Aug. 10, 1926. 1,595,972

F. C. DE REAMER

LIGHTING FIXTURE

Filed Sept. 9, 1921 2 Sheets-Sheet 1

Fig.1.

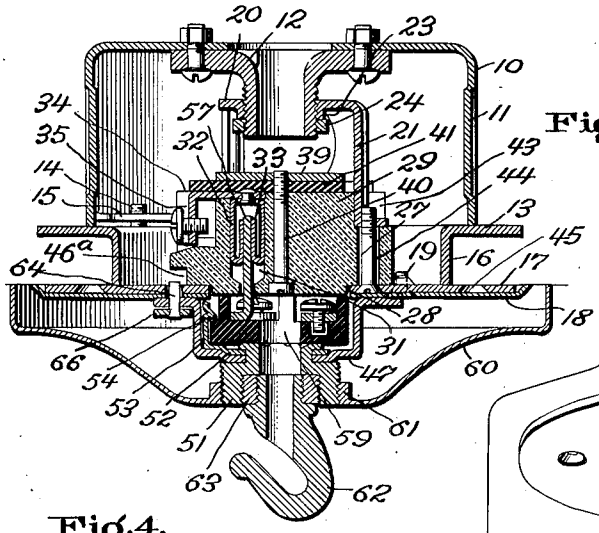


Fig.2.

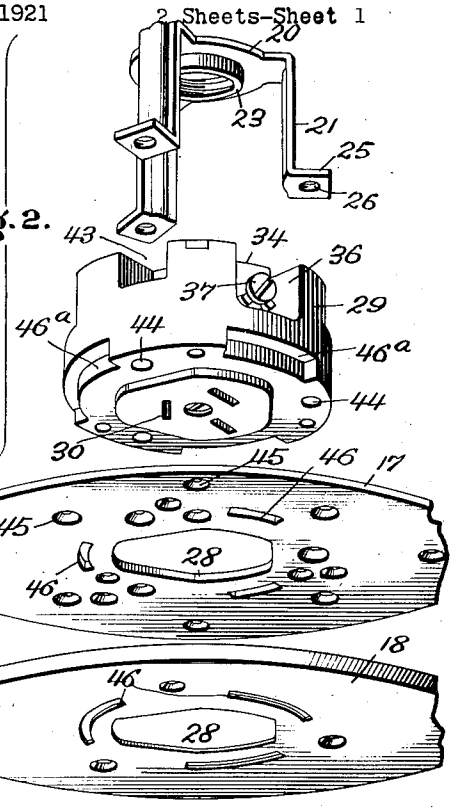


Fig.4.

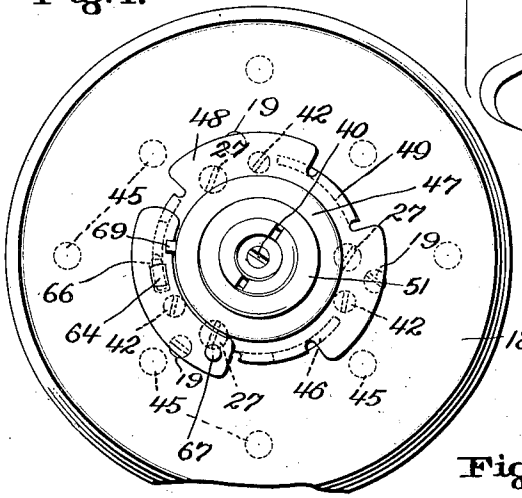


Fig.3.

