

Nov. 9, 1943.

W. WILSON

2,334,139

ELECTRIC LIGHTING FIXTURE

Filed Nov. 29, 1940

2 Sheets-Sheet 1

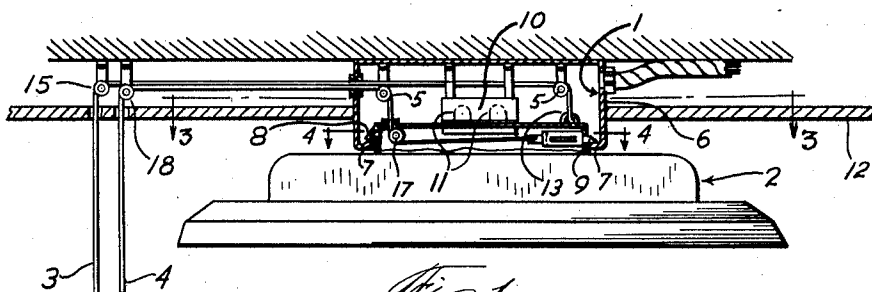


Fig. 1.

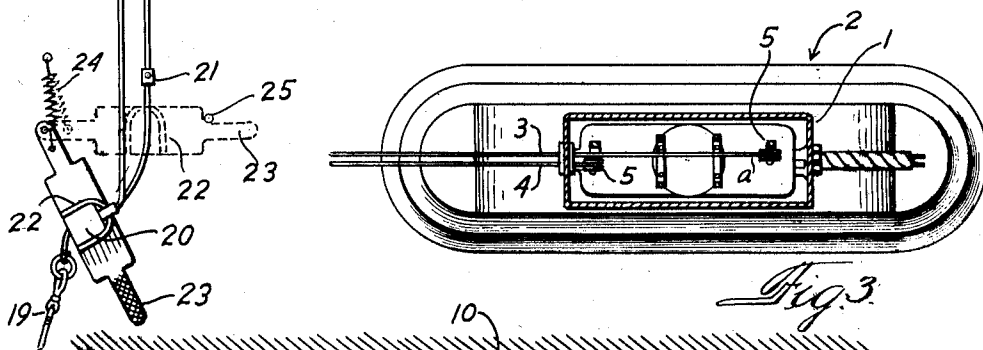


Fig. 3.

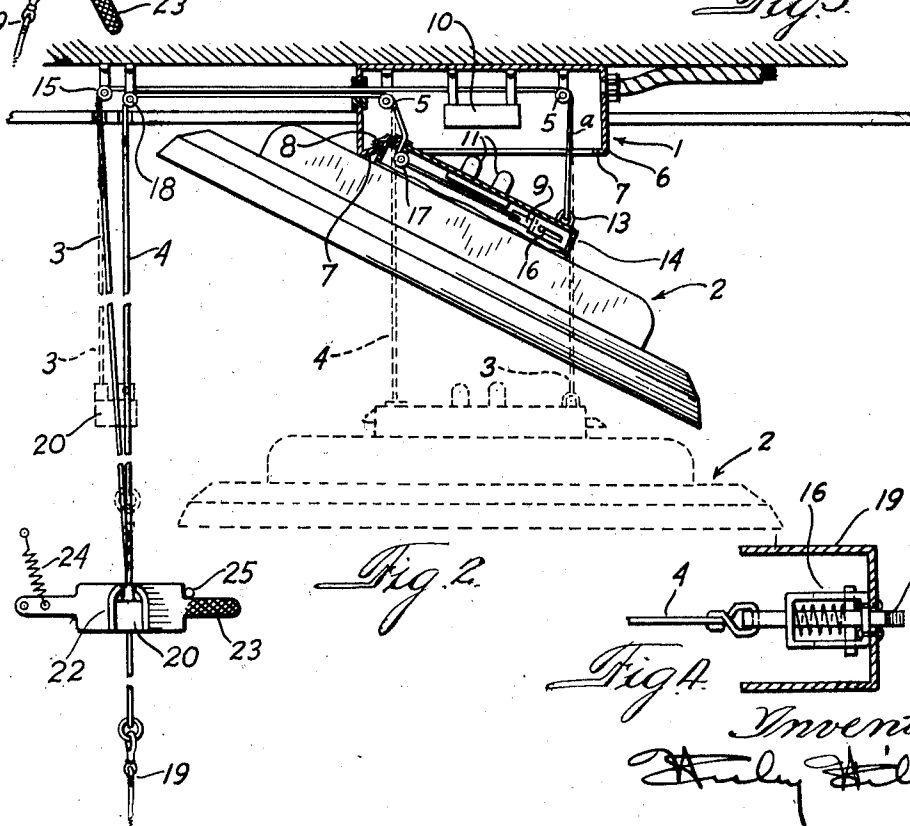


Fig. 2.

