Dec. 27, 1955 S. L. BEBER ET AL 2,728,849

LIGHTING FIXTURE

Filed Aug. 17, 1950 2 Sheets-Sheet 1

Fig. 1.

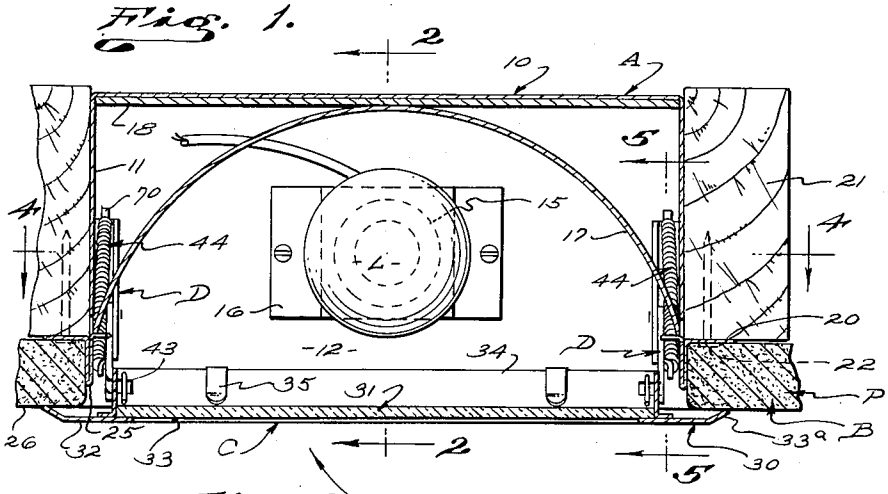

Fig. 2.

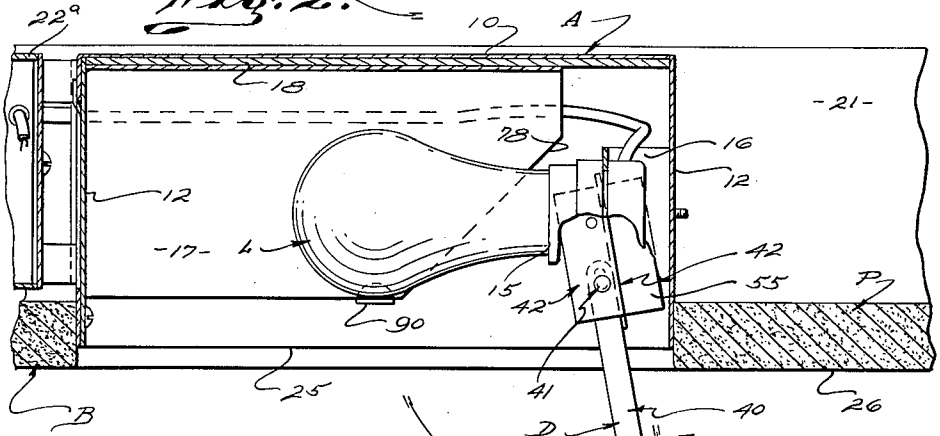

Fig. 3.

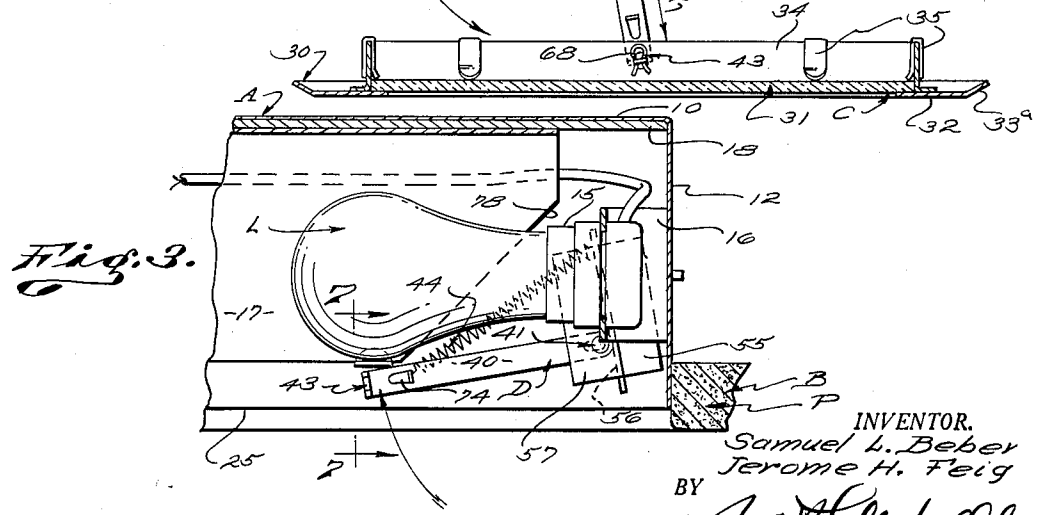

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Fig. 4.

