

IMPROVED STRUCTURE OF LAMP SET

Field of the invention

The present invention relates to an improved structure of a lamp set and, more particularly, to an improved structure of a lamp set, which is applicable to
5 clean rooms, makes use of unique upward-unfolding way of maintenance, has better stability, and adopts airtight design to isolate dusts and particulates.

Background of the invention

Clean rooms have been extensively used in wafer factories, integrated circuits (IC) testing regions, photo mask laboratories, and so on. Ceilings of
10 conventional clean rooms have been provided with lamp sets for illumination.

As shown in Fig. 1, a prior art lamp set 1a comprises a housing 10a, a plurality of lamps 11a, a plurality of reflective covers 12a, and a lampshade 13a. The housing 10a is a rectangular hollow shell body open at the bottom thereof. The lamps 11a are light tubes, which can be properly fixed in the housing 10a
15 in foldable way. Electricity can be provided to the lamps 11a by a power supply circuit (not shown) fixedly provided in the housing 10a. The reflective cover 12a is disposed above each of the lamps 11a. The lampshade 13a is made of transparent material, and is properly fixed at the bottom of the housing 10a in foldable way. The lampshade 13a is used to shut the bottom of the housing 10a.
20 When the lamps 11a are turned on, light can penetrate through the lampshade 13a and project downwards for illumination.

However, the above prior art lamp set 1a is disposed on a ceiling 2a. When the lamps 11a or the power supply circuit in the housing 10a breaks down and needs to be fixed or replaced, it is necessary to detach the lampshade 13a from

below the lamp set 1a indoors for fixing or replacement. Because delicate instruments and equipments are placed in the clean room, it is inevitable to result in damage to these instruments and equipments. Especially, when the lamp set 1a is disposed above these instruments and equipments, it is necessary
5 to halt their operations or wait until they stop operations for fixing or replacement. Moreover, because the lamp set 1a is disposed at a high elevation such as the ceiling, fixers usually step on the instruments and equipments to perform fixing or replacement, thereby more easily resulting in damage to the instruments and equipments.

10 Furthermore, because the housing 10a of the above prior art lamp set 1a is made of thin sheeting with bad stability and also bad airtight property. Therefore, it cannot effectively isolate dusts and particulates.

Accordingly, the above prior art lamp set has inconvenience and drawbacks in practical use. The present invention aims to resolve the above problems in
15 the prior art.

Summary of the invention

The primary object of the present invention is to provide an improved structure of a lamp set, which uses unique foldable covers capable of unfolding upwards. When a lamp or a power supply circuit in the lamp set breaks down
20 and needs to be fixed or replaced, the foldable cover can be unfold upwards above the ceiling so that fixing or replacement can be performed from above the lamp set. It is not necessary to detach a lampshade thereof. The present invention is characterized in that fixing or replacement of the lamp or the power supply circuit in the lamp set is performed outside a clean room.

Therefore, it is not necessary to worry about damage to instruments and equipments in the clean room. Moreover, because it is not necessary to halt these instruments and equipments, their normal operations can be maintained.

Another object of the present invention is to provide an improved structure
5 of a lamp set, whose frame body is made of aluminum alloy with better stability and adopts airtight design to effectively isolate dusts and particulates.

To achieve the above objects, the present invention provides an improved structure of a lamp set, which comprises a frame body, two foldable covers, a plurality of lamps, a plurality of reflective covers, and a lampshade. The frame
10 body is open at the top and bottom thereof. The two foldable covers are pivotally joined at the top of the frame body and capable of unfolding upwards. The lamps are disposed in the frame body. The reflective covers are fixed on the foldable covers and correspond to the lamps. The lampshade is fixed at the bottom of the frame body. Thereby, an improved structure of a lamp set is
15 formed.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing, in which:

Brief description of the drawings:

- 20 Fig. 1 is a side view of the lamp set structure of the prior art;
Fig. 2 is a front view of the present invention;
Fig. 3 is a side view of the present invention;
Fig. 4 is a bottom view of the present invention; and
Fig. 5 is a side view of foldable covers of the present invention when

unfolded upwards.

Detailed description of the preferred embodiments

As shown in Figs. 2 to 4, the present invention provides an improved structure of a lamp set. The lamp set 1 comprises a frame body 10, two foldable
5 covers 11, a plurality of lamps 12, a plurality of reflective covers 13, and a lampshade 14. The frame body 11 comprises two long-sided frames 101 and two short-sided frames 102, which are formed by aluminum extrusion. The two long-sided frames 101 are arranged opposed to each other to form an L-shaped rack. The two short-sided frames 102 are arranged opposed to each other to
10 form a U-shaped rack. The two long-sided frames 101 and the two short-sided frames 102 are locked together to form the rectangular frame body 10 using screws 103. The frame body 10 is open at the top and bottom thereof.

Each of the two long-sided frames 101 of the frame body 10 has a circular pivot 104 of bar shape disposed at the top thereof to facilitate pivotal
15 connection with the two foldable covers 11. The two long-sided frames 101 and the two short-sided frames 102 of the frame body 10 have airtight bars 105 and 106 made of rubber material and fixed at the tops thereof, respectively.

The foldable covers 11 are formed by aluminum extrusion. The foldable cover 11 is a rectangular cover. Each of the foldable covers 11 has a circular
20 pivotal hole 111 of bar shape formed at a side thereof. One of the foldable covers 11 has an airtight bar 112 made of rubber material and fixed at another side thereof opposed to the pivotal hole 111. The two foldable covers 11 are pivotally joined with the two pivots 104 of the frame body 10 through the pivotal holes 111 thereof so that they are capable of unfolding upwards. When

the two foldable covers 11 are folded, they can be used to shut an opening at the top of the frame body 10. Each of the foldable covers 11 has a handgrip 113 at the top thereof to facilitate upward unfolding.

