Dec. 11, 1928. 1,694,707

C. A. JOHNSON

OUTLET BOX

Filed June 13, 1924

Fig. 1.

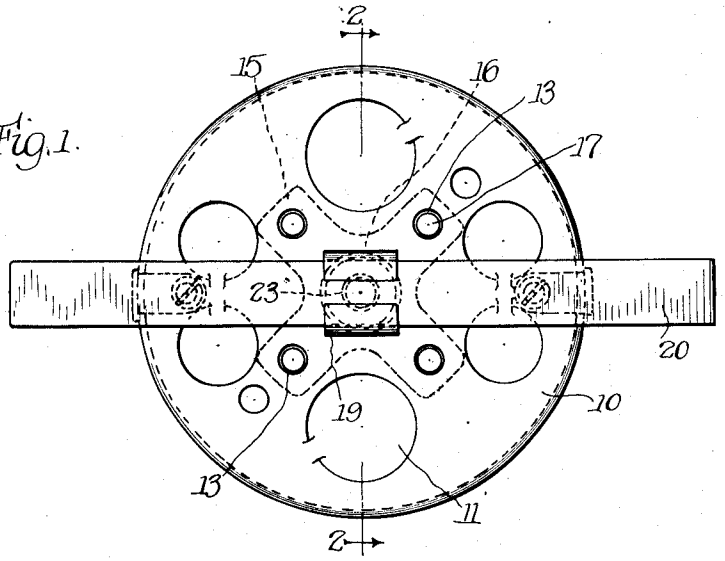


Fig. 2.

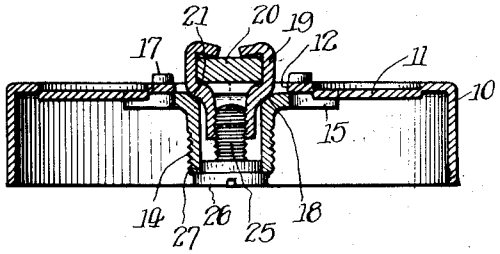


Fig. 3.

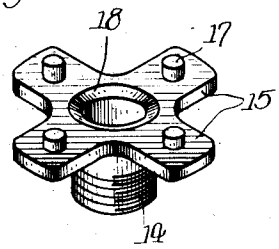


Fig. 4.

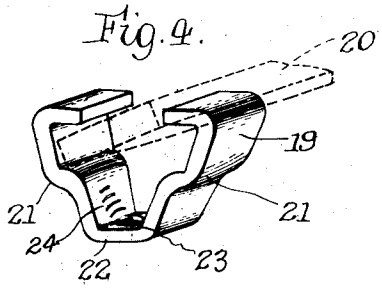


Fig. 6.

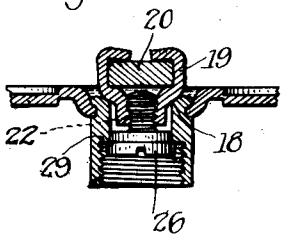
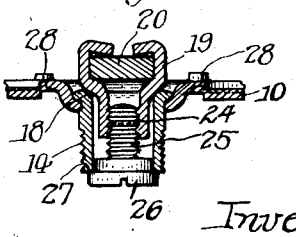


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHESTER A. JOHNSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHICAGO JEFFERSON FUSE & ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

OUTLET BOX.

Application filed June 13, 1924. Serial No. 719,708.

My invention relates to the outlet box art, and more particularly to an improved means of attachment and support for mounting outlet boxes in walls, ceilings, or other places where it may be desirable to locate them.

The primary object of my invention is to provide an electric outlet box with an improved means of attachment which is strong and affords a rigid and secure support for the outlet box and the connected electric fixture, and which is readily accessible from the interior of the box to facilitate ease of installation or detachment.

Another object is to provide an improved fixture stud and clamping hanger for outlet boxes which serves as a secure means for attachment of the electric fixture to the box and of the box and fixture to the wall.

A further object is to provide a combined fixture stud and box clamping hanger adapted to be made and sold separately as a unit, and to be removably used in connection with different kinds of standard outlet boxes as a means of attachment and support.

Other objects and advantages will become apparent as the description proceeds.

In the drawings, Figure 1 is a plan view of an outlet box equipped with a fixture stud and clamping hanger embodying the features of my invention.

Fig. 2 is a vertical section taken in the plane of line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the fixture stud spider.

Fig. 4 is a perspective view of the clamping loop for the spider.

Fig. 5 is a fragmentary section similar to Fig. 2 of a modified form of my invention.

Fig. 6 is a view like Fig. 5 of another modified form of my invention.

