

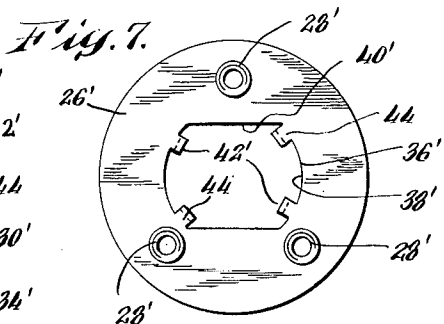
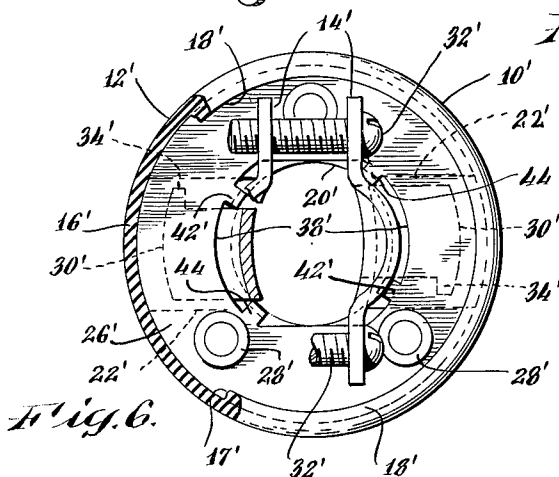
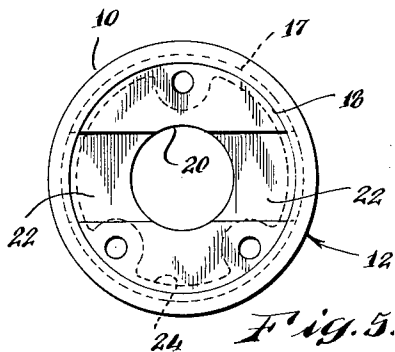
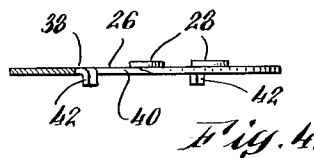
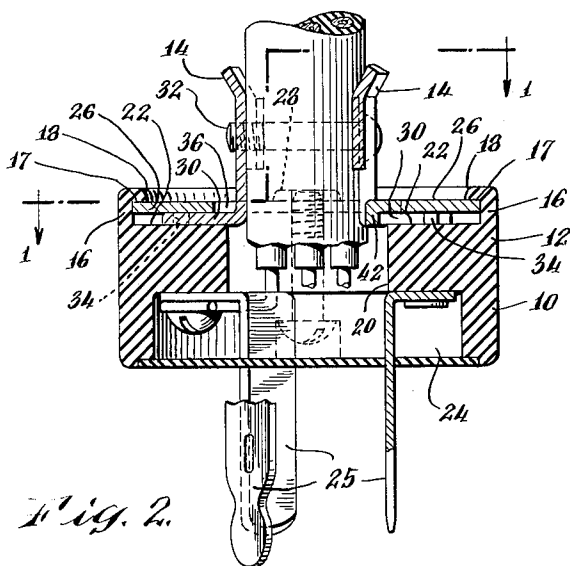
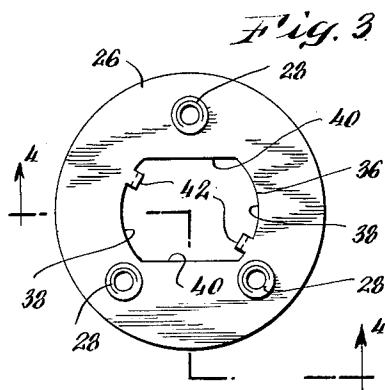
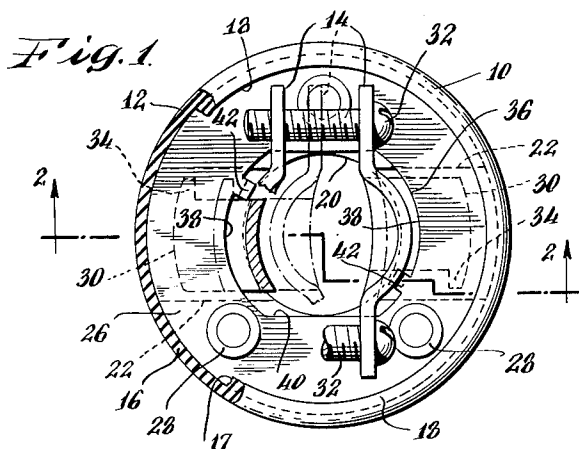
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3,233,205

