ABSTRACT

"An Improved Driver Mounting System for LED Downlight".

This invention relates to an Improved Driver Mounting System for LED Downlight comprising of a driver connected to a housing, which is provided in connection with top cover, wherein an air gap is provided between said housing and driver. The assembly procedure of the mounting system is faster& cost effective. Further, it reduces damage due to driver overheating and saves overall space occupied by the fixture.

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WE CLAIM:

1. An Improved Driver Mounting System for LED Downlight comprising of a driver connected to a housing, which is provided in connection with top cover wherein an air gap is provided between said housing and driver.
2. An improved driver mounting system as claimed in claim 1, wherein the driver is detachably connected to the housing through a clamp.
3. An improved driver mounting system as claimed in claim 1 or 2, wherein the driver is detachably snap fitted with said clamp by means of lock provided on the driver and clamp.
4. An improved driver mounting system as claimed in any of the preceding claims, wherein the clamp is detachably connected to the housing by means of a plurality of bosses provided on the housing, in which the bosses maintain air gap between the driver and housing.
5. An improved driver mounting system as claimed in any of the preceding claims, wherein the housing is detachably connected to the top cover and a spring lock assembly.
6. An improved driver mounting system as claimed in any of the preceding claims, wherein the clamp is preferably made up of plastic
7. An improved driver mounting system as claimed in any of the preceding claims, wherein the driver is snap fitted into the clamp due to elasticity.
8. An Improved Driver Mounting System for LED Downlight substantially as herein described with reference to the accompanying drawings.
9. The improved driver mounting system for the downlight, as claimed in any of the preceding claims, wherein the driver is removed easily by just pulling it out of clamp using a nominal amount of force.

Dated this 16th day of December, 2013

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APPLICANTS AGENT

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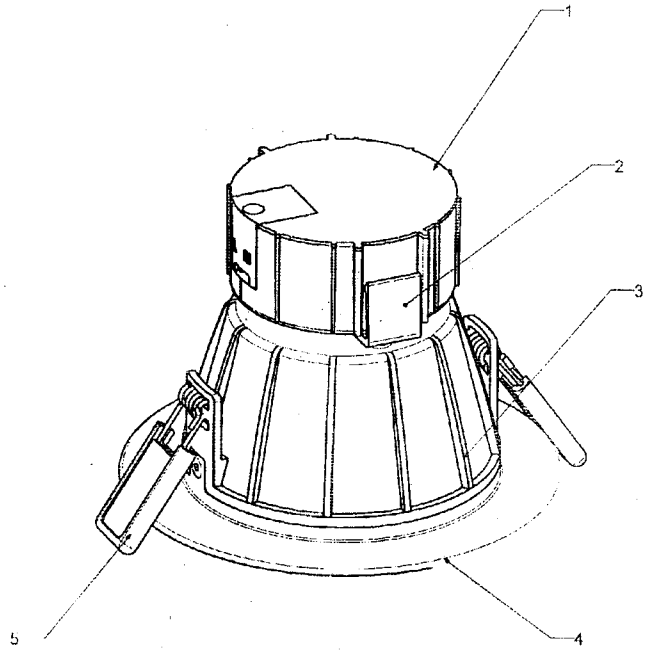