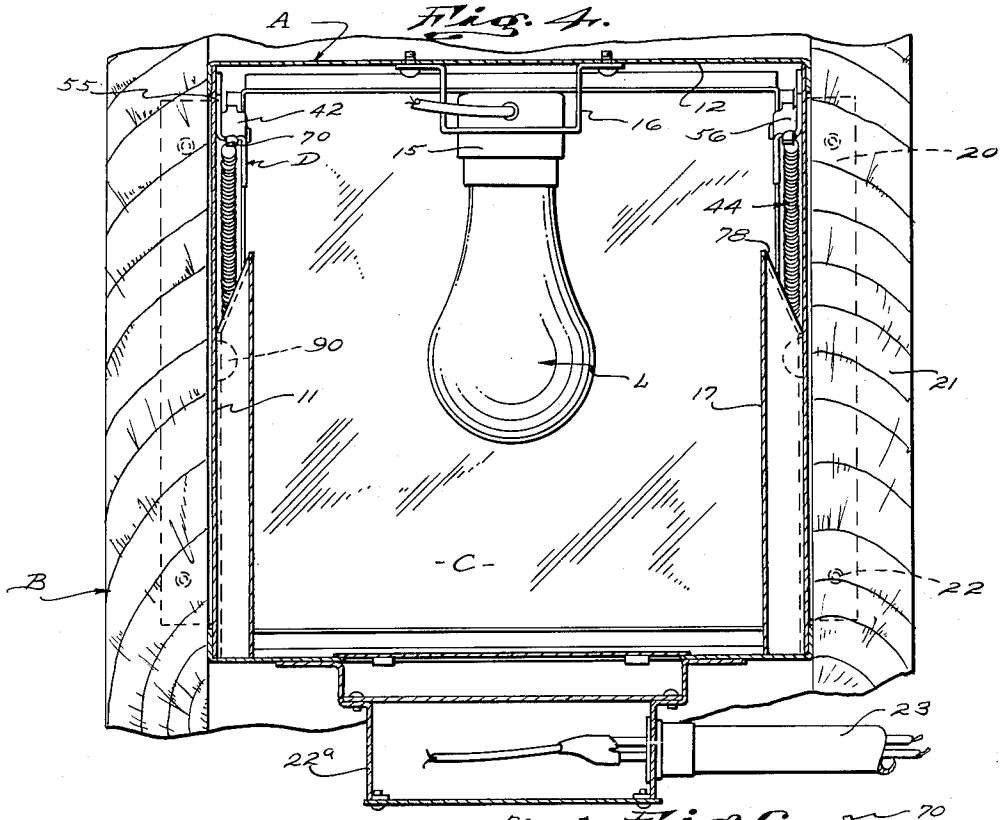


Fig. 5.

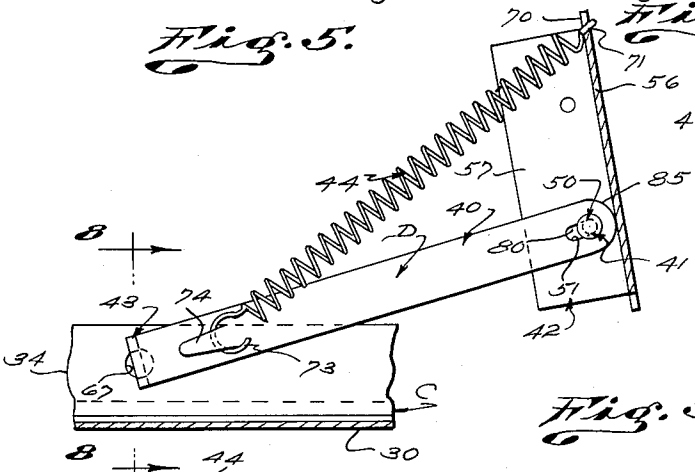


Fig. 6.