5 The lamps 12 are light tubes. Two ends of the lamps 12 are detachably inserted in sockets 121, which are properly fixed in the frame body 10, so that the lamps 12 are detachably fixed in the frame body 10. The lamps 12 are also properly connected to a power supply circuit (not shown), which is fixedly disposed in the frame body 10 to provide electricity for the lamps 12.

10 The reflective covers 13 are bar-shaped circular arcs. The reflective covers 13 are fixedly locked on the foldable covers 11 using screws 131. The reflective covers 13 are disposed at predetermined positions above the lamps 12 and correspond to the lamps 12.

15 The lampshade 14 is made of transparent material and has fixing frame bars 141 embedded in four side edges thereof. The fixing frame bars 141 are properly fixed on the inner walls of the two long-sided frames 101 and the two short-sided frames 102 of the frame body 10 near the bottoms thereof so that the lampshade 14 can be fixed at the bottom of the frame body 10 to shut the opening at the bottom thereof. The lampshade 14 can also be locked or fixedly adhered at the bottom of the frame body 10. When the lamps 12 are turned on, 20 light can penetrate through the lampshade 14 and project downwards for illumination. Thereby, an improved structure of a lamp set of the present invention is formed.

The lamp set 1 of the present invention is particularly applicable to clean rooms. The lamp set 1 can be fixed on a T-shaped rod 2 of the ceiling. Because

the frame body 10 is made of aluminum alloy with good stability and adopts airtight design, dusts and particulates can be effectively isolated. The size of the lamp set of the present invention can be selectively varied to match the size of the hole of the ceiling.

5 As shown in Fig. 5, the lamp set 1 of the present invention uses unique foldable covers 11 capable of unfolding upwards. When the lamp 12 or the power supply circuit in the frame body 10 breaks down and needs to be fixed or replaced, the foldable cover 11 can be unfold upwards above the ceiling so that fixing or replacement can be performed from above the lamp set 1. It is not
10 necessary to detach the lampshade 14. The present invention is characterized in that fixing or replacement of the lamp 12 or the power supply circuit in the lamp set 1 is performed outside a clean room. Therefore, it is not necessary to worry about damage to instruments and equipments in the clean room. Moreover, because it is not necessary to halt these instruments and equipments,
15 their normal operations can be maintained.

Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and modifications have been suggested in the foregoing description, and other will occur to those of ordinary
20 skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

I claim:

1. An improved structure of a lamp set, comprising:
 - a frame body open at a top and a bottom thereof;
 - two foldable covers pivotally joined at the top of said frame body and
 - 5 capable of unfolding upwards;
 - a plurality of lamps disposed in said frame body;
 - a plurality of reflective covers fixed on said foldable covers and
 - corresponding to said lamps; and
 - a lampshade fixed at the bottom of said frame body.
- 10 2. The improved structure of a lamp set as claimed in claim 1, wherein said frame body comprises two long-sided frames and two short-sided frames, which are formed by aluminum extrusion, said two long-sided frames being arranged opposed to each other, said two short-sided frames being arranged opposed to each other, said two long-sided frames and said two short-sided
- 15 frames constituting a rectangular frame body.
3. The improved structure of a lamp set as claimed in claim 2, wherein each of said two long-sided frames has a pivot disposed at a top thereof, each of said two foldable covers has a pivotal hole disposed at a side thereof, and one of said two foldable covers has an airtight bar fixed at another side thereof
- 20 opposed to said pivotal hole, said two foldable covers being pivotally joined with said pivots of said frame body through said pivotal holes thereof so that said two foldable covers are capable of unfolding upwards.
4. The improved structure of a lamp set as claimed in claim 2, wherein said two long-sided frames and said two short-sided frames have airtight bars made of

rubber material and fixed at tops thereof.

5. The improved structure of a lamp set as claimed in claim 1, wherein said two foldable covers are formed by aluminum extrusion and are rectangular covers.

5 6. The improved structure of a lamp set as claimed in claim 1, wherein each of said two foldable covers has a handgrip disposed at a top thereof to facilitate upward unfolding.

7. The improved structure of a lamp set as claimed in claim 1, wherein two ends of said lamps are inserted in sockets, which are fixed in said frame body,
10 so that said lamps can be detachably fixed in said frame body.

8. The improved structure of a lamp set as claimed in claim 1, wherein said reflective covers are fixed on said foldable covers using screws, said reflective covers being disposed at predetermined positions above said lamps.

15 9. The improved structure of a lamp set as claimed in claim 1, wherein said lampshade has fixing frame bars embedded in four side edges thereof, said fixing frame bars being fixed on inner walls of said frame body near the bottom thereof so that said lampshade can be fixed at the bottom of said frame body.

Abstract

The present invention proposes an improved structure of a lamp set, which comprises a frame body, two foldable covers, a plurality of lamps, a plurality of reflective covers, and a lampshade. The frame body is open at the top and
5 bottom thereof. The two foldable covers are pivotally joined at the top of the frame body to shut the top opening thereof, and are capable of unfolding upwards. The lamps are disposed in the frame body. The reflective covers are fixed on the foldable covers and correspond to the lamps. The lampshade is fixed at the bottom of the frame body. Thereby, an improved structure of a
10 lamp set of the present invention is formed. The present invention makes use of unique upward-unfolding way of maintenance to perform fixing or replacement from above the lamp set.

Fig. 5