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PCT

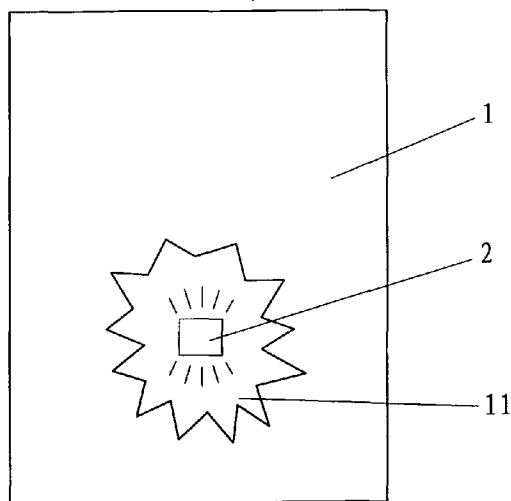
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- (71) 申请人 (对除美国外的所有指定国): 东莞万德电子制品有限公司(DONGGUAN MEMTECH ELECTRONIC PRODUCTS CO., LTD) [CN/CN]; 中国广东省东莞市东城区温塘管理区皂一(1)村, Guangdong 523121 (CN)。万德国际有限公司(MEMTECH INTERNATIONAL LTD) [SG/SG]; 新加坡红毛桥第十街大牌4009#02-33号, Singapore 569738 (SG)。
- (72) 发明人; 及
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- (81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO,

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(54) Title: LIGHT GUIDE PLATE

(54) 发明名称: 一种导光板



(57) Abstract: A light guide plate includes a plastic plate (1) with a high light transmission rate, and a receiving hole (11) to receive a light source (2) is formed in the plastic plate (1). By using the structure of the receiving hole (11) to replace the design of the rectangular grooves with protrusions in the prior art, the light guide plate can adequately apply sides of the light source for dispersion, and further increase the guide proportion, in order to greatly improve the entire brightness and the symmetry.

(57) 摘要:

图1 /Fig. 1

一种导光板, 包括一高透光率的塑胶板(1), 于该塑胶板上开设有一供光源(2)容置的收纳孔(11)。其通过收纳孔(11)的构造取代现有技术中具有突起的长条形凹槽的设计, 可充分利用光源两侧散射光, 进一步也增加了其导光面积, 从而更好地提升整体亮度和均匀性。

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RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW。

KG, KZ, MD, RU, TJ, TM), 欧洲 (AT, BE, BG, CH,
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(84) 指定国 (除另有指明, 要求每一种可提供的地区
保护): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA,
SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY,

本国际公布:

— 包括国际检索报告。

一种导光板

技术领域

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本发明涉及一种导光板，特别指一种适用于电子/通讯产品中按键导光板。

背景技术

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习知技术请参阅中国专利申请号 200510036410.2 所公开一种 LED 使用数量少而减少耗电量又能确保按键发光亮度和发光均匀性的按键导光板，其由一入光面及一出光面构成，且板上分别分布多个与按键对应的孔，于入光面具有用以容纳光源的长形凹槽，且该长形凹槽具有背向导光板的突起结构；其中，上述习知技术主要是通过入光面上设有具朝向光源突起的长条形凹槽将光源发出的光传导至需要照亮的位
15 置，但是，因光源是沿两侧面散射发光，故习知技术中的导光板采用之长条形凹槽构造只能接收到光源一侧面散射光，而另一侧之散射光无法得以充分利用，况且长条形凹槽还必须藉由其朝向光源
20 那侧设置的突起结构辅助导光，如此在结构上有所限制，且制程上存在较为复杂，不利于生产加工。

发明内容

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本发明针对上述习知技术所存在之缺失，主要目的在于提供一种导光板，其通过增加导光面积及充分利用光源散射性，更好地提升整体亮度和均匀性。