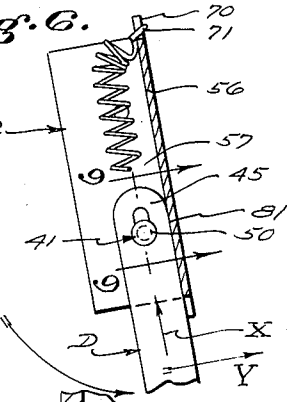


Fig. 9.

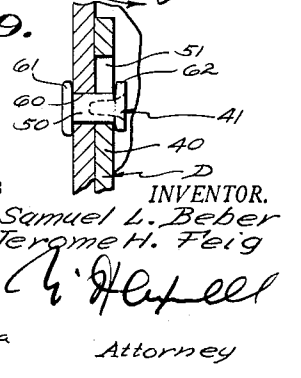


Fig. 7.

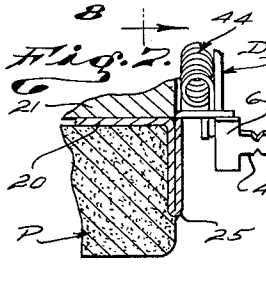
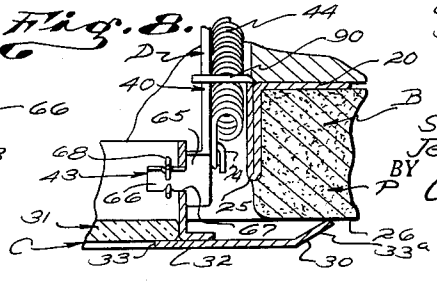


Fig. 8.



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LIGHTING FIXTURE

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Application August 17, 1950, Serial No. 180,004

4 Claims. (Cl. 240—78)

This invention is concerned with a lighting fixture of the type useful as applied to or incorporated in a ceiling, and in which a case is provided to recess into the ceiling and a closure is provided for the opening of the body. It is a general object of the present invention to provide a fixture of the general type referred to which is of simple, inexpensive, practical construction and which has the closure joined or coupled to the body against becoming separated or detached therefrom, and which so connects the body and closure as to make the closure simple, convenient, and safe to handle or manipulate relative to the body.

Lighting fixtures, commonly referred to as recessed fixtures, are applicable to structures, for example, ceilings, and the ordinary fixture of this type has a box-like body recessed into the ceiling and a closure for the body that fits up against the ceiling and when in working position is substantially flush with the ceiling. The closure of a fixture of this type usually involves a metal frame and a lens or plate of glass, with the result that it forms a unit or assembly that is subject to breakage and is in many cases rather cumbersome and inconvenient to handle.

A general object of this invention is to provide a lighting fixture of the recess type, in which the body may be of conventional construction and the closure of the type commonly employed in structures of this kind, and in which the body and closure are linked together, as by hangers, so the closure is readily shiftable between a working position engaging the ceiling and an open or down position where it is clear of the ceiling and spaced from the body, in which open position the closure is locked, requiring deliberate manual manipulation before it can be moved back to the closed or working position.

A further object of this invention is to provide a hanger construction for a fixture of the general character referred to that involves few simple inexpensive parts that are easily applied to the fixture and which are simple of action or manipulation when installed.

A further object of this invention is to provide a fixture of the character referred to which lends itself to handling, for example, shipping, storing, and limited manipulation of the body and closure as separate or disconnected parts, that can be readily fastened or connected together in final assembly after the body is in place and when it is finally desired for the closure to be applied.

A further object of the invention is to provide a hanger construction of the general character referred to which can be readily adapted to handle a closure that is of considerable size and weight, so that a person operating the fixture is not required to apply any great pressure or force either to the opening of the closure or to the closing thereof, while at the same time a deliberate latching or unlocking operation is required before the closure can be moved from the open position to the closed position.

The fixture embodying the present invention is characterized by a body that may be a simple box-like structure insertable into a ceiling to open downwardly. In a

typical case the body has vertical walls including spaced parallel side walls and spaced parallel end walls. A top that may be a flat plate is joined to the walls and closes the top of the body. A bracket supports a socket at one end wall of the body and the socket carries a lamp so that it is advantageously located in the body. A reflector is arranged in the body and may be retained by stops hereinafter referred to. The body may be provided with suitable fittings or accessories common to structures of this general character. For example, it may have mounting flanges, a junction box adjacent one end, etc.