Figure 1

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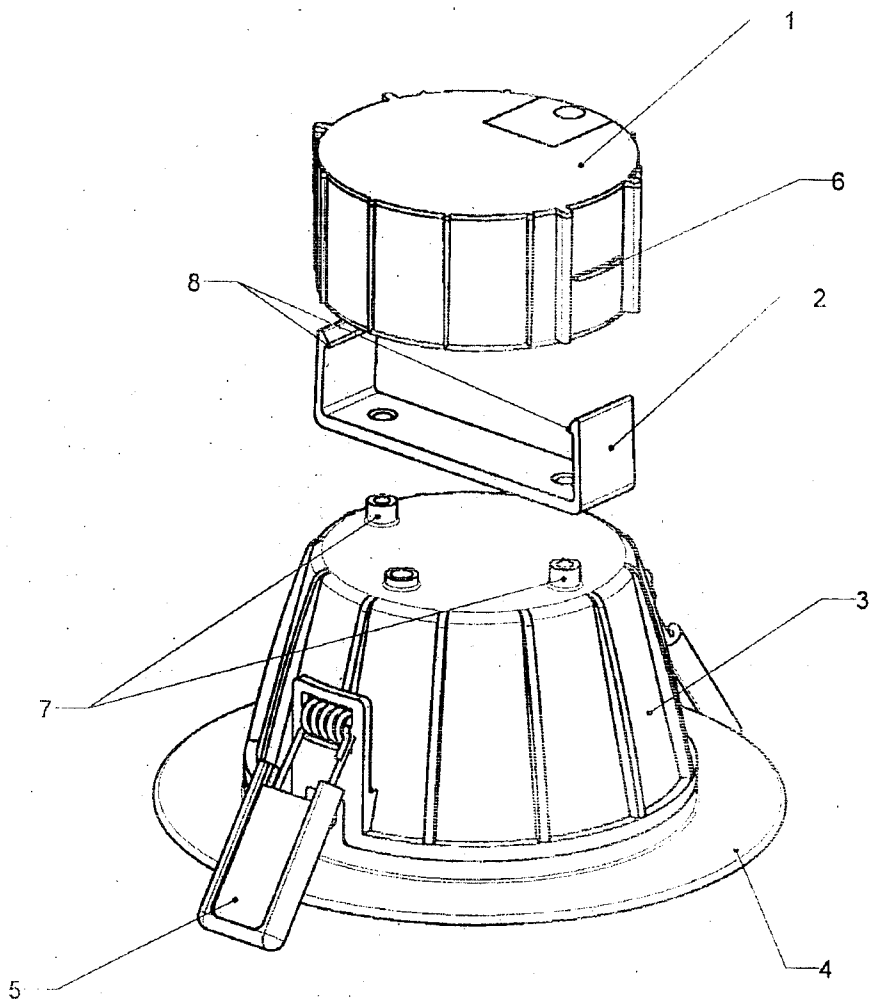

FIGURE 2

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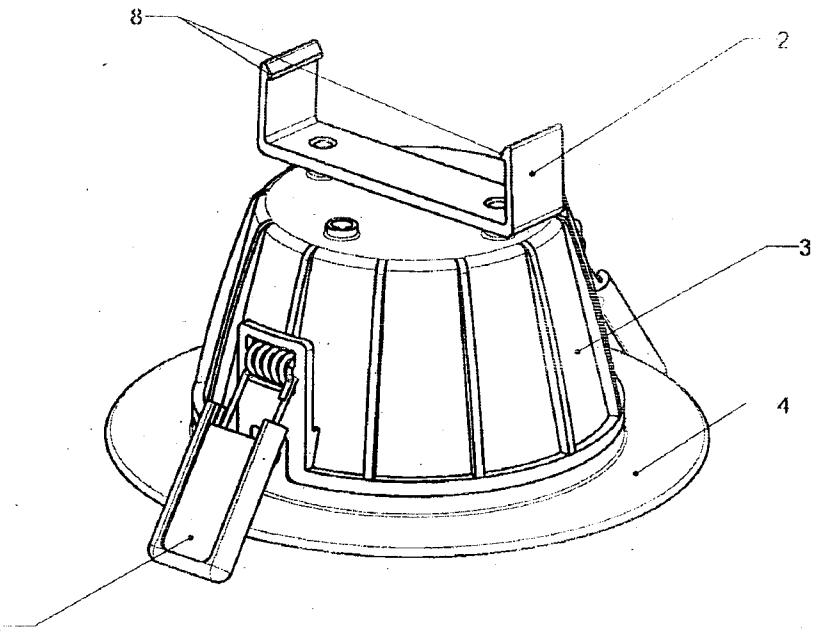

