O. ELTON.

CHAIR ADJUSTMENT.

APPLICATION FILED JUNE 6, 1919.

1,335,884. **Patented Apr. 6, 1920.**

2 SHEETS—SHEET 1.

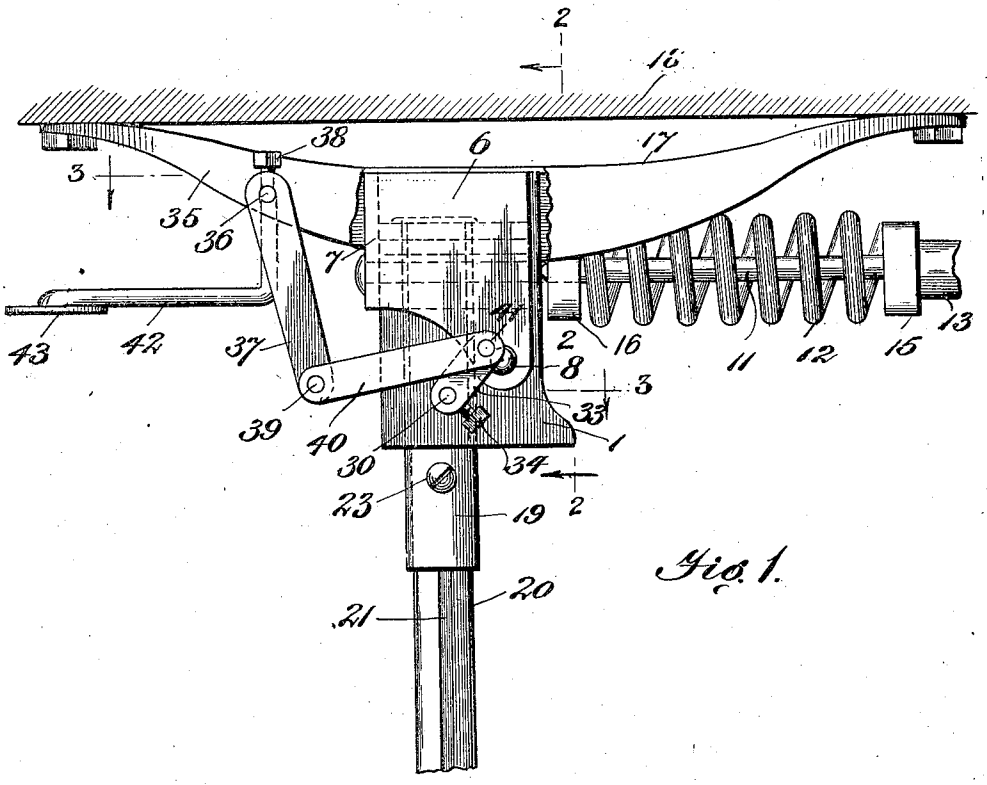


Fig. 1.

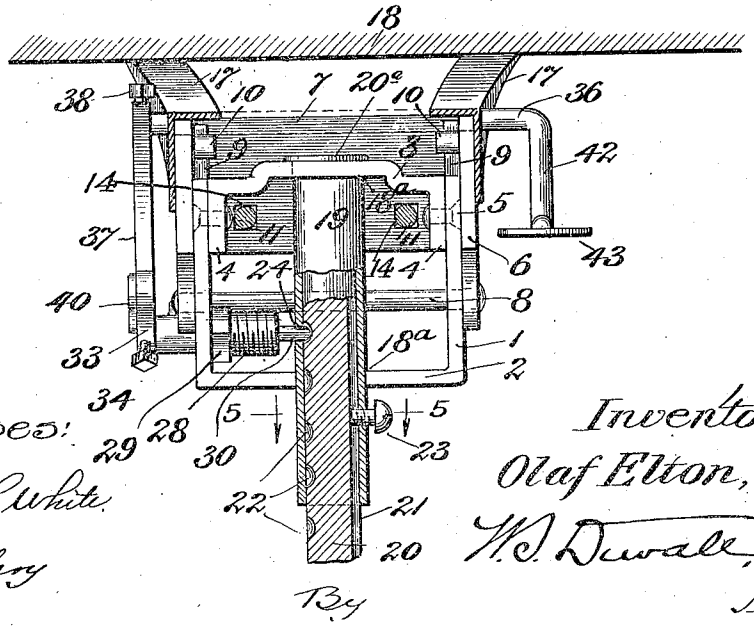


Fig. 2.