CORD GRIP CONNECTOR

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3,233,205

CORD GRIP CONNECTOR

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2 Claims. (Cl. 339-62)

This application is a continuation-in-part application of my copending application Serial No. 226,515, filed September 27, 1962, and now abandoned, for Cord Grip Connector.

This invention relates generally to electrical wiring devices, such as electrical connector bodies or caps. More particularly, the invention relates to such devices having means for gripping the electrical cord or cable to relieve the strain on the electrical connection between the cord or cable and the device.

In my prior United States patent application Serial No. 814,722, filed May 21, 1959, for Means for Mounting Cord Grips, now Patent No. 3,056,944, there are disclosed and claimed certain novel wiring devices. In that application there is disclosed a wiring device which comprises a substantially cylindrical body which may be of a resilient material or of any other suitable insulating material, such as a rigid plastic. A central opening is coaxially provided through the body for receiving the end of an electrical cord and the device is formed with appropriate contact and terminal means as either a connector body, plug or cap. An upper end surface of the cylindrical body is generally flat and includes a pair of recesses positioned on either side of the central opening. The entire device is surrounded by a metallic cup-like shell which also includes a central opening for the cord and covers the two recesses so as to form two enclosed cavities. The cord grip comprises two substantially L-shaped cross-sectioned cord clamps. The "foot" portion of each cord clamp is inserted into a cavity. Clamping screws on the upright portions adjustably connect the clamps to one another and permit tightening of them against an electrical cord. The feet portions are slidably positioned within their corresponding cavities but are retained against the device by the restraining action of the enclosing shell. Each foot member includes a laterally extending lug which abuts against a lug positioned at one side of the cavity when the associated clamp reaches its extreme inward position. As disclosed in said application, the lugs in the cavity may be formed from the material of which the plug body itself is made if it is a rigid material, or may be integrally formed on and project from a rigid top plate enclosed by the shell if the material is resilient. By the foregoing novel construction, the cord clamp is prevented from falling out of the wiring device even when closed down upon very small cords or if the clamps are of a small size relative to the cavities. The clamps can be removed only by individually rotating each against the pivot created by the engagement of the clamp lug with the cavity lug. The foregoing invention is, of course, a significant improvement over devices known in the prior art and possesses many advantages thereover, as set forth in said application. However, as pointed out above, the devices disclosed in my prior application each include an enclosing metal shell and in the case of the resilient body type, the shell is in addition to the metallic top plate.

In many applications where wiring devices of the above type are employed, it is desired to utilize wiring device bodies made of resilient material, such as rubber or resilient plastic. Devices of these materials are particularly well suited to heavy duty applications, such as construction work, as they are virtually unbreakable. How-

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ever, it is to be noted that if a resilient body material is employed, it no longer becomes possible to form the necessary cavity lugs from this material. A greater amount of rigidity is required to retain the feet within the cavities than is possessed by such materials. At the same time, it will be appreciated that even though the body is resilient, it must retain a certain amount of form. For this reason, the devices of the invention in said application require some type of end stiffening means and included the mentioned metallic shell in addition to a stiffener plate that included rigid lugs.

It is an object of this invention to provide an improved cord grip wiring device which has a resilient body, wherein the cord clamps are retained within the body in such a manner that they cannot be accidentally detached therefrom and wherein the need for a metallic cup-like shell is eliminated. The manner in which this object and others are achieved will be more apparent from the following description, the appended claims and the figures of the attached drawing wherein:

FIG. 1 is a plan view, partially cut away, of one form of an electrical cord grip cap incorporating this invention;

FIG. 2 is a sectional view taken substantially on line 2-2 of FIG. 1 but also showing a three-wire electrical cord connected to the cap;

FIG. 3 is a plan view of the top plate which is a part of the FIGS. 1 and 2 cap;

FIG. 4 is a partial sectional view taken along the lines 4-4 of FIG. 3;

FIG. 5 is a plan view of the cap body with the top plate removed;

FIG. 6 is a view similar to FIG. 1 of a modified form of the invention incorporating a modified top plate, and

FIG. 7 is a plan view of the modified top plate incorporated in the FIG. 6 form of the invention.

