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R. A. BALCH ET AL
SELF-SERVICE SUPPORTS
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Fig. 1

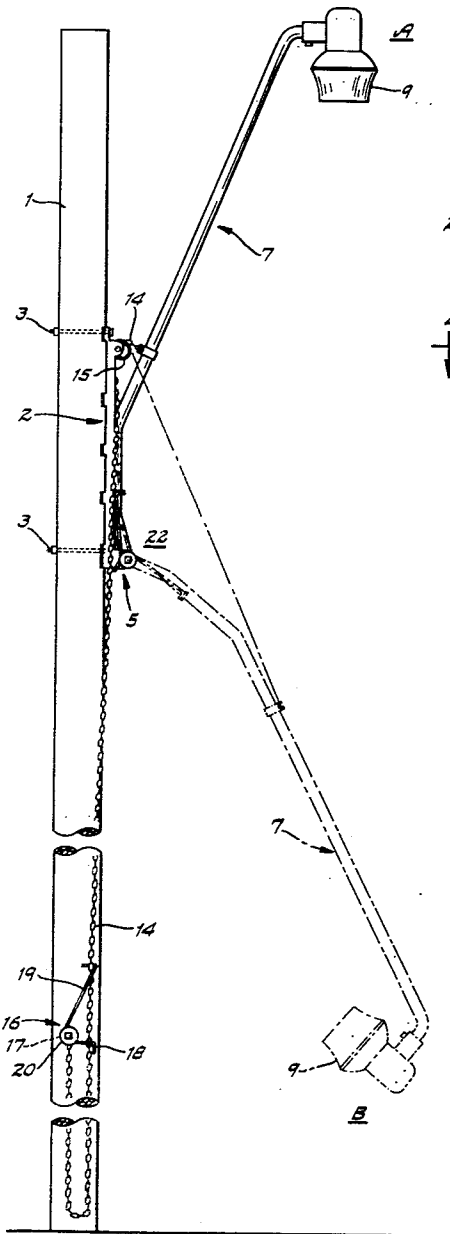


Fig. 2

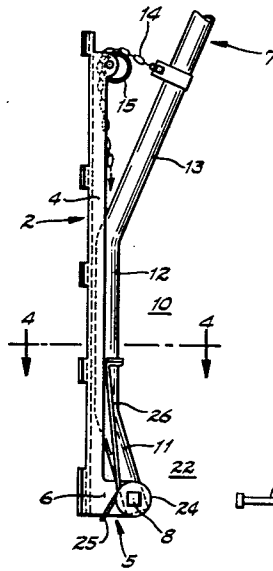


Fig. 3

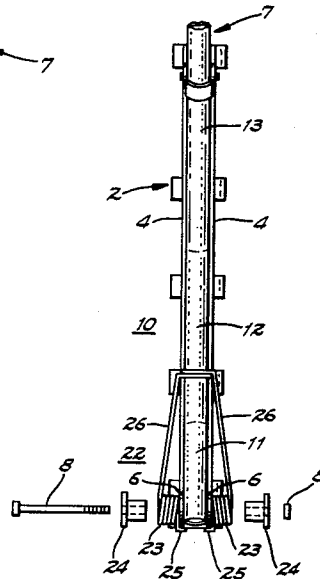
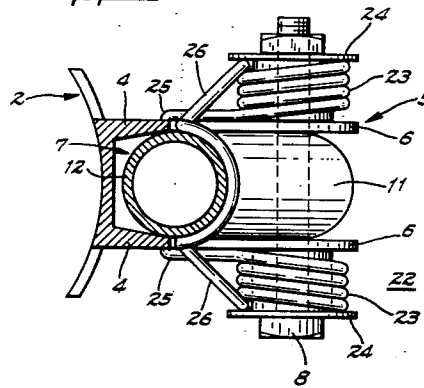


Fig. 4



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SELF-SERVICE SUPPORTS

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This invention relates to an improved lighting fixture support. More specifically to a self-service support which is adapted to rigidly hold a lighting fixture in an elevated normal operating position and operative to lower the lighting fixture to a servicing position accessible from ground level.