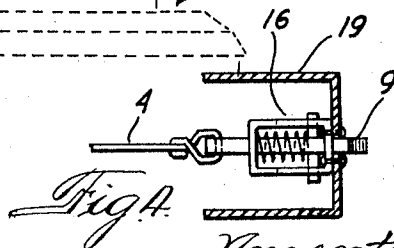


Fig. 4.

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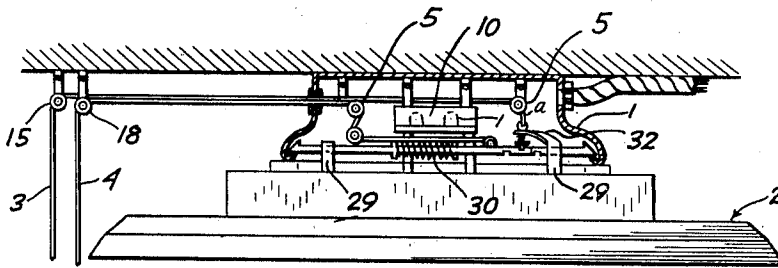


Fig. 5.

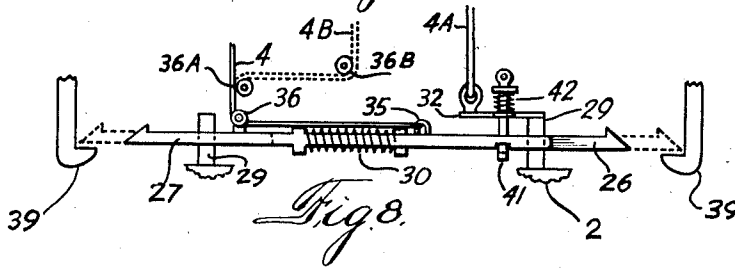


Fig. 8.

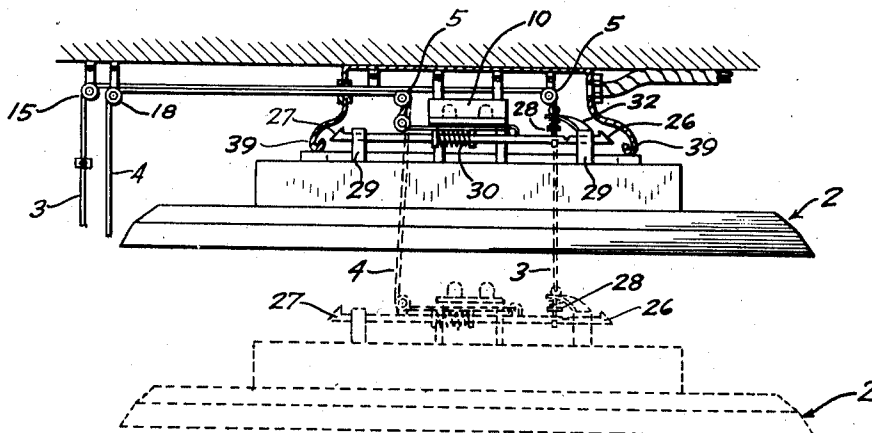


Fig. 6.

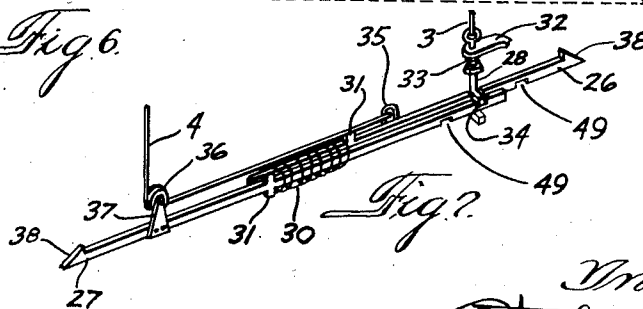


Fig. 7.

