United States Patent

[11] **3,585,379**

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[54] **LIGHTING FIXTURE**
3 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **240/73,** 240/10.1, 240/10.64
[51] **Int. Cl.** **F21s 1/02**
[50] **Field of Search** 240/10, 10.1, 73, 108, 10.64, 49

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ABSTRACT: A lighting fixture for producing a flamelike flickering light. A bulb in a light socket is surrounded by an opaque hollow tube for causing air to flow upwardly over the light bulb. A bladed rotor is rotatably mounted on the hollow tube above the light bulb, and an external tube of semitransparent material surrounds the upper end of the hollow tube and extends substantially vertically upwardly therefrom. The sides of the external tube are bent zigzag along vertical folds.

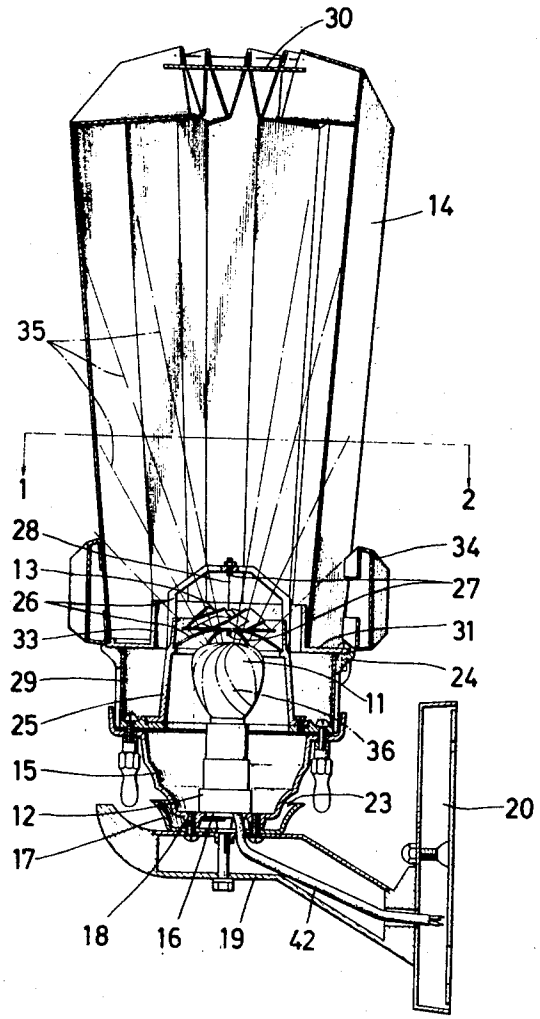

Fig. 1.

