Sept. 23, 1947. I. L. MITCHELL 2,427,870

PAPER WEIGHT

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Fig. 1.

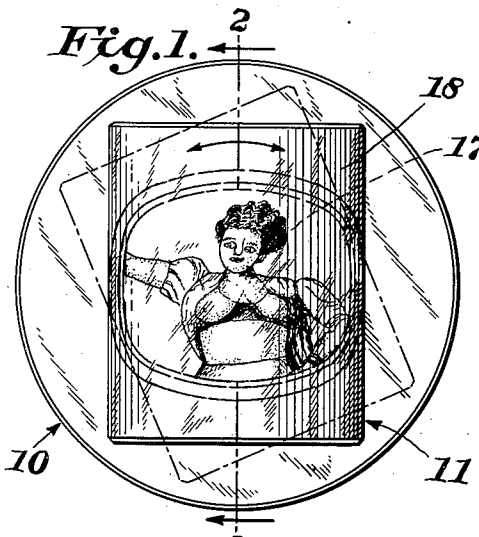


Fig. 2.

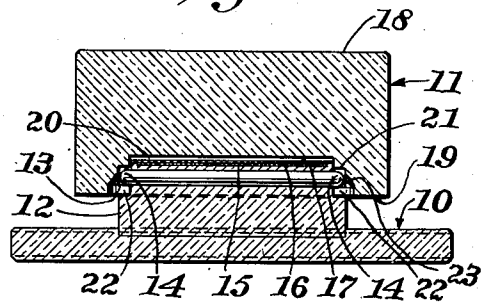


Fig. 3.

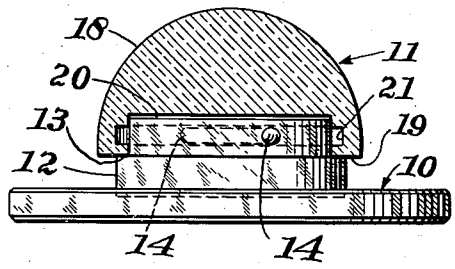


Fig. 5.

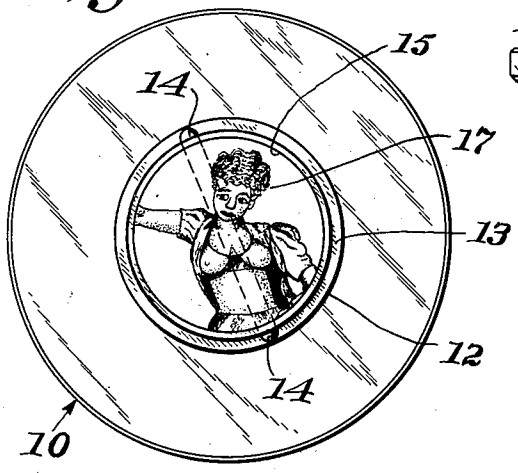


Fig. 4.

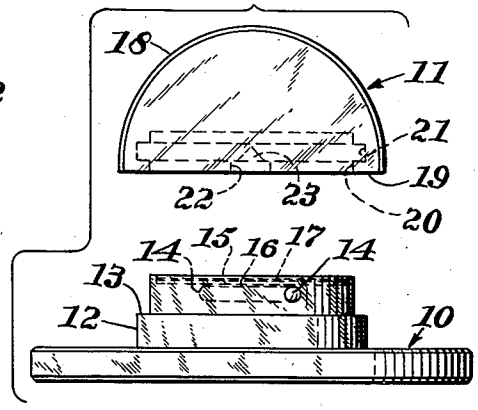
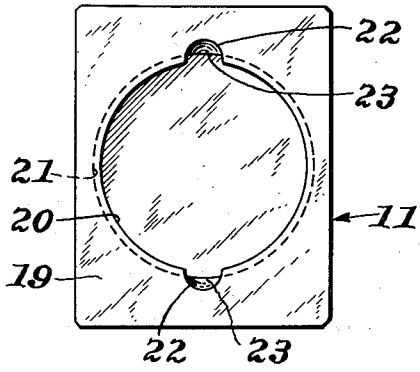


Fig. 6.



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Fig. 7.

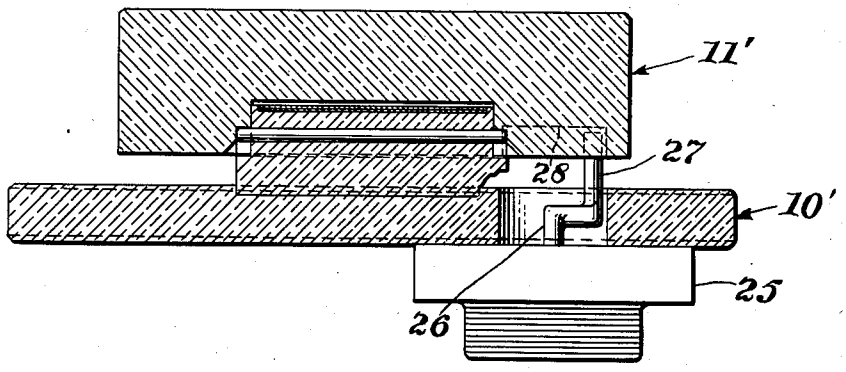


Fig. 8.