FIGURE 3

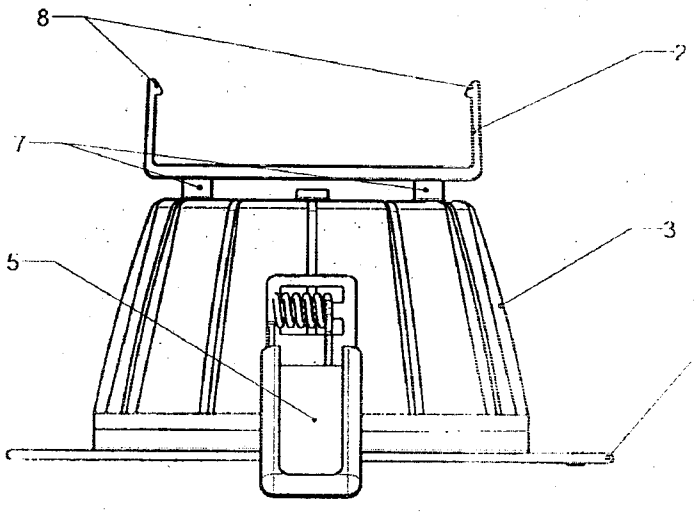

FIGURE 4

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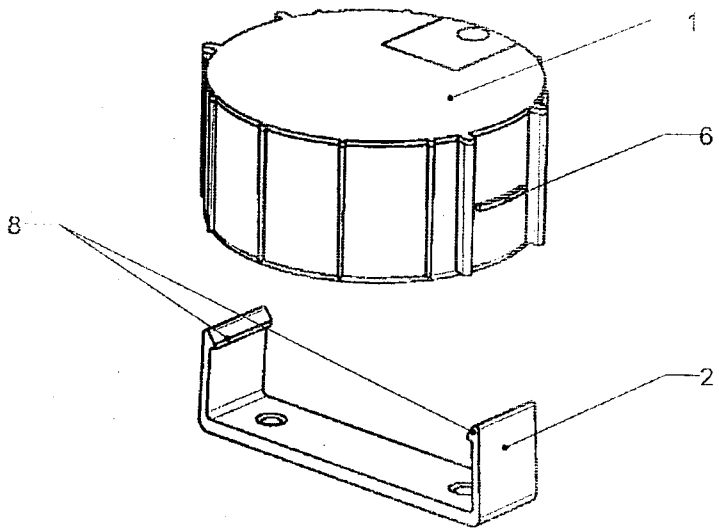

FIGURE 5

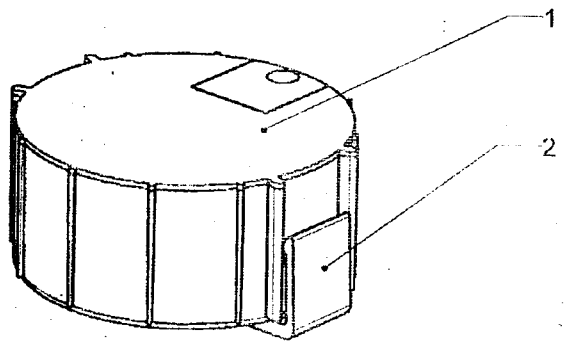

FIGURE 6

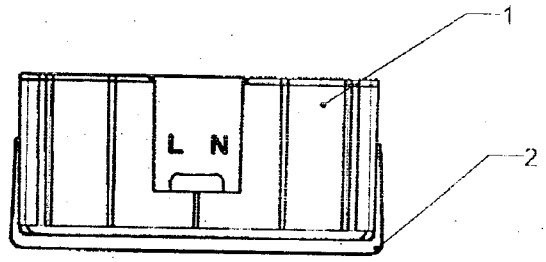

FIGURE 7

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FIELD OF INVENTION

This invention relates to an Improved Driver Mounting System for LED Downlight.