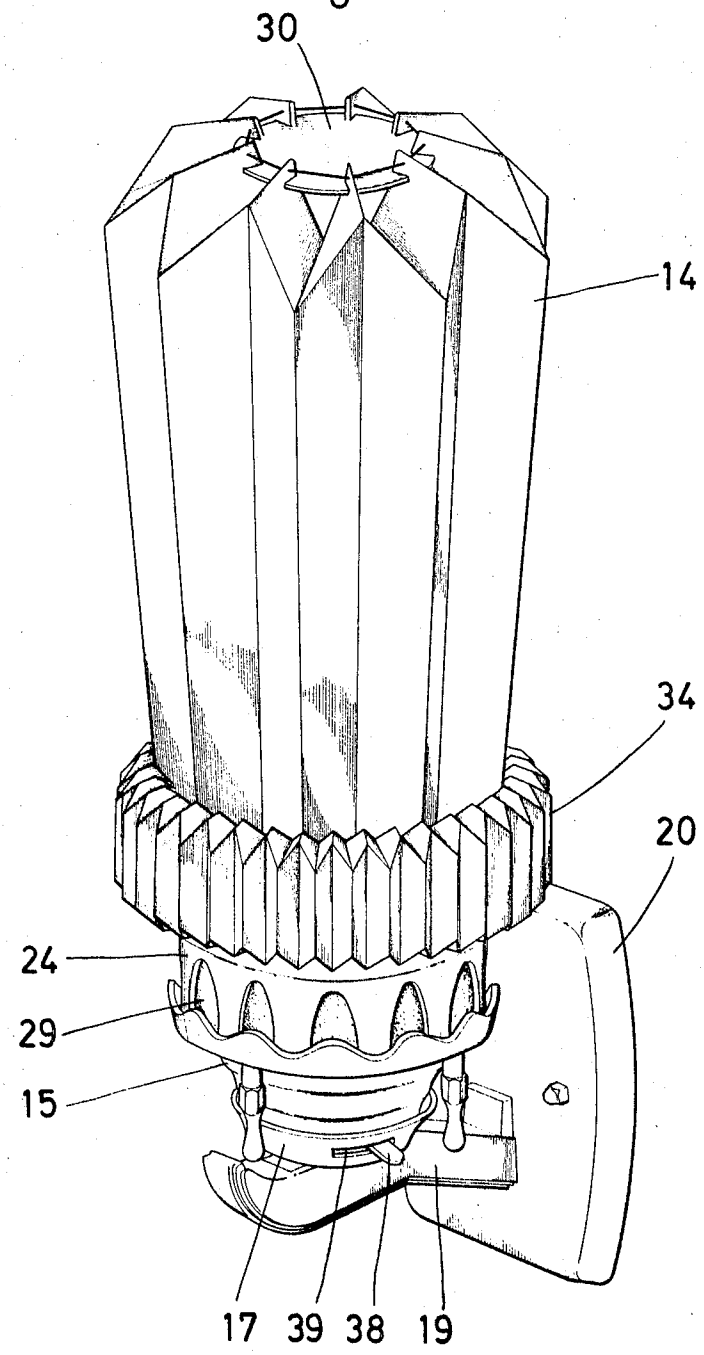

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Fig. 2.