A closure cooperating with the body may vary widely in form, shape, design and construction. In a typical case it involves a frame corresponding, generally, in size and shape with the open bottom end of the body, and a lens or plate is carried by the frame and is ordinarily formed of glass. A typical frame has upwardly projecting flanges confining the plate in the frame. One or more hangers connect the body and closure and the hanger construction provided by the present invention involves a simple, elongate link with an inner end pivotally connected to the body as, for instance, to one side wall thereof, while its outer end is pivotally connected to the closure as, for instance, to a flange thereof. The pivotal connection between the link and flange of the closure may involve a laterally projecting lug on the outer end of the link from which lug a tab projects and fits through an opening provided in the flange of the closure. A key is applied to the tab so the parts are retained in the desired coupled relationship. In the preferred construction the connection between the link and body is through a bracket provided on the inner face of a side of the body, which bracket has a flange which is flat, and which is parallel with and spaced from the side of the body. A pivot pin is carried by or fixed to the flange and is engaged through an opening in the inner end portion of the link. A means, preferably formed by a spring, normally yieldingly urges the link in one direction and toward a position where the closure carried by the link is closed. The spring is preferably a helical tension spring with one end anchored to the bracket and the other end fastened to the outer end portion of the link.

A releasable lock and stop means acts to stop the link in an open position where it depends from the body and acts to releasably lock the link in that position so that it requires a deliberate manipulation other than mere swinging of the closure to release it for movement to the closed position. The lock and stop means preferably involves an elongation of the opening in the link that receives the pivot pin and a shoulder on the inner end portion of the link engageable with a part of the bracket so that the link and bracket are locked in engagement when the elongate or extended pin carrying opening becomes positioned, allowing the link to be shifted lengthwise upwardly by the spring.

A stop limits inward movement of the link when the closure is not attached thereto, and may also serve as a retainer for the reflector provided within the body.

The various objects and features of our invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a detailed transverse sectional view of a typical embodiment of the present invention showing the closure coupled to the body of the fixture and in a closed position where it is held against a ceiling by the action of the hangers. Fig. 2 is a detailed sectional view taken substantially as indicated by line 2—2 on Fig. 1, and showing the closure locked in the open position. Fig. 3 is a view similar to Fig. 2 with the closure removed and

the hanger positioned against the stop which limits its inward movement. Fig. 4 is a plan section taken substantially as indicated by line 4—4 on Fig. 1. Fig. 5 is an enlarged detailed sectional view of a hanger taken as indicated by line 5—5 on Fig. 1. Fig. 6 is a view similar to a portion of Fig. 5 showing the parts positioned as they occur when the hanger is open. Fig. 7 is an enlarged, detailed sectional view taken as indicated by line 7—7 on Fig. 3. Fig. 8 is a detailed sectional view taken as indicated by line 8—8 on Fig. 5, and Fig. 9 is an enlarged detailed section taken as indicated by line 9—9 on Fig. 6.

The fixture provided by the present invention can be used in various manners or in various situations. However, it is particularly practical as applied to or for use in connection with a ceiling where the body of the fixture is recessed into the ceiling structure and the closure of the fixture normally bears up against the ceiling and is substantially flush therewith. In view of this situation we will, in this disclosure, refer specifically to a form of the invention for use in ceilings and will describe the action of the present invention as related to such a situation.

The fixture of the present invention involves, generally, a body A, applicable to a ceiling structure B so that it is recessed therein, and opens or faces downwardly. The fixture further includes a closure C and hangers D which couple or connect the body A and the closure C.

The body A of the fixture is shown as a typical, simple, box-like element formed of sheet metal and having vertical walls and a top **10**. For purpose of description the body will be referred to as having spaced parallel vertical side walls **11** and spaced vertical end walls **12**.

In accordance with the present invention various accessories may be incorporated in the body A as circumstances may require. In the particular case illustrated we show a socket **15** mounted in the body A from one end **12** thereof through a suitable bracket **16**. The socket carries a lamp L so that it is advantageously located in the body. A reflector **17** is carried or mounted in the body and in the case illustrated is a simple, arcuate sheet of suitable material bowed upwardly between the sides **11** of the body so that its crest or uppermost portion is close beneath the top **10**, being spaced therefrom by a sheet **18** of insulating material.

