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ELECTRICAL CONNECTOR LOCKING SYSTEM

Filed Nov. 30, 1960

Fig. 1

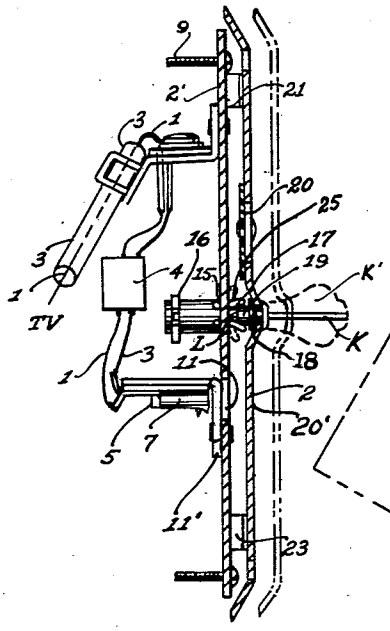


Fig. 2

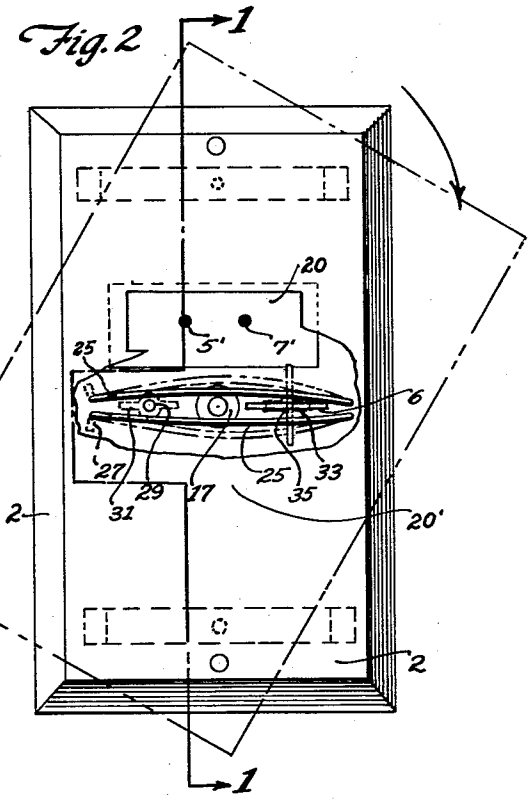


Fig. 3

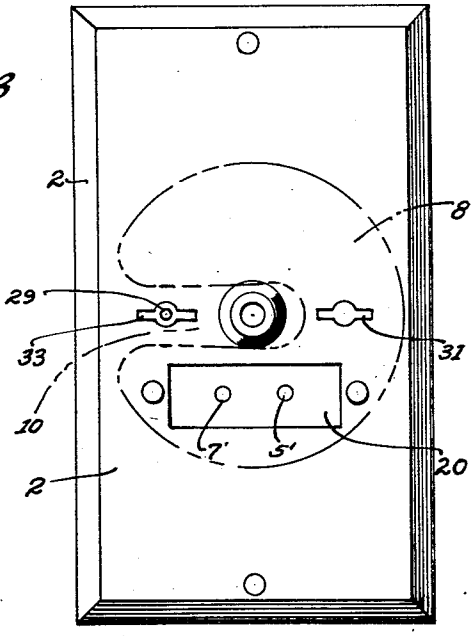
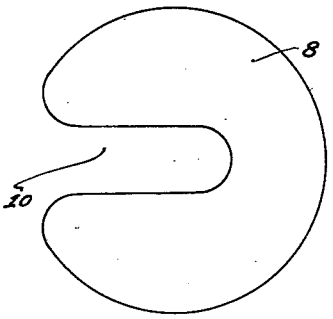


Fig. 4



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ELECTRICAL CONNECTOR LOCKING SYSTEM

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The present invention relates to electrical-connection locking systems and, more particularly, to wall outlets and the like that are adapted for enabling connection into electrical circuits upon the unlocking of a locking mechanism, as for such purposes as "pay television" and the like.

Numerous proposals have been advanced for preventing unauthorized electrical connection to an electrical circuit. In motels, hotels and other television installations, for example, it is sometimes desirable to prevent the tenant from unauthorizedly making electrical connection to a master transmission line bearing the television program signals, except under the control of the management. Unfortunately, the complexity and cost of such proposals, and their inherent susceptibility to being by-passed by the user, have rendered these proposals commercially unsatisfactory.

An object of the present invention, accordingly, is to provide a new and improved electrical outlet mechanism and the like that is not subject to these disadvantages, and that, to the contrary, is simple, fool-proof, and particularly adapted for ready use under the control of the owner.

A further object is to provide a novel electrical connection locking mechanism of more general usefulness, also.

Other and further objects will be explained hereinafter and will be more particularly pointed out in connection with the appended claims.