A major advantage of our invention is that it materially aids the expansion of street lighting apparatus to rural areas. A deterrent to such expansion in the past has been that single lighting installations would be located at widely scattered points and long service trips would be required to maintain the separate installations. Our invention provides a lighting fixture support assembly which is adapted to be connected to a variety of vertically extending surfaces, such as, a pole or the side of a garage or barn. The lighting fixture support assembly includes a hinged support boom that has a lighting fixture detachably connected thereto. The point of connection of the lighting fixture support assembly to the mounting surface is selected at a height such that the support boom can hold the lighting fixture in an elevated normal operating position and can be actuated about its hinge connection to lower the lighting fixture to a servicing position accessible from ground level. With our lighting fixture support assembly a lighting fixture can, for example, be attached to the side of a barn in a farmyard and the farmer can lower the lighting fixture and take care of minor servicing himself. The number of long service trips is appreciably reduced, if not completely eliminated, and street lighting fixtures can be installed at widely scattered points.

In addition, our lighting fixture support assembly includes a substantially channeled shaped base member which is disposed to receive an offset portion of the support boom so that the support boom is rigidly held in its elevated position; an elongated flexible hand line is also included and is connected at one end to the support boom and extends downwardly to a point accessible from ground level for controlling the raising and lowering of the support boom; and counterbalancing spring means is provided adjacent the hinge connection of the support boom which is operative to cushion the movement of the support boom toward the lowered servicing position and to aid motion of the support boom toward the elevated operating position. To lock the support boom, and correspondingly the lighting fixture, in the elevated normal operating position locking means is disposed adjacent the lower end of the flexible hand line and engages and places the flexible hand line in tension.

It is therefore an object of our invention to provide a support that will afford selective actuation of a lighting fixture between an elevated normal operating position and a lowered servicing position accessible from ground level.

Another object of this invention is to provide a lighting fixture support that rigidly holds a lighting fixture in a normal operating position.

A still further object of this invention is to provide a support that affords cushioned movement of a lighting fixture between an elevated normal operating position and a lowered servicing position and in which said movement is controlled from ground level.

Further objects and advantages of our invention will become apparent from a reading of the following detailed description in connection with the drawings, in which:

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FIG. 1 is a side view of our lighting fixture support connected to a vertically extending surface and illustrating the light fixture in both operating and servicing position.

FIG. 2 is a partial enlarged side view of the base member and offset support boom when the latter is in its elevated position.

FIG. 3 is a partial end view of the base member and offset support boom when the latter is in its elevated position.

FIG. 4 is a cross-sectional view taken along lines 4-4 of FIG. 2.

Our self-service lighting fixture support has been illustrated in combination with a pole 1 of the type commonly used in overhead telephone and electrical distribution systems. However, it should be noted that our lighting fixture support is not limited to such use and can be connected to any suitable vertically extending surface, for example, the side of a garage or barn.

The lighting fixture support comprises a substantially channel shaped base member 2 fixed to the vertically extending pole 1 by through bolt means 3. The base member 2 is provided with a pair of spaced side portions 4 that are disposed to extend laterally from the pole 1 when the base member 2 is connected thereto. Also provided as an integral part of the base member 2 is a hinge projection 5 formed by a pair of spaced arm members 6 that extend outwardly beyond the ends of the side portions 4. It should be noted, that the hinge projection 5 is preferably an integral part of the base member 2 but it is within the scope of our invention to make the hinge projection 5 a separate member that is independently connected to the pole 1.

A support boom 7 is preferably hingedly connected to the base member 2 at the hinge projection 5 by through bolt and nut means 8. The support boom 7 is movable in a vertical plane between an elevated position A and a lowered position B. This movement of the support boom 7 is about a transverse axis provided by bolt and nut means 8. A lighting fixture 9, which may contain either an incandescent or vapor discharge light source (not shown) is detachably connected in fixed relation to the upper free end of the support boom 7. Referring to FIG. 1, it can be seen that the support boom 7 can hold the lighting fixture 9 in an elevated normal operating position A or in a lowered servicing position B accessible from ground level.