为实现上述之目的，本发明采取如下技术方案：

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一种导光板，包括一高透光率的塑胶板，于该塑胶板上开设有一供光源容置的收纳孔。

该收纳孔内壁呈多边形构造；该多边形呈规则或不规则形状。

本发明与习知技术相比，其优点在于通过收纳孔之构造取代习知技术中具突起的长条形凹槽之设计，可充分利用光源两侧散射光，进一步也增加了其导光面积，从而更好地提升整体亮度和均匀性。

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附图说明

图 1 是本发明导光板实施例（一）；

图 2 是本发明导光板实施例（二）。

具体实施方式

5 下面结合附图与具体实施方式对本发明作进一步描述。

如图 1，其为本发明导光板实施例（一），从图中可清楚得知，一种导光板，包括一高透光率的塑胶板 1，于该塑胶板 1 上开设有一供光源 2 容置的收纳孔 11，该收纳孔 11 呈不规则状的多边形构造。

10 如图 2，其为本发明导光板实施例（二），从图中可清楚得知，一种导光板，包括一高透光率的塑胶板 1，于该塑胶板 1 上开设有一供光源 2 容置的收纳孔 11，该收纳孔 11 呈规则状的六边形构造。

15 综上述两实施例，上述收纳孔 11 无论是规则还是不规则状，均会因光源 2 容置其中，使光源 2 两侧的散射光均可沿收缩孔 11 内壁向塑胶板 1 中透射，进而可充分利用光源两侧散射光，同时也增加了其导光面积，从而更好地提升整体亮度和均匀性。

20 以上所述，仅是本发明一种导光板的较佳实施例而已，并非对本发明的技术范围作任何限制，故凡是依据本发明的技术实质对以上实施例所作的任何细微修改、等同变化与修饰，均仍属于本发明技术方案的范围。

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权 利 要 求

1、一种导光板，包括一高透光率的塑胶板，其特征在于：于该塑胶板上开设有一供光源容置的收纳孔。

5 2、根据权利要求 1 所述的一种导光板，其特征在于：该收纳孔内壁呈多边形构造。

 3、根据权利要求 2 所述的一种导光板，其特征在于：该多边形呈规则或不规则形状。

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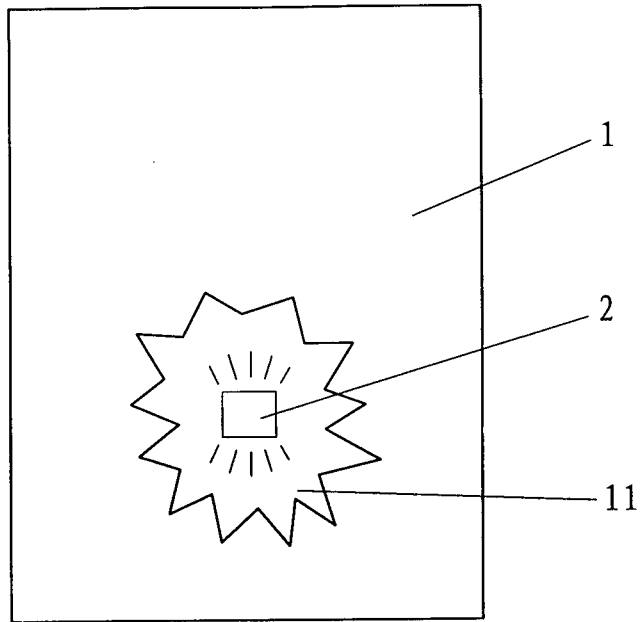


