

G. DALEN.
 PENDULUM SUPPORT FOR LENSES.
 APPLICATION FILED MAY 3, 1910.

985,513.

Patented Feb. 28, 1911.

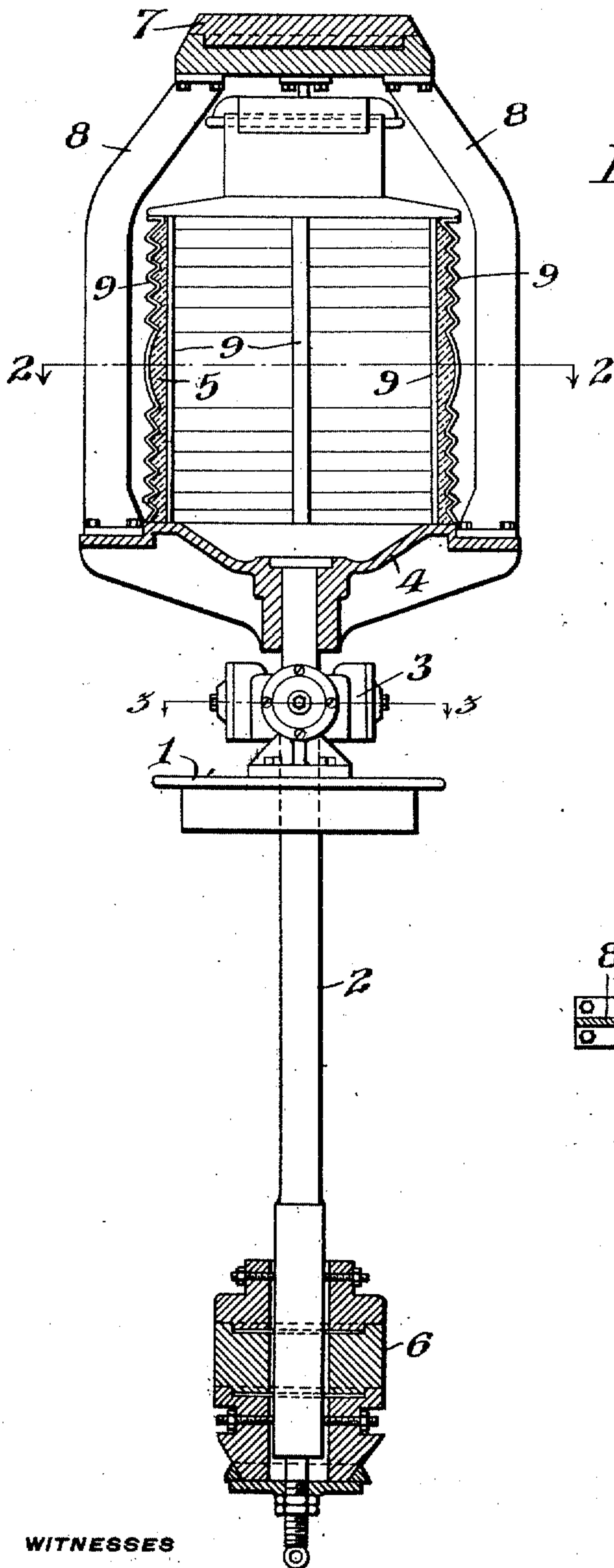


FIG. 1.

FIG. 3.