The support boom 7 is of such a configuration that when the support boom 7 is in the elevated position A it has an offset portion 10 which is receivable in the base member 2. The offset portion 10 is formed by a first portion 11 which extends from the hinge projection 5 toward the base member 2, a second portion 12 which extends at an angle from the first portion 11 and engages the base member 2, and a third portion 13 which extends upwardly and away from the base member 2.

Referring to FIG. 4, the offset portion 10 of support boom 7 being engaged between the side portions 4 the support boom 7 is held rigidly against lateral movement, i.e. perpendicular to the normal vertical movement of the support boom 7 about the transverse axis provided by bolt and nuts means 8. Further, the point of engagement of offset portion 10 with the side portions 4 and the transverse axis are relatively spaced so that the support boom 7 is secured in torsion, i.e. twisting of the support boom 7 on the transverse axis is opposed by the side portions 4 of base member 2.

Flexible hand line means for controlling the raising and lowering of the support boom 7 is preferably provided by an elongated chain 14. Preferably, the chain 14 is connected at one end to the support boom 7, extends over a ring 15, which is loosely mounted on the base member

2, and runs downwardly along the side of the pole 1 to a point below the base member 2 and accessible from ground level at which point the lower end of chain 7 may be fixed to the pole 1.

To secure the support boom 7 in its elevated position, locking means 16 is provided adjacent the lower end of chain 14. Locking means 16 preferably includes a torsion spring 17 having a wound body portion (not shown) mounted on a spring arbor 20 and having opposed end portions 18 and 19 extending tangentially from the spring arbor 20. The spring arbor 20 is fixed to the pole 1 by suitable bolt means. To lock the support boom 7 in its elevated position, chain 14 is pulled tight and the leg 18 of spring 17 is hooked into a loop of chain 14. Then leg 19 is wound around the spring arbor 20 to be looped around chain 14. A resultant force is then exerted by the torsion spring 17 to the chain 14 through the leg 18 to place the chain 14 in tension and lock the support boom in its elevated position. It should be noted that the chain 14 and torsion spring 17 are illustrative only and any suitable elongated flexible means and compatible locking means may be used.

The support boom 7 can be actuated between positions A and B by merely manipulating the chain 14 and, correspondingly, the lighting fixture 9 is selectively operable between an elevated normal operating position A and a lowered servicing position B. Specifically, to lower the lighting fixture 9 to position B the locking means 16 is released and chain 14 allowed to play out over the ring 15 permitting the support boom 7 to lower under its own weight. To raise the lighting fixture 9 to position A the chain is merely pulled over the ring 15.

To produce uniform, cushioned movement of the support boom 7 about the transverse axis provided by bolt and nut means 8, counterbalancing means 22 is provided adjacent the transverse axis. The counterbalancing means 22 comprises a pair of torsion springs 23 each mounted on a respective one of a pair of spring arbors 24. Spring arbors 24 are connected to the hinge projection 5 by the bolt and nut means 8. Each of the torsion spring 23 has one end thereof formed to provide a leg 25 which engages a respective one of the arm portions 6 of hinge projection 5 and the opposite end thereof providing a leg 26 the extreme end of which is formed to grasp the support boom 7. As the support boom 7 moves toward position B its motion is opposed by the springs 23 and said motion is thereby cushioned. The energy stored in the springs 23 during the downward movement of the support boom 7 assists the upward movement thereof toward position A. When support boom 7 is in position A springs 23 are substantially ineffective, that is, the spring rate of springs 23 is selected so that they will retard but will not prevent motion of the support boom 7 away from the base member 2 under the influence of its own weight.

Although we have discussed our invention with relation to a specific embodiment, it is not intended that it be limited thereto. Therefore, it is intended to cover all modification and alternative embodiments of our invention as fall within the true spirit and scope of the appended claims.