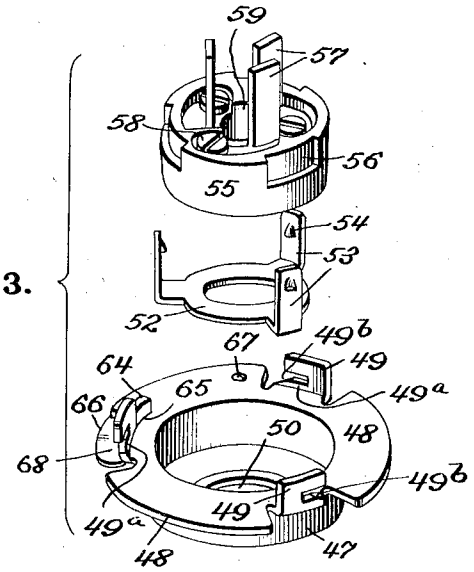
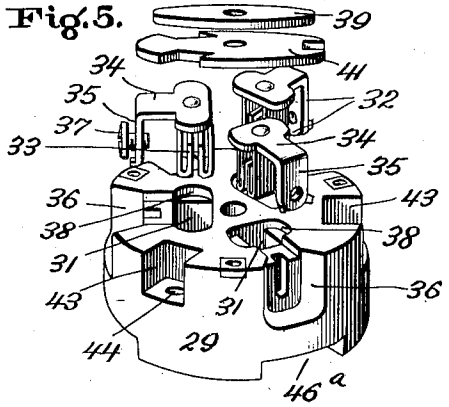


Fig.5.



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Fig.6.

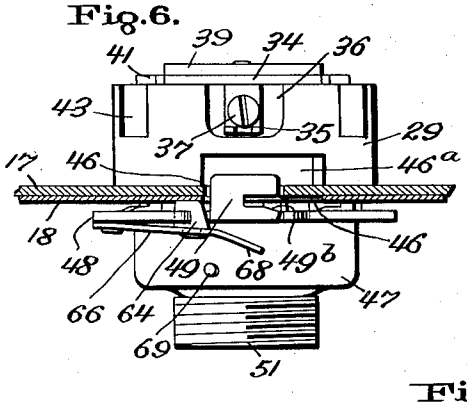


Fig.7.

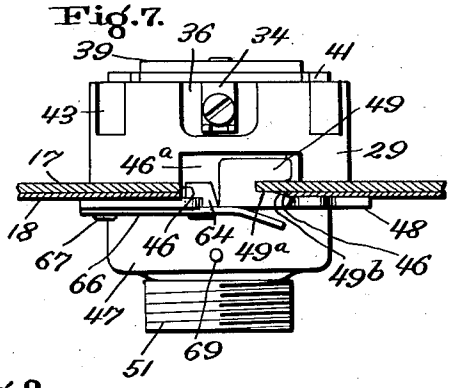


Fig.8.

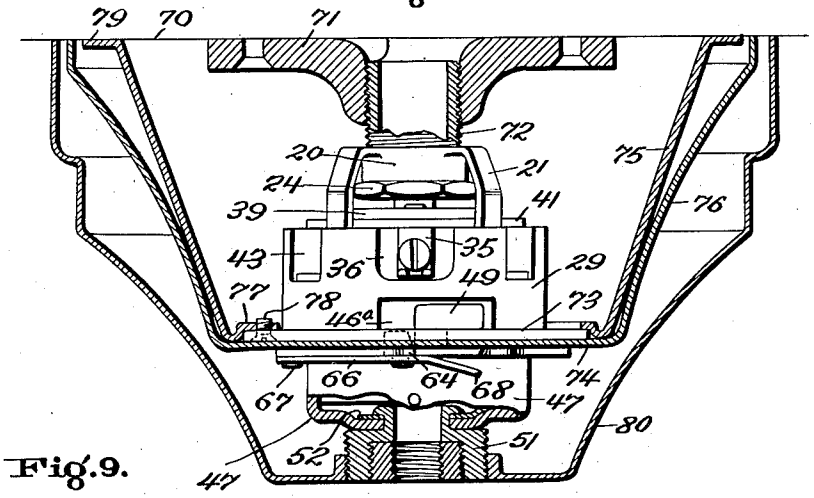
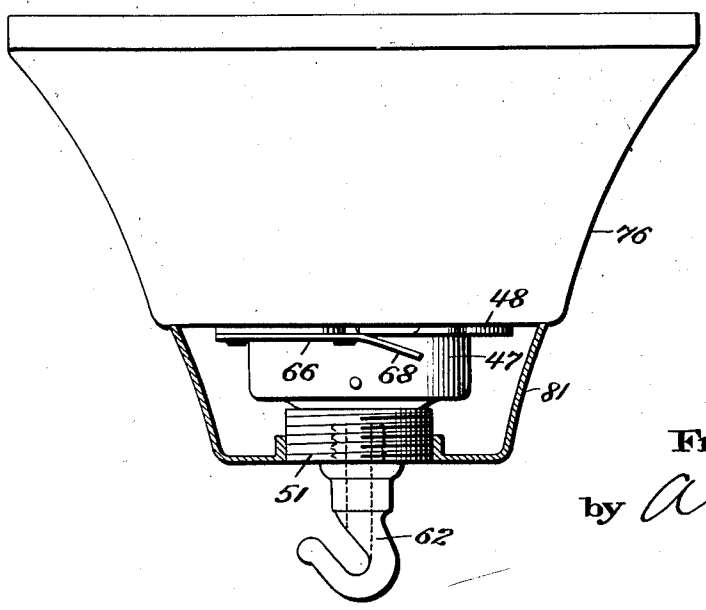