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ELECTRIC LIGHTING FIXTURE

Wesley Wilson, Chicago, Ill.

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7 Claims. (Cl. 248—320)

My invention relates to electric lighting fixtures. One of the objects of my invention is to provide apparatus for facilitating the servicing of fixtures for use with elongated fluorescent bulbs. A further object is to provide improved means for raising and lowering such a fixture by means of flexible pull members. A further object is to provide raising and lowering means which will prevent the fixture from swinging about a vertical axis while being raised and lowered. A further object is to provide a fixture of the type indicated above including a receptacle housing with an electrical contact base and a fixture coacting with said housing and having electrical contacts for cooperation with the contact base. A further object is to provide a fixture of the type indicated, including a plurality of flexible members for raising and lowering the fixtures, one of the flexible members serving to control a latch. A further object is to provide a gaseous discharge lamp for regulating the voltage by use of a transformer which at the moment of starting will provide sufficiently high voltage to start the gaseous discharge from the cold electrodes and thereafter closing the lamp to normal line voltages while maintaining the discharge. A further object is to provide a gaseous discharge lamp of the type indicated in which a provision is made for power factor correction. A further object is to provide a fixture of the type indicated which will permit the elevated unit to be fitted in a receptacle in the ceiling in such a manner that the flexible pull members will be hidden from view. A further object is to provide a fluorescent gaseous discharge lamp having fluorescent crystals on the inner surface of the bulb covering a substantial portion of the area of the inner surface of the bulb but leaving a portion uncoated in order to secure indirect reflection of ultraviolet rays. Further objects will appear from the drawings and claims.

In the drawings in which several forms of my invention are shown, Fig. 1 is a side elevational view, parts being shown in section of a fixture provided with raising and lowering apparatus showing the fixture in raised position. Fig. 2 is a view similar to Fig. 1, but showing the fixture partly disconnected. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is an enlarged sectional view of the latch substantially on the line 4—4 of Fig. 1. Fig. 5 is a side elevational view showing another form of raising and lowering device, parts being shown in section and the fixture being shown in connected position.

Fig. 6 is a view similar to Fig. 5 but showing the latch members withdrawn. Fig. 7 is a perspective view of the latch members and operating cords. Fig. 8 is a side elevational view showing another form of latch mechanism.

Referring now to the drawings in detail and first to Figs. 1 to 4 inclusive, the construction shown comprises an elevated unit 1 which is shown as mounted in a recess in the ceiling, and a detachable unit 2 which may be raised, lowered, connected and disconnected with respect to the elevated unit by means of a pair of cords 3 and 4 secured to the detachable unit 2 and passing over pulleys 5 on the elevated unit and extending thence laterally and downwardly to a position convenient for the service man on the floor. It should be stated that these fixtures are sometimes located so high that they are entirely out of reach for the service man on the floor.

The elevated unit comprises a housing 6 having inwardly extending, hook-like flange portions 7 for cooperation with latch or hook members 8 and 9 on the detachable unit. In the elevated housing may be located a convenience outlet 10, or the like, having concealed contacts for engagement with cooperating contacts 11 on a connector device carried by the detachable unit. The disposition of the pulley cords and contacts is such that the fixture will be guided in its upward movement to a position in which the contacts 11 on the fixture will be brought opposite the openings leading to the contacts on the convenience outlet 10 so that the contacts on the detachable unit will properly enter the entrance openings on the convenience outlet and engage the contacts thereof. As shown, the ceiling 12 is located practically flush with the outer sides of the housing 6 so that the cords 3 and 4 are concealed until brought out through the openings in the ceiling down to a position convenient for the maintenance man.