What we claim is:

1. In combination, a support boom hingedly connected at one end to a vertically extending surface for movement in a vertical plane between an elevated and a lowered position, a lighting fixture detachably connected to the opposite end of said support boom, a substantially channel shaped member fixed to said vertically extending surface and disposed to receive a portion of said boom when said boom is in said elevated position to hold said boom against lateral motion, said point of engagement of said channel shaped member with said support boom being spaced above and offset laterally from said hinge connection so that said support boom is held in torsion, and means connected to said boom and operative to control actuation thereof between said positions to selectively

raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position.

2. In combination, a substantially channel shaped base member connected to a vertically extending surface, a support boom hingedly connected at one end to said base member for movement in a vertical plane between an elevated and a lowered position, said support boom including an offset portion, said offset portion when said support boom is in said elevated position being received in said base member and engaging said base member at a point spaced above and offset laterally from said hinge connection so that said support boom is secured in torsion and against lateral movement, the upper portion of said support boom having a lighting fixture detachably connected thereto, and means connected to said support boom and operative to control actuation thereof between said positions to selectively raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position.

3. In combination, a substantially channel shaped base member connected to a vertically extending surface, a support boom hingedly connected at one end to said base member for movement in a vertical plane between an elevated and a lowered position, said support boom provided with an offset portion disposed above said hinge connection and receivable in said base member when said support boom is in said elevated position so that said support boom is secured in torsion and against lateral movement, the upper portion of said support boom having a lighting fixture detachably connected thereto, a flexible elongated member connected at one end to said support boom adjacent said upper portion of said support boom and the opposite end thereof extending below said base member for access from ground level, said flexible member operative to control actuation of said support boom between said positions to selectively raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position and means operatively associated with said flexible elongated member for securing said support boom in said elevated position.

4. In combination, a substantially channel shaped base member connected to a vertically extending surface, a support boom hingedly connected at one end to said base member for movement in a vertical plane and about a transversely disposed axis between an elevated and a lowered position, said support boom including an offset portion, said offset portion when said support boom is in said elevated position being received in said base member and engaging said base member at a point spaced above and offset laterally from said hinge connection so that said support boom is secured in torsion and against lateral movement, the upper portion of said support boom having a lighting fixture detachably connected thereto, means connected to said support boom and operative to control actuation thereof between said positions to selectively raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position, and resilient counterbalancing means disposed adjacent said transverse axis and operatively associated with said support boom for opposing motion thereof toward said lowered position and for aiding motion thereof toward said elevated position.

5. In combination, a substantially channel shaped base member connected to a vertically extending surface, a support boom hingedly connected at one end to said base member for movement about a transverse axis between an elevated and a lowered position, said support boom in its elevated position comprising a first portion extending from said transverse axis toward said base member, a second portion extending at an angle from said first portion and engaging said base member and a third portion extending upwardly and away from said base member, whereby said support boom is provided with an offset por-

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tion receivable in said base member when said support boom is in said elevated position so that said support boom is secured in torsion and against lateral movement, said third portion of said support boom having a lighting fixture detachably connected to the end thereof and means connected to said support boom and operative to control actuation thereof between said positions to selectively raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position.

6. In combination, a support boom hingedly connected at one end to a vertically extending surface for movement in a vertical plane between an elevated and a lowered position, a lighting fixture disposed at the opposite end of said support boom, means fixed to said vertically extending surface for engaging a portion of

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said boom when said boom is in said elevated position to hold said boom against lateral motion, said point of engagement of said boom engaging means with said support boom being spaced vertically from and offset laterally from said hinge connection so that said support boom is secured in torsion, and means connected to said boom and operative to control actuation thereof between said positions to selectively raise and lower said lighting fixture respectively to an elevated normal operating position and a lowered servicing position.

References Cited in the file of this patent

UNITED STATES PATENTS

452,211	Cardarelli	May 12, 1891
524,001	Edmeades	May 2, 1899
1,622,142	Girard	May 22, 1927