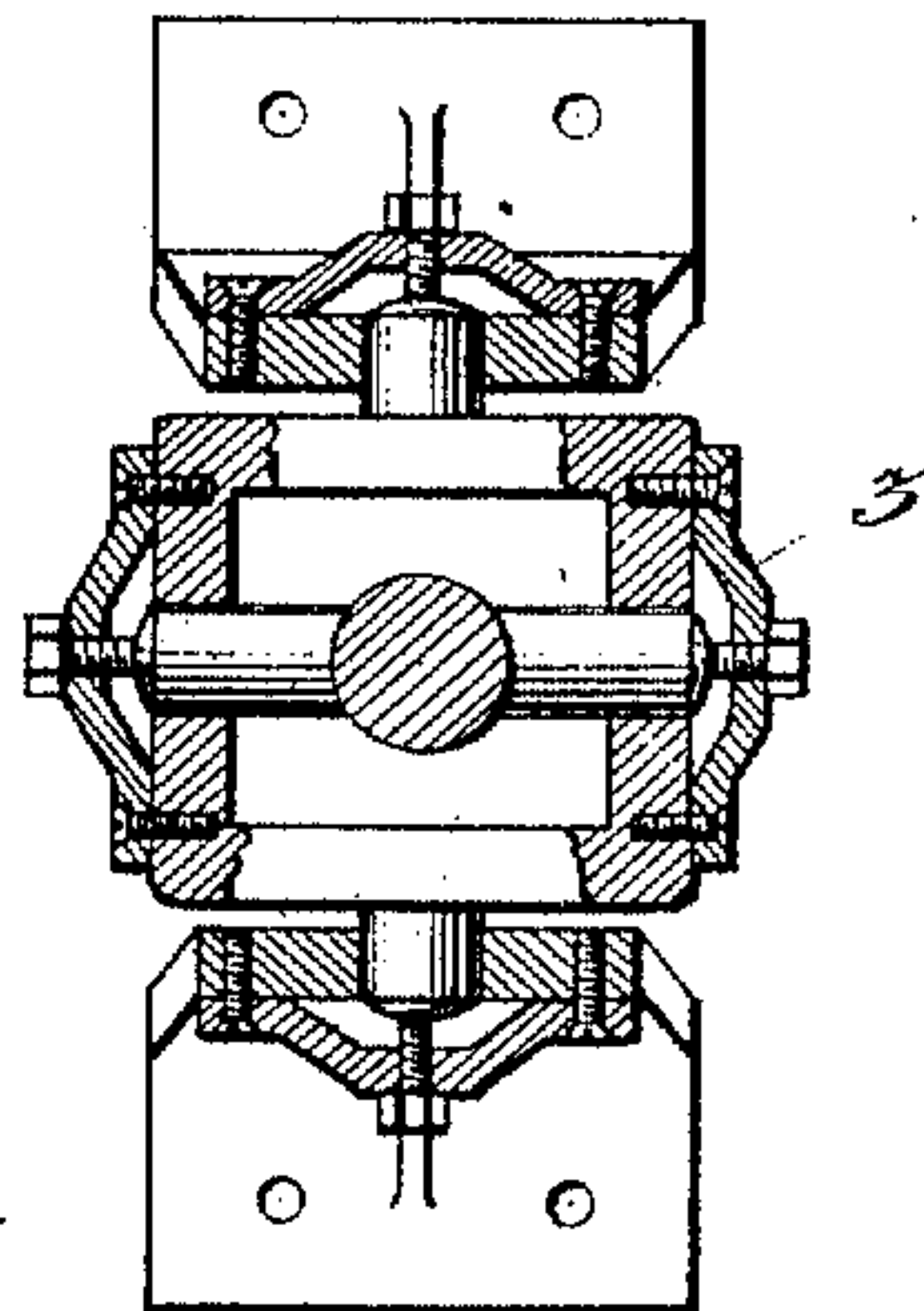
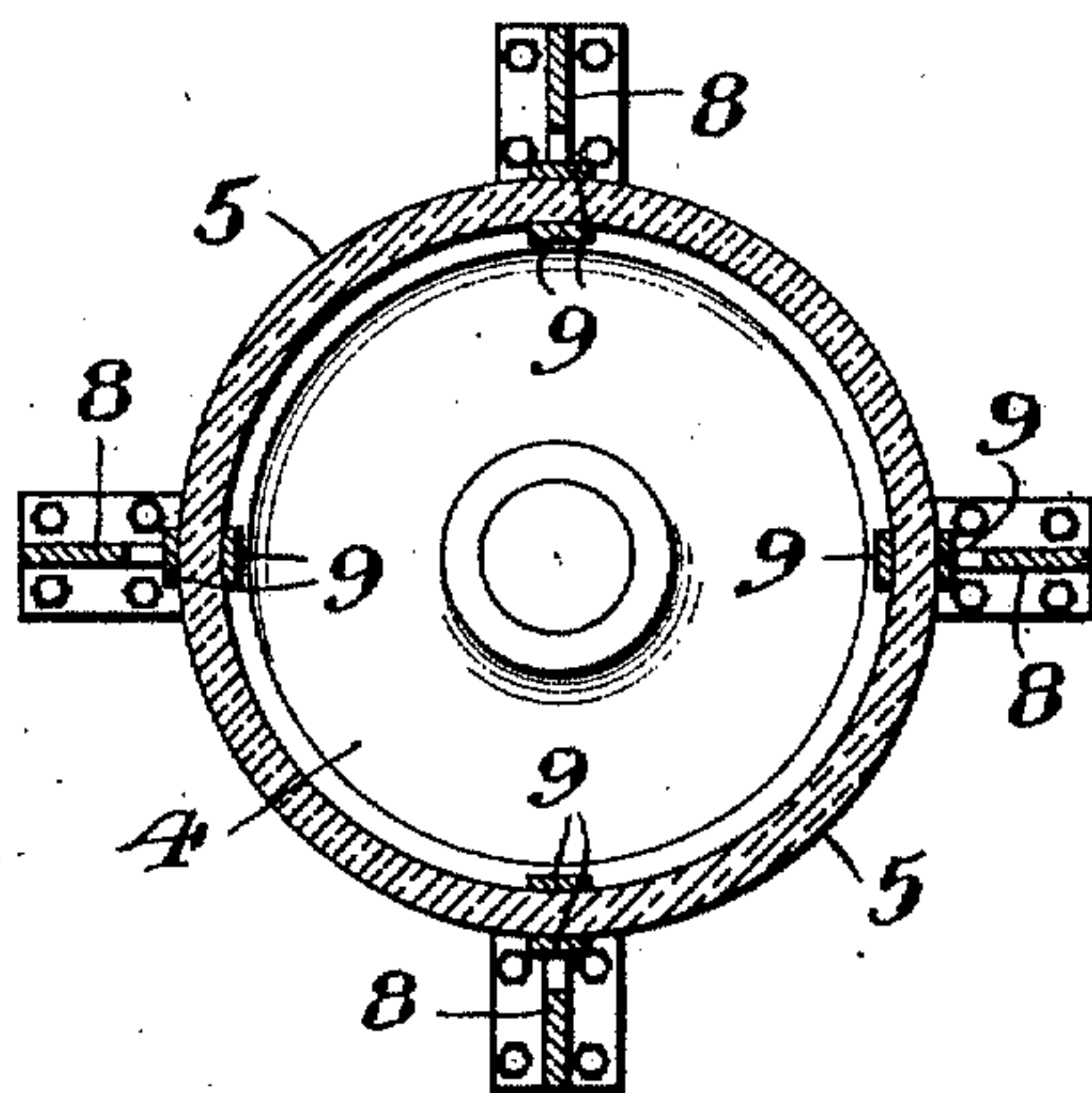