PRIOR ART

Drivers are generally kept separately from the housing so as to prevent external heating of the driver but this requires much of space for fixture. Also in some cases the driver is mounted on top of the housing using complex mechanisms or screws. This is time consuming and expensive as well. They also have a tendency to heat the driver in case it touches the housing.

Now, reference may be made to the following prior arts:-

WO2013034008discloses an assembled LED downlight comprising a light frame (1), a driver (2), an LED module (3), and a reflector hood (4). The light frame (1) comprises a reflector hood base (5) and a bracket (6) arranged on the reflector hood base (5), while the reflector hood base (5) is provided with an installation hole (7). The driver (2) is connected to the bracket (6) via a flexible piece clip-on mechanism. The LED module (3) is detachably connected to the driver (2), and the reflector hood (4) is detachably connected to the reflector hood base (5).

WO2013034009discloses an LED module and driver connection structure. An installation base (14) is fixed on the bottom face of the driver (2). Multiple arc shaped grooves (15) are arranged evenly along a circumferential direction on the

installation base (14). Multiple clip-on edges (16) are arranged correspondingly on the top end of the LED module (3).

CN202253241is directed to detachable light emitting diode (LED) down lamp, which comprises a lamp support and a down lamp body, wherein the lamp support comprises a reflector holder and a bracket arranged on the reflector holder; a mounting hole is formed in the reflector holder; and the down lamp body is connected with the bracket through an elastic sheet clamping mechanism

CN202252998is directed to an assembled type light-emitting diode (LED) tube light, which comprises a light holder, a driver, an LED module and a reflection cover. The light holder comprises a reflection cover seat and a support arranged on the reflection cover seat, wherein an installation hole is arranged on the reflection cover seat. The driver is connected with the support through an elastic sheet clamp connection mechanism, the LED module is detachably connected with the driver, and the reflection cover is detachably connected with the reflection cover seat.

WO2013034010relates to a connection structure of a reflector hood (4) and a reflector hood base (5) in an LED downlight, comprising a light frame (1) and the reflector hood (4). The light frame (1) comprises the reflector hood base (5), a bracket (6) arranged on the reflector hood base (5), and an installation hole (7) provided on the reflector hood base (5), and is characterized in that the reflector hood (4) and the reflector hood base (5) are clipped together via a flexible piece (20).

US20120218764relates to LED light fixture assemblies for general use, which can be used in both new constructions and for retrofitting applications into incandescent or fluorescent light fixture assemblies.

AU2012100086is directed to LED driver and transformer holder is comprised of a metal or plastic bracket that attaches to the frame or heat sink of a recessed LED downlight and allows the associated driver to be clipped on to that bracket to facilitate the correct installation of the driver above the thermal zone of the ceiling insulation whilst negating the need to enter the ceiling space to effect the installation.

CN201507854is directed to integrated LED barrel lamp is provided, wherein a lamp socket is a cylindrical base, a driving circuit is arranged in the base, an LED bulb is connected with the driving circuit which is further connected with one ends of a primary and a secondary connecting wires, a reflecting cover is arranged above the lamp socket, and is in a drum-shape, the LED bulb is arranged in the reflecting cover, the luminous surface of the LED is an opaque glass sheet which is arranged in the middle of two external decorative frames, and two locking springs are symmetrically arranged on the bottom ends of the external decorative frames like two clamps, thereby forming an integrated LED barrel lamp.

CN202813123 discloses a clamp spring combined type light-emitting diode (LED) tube lamp which comprises a lamp shell, a clamp spring set piece, a light-expanding plate, a radiator, a driver and a light source plate.

CN201954331 discloses an integral LED down lamp. Fixing racks are arranged at two ends of an annular base, clamp springs are fixed on the annular base via the fixing racks.

CN201706444 discloses a frame-shaped heat dissipator, which is in a cylindrical structure, and comprises a central cavity arranged at the center, and a pipe wall which is tightly matched with a heat source element, wherein a plurality of heat dissipating fins are arranged on the periphery of the pipe wall, and fixing rings are arranged on the outer edge of the heat dissipating fin.