图1

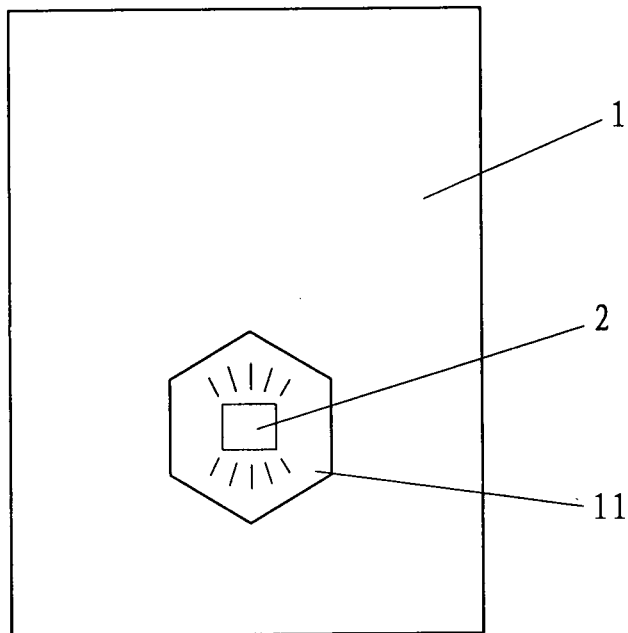


图2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2007/002353

A. CLASSIFICATION OF SUBJECT MATTER <p style="text-align: center;">H04M1/22 (2006.01)i</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>				
B. FIELDS SEARCHED <p>Minimum documentation searched (classification system followed by classification symbols)</p> <p style="text-align: center;">IPC:H04M1/22; H03K17/-; H01H13/-</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p> <p style="text-align: center;">CPRS; CNKI; WPI; EPODOC; PAJ: light+; source?; LED?; ??luminat+; plate?; layer?; sheet?; aperture?; hole?; bore?; hollow?; orifice?; opening?; key+; button?</p>				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
Y	CN1932556A(HONGFUJIN PRECISION IND SHENZHEN CO LT) 21 Mar.2007 (21.03.2007) page 2, line 31 — page 3, line 30 of the description, Fig.2	1-3		
Y	CN1909569A(HONGFUJIN PRECISION IND SHENZHEN CO LT) 07 Feb.2007 (07.02.2007) page 2, line 15 — page 3, line 27 of the description, Figs.2-5	1-3		
A	JP2005268165A (CITIZEN ELECTRONICS CO LTD) 29 Sep.2005 (29.09.2005) the whole document	1-3		
A	DE10155619 C1 (WINTEK CORP [TW]) 27 Mar.2003 (27.03.2003) the whole document	1-3		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> * Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified) “O” document referring to an oral disclosure, use, exhibition or other means “P” document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none;"> “T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&”document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified) “O” document referring to an oral disclosure, use, exhibition or other means “P” document published prior to the international filing date but later than the priority date claimed	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&”document member of the same patent family
* Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified) “O” document referring to an oral disclosure, use, exhibition or other means “P” document published prior to the international filing date but later than the priority date claimed	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&”document member of the same patent family			
Date of the actual completion of the international search 20 Nov. 2007(20.11.2007)		Date of mailing of the international search report 06 Dec. 2007 (06.12.2007)		
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451		Authorized officer LIU Nanjuan Telephone No. (86-10)62086049		

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2007/002353

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN1932556A	21.03.2007	US2007062793A1	22.03.2007
CN1909569A	07.02.2007	US7067753B1	27.06.2006
JP2005268165A	29.09.2005	None	
DE10155619 C1	27.03.2003	JP2003151392A	23.05.2003
		US2003090885A1	15.05.2003
		US6561659B1	13.05.2003