In the form shown here the cord 3 serves mainly in cooperation with cord 4 to assist in raising and lowering the fixture. The cord 4 not only assists in raising and lowering the fixture, but also controls the latch member 9. The cord 3 is secured to a loop 13 adjacent one end of the upper portion of the fixture housing 14 and passes thence over the pulleys 5 and 15 and is connected at its end to the cord 4. The cord 4 is secured to the spring latch 9 slideably mounted in a bracket 16 secured with a housing member 14, and passes thence under a pulley 17 carried by the housing member 14, thence upwardly 55 through an opening in the housing member, over

the pulleys 5 and 12, and thence downwardly to its connection with the cord 3. An extension cord 13 is secured to the cords 3 and 4 adjacent their junction in order to pay out the cords 3 and 4 in lowering the fixture. The connection between the cords 3 and 4 is effected by means of a sleeve 20 to which the cord 3 is secured, this sleeve having an opening therethrough through which the cord 4 passes. A limit stop 21 is secured to cord 4 to limit the sliding movement of the cord 4 in the sleeve 20.

In raising the fixture from the lower position shown in dotted lines in Fig. 2 to the position shown in Fig. 1, the fixture is caused to pass through the stage shown in the upper position in Fig. 2. In raising the fixture the extension cord 19 is pulled down until the sleeve 20 can be placed in the socket 22 on the sleeve holding lever 23 when the sleeve holding lever is in its uppermost spring held position indicated in dotted lines in Fig. 1. This brings the fixture to the upper full line position shown in Fig. 2. In moving to this position the left hand hook or latch 8 has slipped past the hook-like inner extending portion 7 of the casing and has assumed the latched position shown in Fig. 2. To bring the fixture from the upper position shown in Fig. 2 to the position shown in Fig. 1 the slide engaging lever 23 may be moved from its uppermost position to its lowermost position, thus pulling down on the cord 3 and raising the right hand latch up into latching position. In this operation the cord 4 will be slackened slightly so that the right hand latch 9 will snap into latching position when raised up above the hook-like portion 7 of the housing. When the lever is allowed to be swung upwardly by the spring 24 to its upper position against the stop 25, the cords 3 and 4 will both be slackened and the fixture will be held in elevated position by the ends of the latches 8 and 9.

To lower the fixture the cord 4 is pulled to release the latch 9, and the cord 3 is then slackened to lower the fixture to the full line position shown in Fig. 2. Both cords are then paid out to lower the fixture.

The construction shown in Figs. 5, 6, and 7 is similar to that just described. In this form, however, the fixture 2 remains in horizontal position during its raising and lowering movements. Also, in this form one of the cords 4 is disposed so as to tend to retract both latch members 26 and 27 and the other cord 3 is connected to a third latch member 28 which serves, when in down position, to hold the two spring latches 26 and 27 in locked position. The reflector 2, elevated housing 1, the convenience outlet, and the connector member 11 may be substantially the same as in the construction of Figs. 1 to 4 inclusive. In the construction of Figs. 5, 6, and 7 the two latch members 26 and 27 are slideably mounted on brackets 29 secured to the fixture housing 2, a coil compression spring 30 being provided surrounding the sliding latch members 26 and 27 and engaging abutments 31 on these sliding latches tending to hold the latch members in extended position. The third latch member 28 is slideably mounted on an arm 32 extending from one of the brackets 29, and is provided with a coil compression spring 33 tending to hold this latch 28 in lowered position for engagement in the notches 34 on the sliding latches 26 and 27. The latch controlling cord 4 is secured to a loop 35 on the sliding latch 26 and passes around a pulley 36 on a bracket 37 on the other sliding

latch member 27 and thence over the upper pulleys 5 and 18 and thence downwardly into a position convenient for the service man.

In raising the fixture 2 from the lower position shown in Fig. 6 to the upper position, both cords are drawn downwardly. This will release the third latch member 28 from possible engagement with notches 34 on latch members 26 and 27. The coil compression spring, however, is so strong that it will hold the sliding latch members in extended position against the action of the cord 4 which tends to withdraw the sliding latch members into retracted position. However, when the beveled edges 38 of the two sliding latch members engage the lower edges 39 of the housing of the elevated unit the two slides will be pressed inwardly until they pass above the upper edges of the inwardly extending supporting flanges. This movement of latches 26 and 27 will, however, not be sufficiently great for the lower part of latch 28 to possibly engage the notches 49 in latches 26 and 27, whereupon latches 26 and 27 will snap outwardly into engaged position. When the cords 3 and 4 are slackened, the third latch member 28 will snap into the notches 34 on the latch slides to latch these slides in extended latching position.