JP2008258066 discloses the LED luminaire of having more the LED substrate in which LED was mounted, and a power supply circuit which supplies electric power to this LED substrate in details, about the technology of a light. The power supply casing 105 constituted separately from the LED casing 104 for housing the power circuit 103 therein, where the LED casing 104 and the power supply casing 105 are attached detachably to each other.

CN101936458 discloses wide angle LED illumination luminaire. An LED bracket with a wide angle irradiation design is embedded in an LED lamp house of a heat dissipation holder, and a lamp shade and a refraction plate are matched so that an illumination range becomes wider and the brightness is uniform, the dazzling glare of the LED illumination luminaire is improved, in addition, the LED bracket and an LED bulb installed on an inclined plane of the LED bracket can be exchanged according to requirements of the illumination range, and the number can also be changed according to the requirement so as to improve the service efficiency of each luminaire.

CN201521931 discloses a down lamp, especially relates to a down lamp of regarding as the light source with the LED. The down lamp comprises a bracket with mounting buckles, a thermal radiation reflector merging a radiator and a reflector into a whole, an aluminum baseplate or a copper substrate, an LED, a transparent panel, and a power source, wherein the bracket and the thermal radiation reflector are separated from each other, the LED and the aluminum baseplate are arranged at the inner top end of the thermal radiation reflector, the transparent panel is arranged at the inner middle lower part of the thermal radiation reflector, a power source buckle or a power source box is arranged at the top part or the lateral part of the bracket, the power source and the LED are connected through a connecting terminal, and low-temperature high-radiating ceramic radiating coatings are arranged on the inner surface and the external surface of the thermal radiation reflector.

CN201621501 discloses a split-type LED bulb comprising a lamp holder, drive power supply module, bulb shell and LED light source module. The drive power supply module, the lower end of which has two conducting pins, is inserted in the lamp holder. The bulb shell comprises a main body and a bottom cover, which is connected with the lower end of the main body.

CN202835083 discloses a novel ceiling lamp which comprises a lamp holder, a supporting inner ring, a lighting module, a radiator, a driver and a lamp holder clamp, wherein an inner curved surface is formed in the lamp holder; an outer cambered surface is formed on the supporting inner ring.

US2013100650discloses light emitting diode (LED) retrofit downlight light module (DLM) having a housing with an LED downlighting module containing a lighting exit port and connected to a reflector and trim ring having an illumination outlet. The DLM is inserted into an access hole after the existing fixture has been

removed. By inserting the DLM into the access hole, a retention device compresses on contact with the entry surface surrounding the hole perimeter.

Reference may be made to an article entitled *"Quality white light with a simple twist"*. The article discloses the complete system comprising a Twistable LED DownLight Module (TDLM) with integrated driver and a lamp holder, which delivers energy efficient, low-maintenance and high-quality lighting.

The driver fixing mechanism of the conventional system is provided with three parts which are made of metal and have complex shapes. Due to the number of components, the assembly is time consuming and expensive. Also in case driver is directly in contact with the reflector/ housing, there is chance of overheating which may cause damage of the lamp.

Hence, it is required to provide an improved driver fixing system for the downlight which reduces overheating, is simple, easy to install and cost effective.

OBJECTS OF THE INVENTION

The primary object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which overcomes disadvantages associated with the prior art.

Another object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which is compact and cost effective.

Further object of the present invention is to provide an Improved Driver Mounting System for LED Downlight assembly of which is faster and easy.

Still another object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which is easy to install.

Yet another object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which reduces overheating thereby increasing life of the luminaire.

Yet another further object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which reduces damage due to overheating of driver.

Still another object of the present invention is to provide an Improved Driver Mounting System for LED Downlight which facilitates quick replacement of the driver.

SUMMARY OF THE INVENTION:

The present invention is directed to an Improved Driver Mounting System for LED Downlight.The LED downlightercomprises of a driver, clamp, metal (casting) housing, top cover and a spring lock assembly. The top cover and the spring lock assembly are detachably connected to the housing and the clamp is detachably connected to the housing at the bosses provided thereon. The bosses on the housing create an air gap between the driver and the housing. This prevents overheating of the driver due to the heat generated by the LED lamp in the housing.

