

March 23, 1926.

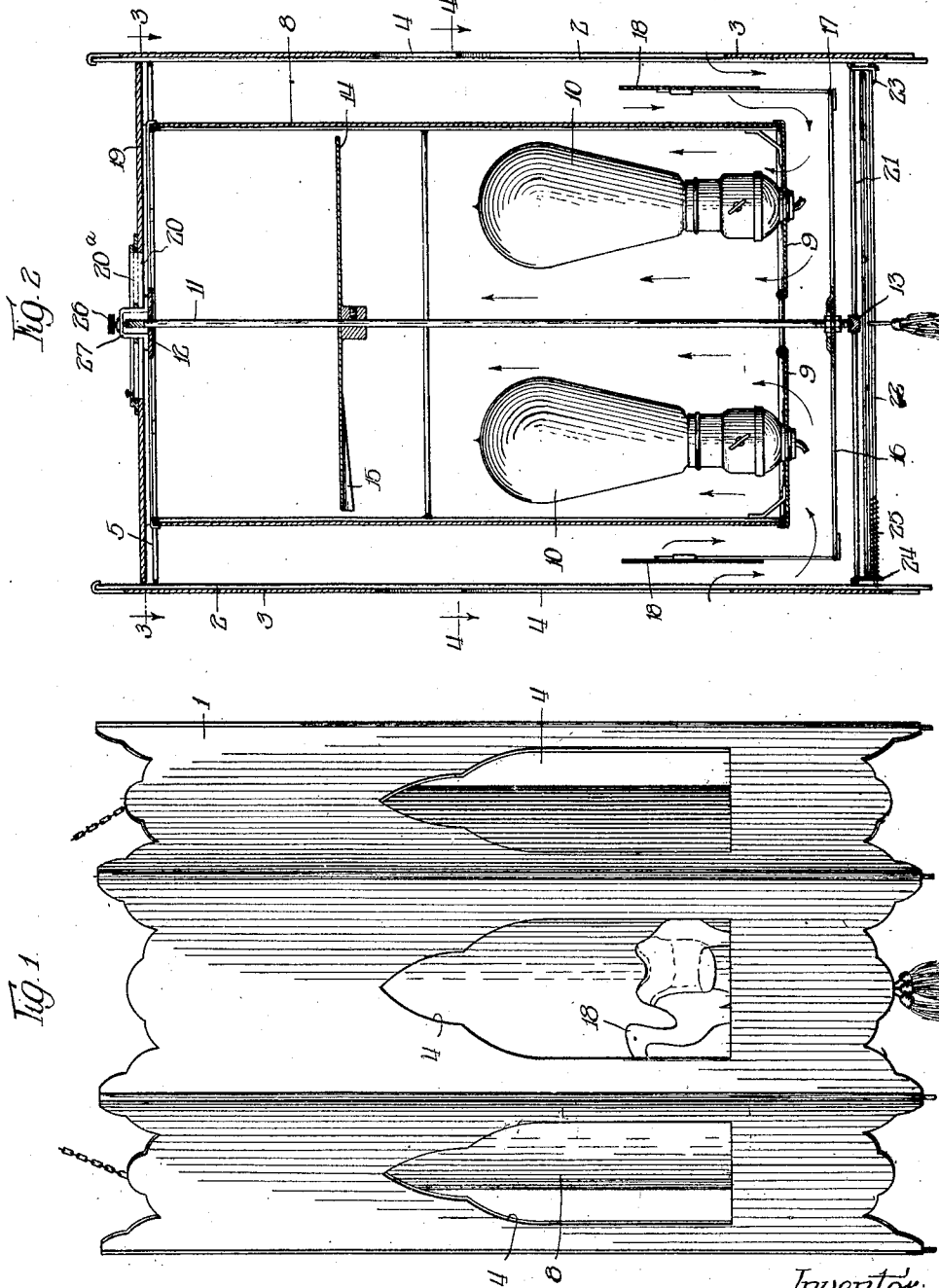
1,577,449

T. H. CHAN

DISPLAY LANTERN

Filed July 24, 1924

2 Sheets-Sheet 1



Witness:
R. Burkhardt.

Inventor:
Tak H. Chan,
By Cromwell Greist & Haden
attys.

March 23, 1926.

1,577,449

T. H. CHAN

DISPLAY LANTERN

Filed July 24, 1924

2 Sheets-Sheet 2

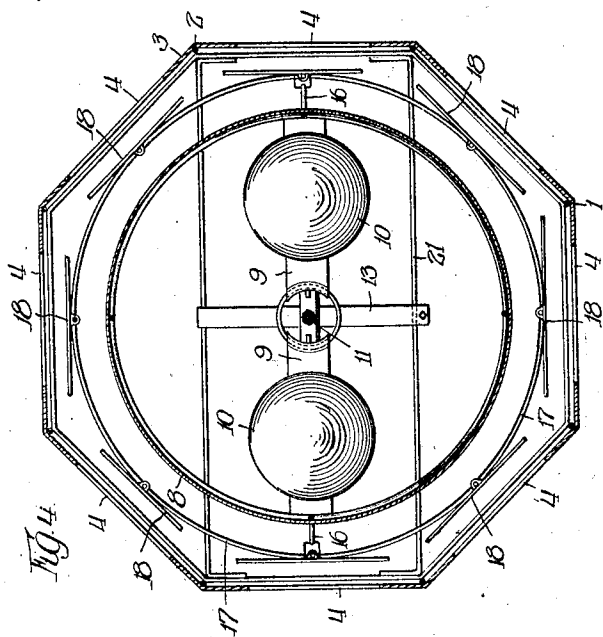


Fig. 6

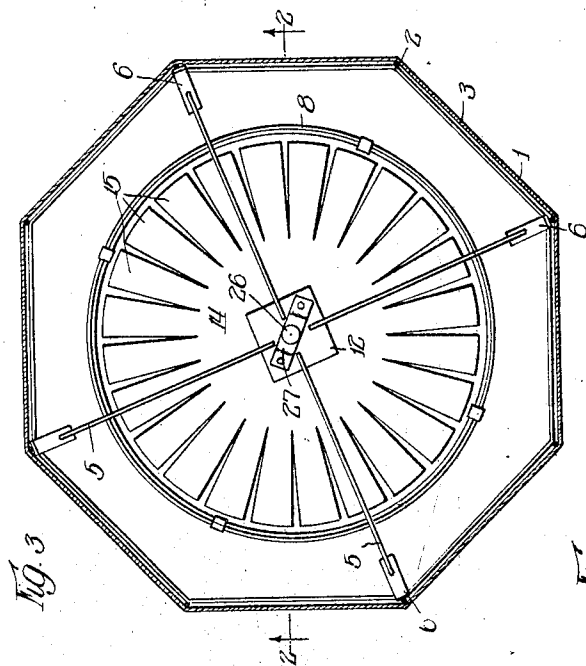
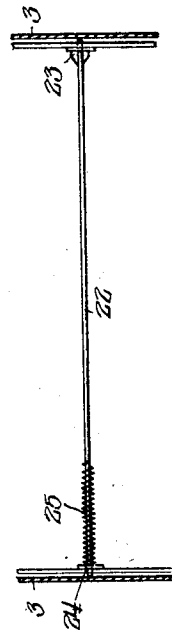
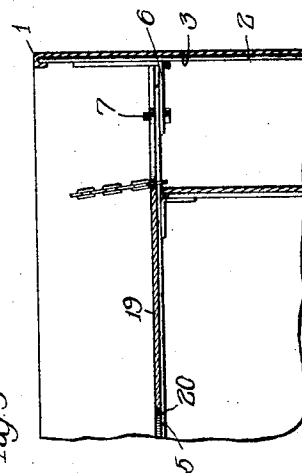


Fig. 5



Witness:
A. Burkhardt

Inventor:
Tak H. Chan,
By Cromwell Greist & Warden
attys

UNITED STATES PATENT OFFICE.

TAK H. CHAN, OF CHICAGO, ILLINOIS.

DISPLAY LANTERN.

Application filed July 24, 1924. Serial No. 728,050.

To all whom it may concern:

Be it known that I, TAK H. CHAN, a citizen of the Republic of China, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Display Lanterns, of which the following is a specification.

This invention has to do generally with display devices and particularly that type provided with means for rotating display objects by air currents induced by heat emanating from a light source.

The primary object of the invention is to provide an improved device of the kind named which will intermittently present objects for view at a fixed location.

A further object of the invention is the provision of a display lantern suitable for use separately or jointly as a display device and an ornamental illuminating device.

A further object is to provide an attractive device of simple construction which is inexpensive, strong and efficient in operation.

The full scope of the invention will become apparent as its general applicability is better understood, the invention consisting essentially in the manner of constructing, associating and organizing the parts hereinafter described, represented by the drawings and pointed out in the appended claims.

A preferred embodiment of the invention is disclosed herein, but this disclosure is to be considered only as exemplifying the true invention and is not to be taken as unnecessarily limiting the same.

In the drawings—

Fig. 1 is a view in elevation of a display lantern embodying the invention;

Fig. 2 is a vertical section through Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2 showing the arrangement of the impeller and inner casing;

Fig. 4 is a section view on the line 4—4 of Fig. 2 showing the arrangement of the lamps and display objects;

Fig. 5 is an enlarged fragmentary view showing the manner in which the inner casing is supported; and

Fig. 6 is an enlarged fragmentary view showing the means for retaining the bottom.

Referring in detail to the drawings, the numeral 1 designates a casing preferably of polygonal cross section. The casing 1, hereafter denominated the outer casing, is comprised of a frame 2 around which a translu-

cent cover 3 such as parchment or oil paper is wrapped and secured. At spaced intervals around the casing 1 observation openings 4 are provided. From cross frame members 5 which are detachably secured to bracket 6 on the frame 2 by bolts 7, a cylindrical translucent inner casing 8 is suspended. Mounted within the inner casing 8 on cross member 9 are lamps 10. Inner casing 8 is of sufficiently smaller dimensions than outer casing 1 to leave a convenient passageway between the walls of the two casings. A central spindle 11 is mounted in bearings 12 and 13. For the purpose of reducing friction, I have found it advisable to use a needle type for the foot step bearing 13. A radially disposed impeller disk 14 is secured to the shaft 11 above the lamps 10 and is provided with a plurality of vanes 15. It will be noted that the outer casing 1, inner casing 8, shaft 11, and impeller disk 14 are all concentrically disposed. A supporting member 16 carried by the shaft 11 extends radially under and beyond the inner casing 8 and has mounted thereon a rim 17 upon which a plurality of display objects 18 are in turn mounted between the walls of the casing 1 and 8 so as to be visible through observation openings 4. Top plate 19 is adapted to rest on cross frame members 5 fitting snugly within the outer casing 1 and is provided with a central aperture 20. Bottom plate 21 is retained in position by rod 22 having its ends removably seated in the sockets 23 and 24, being held in the former by the stress of the spring 25. Bottom plate 21 is comprised of translucent material shielding from view the interior mechanism of the device but permitting light to pass through.

It will be appreciated from the foregoing description that when the lamps 10 are burning they will illuminate the device and throw off heat, which in rising will induce a current of air upwardly through the inner casing 8, and which air current will act on the vanes 15 of impeller disk 14, thereby causing the rotation of the shaft and display objects 18 carried by supporting member 16 and ring 17.

The central aperture 20 in the top plate 19 may be reduced or enlarged for the purpose of governing the air current induced upwardly through the inner casing 8 by heat from the lamp 10. If the aperture 20 is re-

duced in size, it retards the escape of heat and consequently reduces the speed of the air current acting on the impeller disk 14 and slows up the speed of the display objects 18. Similarly, their speed may be increased by enlarging the aperture 20. The effective size of the opening may be regulated by an ordinary register plate 20^a.

It is desirable for the display objects 18 to be visible in other than silhouette as they rotate around the inner casing 8. For this reason the rear surface of outer casing cover 3 is adapted to reflect light on the front of the display objects as they rotate. The illumination of the display objects may be accomplished by other methods and reflecting devices but I have found it satisfactory to obtain the desired illumination by reflecting light from the lamps 10 on to the display objects from the rear surface of the outer casing cover 3.

For convenience in assembling, repairing and adjusting the lantern, and for replacing lamps, I have found it handy to removably suspend inner casing 8 within outer casing 1. This may be done by securing it to cross frame members 5 which are detachably secured to the frame 2. An additional advantage in this construction is that interference by the inner casing with the rotation of the display objects is eliminated and the device is sufficiently rigid to operate even though the shaft be not exactly vertical.

I have also found it advisable to provide a set screw 26 in U bracket 27 on cross-frame members 5, by which shaft 11 may be centered. The set screw may also be used as a brake to regulate the speed at which the shaft rotates and when put under sufficient tension may lock the shaft from turning.

I claim:

1. In a device of the class described, the combination with a stationary tubular casing, of a rotatably mounted impeller positioned crosswise of the casing within the length of the same at a point where it will occupy substantially all of the passage there-through, objects connected with the impeller and adapted to travel around the outside of said casing, and means for producing an upward draft of air within the casing.

2. In a device of the class described, the combination with an interiorly illuminated stationary tubular casing, of a rotatably mounted impeller positioned crosswise of the casing below the top thereof at a point where it will occupy substantially all of the passage through the same, objects connected with the impeller and adapted to travel around the outside of said casing, and means for producing an upward draft of air within the casing.