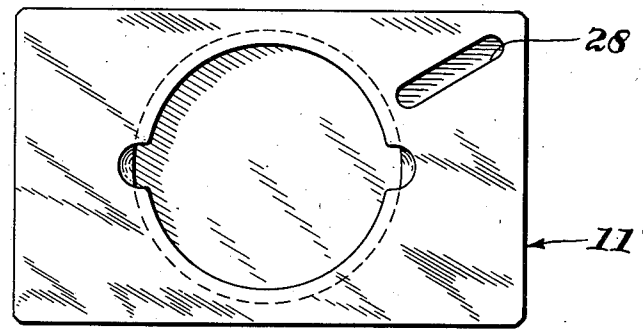
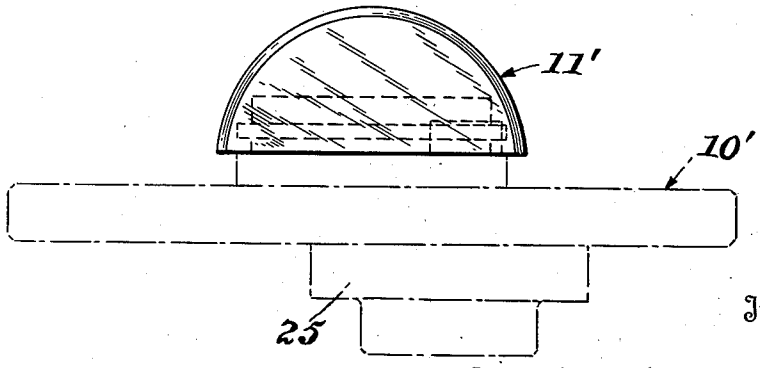


Fig. 9.



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PAPERWEIGHT

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Application March 11, 1946, Serial No. 653,685

7 Claims. (Cl. 120—82)

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The present invention relates to a device suitable as a desk ornament, or the like, and which is particularly useful as a paper weight.

The object of the invention is to provide a stable construction which is readily handled and which, in addition, embodies an educational feature.

The novelty and utility of the invention will be understood from the following description and the accompanying drawings.

Referring to the drawings:

Figure 1 is a top plan view of the invention;

Figure 2 is a vertical section on the line 2—2 of Figure 1;

Figure 3 is a side elevation, partly in section, of the invention;

Figure 4 is a view showing the parts in disassmbled relation;

Figure 5 is a top plan view of one part of the device, and

Figure 6 is a bottom plan view of the other part of the device.

Figure 7 is a vertical section of a modified embodiment of my invention;

Figure 8 is a bottom plan view of the lens member of the modified construction, and

Figure 9 is an end view of the modified construction with the parts in assembled position.

My device comprises a base member 10 and a top lens member 11. Referring to Figure 4, it will be seen that the base member is in the form of a flat circular member having a central raised portion or pedestal member 12 which is substantially cylindrical. The pedestal is provided with an intermediate circumferentially extending ledge 13 for a purpose which will be described later. Adjacent the upper edge, the raised member 12 is provided with two or more outwardly extending projections or lugs 14. In the embodiment illustrated, the two lugs 14 are diametrically disposed, being formed by the ends of a pin carried in the raised member 12.

The upper surface of the raised member is provided with a cylindrical depression or recess 15 adapted to receive a felt liner 16 or the like. Removably secured in any suitable manner upon the top surface of the liner is a pictorial representation or image 17 of any suitable character.

The lens member 11 comprises a transparent cylindrical lens formed of transparent white methacrylate resin such as "Lucite," or "Plexiglass," glass or any other suitable transparent material. The lens can also be made of colored transparent plastic material or glass. In this connection, the base 10 will be made of similar material as the lens member or, of some suitable opaque or non-transparent material, e. g., metal such as aluminum.

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As will be observed, the lens member 11 comprises a segment of a cylinder and has an upper curved or viewing portion 18 and a lower flat portion 19. A circular recess 20 is formed in the flat portion 19 of the lens member whereby the lens member is adapted to be rotatably mounted about the raised portion 12 of the base member 10. By reference to Figure 4, it will be noted that the vertical wall of the recess 20 is provided with a circumferentially extending groove 21, which groove opens into a pair of diametrically opposed slots 22 having inclined bottoms 23 sloping toward the groove.

In assembling the device, the slots 22 are aligned with the projections 14 in the pedestal member and the two members are brought together, with the lugs 14 disposed in the slots 22, whereupon the inclined surfaces 23 will guide the pins 14 toward the bottom of the circumferential groove. Thereafter relative rotation of the two members will cause the projections to engage in the groove, thereby permitting the two members to rotate relatively to each other while being held securely together. In the embodiment illustrated, I have shown the raised member 12 as provided with the projections 14, and the wall of the recess 20 as provided with the groove 21; but this manner and means for uniting the parts for relative rotation may be reversed.