Witnesses:
Harry R. L. White
W. P. Fihry

Inventor:
Olaf Elton,
W. S. Duvall,
Atty.

By

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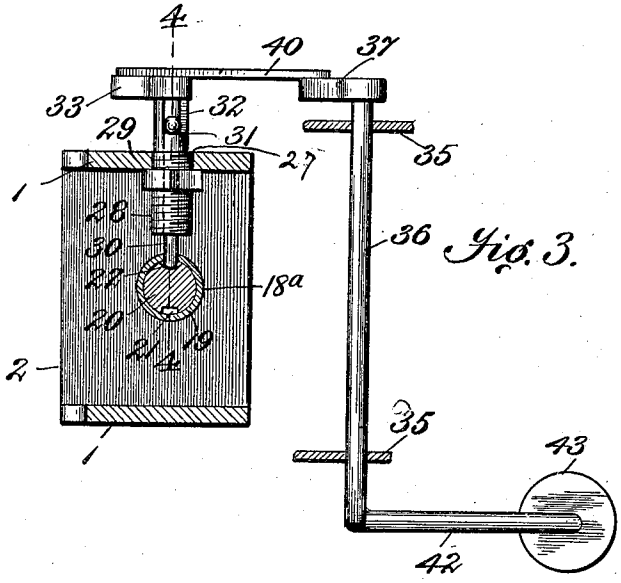


Fig. 3.

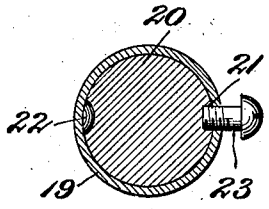


Fig. 5.

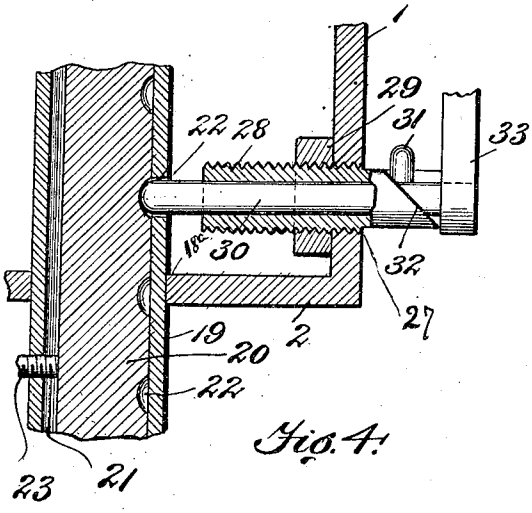


Fig. 4.

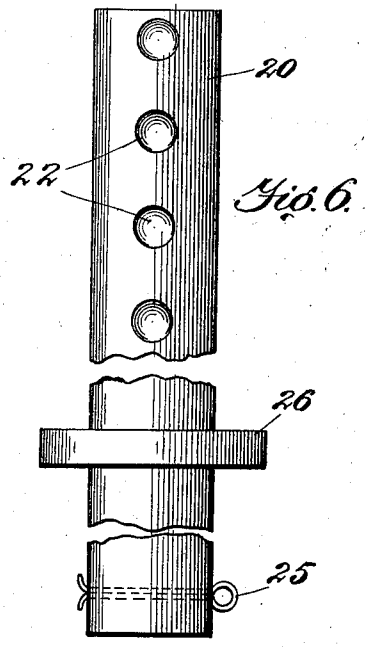


Fig. 6.

Witnesses:
Harry E. Whitte.
W. P. Kilroy

Inventor:
Olaf Elton,
By W. J. Duvall, Atty.

UNITED STATES PATENT OFFICE.

OLAF ELTON, OF PORT WASHINGTON, WISCONSIN.

CHAIR ADJUSTMENT.

1,335,884. Specification of Letters Patent. Patented Apr. 6, 1920.

Application filed June 6, 1919. Serial No. 302,183.

To all whom it may concern:

Be it known that I, OLAF ELTON, a citizen of the United States, residing at Port Washington, in the county of Ozaukee and State of Wisconsin, have invented a new and useful Chair Adjustment, of which the following is a specification.