Referring first to the preferred embodiment of my invention illustrated in Figs. 1 to 4, 10 represents an outlet box of common construction having the usual knock-out plugs 11. While outlet boxes are made in many different sizes and shapes, and can be mounted in various places, I have herein shown a shallow cylindrical box which is usually located in the ceiling for hanging light fixtures. The back of the box 10 is formed with a central circular opening 12, and with a plurality of small apertures 13 spaced about the opening.

Mounted within the box 10 directly in line with the opening 12 is a stud 14 formed with a spider at its inner end comprising a plurality of lateral spaced legs 15. The stud 14 is hollow and is threaded on the outside for the attachment of some electric fixture (not shown). The legs 15, four in the present instance, are formed at their outer ends with pins or projections 17 which extend through the apertures 13 a substantial distance beyond the box, and serve to prevent relative rotation of the stud 14. The inner edge of the bore through the stud 14 is beveled or rounded to form a conical surface or an annular beveled edge 18. Preferably, the stud 14 is made in the form of a unitary casting which can be manufactured and sold separately, and can be selectively applied to any one of a variety of standard outlet boxes.

Extending into the inner end of the stud 14 is a hanger or clamping member having a pair of opposed arms 19 bent at their upper ends into the form of a split loop. The loop slidably engages a hanger bar 20 adapted to be secured to and supported by part of the ceiling structure (not shown); and to insure a firm grasp the split ends of the loop are bent inwardly a trifle to bite into the bar 20. The lower inclined edges of the loop constitute shoulders 21 which engage the conical surface 18. The lower ends of the arms 19 are connected by a cross web 22 having a threaded aperture 23, and are slightly curved and threaded at 24 to reinforce the threads in the aperture. As shown in Fig. 4, the arms 19 can be spread apart sufficiently to just pass over the side edges of the bar 20, thereby obviating the necessity of slipping the loop over the end of the bar 20, and rendering it easy to attach or remove the box 10.

Extending through the stud 14 into threaded engagement with the aperture 23 and the arms 19 is a screw bolt 25 having a large head 26. An annular notch 27 formed in the upper edge of the head 26 engages the lower end of the stud 16, and serves to center the bolt 25. Upon tightening the bolt 25 the conical surface 18 engages the shoulders 21 to close the loop against the bar 20; and the stud 14, box 10 and bar 20 are clamped firmly together. The pins 17 projecting up through the apertures 13 prevent any substantial turning of the bar 20 relative to the box 10, and hence facilitate the assembly or detachment of the parts.

In the modified form shown in Fig. 5, the stud 14 is permanently secured to the box 10

in any suitable manner. In the present instance, the central opening 12 is flared downwardly, and the upper end of the stud 14 is expanded and pressed against the flared portion of the opening. The expanded portion of the stud 14 presents the conical surface 18 for closing the loop against the bar 20. A plurality of projections 28 are stuck up from the back of the box to prevent relative pivotal movement of the bar 20. In other respects, the construction is similar to that shown in Figs. 1 to 4.

The modification shown in Fig. 6 differs from that shown in Fig. 5 in the provision of a stud 14 which is internally threaded and which is formed with an annular shoulder 29 at the base of the threads adapted to fit into the annular notch 27 in the bolt head 26. To bring the shoulders 21 of the clamping loop into engagement with the conical surface 18, the legs 19 below the loop are shortened to bring the cross web 22 a little above the shoulder 29.

While I have shown in the drawings and have described in detail the preferred embodiment of my invention and various modifications thereof for purposes of illustration, it is to be understood that I do not thereby intend to limit the invention to the construction shown, but aim in the appended claims to cover all modifications and alternative constructions falling within the spirit and scope of the invention.

I claim as my invention:

1. An outlet box comrising, in combination, a box having a central opening in its back and a plurality of apertures spaced about said opening, an apertured spider stud having a plurality of pins projecting through said apertures, a clamping member extending through said opening into said stud, said clamping member being bent into the form of a split loop and having a threaded opening substantially opposite the split, a supporting bar engaging said loop and extending across the back of said box and between said pins, and a threaded bolt extending through said stud from the front end thereof into threaded engagement with said clamping member to clamp the box, the stud and the bar rigidly together, the sides of the aperture in the stud and the sides of the split loop having cooperating means to draw the sides of the clamp together about the supporting bar as the bolt draws the clamping member into the stud.

2. An outlet box comprising, in combination, a box provided with an opening in its back and a plurality of apertures spaced about said opening, a hollow spider stud having a plurality of lateral legs, a plurality of pins on said legs projecting through said apertures a substantial distance to the rear of said box, a member extending through said opening into the inner end of said stud, a supporting rod extending through said member and between said pins, and a bolt engaging said stud and extending therethrough into threaded engagement with said member to clamp said stud, said box and said rod together.