FIG. 2.



WITNESSES

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GUSTAF DALÉN, OF STOCKHOLM, SWEDEN, ASSIGNOR TO AMERICAN GASACCUMULATOR COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

PENDULUM-SUPPORT FOR LENSES.

985,513.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAF DALÉN, a subject of the King of Sweden, residing in Stockholm, Sweden, have invented certain new and useful Improvements in Pendulum-Supports for Lenses, of which the following is a specification.

The object of my invention is to provide means in a pendulum lens construction other than the lens and its supporting means for supporting the load of the upper counter-weight which is employed in connection with such lenses.

In the carrying out of my invention I have provided a construction in which the upper counter-weight is carried and supported by arms which are separate from the lens and its supporting or frame members. The said arms are so secured to the lens carrying shaft or to a part connected to such shaft that the lens and its supporting members are not subjected to the load of the counter-weight.

In the accompanying drawings, I have illustrated a convenient embodiment of my invention, but it is to be understood that changes in the details of construction and arrangement of the parts may be varied without departing from the scope of my invention as the same is set forth in the specification and claims which follow.

In the drawings:—Figure 1 is a longitudinal sectional elevation of a construction of pendulum lens and its support embodying my invention; Fig. 2 is a transverse section on the line 2—2 of Fig. 1; and Fig. 3 is a section on the line 3—3 of Fig. 1.

Referring to the drawings:—1 designates the frame or support by means of which the pendulum lens structure is supported on a light ship or other like structure.

2 designates a vertical or pendulum shaft which is connected to the frame or support 1 by means of a Cardanian joint 3. The said shaft 2 is provided with suitable means 4 for supporting the lens 5. At its lower end the shaft 2 is provided with a weight 6. For supporting the upper counter-weight 7 there are provided arms 8 which are separated from the lens and its supporting or frame members 9 and are connected directly to the lens support 4. The arms 8, as will be seen, are arranged outside of the lens 5 and its frame members 9. It is evi-

dent that as constructed the counter-weight 7 exerts no pressure whatever on the lens 5 or the frame members 9. By this construction the inconvenience resulting from the arrangement which heretofore generally has been employed, in which the counter-weight 7 rests directly on the upper edge of the lens 5 and its frame members 9, is entirely avoided.

In constructions as heretofore employed in which the counter-weight has rested directly upon the lens and its frame members 9, it has been necessary to use very thick or wide frame members in order to obviate damage to the lens. The use of such thick or wide members has caused wide shadows which, as is well known, are very objectionable. In the improved construction the arms 8 transmit the load of the counter-weight 7 to the shaft 2 through the support 3 independently of the lens 5 and the frame members 9 and, therefore, may be located at any point desired with respect to the said lens 5 or the frame members 9. For the purpose of obviating shadows from the members 8 they are placed preferably, as illustrated in Fig. 2, radially with respect to the members 9 of the lens frame. It is also to be noted that the arms 8 are rectangular in cross section, being thin in the direction in which the light rays extend or radiate from a light inside of the lens structure.

I have shown no light inside of the lens structure but it is to be understood that any form of light may be employed.

Having thus described my invention, I claim:—

1. A pendulum lens structure comprising a pivotally supported pendulum shaft, a lens supported upon the said shaft, a counter-weight, and means for supporting the said weight upon the said shaft independently of the said lens.

2. A pendulum lens structure comprising a suspended pivoted shaft, a lens supported upon the said shaft, a frame for supporting the said lens, a counter-weight, and arms for supporting the said counter-weight, the said arms being located radially with respect to the members of the lens supporting frame.

3. In a device of the character described, the combination of a pendulum shaft hav-

ing a universal joint connection with a supporting member, a lens supported upon the said shaft, frame members for securing the said lens in position, a counter-weight, arms
5 having connection with the said shaft for supporting the said counter-weight, the said arms being located outside of the said lens and outside of the said frame members for securing the lens in position and being in

radial alinement with the said frame mem- 10
bers.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 14th day of April, A. D. 1910.

GUSTAF DALÉN.

In the presence of—

WALDEMAR BOMAN,
T. EKEBOHM.