June 11, 1929. D. J. McCARTHY 1,716,529

LAMP ADJUSTING DEVICE

Filed Nov. 14, 1927

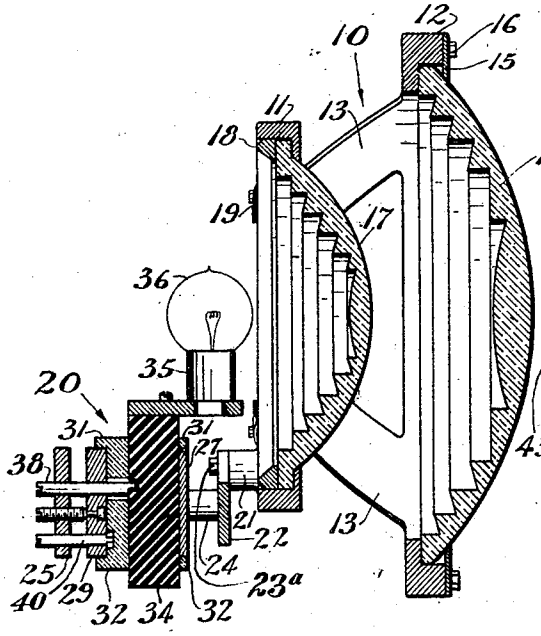


FIG. 1

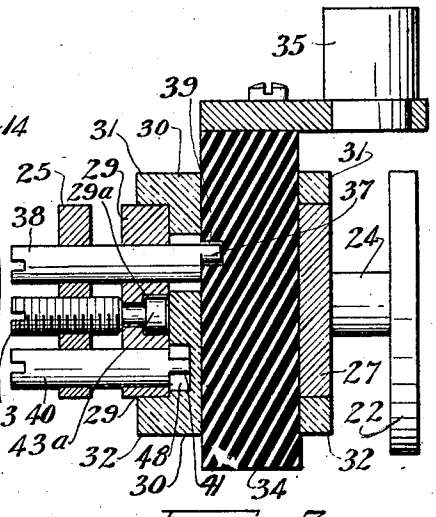


FIG. 3

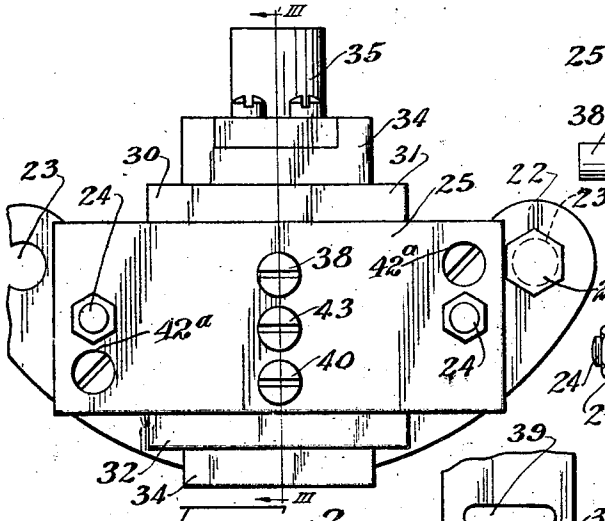


FIG. 2

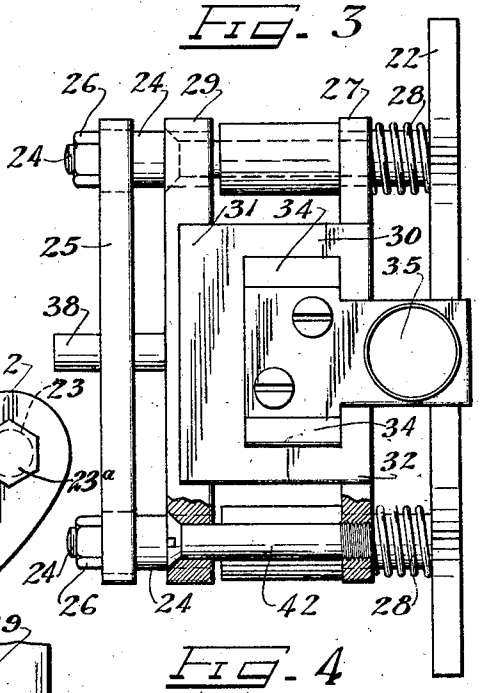


FIG. 4

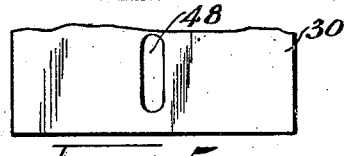
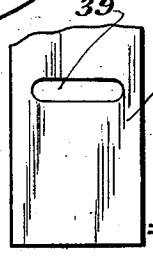


FIG. 5



INVENTOR

FIG. 6 Daniel J. McCarthy

BY Charles Hill ATTY.

Patented June 11, 1929. 1,716,529

UNITED STATES PATENT OFFICE.