In summary, from one of its broadest aspects, the invention relates to an electrical connector having, in combination, fixed electric terminal means, such as television transmission-line outlet receptacles and the like; a cover permanently mounted, preferably intermediately pivotally mounted, in front of the electric terminal means and orientable about the permanent mounting between two positions; the cover being provided with aperture means for alignment with the electric terminal means there-behind when the cover is oriented in one of its said positions in order to permit access from in front of the cover to the electric terminal means, and with a solid-surface region for blocking such access to the electric terminal means when the cover is oriented in its other position. Position-locking means is provided including a position-locking pin and a lock-releasing key-receiving region fixedly positioned behind the cover, with the cover having openings for exposing each of the lock-releasing key-receiving region and the position-locking pin when the cover is oriented in each of its positions. Preferred locking mechanisms are hereinafter set forth in detail.

The invention will now be described in connection with the accompanying drawing, FIG. 1 of which is a longitudinal section of a preferred embodiment thereof taken along the line 1—1 of FIG. 2, looking in the direction of the arrows;

FIG. 2 is a front elevation with parts broken away to illustrate details of construction;

FIG. 3 is a view similar to FIG. 1 with a security insert in place; and

FIG. 4 is a front elevation of the security insert itself.

Referring to FIG. 1, a wall outlet and the like for use, for example, in connection with television-signal distribution from a master antenna system to a plurality of locations, is shown comprising a rear bracket 2' that may be fixedly secured to or within a wall by screws 9, and a cover plate 2 permanently centrally pivoted by a pin or permanent mounting 17 within an opening 15 in the bracket 2'. A distribution transmission line 1, 3, disposed within a wall cavity or behind the wall connects through an appropriate reactive and resistive network 4 to a pair of electrical terminal tubular receptacles 7 and 5, exposed through an opening 11 in the bracket 2' from which the receptacles are rearwardly mounted at 11'.

The pivot pin 17 has a forward reduced diameter section 19 terminating in a forward stop 18, and a rearward stop 16. The cover 2 is rotatably movable or orientable about the pivot pin 17, as shown in dotted lines in FIG. 2, to an inverted, but preferably symmetrical position with respect to the solid-line position of FIG. 2, as shown in FIG. 3. In addition, the cover 2 may be moved inward or outward with respect to the bracket 2' within the predetermined limits provided by the forward and rearward stops 18 and 16.

Outwardly bowing upper and lower leaf springs 21 and 23 are secured to the front face of the fixed bracket 2' to bear against the rear face of the movable cover 2 and thus to exert resilient action thereagainst. A hairpin spring 25, having the ends 27 of its spaced legs secured to the fixed bracket 2', centrally receives the pivot pin 17, and, in the solid-line position of FIG. 1, clamps against the shoulder L at the reduced-diameter section 19 of the pivot pin 17, thereby to lock the cover 2 in position, against the resilient action of leaf springs 21 and 23.

In this locked position, a locking pin 29, FIG. 2, carried by the fixed bracket 2' and extending on one side of the pivot pin 17 between the hairpin legs 25 protrudes through a corresponding aligned opening or slot 31 in the front cover 2, preventing any rotational movement of the cover 2. A further key-receiving opening 33 in the cover 2 is provided on the opposite side of the pivot pin 17, to enable the insertion therein of a key K, FIG. 1, which, when turned to the dotted position K', bears against and separates the legs of hairpin spring 25, at the key-receiving region 35 thereof, and thus permits outward movement of the cover 2 and rotational movement thereof, as the clockwise rotational movement shown by the dotted position of FIG. 1. The amount of outward movement is sufficient, as determined by the location of the rearward stop 16 of the pivot pin 17, to carry the locking-pin-receiving opening 31 beyond the free end of the locking pin 29 thereby rendering it ineffective to prevent rotation of the cover 2. Under such circumstances, the cover 2 may be rotated about the pivot pin 17 to the inverted position of FIG. 3, at which inward pressure upon the cover 2 will insert the locking pin through the former key-receiving opening 33 and clamp the hairpin spring 25 against the pivot pin shoulder L once more.

The cover 2 is provided with an insulating section 20 having a pair of apertures 5' and 7' for aligning with and permitting access to the electrical terminal receptacles 5 and 7 in the position of FIG. 3. In the other locked position of FIG. 2, however, the solid-surface cover region 20' blocks such access, as in FIGS. 1 and 2.

In order to provide additional security against misuse of this locked system, a cardboard or other C-shaped shield 8, FIGS. 3 and 4, may be inserted by, for example, the landlord between the front cover 2 and the rear bracket 2', with the opening 10 of the shield receiving the pivot pin 17, and the neck of the shield blocking the key-receiv-

ing region 35 between the legs of hairpin spring 25. The insertion of the key K will perforate the shield 8 and thereby enable the landlord to know whether someone has tampered with or otherwise falsely operated the lock, particularly if the landlord's signature or other predetermined marking is placed upon the shield 8 so that a substitute shield cannot be replaced without knowledge of such fact.