The body A may, in practice, be provided at its exterior with various fittings or accessories as circumstances require. In the case illustrated mounting flanges **20** project from the exterior of the body and in the case illustrated are shown applied to elements **21** of the ceiling B to which they are secured by fasteners **22**. It is to be understood that such simple and direct application of the body can be employed, or the body can be mounted through suitable mounting brackets, fixtures, or fasteners, as circumstances require. Further, in the drawings a junction box **22***a* is shown provided at the exterior of the body adjacent or outward of one end **12** of the body, the box **22***a* serving as a means through which the fixture can be connected with a suitable wire carrying conduit **23**.

When the body A provided as above described is applied to or incorporated in a ceiling B it is permanently and rigidly secured in place, as by means of the flanges **20** and the lower edge portions **25** of the various vertical walls of the body may be flush with or somewhat above the face **26** of the plaster P which is a part of the ceiling construction.

The closure C provided by the present invention may, in practice, vary widely in form, construction and design, as circumstances require. In the case illustrated a simple and typical closure is shown, the closure involving generally, a frame **30** and a lens or plate **31** carried by the frame. The particular frame **30** illustrated in the drawings has a rectangular portion **32** which is flat and which has a central opening **33** that registers with the body of the fitting and which is normally closed or occupied by the plate **31**. The marginal portion **33** of the frame is shown upwardly turned so that it bears against and makes a suitable joint with the face of the ceiling when the closure is up, as shown in Fig. 1 of the drawings. The plate **31** of the closure is shown as a simple flat plate of glass or the like, and it is supported on the upper side of the frame part **32** where it is maintained in the proper central position by flanges **34** projecting upwardly from the frame part **32**. In the particular case illustrated suitable retainers or clips **35** retain the plate in the frame, the clips being carried by the flanges **34**.

The present invention provides one or more hangers D connecting the closure C with the body A. In a typical situation the closure can be advantageously joined to or carried by the body A through two hangers D and such hangers may be advantageously arranged at opposite sides **11** of the body, as shown throughout the drawings. In practice the hangers D are preferably alike both in construction and action and, therefore, the following detailed description of a single hanger is applicable to both.

The hanger, as provided by the present invention, is characterized by a simple link **40**, means **41** pivotally connecting the inner end of the link to the body, as through a bracket **42**, means **43** pivotally connecting the outer and of the link to the closure C, means **44** preferably in the form of a spring normally yieldingly urging the link to a closed position, and a lock and stop means stopping and releasably locking the link in an open position once it is moved thereto, and requiring deliberate manipulation of the closure in a predetermined manner to release the link to return to the in or closed position.

The link **40** in its preferred form is a simple, straight, elongate strap as shown throughout the drawings. The means **41** pivotally connecting the link to the body preferably involves a simple pivot pin **50** located in a fixed position and engaged through an opening **51** in the inner end portion of the link **40**. Where the construction involves a bracket **42** the bracket is S-shaped in cross-sectional configuration, having a foot portion **55** fastened to the inner face of side **11** of the body, as by welding, a rib **56** projecting upwardly from the foot, and a flange **57** carried by the rib and projecting therefrom to be parallel with and spaced from the side **11** of the body to which the foot is attached. In accordance with the preferred arrangement the pivot pin **50** of means **41** is carried by the flange **57** of the bracekt **42** so that the pin projects inwardly from the flange or toward the wall **11** supporting the bracket. In accordance with the invention the pivot pin **50** is located in the body so that it is spaced inwardly somewhat from one end thereof, as for instance, from the end **12** from which the socket **15** is supported. Further, in accordance with the invention the link **40** is proportioned or is of such length that when it is swung to an in position such as is shown in Figs. 3 and 5, its outer end portion occurs about midway between the two ends **12** of the body. The particular pivot pin **50** illustrated in the drawings is tight in an opening **60** provided in flange **57** and has a head **61** on one end bearing against the flange and a head **62** on the other end retaining the link adjacent the flange.

The means **43** pivotally connecting the outer end of the link **40** to the closure may vary widely in form and construction. In the drawings the means **43** is shown as involving a lug-like projection **65** provided on the outer end of the link and projecting laterally therefrom so that it projects away from the wall of the body that carries the hanger. The lug **65** is provided with a reduced tip **66** which is engaged through an opening **67** in the flange **34** of the closure. These parts may, in practice, fit rather loosely so that the tab can be readily engaged through the opening **67** and any suitable means may be provided for retaining the parts in the engaged or connected relationship. In the particular case illustrated a suitable key **68** is shown provided as a retainer for the pivotal connection.