DANIEL J. McCARTHY, OF ELGIN, ILLINOIS, ASSIGNOR TO CHICAGO RAILWAY SIGNAL & SUPPLY COMPANY, OF CARPENTERSVILLE, ILLINOIS, A CORPORATION OF ILLINOIS.

LAMP-ADJUSTING DEVICE.

Application filed November 14, 1927. Serial No. 232,980.

The invention relates to lamp adjusting devices.

It will be explained as applied to a signal lamp wherein it is utilized to determine the efficient position of a source of light, such as an incandescent lamp, relative to the focal point of a signal lamp lens or lens combination.

The method of adjusting and fixing the position of original and replacement lamps is fully disclosed in my Patent No. 1,563,509, granted December 1st, 1925. The instant invention is a simplified, convenient, and accurate device which accomplishes the results disclosed in my Patent No. 1,563,510, granted December 1st, 1925.

In many fields of industry, such, for example, as in railway signaling, it is frequently necessary or desirable to position an electric lamp in a critical position relative to the focal point of a lens or reflector system to realize the greatest benefit and effect of the beam of light to be projected.

The signaling device is often, perhaps usually, placed in positions which are difficult of access, such as on the tops of poles, switches, signal towers, and the like.

In such inconvenient places, the practice of shop and laboratory methods of lamp replacement and adjustment cannot well be followed, and the apparatus employed for accomplishing this result initially is not practicable for subsequent operations. However, to obtain uniformly and acceptably good results from the signals, defective and burned out lamps must be accurately and firmly replaced despite variations in their manufacture. To assist in the proper replacement and arrangement of lamps, it is desirable, if not absolutely necessary, to be enabled to accurately, easily and quickly determine the position of the new lamp and to detect, even in the most inaccessible places, when the new lamp filament is in the same effective position as the one it replaced.

The accuracy of position is especially desirable when the lamp is small, of relatively low candle power, and where a strong penetrating beam is required. In such cases, the position of the lamp filament in relation to the focal point of the lens or lens combination, not only affects the penetrating properties of the beam, but it also affects its direction. This is quite an important factor in this type of apparatus on account of the small diameter of the beam and the distance from which it is to be observed, which distance often exceeds a mile. A very small variation of the filament from its true position causes a very large deviation at the long range that the signal is to be observed.

One of the objects of this invention is to provide an improved device for conveniently adjusting a lamp to the correct position of the filament with respect to the focal point of a lens or reflector device.

Other objects, advantages and benefits of the invention will become readily apparent to persons skilled in the art from a consideration of the following description together with the accompanying drawings forming a part hereof, wherein:

Figure 1 is a central vertical section of a signal unit.

Figure 2 is an enlarged end elevation of the lamp holding and adjusting apparatus.

Figure 3 is a section taken on line III—III of Figure 2.

Figure 4 is a plan view of the said holding and adjusting device.

Figures 5 and 6 are fragmentary details.

In all the views, the same reference characters indicate similar parts.

In my aforesaid Patent No. 1,563,510, I have very fully discussed the reasons for and the advantages to be gained by means for maintaining the lamp at the focal point of the lens combination and the reason why it may at times be advisable, to meet certain contingencies, to move the lamp slightly out of focus and to fix it in that adjusted position.

In the drawings, a double lens unit 10 is shown which is more or less conventional and in which two parallel rings 11 and 12 are joined and held in spaced relation by arms 13. An outer lens 14, which may be red or any other desirable color, is shown to be secured in the ring by a flat ring 15 and screws 16. A rear lens 17 is secured in ring 11 by the ring 18 and spring clips 19. A frame 20 is secured to the ring 11 by lugs 21 and a plate 22, tap bolts 23[a] passing through holes 23—23 in the plate 22 and securing said plate to the ring 11. The plate 22 carries two parallel spaced studs 24—24. The studs are shouldered to the plate 25 and secured to said plate by nuts 26. A plate 27 is slidable on the studs 24—24 so that it may be moved outwardly

or rearwardly of the unit 10 by the open helical compression springs 28, which are also threaded over the studs 24 and which bear against the plate 22.

The studs 24—24 also pass freely through a plate 29. A metallic hollow block 30, is laterally slidable between plates 27 and 29, but its vertical movement is prevented by its flanges 31 and 32. The block 30 has a rear wall but has no corresponding front wall between said flanges. A vertically movable insulating block 34 passes down through the opening in the block 30, and is vertically movable therein. The block 34 carries a lamp holder 35 slightly offset at its upper end. A lamp 36 is shown in the holder 35 in Figure 1.

A stem 38 is journaled in plates 25, 29, but is movable in a space provided in the block 30. On its inner end it has an eccentrically positioned lug 37 which enters a horizontal slot 39 in the facing surface of the member 34. Manifestly, when the stem 38 is rotated, the block 34 and lamp 36 will be moved thereby in a vertical plane.

