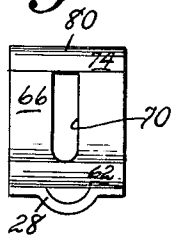


Fig. 4

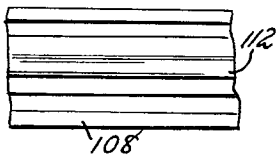


Fig. 5

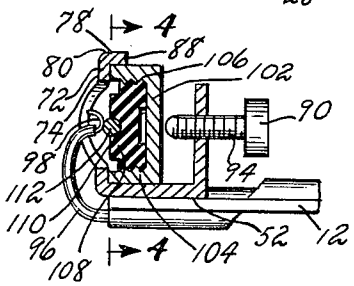


Fig. 6

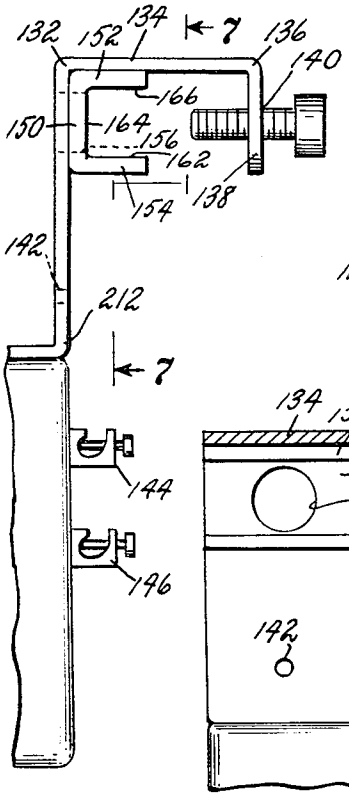


Fig. 7

Fig. 9

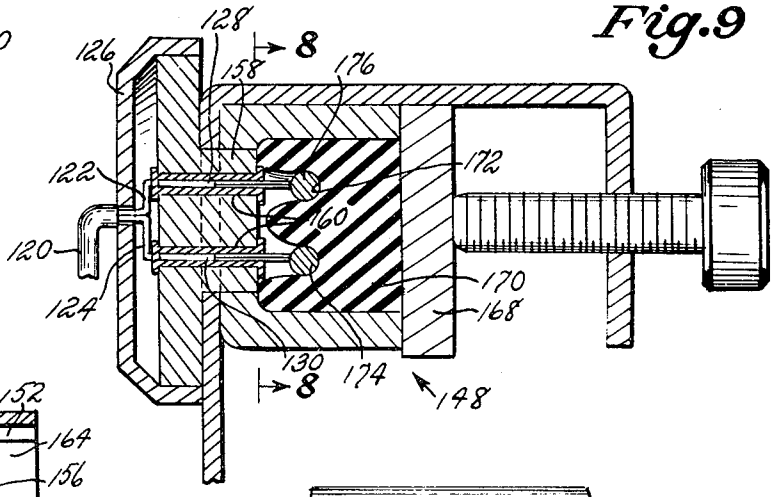
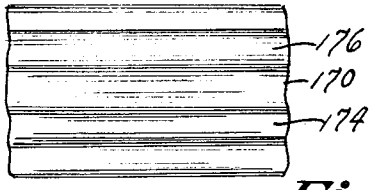


Fig. 8



SECUREMENT DEVICE

The present invention relates to securement devices, and in particular to a novel and improved securement device which can carry an electrically operable unit in a predetermined position, and allow isolated electrical contact with the support, securely maintaining the unit in the desired position in re1ation to the support. This invention has particular application in connection with knitting machines, but the use is not limited thereto.

Previous devices to accomplish this result consist of the sandwiching of an element between two flat plates. The obvious deficiencies in this unit included the lack of a positive securement leading to the very real possibility of movement of the unit out of its predetermined position.

Accordingly, among the principal objects of the present invention is to provide an economical and simple securement device which will grip a support in a positive, non-movable manner.

A further object of the present invention is to provide an invention of the type described which allows an electrical contact with an isolated contact line on the support.

Yet a further object of the present invention is to provide a securement device which will be simple and economical to manufacture and yet be durable to a high degree in use.

In accordance with the principals of the preset invention, there is provided a securement device positioned on one end of the carrier. An electrically operable unit such as a stop action switch is secured to the other end. One or more electrical contact lines are secured to the unit and pass from the unit along the carrier to the securement device and are preferably shielded along the length of the carrier. The securement device includes a bracket having a stop means portion and a receiving portion. The receiving portion forms a channel to which the support is positioned. The receiving portion is of sufficient width to just comfortably receive the channel. Furthermore, the receiving portion may have an arcuate section with an elongated slot therein receiving the electrical contact line from the electrical unit. The stop means securely positions the support within the receiving portion, causing an isolated electrical contact line to make electrical contact with the contact from the electrical unit.