My invention relates to improvements in revolving and tilting-chairs, especially to that portion thereof known as the "adjustment," by means of which the chair-seat is supported upon the chair-base.

Heretofore in adjustments of this kind, it has been the custom to provide for vertical adjustments of the seat through the instrumentality of threaded adjusting-posts in conjunction with which operate threaded hand-wheels or nuts mounted on the chair-base, or through some other instrumentality carried by the chair-base. The principal objections to such means lies in the fact that they are usually more or less coated with grease and accumulations of dust and in the further fact that they are for the most part inaccessible to the chair-occupant, requiring him to assume a stooping posture, grope around for the hand-wheel or other operating element, and being out of the chair at the time, he must guess as to the adjustment he is making.

The prime objects of my invention are to provide a simple means for adjusting the seat upon the supporting standard or post, to locate said means in the chair-iron, and to so locate the elements employed in operating said means as to be operable by the chair-occupant from the chair, if desired, so that he is enabled to get such an adjustment as will exactly suit his requirements.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings—

Figure 1 is a side elevation of a chair-adjustment typifying my invention;

Fig. 2 is a vertical transverse sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 3; parts being broken away; Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 2; and

Fig. 6 is a detail in elevation of the adjusting-post or standard.

Similar numerals of reference indicate similar parts in all the figures of the drawings.

The construction of chair-iron which I have herein illustrated and will describe in detail is, for the most part, merely employed for the purpose of typifying my invention, it being understood that the novel adjusting-means herein disclosed may be employed in connection with any of the well-known types of chair-iron to which it is applicable.

Certain novel features of the chair-iron appearing herein but not claimed, form the subject-matter of a companion application filed by me.

In order to fully typify my invention, the chair-iron illustrated comprises a U-shaped yoke, having opposite vertical side-walls 1, and a lower transverse connecting-wall 2. At their upper ends the side-walls are connected by a transverse brace-plate 3, the same being provided with downturned ends 4, embraced by the side-walls of the yoke and riveted thereto, as at 5.

The chair-iron, in this instance, further comprises a horizontal pivotal yoke consisting of opposite side-walls 6, which embrace the side-walls 1 of the stationary yoke, and connected at their rear ends by a transverse-wall 7. The side-walls of the pivotal yoke are pivotally connected to the side-walls of the stationary yoke by means of a transverse pintle 8, at a point above the lower transverse wall of latter yoke, the ends of the pintle being headed or upset, as is usual.

The upper front portions of the side-walls 1 of the stationary yoke are recessed thereby providing at the opposite or rear corners of said walls, vertical abutments or stop-shoulders 9, and against such are designed to abut stop-pins 10, which project inwardly from the side-walls 6 of the pivotal yoke. It will thus be seen that the rear transverse connecting wall 7 of the pivotal yoke abutting against the rear edges of the vertical side-walls 1 of the stationary yoke will serve to limit the forward pivotal movement of the pivotal yoke while the pins 10 will perform a similar office for the pivotal yoke during its backward movements.

The tension-mechanism, with the detail construction of which we are not interested in the present invention, is of the conventional type comprising the usual tension-rods 11, compression-springs 12, and adjust-

ing-nut or wheel 13, the rods passing through suitable openings 14, formed in the rear connecting-wall 7 of the pivotal yoke, and the front and rear compression-plates 15 and 16 respectively.

Surmounting and secured to the upper ends of the side-walls 6 of the pivotal yoke, are the usual conventional or other type of spider-arms 17, and to these are attached the chair-seat 18.

The brace-plate 3 and the lower transverse wall of the stationary yoke, are provided with circular openings 18ª which, by reason of the relative positions of these two elements are spaced a considerable distance apart. These two openings are in vertical alinement and receive a vertical sleeve 19, the upper end of which is preferably swaged, as at 20, above the brace-plate 3, and the lower end of which sleeve extends through the lower opening to a point considerably below the stationary yoke. This sleeve, it will be observed being supported at two distant points, becomes rigidly mounted in the stationary yoke of the chair-iron, and is therefore prepared to successfully withstand the lateral stress to which it is subjected when in actual use.