国际检索报告

国际申请号
PCT/CN2007/002353

<p>A. 主题的分类</p> <p style="text-align: center;">H04M1/22 (2006.01)i</p> <p>按照国际专利分类表(IPC)或者同时按照国家分类和 IPC 两种分类</p>																	
<p>B. 检索领域</p> <p>检索的最低限度文献(标明分类系统和分类号)</p> <p style="text-align: center;">IPC:H04M1/22; H03K17/-;H01H13/-</p> <p>包含在检索领域中的除最低限度文献以外的检索文献</p> <p>在国际检索时查阅的电子数据库(数据库的名称, 和使用的检索词(如使用))</p> <p style="text-align: center;">CPRS; CNKI; WPI; EPODOC; PAJ: 光; 光源; LED; 板; 孔; 洞; 容纳; 容置; 键; light+; source+; LED?; ??luminat+; plate?; layer?; sheet?; aperture?; hole?; bore?; hollow?; orifice?; opening?; key+; button?</p>																	
<p>C. 相关文件</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">类 型*</th> <th style="width: 60%;">引用文件, 必要时, 指明相关段落</th> <th style="width: 30%;">相关的权利要求</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Y</td> <td>CN1932556A(鸿富锦精密工业(深圳)有限公司) 21.3 月 2007 (21.03.2007) 说明书第 2 页第 31 行—第 3 页第 30 行, 图 2</td> <td style="text-align: center;">1-3</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>CN1909569A(鸿富锦精密工业(深圳)有限公司) 07.2 月 2007 (07.02.2007) 说明书第 2 页第 15 行—第 3 页第 27 行, 图 2—5</td> <td style="text-align: center;">1-3</td> </tr> <tr> <td style="text-align: center;">A</td> <td>JP2005268165A (CITIZEN ELECTRONICS CO LTD) 29.9 月 2005 (29.09.2005) 全文</td> <td style="text-align: center;">1-3</td> </tr> <tr> <td style="text-align: center;">A</td> <td>DE10155619 C1 (WINTEK CORP [TW]) 27.3 月 2003 (27.03.2003) 全文</td> <td style="text-align: center;">1-3</td> </tr> </tbody> </table> <p><input type="checkbox"/> 其余文件在 C 栏的续页中列出。 <input checked="" type="checkbox"/> 见同族专利附件。</p> <p>* 引用文件的具体类型: “A” 认为不特别相关的表示了现有技术一般状态的文件 “E” 在国际申请日的当天或之后公布的在先申请或专利 “L” 可能对优先权要求构成怀疑的文件, 或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件 “O” 涉及口头公开、使用、展览或其他方式公开的文件 “P” 公布日先于国际申请日但迟于所要求的优先权日的文件 “T” 在申请日或优先权日之后公布, 与申请不相抵触, 但为了理解发明之理论或原理的在后文件 “X” 特别相关的文件, 单独考虑该文件, 认定要求保护的发明不是新颖的或不具有创造性 “Y” 特别相关的文件, 当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时, 要求保护的发明不具有创造性 “&” 同族专利的文件</p>			类 型*	引用文件, 必要时, 指明相关段落	相关的权利要求	Y	CN1932556A(鸿富锦精密工业(深圳)有限公司) 21.3 月 2007 (21.03.2007) 说明书第 2 页第 31 行—第 3 页第 30 行, 图 2	1-3	Y	CN1909569A(鸿富锦精密工业(深圳)有限公司) 07.2 月 2007 (07.02.2007) 说明书第 2 页第 15 行—第 3 页第 27 行, 图 2—5	1-3	A	JP2005268165A (CITIZEN ELECTRONICS CO LTD) 29.9 月 2005 (29.09.2005) 全文	1-3	A	DE10155619 C1 (WINTEK CORP [TW]) 27.3 月 2003 (27.03.2003) 全文	1-3
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<p>国际检索实际完成的日期 20.11 月 2007(20.11.2007)</p>		<p>国际检索报告邮寄日期 06.12 月 2007 (06.12.2007)</p>															
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国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2007/002353

检索报告中引用的 专利文件	公布日期	同族专利	公布日期
CN1932556A	21.03.2007	US2007062793A1	22.03.2007
CN1909569A	07.02.2007	US7067753B1	27.06.2006
JP2005268165A	29.09.2005	无	
DE10155619 C1	27.03.2003	JP2003151392A	23.05.2003
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		US6561659B1	13.05.2003