3. In a device of the class described, the combination with a pair of stationary casings one of which is disposed within the

other, of moving display objects adapted to travel between the walls of said casings, and means within the inner casing for imparting motion to the display objects.

4. In a device of the class described, the combination with a pair of stationary casings one of which is disposed within the other, the outer one of which is provided with observation openings, of moving display objects adapted to travel between the walls of said casings and visible through said observation openings, and means within the inner casing for imparting motion to the display objects.

5. In a device of the class described, the combination with a pair of translucent casings, one of which is suspended within the other, the outer one of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings, and visible through said observation openings, means for illuminating the casings, a central spindle, means connecting said spindle and display objects, and means for rotating the spindle.

6. In a device of the class described, the combination with a pair of translucent casings, one of which is suspended within the other, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings, means for illuminating the casings, a central spindle, means connecting said spindle and display objects, and means for rotating the spindle comprising a vane secured thereto adapted to be rotated by air currents induced by heat emanating from the illuminating means.

7. In a device of the class described, the combination with a pair of translucent casings, one of which is suspended within the other, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings, means for illuminating the casings, a central spindle, means connecting said spindle and display objects, means for rotating the spindle comprising a vane secured thereto adapted to be rotated by air currents induced by heat emanating from the illuminating means, and means to control the air currents to regulate the speed of rotation.

8. In a device of the class described, the combination with a pair of translucent casings, one of which is suspended within the other, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings, means for illuminating the casings, a central spindle, means connecting said spindle and display objects, means for rotating the spindle comprising a vane secured thereto adapted to be rotated by air currents induced by heat emanating from the illumi-

nating means, and friction braking means acting on the spindle to regulate the speed of rotation.

9. In a device of the class described, the combination with a pair of translucent casings, one of which is suspended within the other, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings, means for illuminating the casings, a central spindle, means connecting said spindle and display objects, means for rotating the spindle comprising a vane secured thereto adapted to be rotated by air currents induced by heat emanating from the illuminating means, the upper end of the spindle being interiorly coned, and a conical adjusting member seated therein as a centering bearing and friction brake for the spindle.

10. In a device of the class described, the combination with an outer casing having a plurality of spaced observation openings, of an inner casing suspended within said casing, moving display objects adapted to rotate between the walls of the casings visible through said observation openings, means within the casings for illuminating the same, a centrally mounted rotatable member, means extending under and beyond the inner casing connecting the moving display objects and rotatable member, and means for rotating said member by air currents induced by heat from the illuminating means.

11. In a device of the class described, the combination with a pair of concentrically disposed stationary casings, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of the casings and visible through said observation openings, illuminating means within the casings, means associated with the outer casing for illuminating the display objects, a central spindle, and means carried by the spindle for supporting and rotating the display objects.

12. In a device of the class described, the combination with an inner and outer casing, the outer casing being provided with observation openings, of means for illuminating the casings, a central spindle, moving display objects connected to said spindle and visible through said observation openings, and means for rotating the spindle.

13. In a device of the class described, the combination with an inner and outer casing,

the outer casing being provided with observation openings, of means for illuminating the casings, a central spindle, moving display objects connected to said spindle and visible through said observation openings, and means for rotating the spindle, said means comprising an impeller secured to the spindle.

14. In a device of the class described, the combination with an inner and outer casing, the outer casing being provided with observation openings, of means for illuminating the casings, a central spindle, of moving display objects connected to said spindle and visible through said observation openings, and means for rotating the spindle, said means comprising an impeller secured to the spindle and adapted to be rotated by air currents induced by heat emanating from the illuminating means.

15. In a device of the class described, the combination with an inner and outer casing, the outer casing being provided with observation openings, of means for illuminating the casings, a central spindle, moving display objects connected to said spindle and visible through said observation openings, and means for rotating the spindle, said means comprising an impeller secured to the spindle above the illuminating means and adapted to be rotated by air currents induced by heat emanating from the illuminating means.

16. In a device of the class described, the combination with a pair of concentrically disposed translucent casings, the outer of which is provided with observation openings, of moving display objects adapted to rotate between the walls of said casings and visible through said observation openings, means within the casings for illuminating the same, a central spindle, means extending outwardly from the spindle below the inner casing for supporting the display objects, means for rotating the spindle, said means comprising a vane mounted on the spindle within the inner casing above the illuminating means and adapted to be rotated by air currents induced by heat emanating from the illuminating means, and means for regulating the speed with which the shaft rotates.

In testimony whereof I have hereunto signed my name.

TAK H. CHAN.