The means 44 preferably in the nature of a helical tension spring is so connected to the link 40 as to normally yieldingly urge it toward the closed or in position. In the case illustrated the means 44 involves a simple helical spring having one end anchored to the body and the other end anchored to the link. In the particular case illustrated a lug 70 is provided on or projects from the end of the bracket 42 which is innermost in the body and the spring has a looped end 71 that is engaged over the lug. The lug is shown formed on and projecting from the rib 56 of the bracket 42.

The other end of the spring is attached to the outer end portion of the link 40 where a loop 73 of the spring is engaged over an ear 74 that projects from the link. In the preferred construction the spring of means 44 is of such size or diameter as to work or readily fit between the flange 57 and the side 11 of the body to which the bracket 42 is attached. Furthermore, in practice the bracket of the hanger may fit upwardly in the body somewhat above the refector 17 where the reflector engages the wall 11 carrying the bracket, in which case the reflector may be cut away or relieved as at 78 to allow for free working or operating of the link between the positions illustrated in Figs. 2 and 3 of the drawings.

The lock and stop means 45 involves an extension or elongation 80 of the opening provided in the link 40 to carry the pin 50, and a shoulder portion 81 on the inner end portion of the link to bear or stop against the rib 56 of the bracket when the link has been shifted longitudinally by the spring of means 44 to a position such as is shown in Fig. 6 of the drawings. In the preferred construction the inner end 85 of the link 40 is curved concentric with the axis of the opening 51 and the parts are related so that when the pin 50 is confined to the opening 51 the curved end of the link fits against or is in close relationship to the rib 57 but does allow the link to swing freely between the in and out positions. When the link has been swung from the in position to the out position the extension 80 of the opening in the link and which is parallel with the link allows the link to shift bodily inward in the direction of the arrow X in Fig. 6, until the pin is no longer in the opening 51 but is in the extension 80 thereof, and the shoulder portion 81 of the link which is adjacent the curved end 85 is flat against the rib 57. With the parts thus related or with the link thus shifted inwardly, it cannot be swung or turned in either direction about the pin 50, but rather, is locked against pivotal movement. Before the link can be swung or pivoted from the in position it must be bodily shifted lengthwise and downward in the direction opposite to the arrow X in Fig. 6, which operation required deliberate downward shifting or movement of the closure, as by a downwardly pulling action imparted by the operator of the fixture. It is to be noted that the rib portion 57 below the pivot 50 positively stops pivotal movement of the link 40 in the direction Y in Fig. 6, thereby making it impossible for the link to move to a position where the spring of means 44 throws over center to exert pressure on the link, tending to swing it in a direction other than inwardly or to the closed position. With the spring of means 44 always related to the link so that it tends to swing it in or closed, the closure readily swings up and closed just as soon as it moves downwardly to release the lock hereinabove described. In the preferred relationship of parts the means 43 connects the link 40 to the closure about midway between opposite edges of the closure and, consequently, when the link is up or in the closed position the closure is in proper register with the body, as shown in the drawings.

The present invention provides a stop 90 for the link 40 and in its preferred form the stop 90 is an ear projecting inwardly from the side or wall 11 of the body that carries the hanger. The stop forms an inward projection against which the link bears or strikes when the closure is not coupled to or engaged with the hanger and the hanger is in the in position. In practice it is generally desirable to

pack, ship and handle the body A separate from the closure, and during such operations and while the body is being installed, the link of the hanger may be resting on or bearing against the stop 90. In the case illustrated the stop 90 forms a retainer serving to hold or retain the reflector 17 in the body, as shown throughout the drawings.