The objects of this invention are generally achieved by omitting the encircling metallic cup-like shell of the resilient bodied embodiment of the aforesaid prior application and modifying some of the remaining elements. However, the functions of the shell may be retained by providing on the upper surface of the resilient body an encircling lip for receiving and which covers the edge of a rigid top plate on which the cavity lugs for retaining the cord grips are integrally formed.

A cord grip cap incorporating the invention is shown in FIGS. 1-5 and designated generally by reference numeral 10 and essentially comprises a cylindrical cap portion 12 and a cord clamping portion, comprising cord clamps 14, which are carried thereby. The cap portion 12 comprises a cylindrical mass of resilient material and includes at one end an annular rim 16 carrying an encircling lip 18 which cooperate to form a groove 17. The cap portion 12 includes a central coaxial opening 20. The upper surface of cap portion 12 is flat and has a pair of aligned shallow channels 22 formed therein which communicate with the opening 20. The lower surface of cap portion 12 is flat and has a deep recess 24 which communicates with the central opening 20 and is adapted to receive portions of the customary electrical contact fingers 25 and provide the usual electrical connections thereto.

A rigid, generally circular, top plate 26, which is shown in detail in FIGS. 3 and 4, is inserted in groove 17 under the resilient lip 18 surrounding the upper surface of cap portion 12. The top plate 26 is further retained in place by means of suitable screws extending through internally threaded collars 28 formed in the top plate. As will be apparent from FIGS. 1 and 2, top plate 26 forms the upper surface of two cavities which are further defined by the shallow channels 22 formed in the upper surface of cap portion 12. Each of the cord clamps 14 is generally L-shaped in cross section and includes a horizon-

tally extending foot 30 which extends slidably into one of the cavities. The upper portion of each cord clamp is partially arcuate and is provided with lateral ears. The ears of one clamp have threaded openings formed in them and the ears of the other clamp have larger plain openings. The clamps are adjustably connected to one another by means of tightening screws 32 that pass through the plain openings and are anchored in the threaded ones. Each of the feet 30 includes a laterally extending lug 34.

Top plate 26 has a central opening 36 which is aligned with the central opening 20 in cap portion 12 when mounted thereon. Central opening 36 is noncircular and is formed by a pair of spaced arcuate edges 38 and a pair of straight spaced parallel edges 40. Each of arcuate edges 38, at one of its ends, has an extending tab which is bent downwardly to form a lug 42 that is disposed in a cavity when the top plate is secured to the body. The clamp lugs 34 and the cavity lugs 42 cooperate to prevent the inadvertent separation of the cord clamps from the cap portion 12 in the same manner as their counterparts in my copending application and the cord clamps of this invention are adjustable in the same manner as the corresponding cord clamps illustrated in my prior application. It will be understood, however, that by means of this invention an improvement results whereby the rigid body shell in the resilient bodied type of my prior application is omitted while its form-retaining function is retained. Therefore, the function of the shell has been retained though it has been structurally eliminated, and a simpler, more economical device provided. It is also to be understood that although the invention is illustrated as a connector cap, it is not so limited, but may also be incorporated in connector bodies and other types of electrical connector components. Furthermore, the illustration of the cap as having a three-contact-bladed connection is for illustrative purposes only, the device being equally suitable for devices with any desired number of contact elements.

In FIGS. 6 and 7 a modified form of the invention is illustrated which is particularly well suited for practical applications wherein the cap portion is made of a very resilient material. It has been found in practice that when using the FIGS. 1-5 form of the invention, if the cap portion 12 is made of a very resilient material, the clamp feet 30 are prone to "pop" out of their cavities under certain conditions of use. This undesirable action occurs sometimes when a clamp 14 is moved radially inwardly and its lug 34 engages and pivots about a lug 42 on the top plate. Under these conditions the shoulder portion of cap portion 12 forming a cavity, opposite to the shoulder portion thereof adjacent lugs 34 and 42, "gives way" due to its resilience and permits the clamp foot to pop out of the cavity.