Fig.9.



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Patented Aug. 10, 1926. 1,595,972

UNITED STATES PATENT OFFICE.

FRANK C. DE REAMER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

LIGHTING FIXTURE.

Application filed September 9, 1921. Serial No. 499,486.

The present invention relates to lighting fixtures such as wall brackets, ceiling fixtures and the like, and particularly fixtures of the type wherein the wall or ceiling portion of the fixture comprises a wired unit and the bracket or hanging portion of the fixture comprises a second wired unit, the latter being adapted to be detachably connected mechanically and electrically to the former, electrical connections being made by means of a receptacle and plug connection.

The object of my invention is to provide an improved structure and arrangement in apparatus of this character, and for a consideration of what I believe to be novel and my invention attention is directed to the accompanying description and the claims appended thereto.

More particularly the object of my invention is to provide an improved arrangement for attaching a lamp bracket or lamp hanging means to the wall portion of a fixture whereby the bracket or hanging portion of the fixture may be attached to and detached from the wall portion in a manner as simple and easy as that of attaching and detaching an ordinary plug to and from a receptacle, whereby any person may be enabled to mount the fixture in place or change it at will without the assistance of an electrician. In other words, the arrangement is such that there are no electrical connections to be soldered and taped as is usually the case. At the same time, the attachment of the fixture is strong and firm and imposes no strains on the electrical connection, this latter being a matter of primary importance.

It is to be understood that I use the term "wall" in a generic sense and by such term I mean to include either a side wall or a ceiling. However, the particular structure illustrated in the drawing is more particularly adapted and intended for a ceiling fixture and I have so illustrated and described it, but it will be understood that the invention is not necessarily limited to such use.

In the drawing, wherein I have illustrated apparatus embodying my invention, Fig. 1 is a sectional view of a fixture structure illustrating one form of my invention, the hanging or detachable portion of the fixture being shown connected to the wall portion; Fig. 2 is an exploded view in perspective of the wall portion of the fixture; Fig. 3 is an exploded view in perspective of a part of the hanging portion of the fixture; Fig. 4 is a face view showing the hanging portion of the fixture fastened to the wall portion, the canopy and hook being omitted for purposes of illustration; Fig. 5 is an exploded view of the plug receptacle which forms a part of the wall portion of the fixture; Figs. 6 and 7 are side elevations illustrating the manner in which the hooks and locking means cooperate with the face plate; and Figs. 8 and 9 illustrate modifications.

Referring to the drawing, 10 indicates an outlet box provided with the usual knock-out plugs 11, fixture stud 12 and cover 13, the latter being fastened to the box by screws 14 which thread into ears 15 carried by the box. As is well understood an outlet box is usually embedded in the wall of the building with its outer face flush with the surface of the wall but this may not necessarily be the case as sometimes the outlet box may project beyond the surface of the wall or be attached to the surface. The particular type of cover plate illustrated is one used with plastered walls and ordinarily the plaster surface will be flush with the edge of flange 16 of the cover.