Another similar stem 40 is journaled in plates 25 and 29. On its inner end it carries an eccentrically placed lug 41 which enters vertical slot 48 in the facing surface of the block 30. It is also apparent that when stem 40 is rotated, the block 34, carrying lamp 36 and the block 30, will be moved laterally by said eccentric.

The aforesaid parts may be clamped and held in adjusted positions by screws 42, which are rotatable in plate 29 and are threaded in plate 27. Plate 25 is apertured at 42^a to allow access to the screws 42. These plates are thus drawn together so that plate 27 directly contacts and frictionally engages the front side surface of block 30, and plate 29 likewise engages block 30, thereby locking the parts together.

The springs 28 yieldingly hold the described parts in contact with the end of the set screw 43 which is threaded in plate 25. To move the lamp forwardly or toward the lens combination, the screw 43 is advanced, the springs 28 yielding to permit such movement. When set screw 43 is withdrawn to an extent, the springs 28 will tend to move the lamp 36 rearwardly or in the opposite direction until plate 29 contacts the screw. The plate 29 is recessed at 29^a and a reduced extension of the screw 43 is provided with a head 43^a whereby adjustment of the screw 43 positively moves the plate 29 and attached parts. In this manner the lamp may be moved fore and aft to find the focus point of the lens combination.

The adjustment of the adjustable instrumentalities may be accomplished by use of a screw driver, and when adjustment has been made, the elements may be locked together by tightening the screws 42—42.

This invention has been described more or less precisely herein yet it is to be understood that changes may be made in the arrangement and proportion of parts, and that equivalents may be substituted without departing from the spirit and scope of the invention.

I claim as my invention:

1. A lamp-adjusting device, having a vertically movable block and a lamp holder carried thereby, a laterally movable block in substantial contact with the vertically movable block, a fixed frame, an eccentric member journaled in the frame and having a part within a horizontal slot in the vertically movable block whereby to move said block vertically, an eccentric member journaled in the frame and having a part within a vertical slot in the horizontally movable block to move said block laterally and means to lock the movable blocks to prevent their movement.

2. A lamp adjusting device including in combination two spaced parallel plates, studs connecting said plates and maintaining the same in fixed relation, two intermediate parallel plates relatively slidable on said studs, means connecting said two last named plates for varying the distance therebetween, a block supported between said two last named plates and movable horizontally, a second block supported between said first block and one of said second named plates and movable vertically, means for moving each of said blocks in the directions stated, means cooperating with one of said first named plates and one of said second named plates for moving said second named plates and the supported blocks along said studs, and a lamp connection carried by said second block.

3. A lamp adjusting device comprising in combination two spaced parallel plates, studs connecting said plates and maintaining the same in fixed relation, two intermediate parallel plates relatively slidable on said studs, means connecting said two last named plates for varying the distance therebetween, a block supported between said two last named plates and movable horizontally, a second block supported between said first block and one of said second named plates and movable vertically, means for moving each of said blocks in the directions stated, means cooperating with one of said first named plates and one of said second named plates for moving said second named plates and the supported blocks along said studs, cushioning means interposed between one of said first named plates and one of said second named plates for coacting with said last mentioned means, and a lamp connection carried by said second block.

4. A lamp adjusting device comprising a frame, two parallel plates supported trans-

versely of said frame in a manner to slide lengthwise of the same and relatively to each other, a block supported by said plates and slidable therealong, a second block supported by said first block and one of said plates and movable vertically, a lamp socket carried by said second block, means for moving said blocks in the directions stated, means for moving said plates towards each other to clamp said blocks in relatively adjusted position, and other means for moving said plates and supported blocks lengthwise of the frame.

5. A lamp adjusting device, including a holder to receive a lamp, a block carrying said holder and movable vertically, cam means for adjusting said block vertically, cam means for moving said block laterally, means for moving said block fore and aft without disturbing either of the before mentioned cam means, means for clamping together the vertical moving means and the lateral means in any adjusted position, and means for locking all of said adjusting means in adjusted position.

6. A lamp adjusting device comprising a frame, two plates slidable on said frame, a block slidable on said plates transversely of said frame, a second block vertically slidable between said first block and one of said plates, cam means for moving said blocks in the directions stated, clamping screws for locking said blocks in adjusted position, and a screw engaging one of said plates for imparting fore and aft motion to said plate and the supported blocks.

7. A lamp adjusting device comprising in combination a block supported for horizontal movement, a second block in contact with and supported by said first block for vertical movement, cam means for moving each of said blocks in the directions stated, clamp means for locking said blocks in the position to which same have been moved by said cam means, means for moving said blocks when clamped in the position just stated in a direction perpendicular to the direction of movement of either of said block as effected by its cam means, and a lamp connection carried by said second block.

In testimony whereof I have hereunto subscribed my name at Carpentersville, Kane County, Illinois.

DANIEL J. McCARTHY.