The adjusting-post or standard is not threaded, as is usual, but upon one side near its upper end, is longitudinally grooved, as at 21, and at its opposite side is provided with a longitudinal series of recesses or cavities 22. The adjusting-post or standard is of such diameter as will permit it to readily slide within the sleeve 19 and is secured to said sleeve so that the two elements will revolve together, while yet maintaining a slidable connection, by means of a screw 23, threaded in the sleeve and having its inner end engaging with the groove 21 of the post or standard. The sleeve is further provided at a point within the stationary yoke with a small aperture 24, which by vertically raising and lowering the chair-iron may be caused to register or aline with any one of the recesses or cavities 22, heretofore mentioned as being provided in the adjusting-standard or post.

The adjusting-standard or post it will be understood, is swiveled in the usual manner in the chair-base, from which latter withdrawal of the standard or post may be prevented by the usual means, as for instance, by a key 25. The post or standard may be provided with the usual bearing-collar 26, rotating upon the chair-base all of which is common in structures of this kind, and hence, require no further detailing.

At a point transversely opposite the aperture 24 formed in the sleeve, there is formed in the side-wall 1 of the stationary yoke, a threaded aperture 27, (see Figs. 3 and 4.) and in said aperture last mentioned there is threaded an exteriorly threaded tubular or bored sleeve 28, that extends inwardly from the side-wall in which it is mounted to a point near and in line with the aperture 24 of the sleeve 19. A nut 29, threaded on the sleeve, is utilized to lock the same in position by being run tightly up against the side-wall in which the sleeve is located.

Mounted to reciprocate as well as rotate within the sleeve 28, is a horizontal bolt 30, longer than the sleeve and therefore projecting beyond the opposite ends of the latter. The inner end of the bolt is preferably somewhat rounded to conform to the outline of the recesses or cavities 22 of the adjusting-post or standard, and the diameter of the bolt is such as to enable it to readily pass in and out of the aperture 24 of the vertical bearing-sleeve 19.

Near its outer end, the bolt 30 is provided with a guide-lug 31, the same being designed to operate against an inclined cam-face 32, with which the outer end of the horizontal sleeve 28 is provided immediately outside of the yoke in which it is mounted. It will be obvious that as the bolt 30 is rotated partially, the guide-lug working against the cam-face 32, will cause said bolt to withdraw from its end engagement with the recesses or cavities 22 of the adjusting-standard or post and thus release the chair-iron from its locked engagement with said post or standard, after which the chair-iron and the chair-seat may be raised and lowered upon the post or standard to the desired height.

Various means will readily suggest themselves for accomplishing the partial rotation of the bolt and its consequent withdrawal from its locking engagement with the post or standard, and it will be understood that such means as are employed may be operable by the chair-occupant from any desired point; so that it is not to be understood that I limit my invention either to the means herein shown and described for accomplishing the locking of the chair-iron upon the post or standard or to the means employed for operating the same, the arrangement shown being merely a typification of my invention.

In the present instance, I secure to the outer end of the bolt 30, beyond the end of the sleeve 28, a rocker-arm 33, the same being held rigidly upon the bolt by means of a set-screw 34, and to such arm is connected an operating-mechanism that may lead from any point desired and found convenient to the chair-user. A conveniently located operating system or means will be found in that shown, wherein, as will be seen, I journal in the vertical webs 35, of the spider-arms 17, a transverse shaft 36, the same being positioned immediately under the chair-seat 18 and in rear of the

chair-iron. At one end this shaft 36 is provided with a rocker-arm 37, the same being secured to the shaft by a set-screw 38, and the arm at its lower extremity being pivotally connected, as at 39, to one end of a connecting-link 40, the opposite end of which is pivotally connected, as at 41, to the free end of the rocker-arm 33 of the bolt 30. It will readily be seen that any rocking motion imparted to the shaft 36 will be conveyed to the bolt 30, and therefore, the latter reciprocated into and out of its locking engagement with the adjusting-post or standard. It now merely remains to provide a convenient means for rocking the shaft 36, and in the present instance I accomplish this by providing the shaft at that end opposite the rocker-arm 37, with an operating-arm 42, which projecting from the shaft, may be shaped as desired and caused to terminate at any point desired and convenient. In this instance, the arm 42 projects to a point slightly below the bottom of the chair and near its edge, and is there provided with a plate or head 43, so that the user can readily reach the same with his hand while at the same time grasping the chair-seat with both hands. By raising the head 43 and relieving the chair of his weight somewhat, an unlocking of the parts will occur and the seat may be permitted to fall or lower or be elevated the desired degree, after which by merely releasing the plate 43, the locking engagement of the bolt and the adjusting-post or standard will become reëstablished, the weight of the bolt operating-mechanism of the bolt being amply sufficient for returning the parts to their normal locking position.