3. An outlet box comprising, in combination, a box having an opening in its rear wall, a removable hollow stud positioned in said box in line with said opening, said stud being flared at its inner end to provide a bevel surface, a split clamping member extending into said stud and having shoulders adapted to engage said wedge surface, a supporting member extending through said clamping member and across the back of said box, and screw means engaging said stud and said clamping member for drawing said shoulders against said wedge surface to clamp said box, said stud, and said supporting member firmly together.

4. An outlet box comprising, in combination, a box having a rear opening, a tubular stud extending inwardly of the box in line with said opening, and having a beveled edge thereon, a split clamping member adapted to enter said aperture and having shoulders arranged to engage said bevel edge to close the clamp as the member enters the stud, a supporting member arranged to be clamped by said clamping member, and screw means for drawing said clamping member into said stud.

5. An outlet box comprising, in combination, a box, a removable stud positioned inside said box having an unvarying relation therewith, a clamping member extending through the back of said box into said stud and movable with respect to said stud, a supporting member extending through said clamping member across the back of said box, and screw means extending through said stud and threaded into said clamping member to effect said relative movement of the clamping member and the stud.

6. An outlet box comprising, in combination, a box, a hollow stud in said box, said stud having its inner end formed to provide a bevel surface, a split clamping member having a pair of shoulders positioned to engage said bevel surface, a supporting bar extending through said clamping member across the back of said box, screw means engaging the front end of said stud and extending therethrough into threaded engagement with said clamping member to force said shoulders yieldingly against said bevel surface, and means projecting rearwardly from the back of said box for preventing relative pivotal movement of said supporting bar.

7. An outlet box comprising, in combination, a box having an opening in its back, a tubular fixture stud in line with said opening within said box, a clamping member comprising a pair of opposed arms bent at their free ends into the form of a loop and con-

nected at their other ends with a cross member having a threaded aperture, the sides of said arms being threaded to reinforce said threaded aperture, supporting means extending through said loop and across the back of said box, and screw means extending through said stud into threaded engagement with said aperture and said arms to clamp said supporting means firmly in place.

8. An outlet box comprising, in combination, a box and stud structure having an aperture and providing an edge about the aperture, a supporting member for said box, a split clamping member engaging said supporting member and having wedge shoulders positioned to seat on said edge, and means for moving said clamping member into the aperture of said box to force said shoulders against said edge and secure said box to said supporting member.

9. A clamping unit for an outlet box having in its rear wall the usual substantially central opening and spaced apertures about said opening comprising, in combination, a hollow stud having means cooperating with said apertures to definitely position said stud with reference to the opening in the rear wall of the box, a hanger having spaced hooked clamping jaws adapted to grasp a part to which said box is to be clamped for supporting the box, said hanger projecting into the hollow of said stud and adapted to pass through the opening in the box, shoulders on the jaws of said hanger to engage with the end of the stud into which the hanger projects, said shoulders being angularly inclined to cause said jaws to close, and screw means acting on said hanger to draw said shoulders toward the stud to close the jaws.

10. A clamping member for outlet boxes comprising, in combination, a pair of spaced arms bent to provide a pair of inclined shoulders, and a cross member connecting two ends of said arms and having a threaded aperture of a diameter such that the aperture is substantially tangential to the arms, said arms near the cross member being adapted to be bent into a position perpendicular to the plane of said aperture, and each arm being partially threaded adjacent said aperture to reinforce the threads of the latter in the bent position of the arms.

11. An outlet box comprising, in combination, a box having a substantially central opening in the rear wall thereof, a member extending inwardly of said box having an opening therethrough concentric with respect to said opening in said box, the margin of one of said openings being formed to provide a bevelled surface, a split clamping member adapted to be drawn into said openings, said member having an outwardly flaring portion on either side thereof to engage said bevelled surface, and screw means engaging said inwardly extending member and having a threaded engagement with said clamping member to draw said clamping member into said openings and to force said flaring portions against said bevelled surface.

12. In combination, an outlet box having a tubular member extending inwardly of said box to provide an opening into said box, a split clamping member having shoulders to engage the margin of said opening, a supporting bar extending through said clamping member across the back of said box, and screw means engaging the front end of said tubular member and extending therethrough into threaded engagement with said clamping member to draw said clamping member axially of said box and into longitudinal clamping engagement with said supporting bar and to force said shoulders yieldingly against said margin to move said clamping member into lateral engagement with said supporting bar.

13. In combination, an outlet box having a stud extending inwardly of said box, said stud and box having an opening therethrough, a divided clamping member having shoulders adapted to engage the outer margin of said opening, a supporting bar extending through said clamping member across the back of said box, and screw means engaging said stud and extending through said opening into threaded engagement with said clamping member to force said shoulders against said margin whereby a lateral engagement of said clamping member with said supporting bar is effected.

In testimony whereof, I have hereunto affixed my signature.

CHESTER A. JOHNSON.