July 14, 1936. R. L. LAUER 2,047,640

KNOCK-OUT BOX

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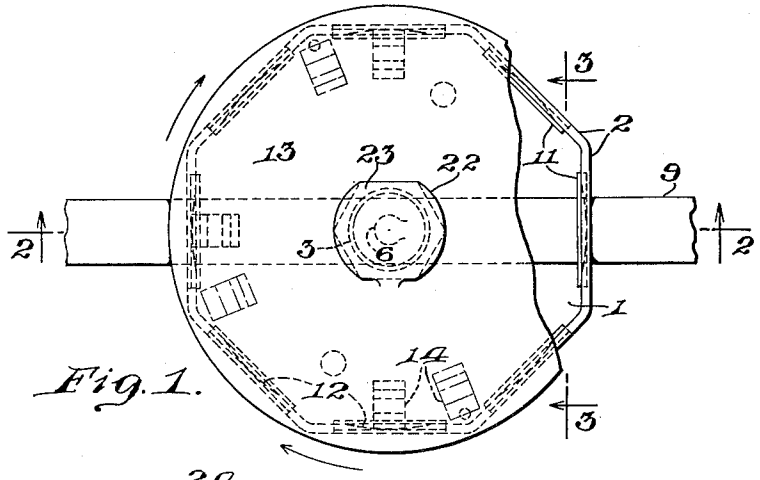


Fig. 1.

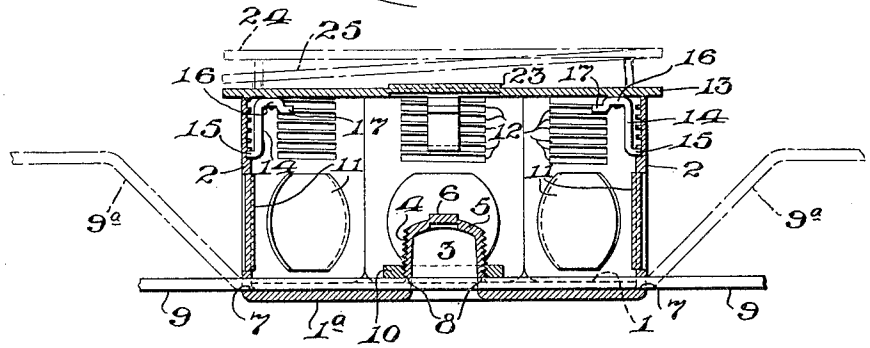


Fig. 2.

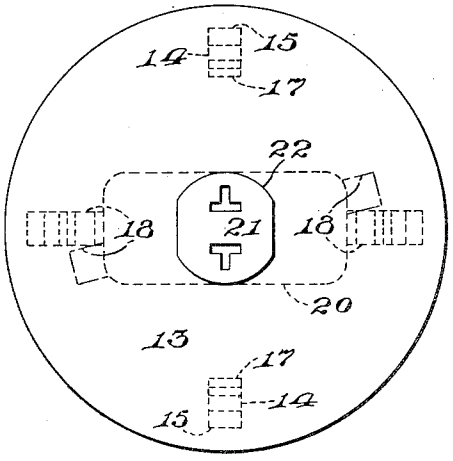


Fig. 4.

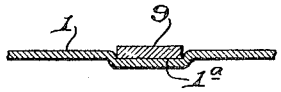


Fig. 3.

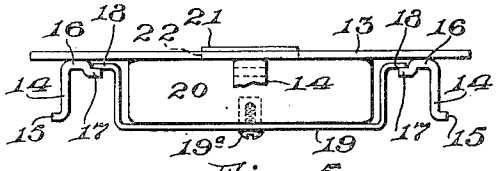


Fig. 5.

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KNOCK-OUT BOX

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8 Claims. (Cl. 247—19)

The object of the invention is to provide improvements in outlet and junction boxes, such as are particularly used in either concealed or exposed electric wiring, and frequently called knock-out boxes.

Another and more specific object is to provide for the elimination of screws as such from this type of box, as they are easily lost and even under the best conditions require time and a certain degree of dexterity to manipulate.

A further object therefore is to provide a construction, whereby the cover of such a box may by a simple means be attached to and detached from the box proper, and also may be attached thereto in various angular positions to adapt the plane of the cover to the plane of the adjacent wall, ceiling, floor, or other surface.

Still another object is to provide in such an improved box a cover-holding means which is also adapted to simultaneously support a switch or receptacle unit in operative relation with respect to the cover, the term receptacle unit being hereinafter employed generically to indicate either or both receptacle and switch or other units in such a box.

A still further object is to provide an improved means for adjustably supporting and normally fixedly securing the improved box in various positions upon the usual bar or strap support employed for this type of work.

With these and other objects in mind, the present invention comprises further details of construction and operation, which are fully brought out in the following description when read in conjunction with the accompanying drawing, in which Fig. 1 is a top plan view of a box and cover comprising one embodiment of the invention and with a portion of the cover broken away; Fig. 2 is a central longitudinal section on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary transverse section on the line 3—3 of Fig. 1; Fig. 4 is a top plan view of the cover per se provided with a receptacle unit, as representative of switch, receptacle and other units in general; and Fig. 5 is an end elevation of the cover and receptacle unit of Fig. 4.

Referring to the drawing, an outlet box is shown as comprising a base wall 1, from which a plurality of angularly positioned side walls 2 extend upwardly, while the central (or other) portion of said base wall is raised in any suitable manner, to provide a boss 3 having external threads 4 and closed at its inner end 5 except for a so-called knockout 6. Two of the side walls and the opposite sides of said boss in alignment with such walls are provided with aligned transversely elongated apertures 7 and 8, through which slidably extends a strap 9, rod, or bar, which is initially rectilinear and may be positioned in a diametrically extending depression 1^a in said bottom wall. The box can be slid along this strap or the like, either before or after the latter has been secured in place, and when in the desired position thereon, said strap may be bent substantially as indicated by the dot-and-dash lines 9^a, in order to set the box inwardly of the building wall upon which the strap is mounted, said box then being secured in the desired position by means of a nut 10, or a so-called hickey, adjustably carried by the threaded surface of said boss, as shown in Fig. 2.