I am aware that I am not the first to provide a locking-means for retaining vertically reciprocating adjusting standards for chairs at various elevations with relation to the chair-base, and hence, I do not broadly claim the same as of my invention; but in all such constructions as have come within my knowledge, the locking-means employed have been otherwise mounted than upon and carried by what I term herein and in the claims as the "chair-iron", such means usually being carried by the chair-base or hub; so that, the term "chair-iron" as I employ it herein, is intended to mean what is sometimes called a "spider" and at other times a "stretcher", such terms being used to designate a frame located at the upper end of the adjusting-standard and upon which the spider-arms are tiltably mounted. By the word "hub", also, as used herein, I mean to include the usual commercial chair-base. It will be found that the chair-iron is far better adapted to receive a locking-device for the standard, as herein typified, than is the chair-base, for that the latter, being always in view, is generally marred or its symmetry destroyed by the application of such a device; and moreover is, in many instances, weakened by such application. By applying the locking-means, as I have, to the chair-iron, instead of to the chair-base, such locking-means is entirely out of sight, being located directly under the chair-seat; and moreover, the usual form or style of chair-iron provides ample room for the application of the device; and finally, the locating of the locking-device within the chair-iron, enables me to employ an operating-means that may terminate adjacent the edge of the chair-seat and yet be hidden from view—a feature of the invention impossible where the locking-means is located in the chair-base.

Having described my invention, what I claim, is:

1. In a chair-adjustment, the combination with an adjusting-standard adapted for mounting in a hub or base, of a chair-iron having a vertical sleeve vertically movable upon the upper portion of the standard, a locking-means carried by the chair-iron to prevent independent vertical movement of the sleeve upon the standard, and means for releasing said locking-means.

2. In a chair-adjustment, the combination with an adjusting-standard adapted to be mounted in a hub, of a chair-iron having a vertical sleeve mounted for vertical adjustment on the upper portion of said standard, a locking-means carried by the chair-iron independent of the hub, means for automatically causing said locking-means to engage said standard, and means for disengaging said locking-means from such engagement.

3. In a chair-adjustment, the combination with an adjusting-standard adapted for mounting in a hub or base and provided with a plurality of engaging cavities, of a chair-iron having a perforated sleeve vertically movable upon the upper portion of the standard opposite the cavities, a laterally movable locking-means carried by the chair-iron and adapted to lock the sleeve and standard together through the perforation of the sleeve and one of the cavities of the standard whereby to prevent independent vertical movement of the sleeve upon the standard, means for normally retaining said locking-means in engagement with one of said cavities, and means for releasing or withdrawing said locking-means from such engagement, whereby to permit of independent movement of the sleeve upon the standard.

4. In a chair-adjustment, the combination with an adjusting-standard adapted to be mounted in a hub and having engaging recesses in its upper portion, of a chair-iron having a vertical sleeve mounted for vertical adjustment on the upper portion of said standard, a locking-means carried by the

chair-iron independent of the hub and adapted to engage and interlock with the recesses of the standard, and means for operating said locking-means to disengage the same from said recesses.

5. In a chair-adjustment, the combination with an adjusting-standard adapted for mounting in a hub or base, of a chair-iron having a vertical sleeve vertically movable upon the upper portion of the standard, a locking-means carried by the chair-iron and adapted to prevent independent vertical movement of the sleeve upon the standard, and means for operating to release said locking-means and extending to an operable position adjacent the edge of the chair-seat.

6. In a chair-adjustment, the combination with an adjusting-standard adapted to be mounted in a hub, of a chair-iron mounted for vertical adjustment on the upper portion of said standard, a locking means between the chair-iron and standard and independent of the hub, and means for disengaging said locking-means.

7. In a chair-adjustment, the combination with an adjusting-standard adapted to be mounted in a hub, of a chair-iron mounted for vertical adjustment on the upper portion of said standard, a locking-means between the chair-iron and standard and independent of the hub, and means extending from adjacent the edge of the chair-seat and adapted when operated to disconnect said locking-means.

8. In a chair-adjustment, the combination with an adjusting-standard adapted to be mounted in a hub and having a vertical series of recesses, of a chair-iron mounted for vertical adjustment on the upper end of said standard, a locking-means carried by the chair-iron independent of the hub and adapted to normally engage and interlock with one of said recesses, and means for operating said locking-means to disengage the same from said recesses.

9. In a chair-adjustment, the combination with an adjusting-standard having a series of engaging recesses, of a chair-iron, a reciprocal, rocking, locking-bolt carried by chair-iron and adapted to normally engage one of the recesses of the standard, an inclined cam, a lug extending from the bolt and working in contact with the cam, whereby to reciprocate said bolt when rocked, and means for rocking said bolt.

10. In a chain-adjustment, the combination with an adjusting-standard provided with a series of engaging recesses, of a chair-iron comprising a yoke and a vertically disposed perforated sleeve mounted for vertical adjustment on said standard, a sleeve mounted horizontally in said yoke and provided with an inclined cam-surface, a bolt mounted to reciprocate as well as rock in said sleeve and to engage one of the engaging recesses of the standard through the perforation in the sleeve, a lug extending from the bolt and riding upon the cam-surface of the sleeve in which it is mounted, and means for rocking the bolt.

11. In a chair-adjustment, the combination with an adjusting-standard provided with a series of engaging recesses, of a chair-iron comprising a yoke and a vertically disposed perforated sleeve mounted for vertical adjustment on said standard, a sleeve horizontally disposed in said yoke and threaded in one of the walls thereof and provided at its outer end with an inclined cam-surface, a bolt mounted to reciprocate as well as rock in said sleeve and at its inner end to engage one of the engaging recesses of the standard through the perforation in the sleeve, a lug extending from the bolt and riding upon the cam-surface of the sleeve in which it is mounted, means for rocking the bolt, and a jam-nut threaded on the horizontal sleeve and impinging against the wall of the yoke.

12. In a chair-adjustment, the combination with an adjusting-standard having engaging recesses, of a chair-iron having a sleeve disposed vertically therein and provided with an aperture registering with the recesses in the standard, a sleeve horizontally disposed in the chair-iron and provided with an inclined cam, a bolt adapted at its inner end to engage one of the recesses of the standard through the aperture in the vertical sleeve and mounted to reciprocate and rotate in the horizontally disposed sleeve, a lug projecting from the bolt and operating against the inclined cam of the horizontal sleeve, whereby, when rocked, the bolt will be caused to withdraw from its locking engagement with the standard, a rock-arm at the outer end of the bolt, an adjacent rock-shaft terminating at one end in an operating crank, bearings for the rock-shaft, a rock-arm at the opposite end of the rock-shaft, and a link pivoted at one end to the free end of the rock-arm of the shaft and at its other end to the free end of the rock-arm of the bolt.

13. In a chair-adjustment, the combination with an adjusting-standard, of a chair-iron comprising a yoke having opposite vertical side and an intermediate lower connecting-wall, and an upper transverse brace-plate connecting the two side-walls and spaced from the intermediate lower connecting-wall, said plate and latter wall having vertically alining openings, a sleeve located in said openings and mounted for vertical adjustment on the standard, means carried by the yoke for engaging said standard and locking the yoke at a point thereon, and means for disengaging said locking-means.

14. In a chair-adjusment, the combination with an adjusting-standard, of a chair-

iron comprising a yoke having opposite vertical side and an intermediate lower connecting-wall, the latter having a central opening, a superimposed transverse brace-plate connecting the side-walls of said yoke and having an opening alining vertically with that of the connecting-wall of the yoke, said brace-plate being spaced from said latter wall, a sleeve located in the openings of the brace plate and yoke and extending at its lower end below the yoke, said sleeve being mounted for vertical adjustment on the adjusting-standard, and means carried by the yoke for locking the latter upon the post at various points of adjustment on the adjusting-standard.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OLAF ELTON.

Witnesses:
T. A. BOERNER,
A. H. ERLWIG.