In order to disconnect the fixture from its latch position shown in Fig. 5, the cords 3 and 4 are both tightened. This withdraws the third latch member 28 from latching engagement with notches 34 of the latch slides 26 and 27 and also withdraws the latch slides from latching engagement with the flange on the housing. In order to lock latches 26 and 27 in the contracted or open position, it is necessary that rope 4 be pulled sufficiently far to permit the under part of latch 28 to engage notches 49 on latches 26 and 27. Cords 3 and 4 are then paid out together, and the fixture is lowered.

As the weight of fixture 2, Figs. 5, 6, and 7, is sufficient to keep spring 33 compressed, latches 26 and 27 will remain in the contracted position as the fixture is lowered to the dotted position of Fig. 6 where the service man can handle it for repair or cleaning.

After maintaining, but before the ropes are pulled down, in order to replace the fixture, latches 26 and 27 should be released from the compressed position. This is done by lifting slightly the side of the fixture which is supported by rope 3 which will allow spring 33 to expand, releasing latch 28 from notches 49.

Fig. 8 shows a modified construction in which latch slides 26 and 27 would normally engage the supporting flange 39. A locking latch 41 is slideably mounted on arm 32. A spring 42 is so mounted on latch 41 as to tend to keep said latch 41 in the engaged position, if latches 27 and 26 are pulled sufficiently far back, in which position it is shown in Fig. 8.

Cord 4 controls the movement of latches 26 and 27 in a manner similar to that shown in Figs. 5 and 6. Cord 4A is fastened to a loop located on arm 32 which is rigid with the reflector 2 only section of which is shown in Fig. 8. The general shape can, however, be similar to reflector 2 of Fig. 6.

It will be noted that when latch slides 26 and 27 are pulled sufficiently far back as to be locked by latch 41, that the engaging ends of these latch slides have travelled a far greater distance than is necessary in order to merely effect the release of the fixture.

Thus, if the unit is being pulled up toward the

ceiling and latch 41 has been released so that slides 26 and 27 are spread apart, the ends of said latch slides will move together sufficiently to pass around the lip of supporting flange 39. They will however, not be pulled together sufficiently for latch 41 to lock them together, and, therefore, if the fixture is pulled up a little higher so that slides 26 and 27 can then pass over and above the supporting flange 39, spring 30 will immediately force said slides apart so as to effectively engage said supporting flange 39.

Thus, in order to release a fixture having this type of locking device from the ceiling so that it can be lowered to be cleaned or repaired, the following procedure is necessary.

The operator puts sufficient tension on rope 4 to cause spring 30 to be compressed. It is necessary, however, that rope 4 be pulled sufficiently far to cause latch slides 26 and 27 to move sufficiently close together to allow for engagement of latch 41. Slides 26 and 27 (Fig. 8) will then be locked together and by paying out the ropes 3 and 4 the unit can easily be lowered.

In this construction shown in Fig. 8 it is apparent that cord 4A could be eliminated by substituting a flat band 4B for round cord 4 and having this band pass over pulleys 36A and 36B. Pulleys 36A and 36B would be attached to reflector 2 in a manner similar to pulley 36.

Pulley 36B is located at the center of gravity of the reflector. The flat band 4B would act to prevent the reflector from rotating excessively during the raising and lowering operations, and would keep reflector 2 well balanced during the raising and lowering operation.

After the necessary repairs or cleaning and it is desired to raise the fixture to its normal ceiling position, the operations are as follows:

Latch 41 is first pushed down against the action of spring 42, which acts to keep latch 41 in the locked position. This releases slides 26 and 27, causing them to spread to the locking position. The fixture is then ready to be elevated by pulling on ropes 4 and 4A. It should be noted that spring 30 has sufficient expansive force to more than offset the tendency to compress spring 30 due to the tension on rope 4 caused by the weight of the fixture. Therefore, as the fixture approaches the ceiling, and ends of latches 26 and 27 engage supporting flange 39, this results in the necessity of applying additional pull on ropes 4 and 4A in order to force latches 26 and 27 together against the action of spring 30 sufficiently far to permit said latch slides 26 and 27 to pass around said supporting flange 39. Then, as the fixture is elevated slightly more, latch slides 26 and 27 snap past and engage the supporting flange 39. This furnishes a rigid and secure support for the entire fixture.