Fastened to the outlet box is a face plate which in the present instance comprises two members, a sub-plate 17 and a finishing plate 18, fastened together by screws 19. Finishing plate 18 is used primarily to give a finished appearance to the face plate and may be omitted if found desirable. In this case, plate 17 alone will serve as a face plate. The face plate may be attached to the outlet box in any suitable manner and supported from any suitable part of the box. Preferably, however, I support the face plate from the fixture stud 12 so that the weight of the fixture which is hung from the outlet box will be carried by the fixture stud. To this end, I provide a yoke member 20 having three legs 21 as best shown in perspective at the top of Fig. 2. The central portion of the yoke is provided with a flanged threaded opening 23 which screws onto the fixture stud 12, and is locked in adjusted position by a lock nut 24. The legs of the yoke terminate in outwardly bent flat ends 25 having threaded openings 26 into which thread the ends of screws 27 which extend through openings in the face plate and serve to fasten the face plate to legs 21.

The heads of screws 27 are preferably countersunk in subplate 17 and are covered by finishing plate 18 thus preventing their showing on the surface of the face plate. When screws 27 are screwed down the face plate will be clamped firmly against the end of flange 16. By adjusting the yoke on the fixture stud a firm seating of the face plate against the outlet box is assured. Also by such adjustment the structure may be applied to outlet boxes of varying depth.

At the center of the face plate is an opening 28 and fastened to the rear of the face plate with its forward end presented to opening 28 is a plug receptacle which may be of any suitable structure. In the present instance it is shown as comprising a mounting block 29 having slots 30 in its face through which the contacts of a contact plug are adapted to pass. Slots 30 open into recesses 31 in which are located receptacle contacts 32. The receptacle contacts are shown as comprising U-shaped members the ends of which are reversely bent on themselves to form adjacent spring contact fingers 33, between which a plug contact is adapted to pass. Riveted to the yokes of the U-shaped contact members are connectors 34 having angularly bent ends 35 which lie in recesses 36 in the mounting block and carry binding posts 37 to which the lead wires are connected. The connectors 34 have enlarged heads as best shown in Fig. 5 and are seated in shallow recesses 38 in the mounting block, the arrangement being such as to prevent the connectors from twisting. Any suitable number of contacts may be provided. In the present instance I have shown three since this will take care of all usual cases arising in fixture work. All the contacts may be wired or only two as desired. In assembling the plug receptacle, contacts 32 are slipped axially into recesses 31, the bent ends 35 of the connectors at the same time entering recesses 36, and the straight portions lying in shallow recesses 38. They are then held in place by a metal disk 39 and a screw 40 which extends axially through the mounting block, there being a disk of insulation 41 between the metal disk and the connectors. Disk 41 is larger than disk 39 and extends well over the connectors 34. By this arrangement no attaching screws are necessary to fasten the contacts individually to the mounting block and the assembly of them in the block is a simple matter.

The mounting block is fastened to the face by screws 42, three being illustrated. It is also clamped against the face plate by the same screws 27 which fasten the face plate to the fixture stud. To this end the mounting block is provided with spaced recesses 43 in which the ends of legs 21 lie and holes 44 through which screws 27 pass. The mounting block is thus clamped between the face plate and the angular ends of legs 21 and is firmly held against the face plate. As best shown in Fig. 5 disk 41 is notched in line with recesses 43. Referring particularly to Figs. 2 and 4, it will be seen that the face plate is provided with three holes for the screws 19, three holes for screws 27, three holes for screws 42, and a suitable number of holes 45 which adapt the face plate for attachment to different types of existing boxes. This adapts one cover plate for both old and new work.

Formed in the face plate are a suitable number of slots 46 grouped around central opening 28 in spaced relation to each other. The slots are arcuate in shape and lie on the circumference of a circle having its center at the center of the face plate. In the present instance three slots are shown. These slots are adapted to cooperate with hook members formed on the hanging or supporting portion of the fixture and ordinarily it is desirable that the hook members engage with the subplate only so as not to mar the surface of the finishing plate. The portion of slots 46 in the finishing plate are accordingly made longer than in the subplate so the hooks will engage with the subplate only as will appear more clearly hereinafter. To accommodate the hooks mounting block 29 is provided with recesses 46^a which lie just back of slots 46 and are sufficiently long and deep to receive the hooks and permit of the required amount of movement of the hooks to bring them into engagement with the face plate.

The fixture supporting element or hanging portion of the fixture comprises a cylindrical casing or supporting member 47 made of metal and provided with three spaced, out-turned flange sections 48 between which are forwardly projecting hooks 49, which correspond in spacing to slots 46 in the face plate. The flange sections present a flat surface adapted to lie against the face plate and the hooks project forward from such flat surface.

Since the hooks are intended to engage with the subplate 17 only, they are set forward from the flat surface of the supporting member as indicated at 49^a by an amount substantially equal to the thickness of the finishing plate. Also the surface at the entrance edge of each hook is preferably beveled as indicated at 49^b to provide an inclined surface so that when the supporting member is turned to bring the hooks into engagement with the face plate the inclined surfaces will ride along the edges of the slots thereby forcing the supporting member slightly away from the face plate. This provides a small amount of clearance between the flange portions 48 and the face plate which clearance serves to take care of

any variations in thickness of the two face plates which may be occasioned by variations in the thicknesses of materials or to plaster between the face plates, for example. In case a finishing plate is not used or it is desired to hook over the finishing plate also, the hooks would preferably not be set forward as is obvious. The hooks are of a width substantially equal to the thickness of the plate with which they engage.

In the bottom of the casing is a central opening 50 in which is fixed a boss 51 threaded both outside and inside. The boss is fastened in place by having its edge turned out over the edge of opening 50 as shown in Fig. 1, and held under the outturned edge is a ring 52 from which projects three spaced spring fingers 53 having inwardly projecting beads 54 at their ends. In casing 47 is a contact plug comprising a mounting block 55 having three arcuate recesses 56 over the edges of which beads 54 lie. The plug can be mounted in the casing by pushing it in between fingers 53 which spread apart as the plug pushes against beads 54 and when the edges of recesses 56 move beyond the beads, they spring over such edges. As shown in Fig. 1, there is sufficient space between the plug and casing to permit of the necessary movement of arms 53 for inserting and removing the plug. This serves to detachably hold the plug in the casing. Recesses 56 are sufficiently long to permit a limited amount of relative turning movement between the plug and casing. Fixed to the mounting block are three contacts 57 adapted to enter slots 30 in the plug receptacle and at 58 are binding screws for fastening lead wires to contacts 57. Slots 30 and contacts 57 are preferably arranged so the plug must be applied to the receptacle always in the same way and to this end two of the slots 30 and contacts 57 are arranged radial and the third one in each case is arranged at an angle to the radial, preferably at a right angle. At the center of mounting block 55 is an opening 59 for the passage of lead wires.

The outside of boss 51 is adapted to have a canopy 60 screwed onto it, the canopy illustrated having a threaded collar 61. The inside of boss 51 is adapted to receive various types of lighting fixtures. For example, in case the fixture comprises a supporting tube, the end of the tube may be threaded into the boss. Or if the fixture is hung with a chain, a hook as shown at 62 may be screwed into the boss. For various sized supporting elements adapters as shown at 63 may be used.

To lock the supporting member 47 to the face plate I provide a locking means comprising a head 64 located in a recess 65 in one of the flange sections 48 just back of a hook member 49. Head 64 is carried by a flat spring 66 riveted to the flange sections 48 as indicated at 67, the free end of the spring projecting beyond head 64 and curving outwardly to form a finger piece 68 by means of which the spring may be lifted away from the flange section to pull head 64 outward. On the side of casing 47 is a projecting pin 69 which forms a stop to limit the movement of spring 64. When the supporting member 47 is fastened to the face plate by bringing hooks 49 into engagement with the edges of slots 46, head 64 is adapted to enter a slot 46 and substantially fill the space back of the hook.

In use the wall portion of the fixture is fastened in a wall, for example a ceiling, in the usual manner, the face plate being flush with the surface of the wall or projecting somewhat beyond it as the case may be; the plug receptacle is permanently wired to the power circuit. The hanging portion of the fixture is wired permanently, one end of the lead wires being connected to plug contacts 57 by binding screws 58 and the other end of the wires being connected to the lamp socket or sockets or other devices carried by the hanging portion of the fixture. This thus forms a completely wired unit.

To connect the hanging portion of the fixture to the wall portion, contacts 57 are inserted through openings or slots 30 and pushed into engagement with receptacle contacts 32, hooks 49 passing through slots 46. The supporting member is pushed forward until flange portions 48 engage the surface of the face plate. Hooks 49 will now have passed beyond the face plate into position to engage with the edges of the face plate slot. Supporting member 47 is now given a turning movement to bring the hooks into engagement with the rear surface of the face plate thus fastening the supporting member 47 to the face plate. During the initial turning movement of the supporting member, the beveled surfaces 49^b slide along the edges of the face plate slots and move the supporting member slightly outward from the face plate for the purpose already described. When the supporting member 47 is turned to bring the hooks into engagement with the face plate slots, it turns relatively to the contact plug which is held stationary due to its connection with the receptacle. Arcuate recesses 56 are sufficiently long to permit of the necessary amount of relative movement to effect the fastening of the supporting member to the face plate. When supporting member 47 is pushed toward the face plate to pass hooks 49 through slots 46, locking head 64 strikes the surface of the face plate just behind or at the edge of a slot 46 and is pushed outwardly thus putting spring 66 under compression. (See Fig. 6.) Now when sup-

porting member 47 is turned to engage the hooks with the face plate, head 64 will come into line with the adjacent slot 46 and will spring into it substantially filling the space back of the hook as best shown in Fig. 7. The supporting member is thus locked to the face plate.

To remove the hanging portion of the fixture it is only necessary to pull locking head 64 out of slot 46 by means of finger piece 68, give the supporting member 47 a turn to release the hooks from the face plate, and then pull the hanging portion of the fixture away from the wall portion. The flange portions 48 form in substance a complete flange surrounding the marginal edge of the supporting member, the same being only interrupted by the material which is stamped up from it to form the hooks.

Apparatus embodying my invention may be built to meet various wiring conditions, one such being illustrated in Figs. 8 and 9. In connection with old wiring it is often the case that no outlet box has been used, the fixture being supported from a crow foot or tripod fastened to the wall and Figs. 8 and 9 show an embodiment of my invention adapted for use in such cases. In these figures 70 indicates the surface of a wall, for example a ceiling, to which is attached a crow foot 71. To adapt my invention for use under such conditions I thread a fixture stud 72 into the crow foot and support the wall portion of the fixture from this, screwing yoke 20 onto the stud and fastening it with lock nut 24. This spaces the face plate from the wall and to support it and enclose the plug receptacle and wiring I provide a surrounding side wall which may be formed integral with the face plate or as a separate member to which the face plate is fastened. In the present instance the face plate is shown as comprising a sub-plate 73 and a finishing plate 74, and the end wall comprises two members, an inner wall 75 and an outer wall or finishing wall 76. Wall 75 is preferably formed of fairly heavy metal and has an internal flange 77 to which sub-plate 73 is fastened by screw 78. It is also provided with an out-turned flange 79 which rests against wall 70 to give a firm seating. Wall 75 is the main supporting portion of the side wall. Finishing wall 76 is preferably formed integral with finishing plate 74. It surrounds wall 75 and is given a suitable shape so as to present a pleasing appearance. These walls form in substance a casing which carries the face plate and takes the place of and performs in part the functions of an outlet box.

When the hanging portion of the fixture is connected to the wall portion, the supporting member or casing 47 together with the wall portion of the fixture may be completely covered by a canopy 80 which threads on to boss 51; or as shown in Fig. 9, casing 47 alone may be covered by a canopy 81 which screws on to boss 51 and is shaped to blend with the contour of finishing wall 76.

The type of fixture structure illustrated in Figs. 8 and 9 is the same as shown in Figs. 1 to 7 and the same reference numbers have been applied to corresponding parts for purposes of indentification.

In the use of my invention, the house or other building will be provided at the desired points with wired receptacles such as form the wall portion of my improved fixture. For example, there may be several in each room. As many hanging fixtures may be provided as found desirable and these may be transferred from one wall receptacle to another and from one room to another at will in the manner already explained, and this as easily as connecting an ordinary plug to a receptacle.