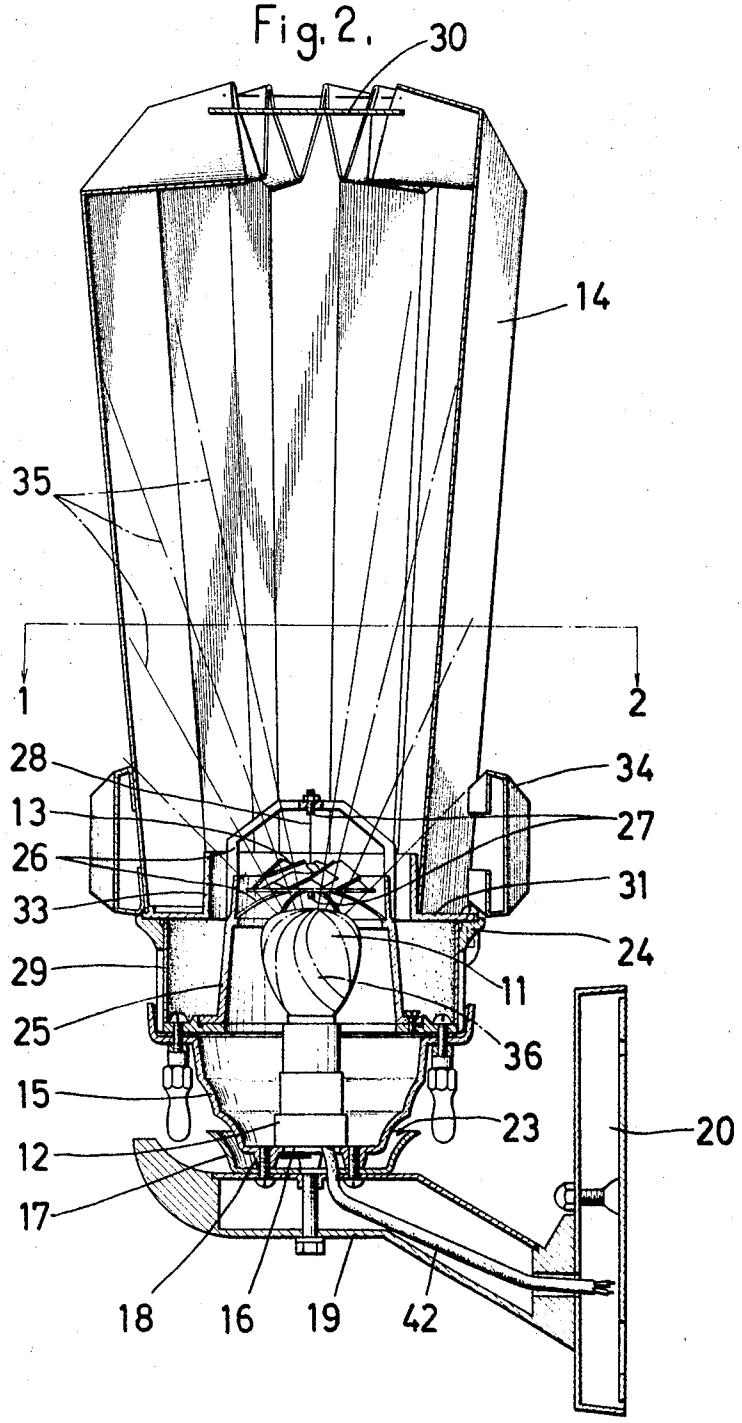

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Fig.3.

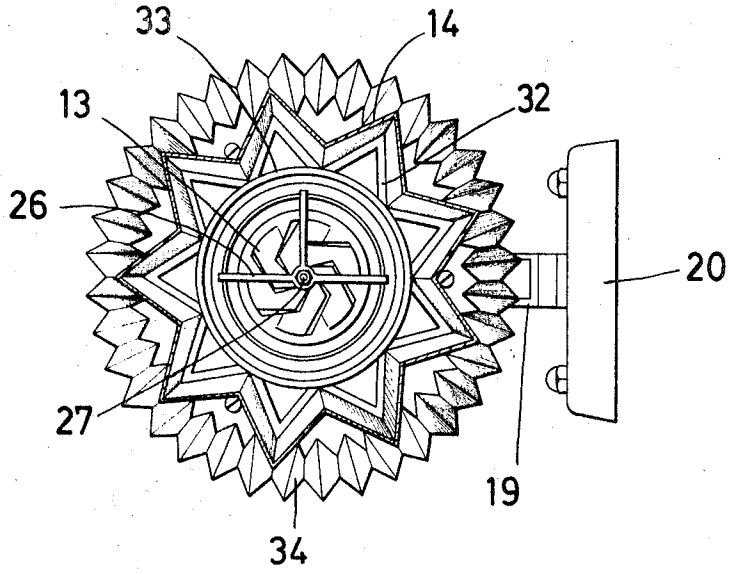


Fig.4.

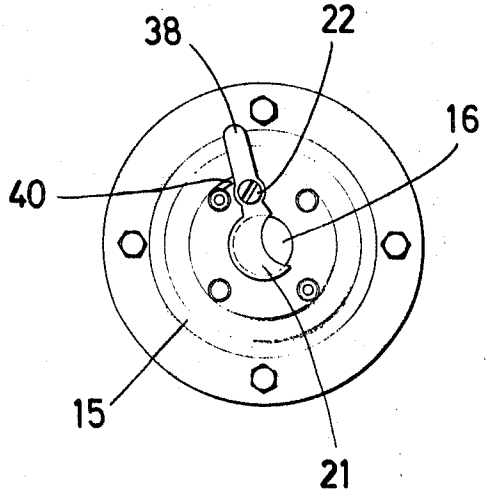
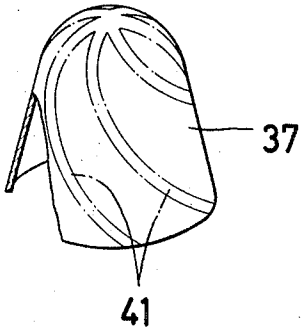


Fig.5.



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LIGHTING FIXTURE

This invention relates to a lighting fixture wherein an electric bulb is used, more particularly to a lighting fixture wherein the projection of the light of the electric bulb provided inside thereof produces an image as if flames are flickering on the external tube.

It is common to the conventional lighting fixtures that the light of the electric bulb provided inside thereof is stationary. The first object of the invention consists in obtaining an extremely refined effect of illumination quite different from the conventional lighting fixtures by giving movement to the light emanating from the stationary electric bulb.

The second object of the invention consists in the fact that no special driving equipment, such as an electric motor and the like, is required to cause the foregoing movement of the light. The third object of the invention consists in giving a very intricate variety to the moving light by projecting the said moving light from inside the external tube which is bent in zigzag.