In using the structure of the present invention the body A is installed or built into a structure such as a ceiling B and during the course of such operation the links of the hangers are confined in the body where they are protected and where they rest against the stops. When it is desired to install or apply the closure the operator swings the hangers down or to the out position, as shown in Fig. 2, where they are immediately locked through the action of the springs. With the hangers thus locked in the depending or down position the operator can readily apply the closure to the outer ends of the links and lock the parts together by application of the keys 68. When the means 43 have thus been engaged, pivotally connecting the closure to the links, the operator applies downward pressure to the closure. For example, pressure in the direction indicated by the arrow Z in Fig. 2, disengaging the means 45 of the hangers and freeing the links so that they can be swung in or to the closed position. The springs, being related to the links so that they always urge the links inward aid in lifting the closure and are, in practice, made of such strength as to always counteract the weight of the closure. When the closure has been engaged with the ceiling, as shown in Fig. 1, it is retained in that position by the action of the springs of the hangers, making it unnecessary to employ screws, catches, latches, or other fasteners such as are commonly required in fixtures of this general character. Whenever it is desired to gain access to the interior of the body A, as for instance, to make a repair or to replace a lamp, it is merely necessary for the operator to pull the closure down and to the open position where it is spaced well below the ceiling and is laterally shifted in the direction of the wall from which the lamp sockets projects, and to the end that the operator can readily remove and install globes with safety and without danger of accidentally releasing the closure so that it is closed out of control. The locking action provided in the hangers is of particular importance when it is considered that the fixture is ordinarily manipulated when the operator is on a ladder or is working overhead, under which conditions acicdental operation of parts by a spring action is likely to be dangerous.

Having described only a typical preferred form and application of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described our invention, we claim:

1. A lighting fixture including, an open box-like body, a closure for the body including a frame and a plate carried by the frame, and a hanger connecting the body and closure including, an arm, means pivotally connecting the outer end of the arm to the frame of the closure, means pivotally connecting the inner end of the arm to the body, and a spring connected between the arm and body above the arm urging the arm inwardly to a position where the arm is in an up position and holds the closure in a closed position, the last mentioned means including a pin carried by the body and slidably engaged in an elongate slot opening in the arm, the arm being shiftable lengthwise by the spring when the arm is in a down position and the arm having a shoulder bearing against a rib on the body when the arm has been shifted lengthwise by the spring, thereby locking the arm against pivotal movement.

2. A lighting fixture including, an open box-like body having a rib projecting therefrom and carrying a flange, a closure for the body including a frame, and a plate carried by the frame, and a hanger connecting the body

and closure including, an arm, means pivotally connecting the outer end of the arm to the frame of the closure, means pivotally connecting the inner end of the arm to the flange of the body, and a spring connected between the arm and body above the arm urging the arm toward the body and to a position where the arm is in an up position and holds the closure in a closed position, the means connecting the arm and body including, a pin carried by the flange and slidably engaged in an elongate slot opening in the arm and the arm having a shouder engageable with the rib and holding the arm against pivotal movement when the arm is in a down position and is shifted lengthwise toward the body by the spring, the slot opening in the arm being formed by an opening having an extension receiving the pin when the arm is down and is shifted lengthwise.

3. A lighting fixture including, an open box-like body, a closure for the body including a frame and a plate carried by the frame, and a hanger connecting the body and closure including, an arm, connecting means pivotally connecting the outer end of the arm to the frame of the closure, connecting means slidably pivotally connecting the inner end of the arm to the body including, a pin carried by the body and slidably engaged in an elongate slot opening in the arm, a spring connected between the arm and body above the arm urging the arm toward the body, the arm having an up position where the arm holds the closure in a closed position, a stop in the body adapted to be engaged by the arm and limiting upward movement of the arm, and a single stop and lock means in the body stopping the arm in a down position upon its being moved thereto and holding the arm in said down position when the arm is engaged therewith and is shifted lengthwise toward the body by the spring, the stop and lock means requiring shifting of the arm lengthwise away from the body before it can be swung from the down position to the up position.

4. A lighting fixture including, an open box-like body with side and end walls, a closure for the body having a frame and a plate carried by the frame, and hangers carried by the side walls of the body at the inner sides thereof and carrying the closure for swinging movement from an up position closing the body and an open position where the closure is downwardly spaced from the body and shifted laterally in the direction of said end wall of the body, each hanger including, a pivotally and shiftably mounted arm, means pivotally connecting the outer end of the arm to the frame of the closure, means pivotally connecting the inner end of the arm to the body including, a pin carried by the body and an elongate slot opening in the arm and slidably engaged with the pin, a spring connected between the arm and body above the arm urging the arm upwardly to a position where the arm holds the closure in a closed position, and a stop and lock means carried by the body and adapted to operate by upward and lengthwise shifting of the arm when the arm is swung downwardly to lock the arm in said open position and requiring shifting of the arm downwardly and lengthwise from the locked position before it can be swung from the open position.

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