It is furthermore to be noted that by my invention I modify existing structures but little. In the case of the wall portion of the fixture it is only necessary to provide openings in the face plate to receive the supporting hooks, and where a house is already wired with flush plate receptacles, the plate already there may be modified by providing openings in them or new plates may be substituted. In the case of fixtures hung without outlet boxes the hanging fixture is removed and a suitable wall portion attached to the supporting element in the wall and wired to the power circuit. In the case of the bracket portion of the fixture any existing structure may have attached to it a supporting member or a casing structure with a plug therein.

In accordance with the provisions of the Patent Statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention may be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a lighting fixture, a wall portion comprising a face plate having a flat front provided with circumferentially spaced slots, and a hanging portion comprising a supporting member which presents a flat surface and hook members formed integral with and projecting forwardly from the marginal edge of such surface, said hook members being adapted to enter the face plate slots and be brought into engagement with the rear surface of the face plate by

a turning movement of the supporting member relatively to the face plate.

2. In a lighting fixture, a wall portion comprising a face plate having a flat front provided with a central opening and arcuate slots spaced around the opening, and a hanging portion comprising a supporting member which presents a flat surface and curved hook members formed integral with and projecting forwardly from a marginal edge of such surface, said hook members being adapted to enter the face plate slots and be brought into engagement with the rear surface of the face plate by a turning movement of the supporting member relatively to the face plate.

3. In a lighting fixture, a wall portion comprising a receptacle having contacts and a face plate having a flat front provided with slots, a hanging portion comprising a casing having hooks adapted to enter said face plate slots and be moved into engagement with their edges by a turning movement, and a plug in said casing having contacts adapted to be pushed into engagement with the receptacle contacts at the same time the hooks enter the face plate slots, said casing being movable circumferentially relatively to the plug to bring the hooks into engagement with the edges of the face plate slots.

4. In a lighting fixture, a wall portion comprising a receptacle having contacts and a face plate having a flat front provided with slots, a hanging portion comprising a casing having hooks adapted to enter said face plate slots and be moved into engagement with their edges by a turning movement, a plug in said casing having contacts adapted to be pushed into engagement with the receptacle contacts at the same time the hooks enter the face plate slots, said casing being movable circumferentially relatively to the plug to bring the hooks into engagement with the edges of the face plate slots, and means for locking the casing to the face plate.

5. In a lighting fixture, a wall portion comprising a receptacle having contacts and a face plate having a flat front provided with slots, and a hanging portion comprising a supporting member having hooks adapted to enter said face plate slots and be moved into engagement with their edges by a turning movement, a plug having contacts which are adapted to be pushed into engagement with the receptacle contacts at the same time the hooks enter the face plate slots, said supporting member being circumferentially movable relatively to the plug to bring the hooks into engagement with the edges of the face plate slots, and a locking member which enters a face plate slot behind one of the hooks to lock the supporting member to the face plate.

6. In a lighting fixture, a wall portion comprising a receptacle having a face plate with a flat front provided with slots, a bracket portion comprising a supporting member which presents a flat surface to the face plate, hook means which project forwardly from said flat surface, said hook means being adapted to enter the face plate slots, and a connecting plug associated with said supporting member adapted to make electrical connection with said receptacle, said supporting member being adapted to be turned relatively to the plug to bring the hook means into engagement with the edges of said slots.

7. In a lighting fixture, a wall portion comprising a receptacle having a face plate provided with slots, and a hanging portion comprising a casing having a flange surrounding one edge, hook members projecting forwardly from said flange, and a connecting plug mounted in said casing adapted to make electrical connection with the plug receptacle, said casing being adapted to be turned to bring the hook members into engagement with the edges of the slots.

8. A fixture unit comprising a casing having an open side which presents a flat surface and a flange projecting at a right angle to the casing and lying in the plane of such surface, spaced hook members which project forwardly from said flat surface, a contact plug in the casing, and means whereby wiring for the fixture may be connected at one end of said plug.

9. The combination with a face plate having spaced slots therein, of a supporting member comprising an annular casing provided with a flanged edge and hook members projecting forwardly from such flanged edge and adapted to enter said slots to fasten the supporting member to the face plate, said hook members being formed by undercut slots of a width substantially equal to the thickness of the face plate.