Further modifications will occur to those skilled in the art and all such are considered to fall within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. An electrical connector having, in combination, fixed electric terminal means; a cover permanently mounted in front of the electric terminal means and orientable about the permanent mounting between two positions; a locking pin; cover-position-locking means which, when locked, causes the locking pin to maintain the cover against orientation, the cover-position-locking means having a key-receiving region for receiving a key to unlock the same; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having openings disposed to provide an opening aligned with each of the said locking pin and key-receiving region when the cover is oriented into each of its said positions.

2. An electrical connector having, in combination, fixed electric terminal means; a cover permanently mounted in front of the electric terminal means and orientable about the permanent mounting between two positions; a locking pin; cover-position-locking means comprising a member for locking against the said mounting and which, when locked, causes the locking pin to maintain the cover against orientation, the cover-position-locking means having a key-receiving region for receiving a key to disengage the locking member from the said mounting; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having openings disposed to provide an opening aligned with each of the said locking pin and key-receiving region when the cover is oriented into each of its said positions.

3. An electrical connector having, in combination, fixed electric terminal means; a cover permanently mounted in front of the electric terminal means but movable within limits toward and away therefrom and orientable, when moved away, about the permanent mounting between two positions; a locking pin; cover-position-locking means for controlling the movement within the said limits and which, when locked, causes the locking pin to maintain the cover against orientation, the cover-position-locking means having a key-receiving region for receiving a key for releasing the said locking means in order to move the cover away from tthe electric terminal means and out of range of the locking pin; thereby to permit of the said orienting of the cover; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having openings disposed to provide an opening aligned with each of the said locking pin and key-receiving region when the cover is oriented into each of its said positions.

4. An electrical connector having, in combination, fixed electric terminal means; a cover permanently mounted in front of the electric terminal means but movable within limits toward and away therefrom and orientable, when moved away, about the permanent mounting between two positions; a member to engage the cover to prevent orientation thereof when the cover is moved toward the fixed electric terminal means; cover-position-locking means comprising a member for locking against the said mounting when the cover is moved toward the electric terminal means and a key-receiving region for receiving a key to disengage the locking member from the said mounting and to permit movement of the cover away from the electric terminal means, thereby to permit of the said orienting of the cover; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having openings disposed to provide an opening aligned with said key-receiving region when the cover is oriented into each of its said positions.

5. An electrical connector having, in combination, fixed electric terminal means; a cover permanently mounted in front of the electric terminal means and orientable about the permanent mounting between two positions; a locking pin; cover-position-locking means which, when locked, causes the locking pin to maintain the cover against orientation, the cover-position-locking means having a key-receiving region; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having openings disposed to provide an opening aligned with each of the said locking pin and key-receiving region when the cover is oriented into each of its said positions; and a shield, pierceable by the key that is to be inserted through the key-receiving cover opening, interposed between the cover and the electric terminal means to cover the said key-receiving region, but free of the aligned locking-pin opening and locking pin.

6. An electrical connector having, in combination, electric terminal means mounted fixedly upon a bracket; a cover intermediately pivoted to and in front of the bracket and rotatable about the pivot between two positions; a locking pin; cover-position-locking means comprising resilient legs mounted upon the bracket and clamping the said pivot and which, when clamped, cause the locking pin to maintain the cover against rotation, the cover-position-locking means having a key-receiving region to receive a key to unclamp the same; the cover being provided with aperture means and a solid-surface region for respective alignment with the electric terminal means in order to permit and to block access thereto, respectively, when the cover respectively occupies its two positions, and the cover having a pair of openings disposed to provide an opening aligned with each of the said locking pin and key-receiving region when the cover is rotated into each of its said positions.

7. An electrical connector as claimed in claim 6 and in which the said resilient legs are positioned to be separated upon movement of a key disposed in the cover-opening aligned with the said key-receiving region, thereby to unclamp the said pivot, the cover and the pivot being then movable away from the bracket a predetermined distance sufficient to render the cover-opening aligned with the locking pin free of the locking pin, thus to permit of rotation of the cover.

8. An electrical connector as claimed in claim 7 and in which the said pivot is provided with a shoulder for engaging the said resilient legs.

9. An electrical connector as claimed in claim 6 and in which the said locking pin and key-receiving region are disposed on opposite sides of the pivot within the said resilient legs.

10. An electric connector as claimed in claim 6 and in which a shield, pierceable by a key, is disposed between the cover and the bracket, covering the said key-receiving region.

11. An electric connector as claimed in claim 10 and in which the said shield is substantially C-shaped, with the

opening of the C receiving the pivot and the aligned cover opening and locking pin.

12. An electrical connector as claimed in claim 6 and in which the electric terminal means comprises a pair of connector receptacles such as television outlet receptacles and the like.

13. An electrical connector as claimed in claim 6 and in which the said aperture means are provided within an insulating member.

14. An electrical connector as claimed in claim 6 and

in which further resilient means is interposed between the bracket and the cover urging the latter away from the bracket.

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