The foregoing objects are achievable by a combination of each part constituting the invention and the effect thereof. The preferred embodiments of the invention will be clarified by the detailed description set forth hereinunder with reference to the accompanying drawing. Modifications and transformations as regard to the details of the structure are to be included in the claims which will appear hereinafter.

The invention comprises a stay on which an electric bulb is mounted, a runner which is revolvably pivoted above the said electric bulb and gyrated by the ascending air owing to the heat developed by the electric bulb, and a semitransparent external tube which receives and projects outward the light emanating from the electric bulb and passing through the runner.

FIG. 1 is an oblique view of the lighting fixture of the invention;

FIG. 2 is a lateral view of a longitudinal section of the lighting fixture of the invention;

FIG. 3 is a cross section taken approximately on the line 1—2 in FIG. 2;

FIG. 4 is a bottom view of the lower frame only of the lighting fixture of the invention, illustrating the relation between the air passage and the shutter;

FIG. 5 is an oblique view of the cover with which to cover the electric bulb, a part thereof being omitted.

The lighting fixture of the invention consists of a stay **12** in the inside of which is fixed an electric bulb **11**, a runner **13** revolvably provided at the upper part thereof, and an external tube **14** of semitransparent material which is provided on the stay **12**. The stay **12** is provided on the bottom of the lower frame **15**, the said lower frame **15** having an air passage **16** at the center thereof. The lower frame **15** is sustained by legs **18** with appropriate spacing on a dish-shaped receiver **17** which is located further below, the said receiver **17** being fixed to an arm **19**, a fixing plate **20** being provided at the base of the arm **19**, the said fixing plate **20** being fixed to a post or the wall of the room with bolts or the like. As is explicit from the bottom view of the lower frame **15** illustrated by FIG. **4**, on the lower surface of the lower frame **15** a shutter **21** facing the lower part of the air passage **16** is pivoted revolvably in the horizontal direction centering on the axis **22**, a handle **38** which is integrally formed with the shutter **21** being caused to protrude outward from an oblong hole **39** provided on the periphery of the receiver **17**, so that the aperture of the air passage **16** can be controlled by the revolution of the shutter **21** by means of the handle **38**. A ventilating space **23** is provided between the lower frame **15** and the receiver **17**. The electric wire to the bulb **11** is drawn out from the reverse side of the fixing plate **20** through the air passage **16** by way of the lower part of the stay **12** and then through the hollow inside of the arm **19**. The wire can be arranged through the air passage **16**, a stopper **40** preventing the shutter **38** from narrowing the air passage any further. Onto the lower frame **15** is fixed an upper frame **24** with bolts. Inside the said upper frame **24** is fixed a runner fixing tube **25** by means of bolts. Upper and lower bearings **27** are mounted on the said fixing tube **25** with several slender arms **26**, the upper and lower ends of the axis **28** of the runner **13** being borne by the said bearings **27**. It is advisable to employ pivot bearings for the said bearing parts with the aim of minimizing the resistance. The upper frame **24** is provided with a large number of windows, rings **29** of beautifully colored semitransparent synthetic resin or the like being fitted to the inside of the frame **24**. The external tube **14** consists of white or colored semitransparent material, the external tube **14** being folded in zigzag as indicated by the cross section thereof in FIG. **3**, a translucent white disc **30** of being fitted to the open end of the external tube **14**. The numeral **31** designates a fixing table on which to mount the external tube **14**, the upper surface thereof being provided with a zigzag ridge **32** corresponding to the inside of the lower terminal face of the external tube **14**, a tube **33** open at both ends being formed in the center of the said fixing table. The lower part of the external tube **14** is fitted to the outside of the ridge **32**, the said two members **14**, **32** being fixed together with adhesive agent, the said fixing table **31** being placed on the upper frame **24** and fixed thereto with screws. To the outside of the base of the external tube **14** is fitted a short decoration ring **34** which is made of the same material as the external tube **14** and is bent in zigzag identical with the external tube **14**. All the foregoing lower frame **15**, dish-shaped receiver **17**, upper frame **24**, runner fixing tube **25**, fixing table **31** and the like are made of lightproof material, such as metal and the like, so as to prevent the light of the electric bulb **11** from escaping outside directly through the foregoing parts.

Now the function of the invention will be set forth hereinunder. When the electric bulb **11** is lighted, the air around it is heated by the electric bulb **11** and ascends, causing the runner **13** to gyrate. With the ascent of the air around the electric bulb **11** the outside air flows in toward the electric bulb **11** by way of the air passage **16** through the space **23**, the said air being also sent upward by the heat of the electric bulb **11**. In this way, the air constantly ascends inside the external tube **14** gyrating the runner while the electric bulb **11** is being lighted. By adjusting the aperture of the air passage **16** with the shutter **21** by means of the handle **38**, the quantity of the ascending air which caused the runner **13** to gyrate can be controlled, and hence the number of the rotations of the runner **13** can be altered. The light from the electric bulb **11** is projected on the internal surface of the external tube **14** through the opening at the upper end of the tube **33** as illustrated by the dots and dashes **35**.

The shadow of the runner **13** is projected on the external tube **14** on an magnified scale, the said shadow of the runner **13** rotating along the periphery of the external tube **14** according to the gyration of the runner **13**.

When the shadow of the gyrating runner **13** is projected on the external tube **14**, the moving shadow is visible from the outside, the external tube being semitransparent.

The external tube **14** being bent in zigzag according to its longitudinal folds, the light and shadow are refracted zigzag as they move on by the irregularity of the external tube **14**. Consequently, if each blade of the runner **13** is bent as indicated in FIG. **3** so that the shadow of the blade to be projected on the external tube **14** may be bent and inclined relative to the axis of the tube **14**, the projected light and shadow will appear as if they were climbing up and down as they move along, the combination of the foregoing up-and-down movement and the zigzag movement owing to the irregularity of the external tube **14** creating an image as if flickering flames were flaring up. The foregoing effect is obtainable even when the electric bulb is colorless and transparent, but if a plurality of clockwise or counterclockwise helical stripes **36** are provided on the surface of the electric bulb **11** with lightproof painting material as indicated in FIG. **2**, much more intricate movement and flickering of the light and shadow will be projected on the ex-

ternal tube **14** owing to the mutual interference between the shadows of the said stripes **36** and the shadow of the runner **13**.

The same effect is obtainable by covering the colorless and transparent electric bulb **11** with a transparent or semitransparent cover **37** provided with clockwise or counterclockwise helical stripes **41** consisting of lightproof painting material.

By the use of an electric bulb of arbitrary beautiful coloration instead of a colorless one, the external tube **14** as well as the cover **37** being also of arbitrary coloration, a refined lighting fixture, wherein are combined the light, shadow, colors and movement, is obtainable.

As set forth above, the lighting fixture of the invention can project an image as if flickering flames were flaring up on the external tube by means of a very simple mechanism, the monotonous light of the electric bulb thus being changed into such a refined light that the effect of the lighting full of romantic atmosphere is easily obtainable from the lighting fixture of the invention.

The runner **13** being gyrated by means of the ascending air owing to the heat of the electric bulb **11**, no special driving equipment is needed for the rotation of the runner **13**, with the result that the lighting fixture of the invention is characterizing by the fact that the power consumption is remarkably small.

What we claim is:

1. A lighting fixture comprising a light socket, a frame on which said light socket is mounted, said frame having an aperture in the bottom thereof and having means for at least partially closing the aperture, a light bulb in said socket, a hollow unperforated opaque tube mounted on said frame and positioned around and spaced from said light bulb and extending to a position just above said light bulb, a bladed rotor rotatably mounted on said hollow tube above said light bulb and rotatable by the heated air rising through said tube around said light bulb, said rotor being positioned adjacent the top end of said hollow tube for interrupting the light radiating from said bulb, and an external tube of semitransparent material mounted on said frame having the lower end around and just below the upper end of said hollow tube, said external tube having substantially vertically extending sides which are bent zigzag along folds extending vertically along the tube, whereby the light radiating from the light bulb through the rotor produces a flamelike flickering light which appears to ascend along the external tube.

2. A lighting fixture as claimed in claim **1** in which said light bulb has a plurality of opaque helical stripes thereon.

3. A lighting fixture as claimed in claim **1** further comprising a cover for said bulb which is at least partially transparent and having a plurality of opaque helical stripes thereon.