10. In a device of the character described, the combination of a receptacle having contacts, a face plate which is fixed in position with respect to the receptacle and has a central opening and arc-shaped slots which are angularly spaced with respect to each other, a supporting member which has a flange that extends parallel to the plate, portions of the flange being bent over to form hooks which enter the slots and engage the back face of the plate, an attachment plug located in the casing, the blades of which pass through said central opening into the receptacle, means for retaining the plug in the casing while permitting limited relative movement between the two, and a fixture support which is carried by the casing.

11. In a device of the character described, the combination of a receptacle having contacts, a face plate which is fixed in posi-

tion with respect to the receptacle and has spaced hook receiving slots, a detachable casing having an out-turned flange which faces the plate, and is divided into segments, hooks on the casing which are located between said segments and enter the slots in the plate and engage the back face thereof, an attachment plug in the casing for establishing electrical connection with the contacts in the receptacle, means permitting relative movement of the plug and casing to permit the hooks to engage and be disengaged from the plate, a fixture support which is carried by the casing, and a locking block which extends through an opening in the flange to fill the space in a plate slot behind a hook after the latter is seated.

12. In a device of the character described, the combination of a receptacle having contacts, a face plate which is fixed in position with respect to the receptacle, and has spaced hook-receiving slots, a detachable casing having an out-turned flange which faces the plate, and is divided into segments, hooks on the casing which are located between said segments and enter the slots in the plate and engage the back face thereof, an attachment plug in the casing for establishing electrical connection with the contacts in the receptacle, means permitting relative movement of the plug and casing to permit the hooks to engage and be disengaged from the plate, a fixture support which is carried by the casing, and a locking block for one of the hooks which block is located in a slot in the flange, and is arranged to enter a plate slot behind a hook, and a flat spring which forms the support for the block and is itself secured to the flange.

13. In a device of the character described, the combination of a fixture supporting casing which is provided with hooks to support the weight of the fixture, an attachment plug which is located in the casing and comprises a disk of insulating material and contact devices carried thereby, said disk having a recess defining a shoulder and a resilient member which is secured to the casing and engages the shoulder of the recess and retains the plug in the casing, said recess having a length such that the casing may turn relatively to the disk a distance sufficient to effect engagement of the hooks with a support.

14. In a device of the character described, the combination of a fixture supporting casing which is provided with hooks to support the weight of the fixture, an attachment plug which is located in the casing and comprises a disk of insulating material and contact devices carried thereby, said disk having recesses defining spaced shoulders, and a member which is secured to the casing and has spring arms which engage the shoulders of the recesses and retain the plug in the casing, said recesses having lengths such that the casing may turn relatively to the disk a distance sufficient to effect engagement of the hooks with a support.

15. In a device of the character described, the combination of a fixture supporting casing which is provided with hooks to support the weight of the fixture, an attachment plug which is located in the casing and comprises a disk of insulating material and contact devices carried thereby, said disk having arc-shaped recesses defining spaced shoulders, and a member which is secured to the casing and has spring arms which engage the shoulders of the recesses, said arms being narrower than the recesses to permit relative angular movement between the disk and the casing sufficient to effect engagement of the hooks with a support.

16. In a device of the character described, the combination of a fixture stud, a yoke carried thereby which is provided with arms, a body of insulating material which is provided with peripheral recesses, one for each arm, screws which pass through the body and enter the arms for securing the body to the yoke, said body also having internal recesses, contact devices located in the internal recesses, a connector to which each of the devices is secured, each said connector having an enlarged head which is seated in the body and is held against turning thereby, means for attaching circuit wires to the connectors, and a means common to the connectors for securing them in place.

17. In a lighting fixture, a wall portion comprising a face plate having a flat front provided with spaced slots and a casing member which carries the face plate and is adapted to fit against the surface of the wall to hold the face plate in spaced relation thereto, a supporting member having hooks adapted to engage with the face plate slots, a boss on the supporting member, and a canopy carried by the boss to cover the supporting member.

In witness whereof, I have hereunto set my hand this 2d day of Sept., 1921.

FRANK C. DE REAMER.