It should further be borne in mind that in the construction illustrated in Fig. 8 the fixture could be raised and lowered through the application of only one rope. In this case it would be advisable to have this rope pass through the center of gravity of the fixture. This could be accomplished by passing over two additional pulleys 36A and 36B, as shown in dotted. Flexible member 4A would not then be necessary. If this construction were used, it would be advisable to use a flat rope or tape which would act to prevent the fixture from rotating during the raising and lowering operations.

Summarizing the general construction of Fig. 8 and the modified construction of Figs. 5, 6, and 7,

it will be seen that they are fundamentally similar in that the fixture, when in the elevated and locked position, can be lowered by the application on the flexible raising and lowering means of tension considerably greater than that normally required to raise and lower the fixture. This additional pull or tension acts to compress coil spring 30 and to compress it sufficiently far to permit latch 41 to lock slides 26 and 27 in the open position. As soon as they are locked in the open position, the unit can be lowered by paying out on the flexible raising and lowering means.

In order to attach the fixture to the ceiling support, it is necessary that latch 41 be released manually by the operator while it is in the lowered position, and as soon as latch 41 has been released, the fixture then can be pulled up and locked into the ceiling support by merely the application of sufficiently hard pulling on the flexible raising and lowering means.

I claim:

1. A lighting construction comprising an elevated unit having contacts, a pair of pulleys, and a pair of spaced connector engaging members, and a detachable unit comprising a reflector, contacts for engaging said first contacts, and spaced connectors for engaging said spaced members respectively, one of said connectors comprising a latch, and means for raising and lowering said detachable unit with respect to said elevated unit comprising a pair of flexible pull members passing over said pulleys and secured to said unit, one of said pull members being connected to said latch to control its action.

2. A lighting fixture comprising an elevated unit, a detachable unit, flexible means attached to said detachable unit and supported by said elevated unit for raising and lowering said detachable unit, a latch engaging means on said elevated unit, a latching means on said detachable member for engaging said latch engaging means on said elevated unit, means for locking said latching means in the released position, and manual means for releasing said latch locking means when the fixture is lowered to within easy reach of the operator.

3. A lighting fixture comprising an elevated unit, a detachable unit, and flexible means attached to said detachable unit and supported by said elevated unit for raising and lowering said detachable unit, a latch engaging means on said elevated unit, a latching means on said detachable member for engaging said latch engaging means on said elevated unit, means operated by said flexible raising and lowering means causing said latching means to be moved to the released position through the application of tension on said flexible raising and lowering means, latch holding means for holding said latching means in the released position, and means for releasing said latch holding means when the fixture is in the lowered position so as to permit said latch supporting means to be in the locked position.

4. A lighting fixture comprising an elevated unit having electrical contacts, and latch engaging members, a detachable unit comprising a reflector, electrical contacts for engaging said first contacts, and latch members for engaging said latch engaging members, and two flexible pull members for raising and lowering said fixture, said latch members comprising a latching means co-acting with said pull members in such a manner that said latching means can be held open by causing one of said pull members to be moved relative to the other pull member.

5. A lighting fixture comprising an elevated unit having electrical contacts and latch engaging members, a detachable unit comprising a reflector, electrical contacts for engaging said first contacts, and latch members for engaging said latch engaging members, two flexible pull members for raising and lowering said fixture, and spring means controlled by the relative tension of said pull members for moving said latching means to latching position.

6. A lighting fixture comprising an elevated unit having electrical contacts and latch engaging members, a detachable unit comprising a reflector, electrical contacts for engaging said first contacts, and latch members for engaging said latch engaging members, two flexible pull members for raising and lowering said fixture, spring means for moving said latch members to latching position, and means controlled by the rela-

tive tension of said pull members for releasing said latch members from latching position.

7. A lighting construction comprising a detachable unit consisting of a reflector, electrical contacts on said reflector, locking means on said reflector, and a plurality of flexible raising and lowering members attached to said reflector and co-acting with said locking means, and an elevated unit comprising electrical contacts for engaging said contacts on said detachable unit, a lock engaging means on said elevated unit for locking said detachable unit to said elevated unit, and a supporting means for supporting said flexible lowering means, and spring means controlled by the relative tension of said raising and lowering members for releasing said locking means from locking position.

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