Any or all of the side walls 2 of said box may be provided with knockouts 11, while each of said side walls is also provided with circumferentially spaced series of vertically spaced grooves 12, which may be pressed in said walls or may be cut therein by means of any suitable form of screw cutting device, it being noted that each groove is both arcuate and diagonally positioned, and from its deepest central portion gradually decreases in depth towards its ends, said grooves in fact being concentric with the axis of the box and of any desired cross section.

A disc-shaped box cover 13 is provided at spaced regions with depending parallel fingers 14, having angularly outwardly formed ends 15 for engagement within the grooves 12 selectively, the base 16 of each finger being attached in any suitable manner as by welding or the like directly to the cover, while beyond its point of attachment said finger is provided with any suitable form of unitary extension 14, positioned in spaced relation to the under surface of said cover, and adapted to removably support the free end portions 18 of a strap 19 or other suitable means, pivotally secured by a screw 19^a or the like to and carrying a receptacle 20, switch, or other fixture, which when present has its normally exposed portion 21 projecting through an aperture 22 in said cover, said aperture initially having preferably been closed by means of a knockout 23.

In use, this improved outlet box is positioned upon and secured to the strap as hereinbefore described. As many of the knockouts 11 are removed as may be necessary for the admission of wires, cables, or the like, and the knockout 21 is also removed if a receptacle or the like is to be provided for. This being done and it being desired to close the box, the cover is placed thereupon, the fingers 14 and their ends 15 entering

the box in the angular portions thereof between adjacent side walls, or in other words free from engagement with the thread grooves, into which said finger ends are then moved by rotating said cover in a (usually) clockwise direction. Also, instead of regularly positioned grooves as shown, it is of course possible to employ various forms and arrangements of cam surfaces for engagement by said fingers.

When securing the cover to the box, it may be possible to bring the two into close juxtaposition, as shown in Fig. 2, but if the box is set too far beneath or to the rear of the plaster or other wall, ceiling, or floor surface, the cover may take such a position as is indicated by the dot-and-dash lines **24**, while if the box is angularly positioned with respect to such wall, ceiling, or floor surface, the cover is adapted to assume the angular position indicated by the dot-and-dash lines **25**. Removal of the cover in any case merely necessitates its being rotated in the opposite direction to that by which it was first placed in operative position.

In the appended claims, reference to apertures in the walls and cover of the box is intended to cover the actual apertures as such or the partial provision of apertures spanned by the so-called knockouts **6**, **11** and **23**. Also, rotation of the cover may be accomplished by means of a spanner wrench or the like, or may be accomplished manually, in which latter case the operation may be facilitated by notching or corrugating the periphery of the cover in accordance with any suitable design.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:—

1. An outlet box, comprising side walls provided with vertically spaced angularly disposed recesses simulating sections of screen threads, and a cover provided with fingers adapted to engage within said recesses selectively, to provide for tilted relation of the cover with respect to the box, and the cover when axially rotated with respect to the box affording varying degrees of compactness of the former with respect to the latter.

2. A polygonal outlet box, comprising side walls provided with circumferentially spaced grooves angularly arranged to simulate spaced sections of screw threads, and a cover provided with fingers adapted to engage said walls within said grooves, and upon being rotated being operative to unite said cover more closely with said box.

3. A polygonal outlet box, comprising side walls provided with circumferentially spaced series of grooves angularly directed to simulate spaced sections of screw threads, and a cover provided with fingers adapted to enter the box at the angular junction of each pair of said walls, and upon said cover being rotated said fingers being operative to enter said grooves, to unite said cover more closely with said box.

4. An outlet box, comprising side walls provided with spaced recesses, and a cover having a potential aperture and fingers adapted to engage within said recesses selectively, said fingers also having portions forming means to support a fixture operatively with respect to said cover and the outlet therein when opened.

5. An outlet box, comprising side walls provided with circumferentially spaced series of grooves angularly arranged to simulate spaced sections of otherwise regular screw threads, and a cover provided with fingers adapted to enter the box between said spaced thread sections and in various angular relations with said box, said cover upon being rotated being operative to be drawn, by the fingers engaging the threads of said sections, into closer normal relation with said box.

6. An outlet box, comrising side walls provided with circumferentially spaced series of grooves angularly arranged to simulate spaced sections of otherwise regular screw threads, and a cover provided with fingers adapted to enter the box between said spaced thread sections and in various angular relations with said box, said cover upon being rotated being operative to be drawn, by the fingers engaging the threads of said sections, into closer normal relation with said box, said cover being provided with an aperture, and said fingers being provided with portions operative to support a fixture in operative relation to said aperture.

7. An equilateral outlet box, comprising side walls, each of which is provided with sets of vertically spaced recesses, and a cover provided with elongated resilient fingers having terminal portions adapted to enter said box between adjacent sets of recesses, and by angular movement of said cover with respect to said box, engaging within various combinations of said recesses of each of said sets selectively, to provide an angular relation of the cover with respect to the box.

8. A polygonal outlet box, comprising side walls provided with circumferentially positioned series of vertically arranged spaced grooves, angularly directed to simulate spaced sections of screw threads, and a cover provided with fingers adapted to enter the box at the angular junction of each pair of said walls, and upon said cover being rotated said fingers being operative to enter said grooves, to units said cover more closely with said box in planes having various angular relationship.

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