By reference to Figure 2, it will be observed that the bottom of the cylindrical recess 20 is flat and parallel with the flat portion 19 of the lens member. The upper surface of the raised member 12 carrying the pictorial representation is likewise flat and when the two members are assembled, the plane of the pictorial representation is parallel with the bottom surface of the recess 20.

The viewing portion of the lens member 11 is at least of an area substantially coextensive with the area of the pictorial representation.

With the parts in assembled condition as described, and the base held stationary, the rotation or oscillation of the lens member will cause the illustrative pictorial representation or image to acquire a variable distorted appearance. This will readily be apparent upon a comparison of Figures 1 and 5, the latter showing the pictorial representation as it appears with the lens member removed, while Figure 1 shows the distorted appearance when the device is assembled and

the lens member occupies the full line position shown in this figure. The extent of the distortion varies with the relative angular positions of the base and lens members. Thus, the construction, in addition to its utility as a paper weight, is useful from an educational standpoint in that it offers a ready and simple means of demonstrating the properties of a cylindrical lens. The present construction permits easy assembling or disassembling of the parts and the pictorial representation may be removably carried on the top of the pedestal member so that a variety of demonstrations may be readily carried out.

To disassemble the parts for the purpose of replacing the pictorial representation, it is only necessary to rotate the lens member relative to the base until the projections 14 are aligned with the slots 22, whereupon the two members may be separated from each other by a simple lateral displacement.

Referring to Figure 4, the groove 21 and the projections 14 rotatably received therein, constitute a bearing for the rotation of the respective members, but it is preferable to employ the ledge 13 as an additional bearing surface for rotatably supporting the outer marginal area of the bottom surface of the lower flat portion 19 of the lens member.

While the device of the present invention may be manually operated, it is also susceptible of continuous and automatic operation by mechanical means; e. g., in the case where the device is used for educational or advertising purposes or where the structure is of such substantial size as to make hand operation inconvenient. The rotary or oscillatory mechanical movement of one of the members may be effected in any suitable manner. The construction shown in Figures 5 to 7 exemplifies one means for mechanizing the operation of the parts to effect an oscillatory movement of the lens member. As there illustrated, the base member 10' is held stationary and the lens member 11' is moved with respect thereto by means which will now be described. Secured to the bottom wall of the base member 10' is a motor 25 of any suitable type. The motor shaft rotates through a reduction gear (not shown) a crankshaft 26 which extends vertically upwards through an opening in the base member 10' and the free end or crankpin extension 27 thereof engages in an elongated recess 28 in the lower surface of the lens member 11'. Due to the eccentric position of the axis of rotation of the shaft 26 and pin 27 with respect to the vertical axis of rotation of the lens member and the engagement of the crankpin in the recess 28, the rotation of the crankpin will impart an oscillatory motion to the lens member 11' and thereby produce distortion of the image as described above.

Instead of imparting an oscillatory motion to the lens member, this last member may be fixed and the base member given an oscillatory motion. Also, instead of employing an oscillatory motion, one or the other of the members may be rotated with respect to the other. The motor or prime mover 25 will be operated at various speeds depending upon the subject being displayed and the effect desired.

While I have illustrated a crank and slot arrangement for effecting oscillatory motion of the lens member, it is to be understood that such motion or rotary motion of the lens member may be produced by other suitable means, such as cam devices or gearings.

While I have illustrated the base members 10 and 10' as being circular, it will be understood that they may be of any desired contour.

I claim:

1. A device of the character described comprising a base member, a pictorial representation supported on said base member, and a cylindrical lens rotatably mounted above the pictorial representation and over the same, rotation of the said lens producing a distorted image of the pictorial representation as viewed through said lens.

2. A device of the character described comprising a base member having a raised portion, a pictorial representation supported on the upper surface of the raised portion, a cylindrical lens member having a recessed bottom adapted to be rotatably mounted about said raised portion, said lens being disposed over said pictorial representation, rotation of the said lens producing a distorted image of the pictorial representation as viewed through said lens.

3. A device according to claim 2 wherein the raised portion on the base member is received within said recess, and the wall of said recess and said raised portion have co-operating means for connecting the two together and permitting relative rotation thereof.

4. A device according to claim 2 in which the surface of the bottom of the recess is flat and parallel to the plane of the pictorial representation.

5. A device according to claim 2 wherein the raised portion on the base member is received within said recess, and the wall of said recess and said raised portion have co-operating means for connecting the two together and permitting relative rotation thereof, said connecting means comprising a groove on one member and projections on the other said member received within said groove.

6. A device according to claim 2 wherein the raised portion is provided with outwardly extending projections and the recess in said lens is provided with a groove to receive said projections.

7. A device according to claim 2 in which the raised portion is provided with an intermediate ledge forming a bearing for the lens member.

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