This support generally consists of a ring with an inner mounted dielectric and the electrical contact isolated thereon. The ring is received within the channels of the receiving portion. However, the unit may be modified so that the channels receive the dielectric portion, and there may be more than one electrical contact line imbedded therein making electrical contact with more than one contact from the electrical unit.

Additional objects and advantages of the invention will become apparent during the course of the following specification when taken in connection with the accompanying drawings in which:

FIG. 1 is a side elevational view showing the securement device embodying the present invention and the stop action unit mounted on the carrier.

FIG. 2 is a top planned view of the securement device with the carrier cut away.

FIG. 3 is an end elevational view of the securement device, showing the shielding under the carrier means.

FIG. 4 is a cross-sectional view taken along the lines 4—4 of FIG. 5.

FIG. 5 is a side elevational view, cut away and partly in section of the securement device.

FIG. 6 is an elevational view of a modified embodiment of the securement device, with the carrier means partly cut away.

FIG. 7 is an elevational view taken along the line 7—7 of FIG. 6.

FIG. 8 is a side elevational view taken along the lines 8—8 of FIG. 9; and

FIG. 9 is a cross-sectional view of the modified embodiment of FIG. 6 showing two electrical contacts and a support positioned within the securement device.

Referring in detail to the drawings, and in particular to FIG. 1, there is shown a securement device **10** which is mounted on a carrier plate **12** by means of welding, gluing, riveting, or any other well-known means. An electrically operable unit **14** is secured to the other end of the carrier by means of screws **16** or the like. In the present situation, the unit **14** is a stop action switch. These switches are well-known in the art and do not form a part of the present invention.

The plate **12** as illustrated, has three perforations **18**, **20**, **22**. The plate is further shaped, as by a drop forging, to form an elongated channel **24** between the perforations **18** and **20** and a lower channel **26** between the perforation **18** and the left end section **28** of the plate. An electrical contact wire **30** secured to the unit **14**, as at **32**, passes upwardly through the perforation **22** along the top of the plate and into the channel **24**, then down to the perforation **18** and into the channel **26**, and thence outwardly and upwardly as will be explained below.

Turning in detail to the securement device **10**, it consists of three portions, namely the stop means portion **32**, the support portion **34**, and the receiving portion **36**. The stop means portion **32** is defined by side surfaces **38**, **40**, and edges **42**, **44** terminating in an arcuate upper edge **46**. Furthermore, the portion **32** carries an aperture **48** which is threaded.

The support portion **34** is at right angles to the portion **32** and consists of an upper surface **50**, a lower surface **52**, and edges **54**, **56**.

The receiving portion **36** is also generally at right angles to the support portion **34** and is parallel to the stop means portion **32**. The portion **36** includes an upstanding vertical lower section **58** having an inner surface **60** and an outer surface **62**. Depending upwardly from the section **58** is an arcuate section **64** having an outer surface **66** and an inner surface **68**, and having an elongated slot **70** defined therein. Depending upwardly from the section **66** is an upper vertical section **72** having an outer surface **74** and an inner surface **76**. The sections **58**, **72** are in alignment with each other.

Extending inwardly towards the portion **32** from the section **72** is a shoulder section **78**, perpendicular to the section **72** and parallel to the portion **34**. The section **78** has an upper surface **80** and a lower surface **82**. The portion **36** is bounded by side edges **84**, **86** and terminates at an edge **88** on the shoulder **78**.

A standard stop action type bolt **90** having a head **92** with a knurled edge and a threaded bolt portion **94** passes through the aperture **48**. The invention is not limited to the bolt as a stop means, and it is shown as an acceptable way of retaining the support within the bracket.

The wire **30** may be bent upwardly as at **96** and the insulation may be stripped away exposing the inner conductive wire **98**.

The support is usually a ring having a rectangular cross-sectional configuration, and is commonly found on most types of knitting machines. This element of course is not limited to knitting machines, but may be utilized in any machine having any type of support with an isolated electrical contact thereon, and the requirement to make electrical contact to an electrically operable unit therefrom.

In the present invention, the ring is best illustrated in FIGS. **4–5**, and consists of a channel element **100** having a bottom section **102** and upstanding side sections **104, 106**. The inner surfaces of the sections are ridged to receive a longitudinally extending dielectric **108**, such as rubber or porcelain. The dielectric has a longitudinally extending channel **110** receiving an electrically conductive wire **112**. As shown in FIG. **5**, the dimensions of the outer surfaces of the support **104, 106** are just slightly smaller than the distance between the surfaces **82, 50**. When the support is placed therein and the bolt **90** is rotated until it abuts against the section **102**, a snug, secure, positive fit is insured, and the electrical contact **112** abuts the electrical contact **98**, insuring an electrically conductive connection between the contact **112** and the unit **14**.

It is possible to eliminate portion **34** and to secure the portion **32, 36** directly to the carrier, although use of the support section **34** simplifies production of the invention.

Turning to FIGS. **6–9**, there is shown a modified embodiment of the invention, in which the carrier is utilized as part of the securement device, and further showing the use of the invention with more than one electrical contact, allowing for the grounding of the unit.

Similar parts will be assigned similar reference numerals, with the addition of the prefix numeral "2".

In this embodiment the carrier plate has secured thereto an electrically operable unit, and in this case it may be a stop action switch having two separate electrical outlets thereon. The electrically conductive wires may be carried in a single wire **120** and may be separated into electrical contact wires **122, 124** within a protective housing **126**. The wires may be electrically secured to contacts **128, 130**.

The carrier plate **212** may be bent at right angles as at **132**, forming a perpendicular section **134**, which may again be bent at right angles as at **136** to form a bolt receiving portion **138** having an aperture **140**. The plate **212** may have an aperture **142** through the wire **120** passes and the electrically conductive wires **122, 124** may be secured to contacts **144, 146** on the electrically operable unit.

Positioned within the angle formed by the plate **212** and the section **134** is a channel member **148** having a base portion **150** and side portions **152, 154**. The member **148** may be secured in position against the surfaces of plate by means of welding, glue, rivets, etc. An aperture **156** is positioned within the bottom portion **150** through which is positioned a plug **158** forming part of the assembly **126**. The plug **158** is made of a dielectric material, and has apertures **160** through which the contacts **128, 130** pass into the interior space of the member **148** defined by the inner surfaces **162, 164, 166**.

This modified embodiment is capable of engaging a differently designed type of support having a plate **168**, a dielectric **170** secured to the plate, and sides to be received within the space defined by the surfaces **162, 164, 166**. Furthermore, the dielectric has two channels **172** defined therein carrying electrically conductive wires **174, 176**. When the support is placed within the member **148** and the bolt is rotated to securely mount the support in position, the wires **174, 176** contact the contacts **128, 130** and hence are electrically connected via the wire **120** and the contacts **144, 146** to the electrically operable unit.

When it is desired to send an electrical signal to the electrically operable units, or when it is desired to change an electrical contact or break an electrical signal by means of mechanical, or other type of movement of the electrically operable unit, the signal can be passed out of the unit into the isolated contact on the support, while eliminating any problems concerning movement of the unit from its original, predetermined position.

While preferred embodiments of the present invention have been shown and described herein, it is obvious that numerous omissions, changes and additions may be made in such embodiments without departing from the spirit and scope of the invention.

What is claimed is:

1. A securement device for retaining a unit in a predetermined position proximate to a support comprising:

a. carrier means;

b. an electrically operable unit secured to one end of the carrier means;

c. a securement device including a bracket secured to the other end of the carrier means, the bracket including a receiving portion angularly disposed to the carrier means, a support portion secured to the carrier means and at one end of the receiving portion, a stop means portion secured to the other end of the support portion and angularly disposed to the carrier means;

d. the receiving portion having means to establish electrical contact with the support, said means being isolated from the securement device the stop means carrying means to retain the support in a positive, non-movable position within the bracket and in isolated electrical contact with the contact means.

2. The invention according to claim **1**, the stop means portion including a threaded aperture, the stop means including a bolt having a threaded body received within the aperture.

3. The invention according to claim **1**, the receiving portion having an elongated slot defined therein, shielded electrical contact means secured to the unit, passing along the carrier means and up into the slot, the electrical contact means being unshielded within the slot.

4. The invention according to claim **3**, the receiving portion including an upstanding vertical lower section depending from the support portion, an arcuate section depending from the lower section, the slot being defined therein, an upstanding vertical upper section depending from the arcuate section.

5. The invention according to claim **4**, an outwardly extending shoulder section depending from the upper vertical section, substantially perpendicular thereto and parallel to the support portion.

6. The invention according to claim **1**, the receiving portion including a channel shaped member.

7. The invention according to claim **1**, the stop means portion including a threaded aperture, the stop means including a bolt having a threaded body received within the aperture.

8. The invention according to claim **6**, a dielectric plug received within an aperture defined in said channel member, and having at least one electrical contact extending therethrough into the interior of said channel member.

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