To eliminate the problem set forth in the preceding paragraph, the modified form of the invention illustrated in FIGS. 6 and 7 is employed. In these figs., the parts corresponding to FIGS. 1-5 parts are indicated by the same reference numeral with a prime (') added.

The principal structural distinction of the FIGS. 6 and 7 modification resides in the addition of an additional pair of lugs 44 to the top plate 26', diagonally located, as illustrated, at ends of arcuate edges 38' opposite to lugs 42'. Modified top plate 26' can be clearly seen by itself in FIG. 7. In FIG. 6, the fully assembled modified form can be seen. It will there be observed that lugs 44 on top plate 26' are disposed to be engaged by the side edges of clamp feet 30' opposite to lugs 34', in the event pivoting of the feet occurs. Such engagement prevents sufficient pivoting of the feet to permit their popping out. Stated differently, the associated pairs of lugs 42' and 44 cooperate to form rigid guideways for the clamp feet of a width approximately equal to the width of the feet. Therefore, only substantially radial sliding of the feet between the such pairs of lugs is permitted, thereby precluding inadvertent pivoting of the feet and their pos-

sible undesirable popping out. However, the distance between such pairs of lugs is sufficient to permit intentional mounting and removal of clamp feet relative to the cavities.

As will be evident from the foregoing description, certain aspects of my invention are not limited to the particular details of construction of the examples illustrated. I contemplate that various and other modifications and applications will occur to those skilled in the art. It is, therefore, my intention that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of my invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An electrical wiring device which comprises: substantially cylindrical resilient body means defining a central opening therethrough for the reception of an electrical cord and defining in a first plane surface thereof a pair of aligned cavities diametrically opposite one another and communicating with said opening; a rigid plate secured to said body means, a first plane surface of said plate cooperating with said resilient body means to rigidify it and to form one wall of each of said cavities, said plate defining a central opening aligned with said central opening of said body means; first and second cord clamps supported by said body means, each of said cord clamps extending through the opening in said plate and including cooperating cord gripping portions on the exterior of said plate; means for securing said cord gripping portions to each other about an electrical cord; a mounting foot on each of said clamps, which are slidably and readily removably received in said cavities and each of which includes a laterally projecting lug formed at only one side thereof; and a pair of spaced lugs in each of said cavities integral with said plate, at opposite sides of said cavity and positioned to be at opposite sides of its associated foot, one of said spaced lugs disposed to engage one of said clamp feet lugs and limit the movement of the associated foot inwardly toward said openings, said spaced lugs being spaced sufficiently relative to said feet to permit intentional removal of said foot by pivoting about the engaged lugs while maintaining its plane of sliding movement.

2. An electrical wiring device which comprises: substantially cylindrical resilient body means defining a central opening therethrough for the reception of an electrical cord and defining in a first plane surface thereof a pair of aligned cavities diametrically opposite one another and communicating with said opening; an annular resilient rim projecting axially from said body and encircling said cavities, said rim including an inwardly projecting annular lip; a rigid plate secured to said body means and having its outer edge positioned beneath said lip, a first plane surface of said plate cooperating with said resilient body means to rigidify it and to form one wall of each of said cavities, said plate defining a central opening aligned with said central opening of said body means; first and second cord clamps supported by said body means, each of said cord clamps extending through the opening in said plate and including cooperating cord gripping portions on the exterior of said plate; means for securing said cord gripping portions to each other about an electrical cord; a mounting foot on each of said clamps, which are slidably and readily removably received in said cavities and each of which includes a laterally projecting lug formed at only one side thereof; and a pair of spaced lugs in each of said cavities integral with said plate, at opposite sides of said cavity and positioned to be at opposite sides of its associated foot; one of said spaced lugs in each cavity disposed to engage the lug of its associated clamp foot and limit the movement of the associated foot inwardly toward said openings, said spaced lugs being spaced sufficiently relative to said feet to permit intentional removal of said foot by pivoting said foot

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about the engaged lugs while maintaining its plane of sliding movement.		2,553,681	5/1951	Schmier -----	339—103
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