The driver is detachably connected (via snap fit) with the clamp by means of lock on the driver and the clamp. The driver, clamp and housing are individual components, which are attached to each other. The snap fit locks on the driver and the

Clamp to make the assembly quick and easy. This facilitates quick replacement of the driver. The present invention has an advantage of having lesser footprints which saves space required in the application areas where the fixture is mounted.

The driver can also be removed easily by just pulling it out of the clamp using a nominal amount of force. This makes the holding mechanism simple, quick, easy and cost effective method for installation and maintenance.

STATEMENT OF INVENTION

According to this invention, there is provided an Improved Driver Mounting System for LED Downlight comprising of a driver connected to a housing, which is provided in connection with top cover, wherein an air gap is provided between said housing and driver.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

Further objects and advantages of this invention will be more apparent from the ensuing description when read in conjunction with the accompanying drawings and wherein:

FIG 1 and 2 shows: driver mounting system for downlighter according to the present invention.
FIG 3 and 4 shows: the housing and clamp according to present invention.
FIG 5, and 6 shows: the driver with locks according to present invention.
FIG 7 shows: the side view of driver with locks according to present invention

DETAILED DESCRIPTION OF THE INVENTION WITH REFERENCE TO THE ACCOMPANYING DRAWINGS

The present invention discloses an Improved Driver Mounting System for LED Downlight. Reference may be made to figure 1 and 2 which shows LED downlighter. The LED downlightercomprises of a driver [1], clamp [2], housing [3], top cover [4] and a spring lock assembly [5]. Housing can be made of Aluminium, thermally conductive plastic. The driver is made of any thermally and electrically insulated material such as plastic. Said clamp can be made of plastic, spring steel. Again, material of the top cover is plastic. However, Aluminium and any casting material can also be used. Further, spring assembly is made of spring steel and rubber.

The aforesaid materials are given as examples. Any other suitable materials readily apparent to person skilled in the art are understood to be within scope of the invention.

The top cover [4] and the spring lock assembly [5] are detachably connected to the housing [3].The clamp [2] is detachably connected to the housing [3] at the bosses [7] provided on the housing [3] surface as shown in "figure 3&4". The bosses [7] on the housing [3] create an air gap between the driver [1] and the housing [3]. This prevents any overheating of the driver due to the heat generated by the LED lamp source in the housing [3].

The driver [1] is detachablysnap fitted with the clamp [2] by means of locks [6, 8], provided on the driver [1] and the clamp [2] respectively as shown in figure 5, 6 and 7. Thus, the driver [1], the clamp [2] and the housing [3] constituting individual components are attached to each other by a simple, easy and fast method. The snap fit locks [6, 8] on the driver [1] and on clamp [2] make the assembly quick and easy. This facilitates quick replacement of the driver [1]. The present invention has an advantage of lesser footprint which saves space required in the application areas where the fixture is mounted.

The contact area between the driver [1] and the housing [3] is reduced by adding atleasttwo bosses [7] on the housing [3] itself and detachably connecting a clamp [2] to the housing [3]. The driver [1] is then snap fitted with the clamp [2]. This

helps in creating an air gap between the driver [1] and the housing [3] which prevents heat in housing from affecting the driver [1] performance. Also due to placement of the driver [1] just on top of the housing [2], the overall footprint of the downlighter is reduced. This helps in the assembly of the downlight and creates a hassle free system.

The driver [1] can also be removed easily by just pulling it out of the clamp [2] using a nominal amount of force. This makes the holding mechanism a simple, quick, easy and cost effective method for installation and maintenance.

It is to be noted that the present invention is susceptible to modifications, adaptations and changes by those skilled in the art. Such variant embodiments employing the concepts and features of this invention are intended to be within the scope of the present invention, which is further set forth under the following claims: