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(71) Applicant: **Zhejiang Chint Electrics Co., Ltd.**
Yueqing, Zhejiang 325603 (CN)

(72) Inventors:
- **XU, Ruoliang**
  Yueqing
  Zhejiang 325603 (CN)
- **YU, Xuefeng**
  Yueqing
  Zhejiang 325603 (CN)
- **YANG, Yaoke**
  Yueqing
  Zhejiang 325603 (CN)
- **CHEN, Ting**
  Yueqing
  Zhejiang 325603 (CN)
- **PU, Qicheng**
  Yueqing
  Zhejiang 325603 (CN)

(74) Representative: **Petraz, Gilberto Luigi et al**
GLP S.r.l.
Viale Europa Unita, 171
33100 Udine (IT)

(54) TIME RELAY SOCKET

(57) The invention discloses a time relay socket. A shell is provided with eight jacks, conducting sheets corresponding to the jacks and plug bush ends on the conducting sheets. The conducting sheets are located in a cavity between the shell and a cover plate; each of the two ends of the cover plate is provided with four wiring seats, a cover plate screw seat and two insulated baffles. Each cover plate screw seat separates the four wiring seats at the same end into two groups, the two wiring seats of each group are separated by the raised insulated baffle on the cover plate, and wiring ends of the conducting sheets are arranged on the wiring seats. Each of the two ends of the shell is provided with two sunken hole grooves and a shell screw seat, wherein the shell screw seat is located between the two hole grooves at the same end and separates the two hole grooves at the same end, and a sunken space of each hole groove is accommodated with a group of two wiring seats provided with one insulated baffle and two wiring ends. Thus, a harmful gap can be avoided, the safety level is enhanced, and voltage resistance is strong.

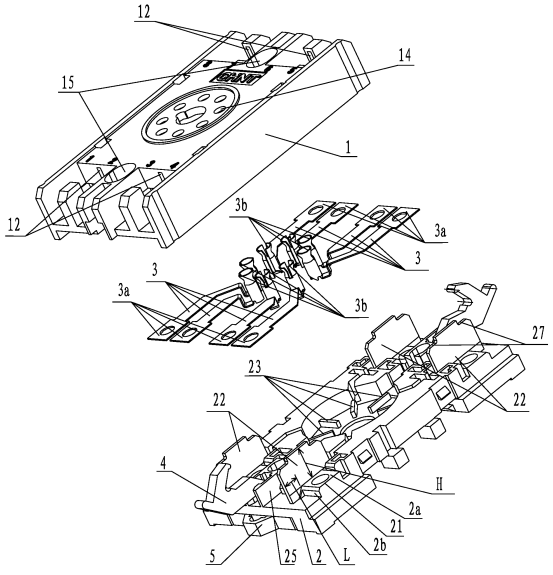

Fig. 2

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Description

TECHNICAL FIELD

[0001] The present invention relates to a time relay, in particular to a time relay socket.

BACKGROUND ART

[0002] A time delay is an electronic control device which has a control system (also referred to as an input loop) and a controlled system (also referred to as an output loop) and is generally applied to an automatic control circuit. The time relay is actually configured to control a higher current with a lower current. The time relay has a socket component which is also referred to a time relay socket. The time relay socket comprises a base, a bottom plate and eight inserts, wherein the eight inserts have higher voltage differences, the base and the bottom plate are fixedly connected to form a cavity, and the eight inserts are encapsulated inside the cavity. With respect to the existing time relay socket, because of its unreasonable structure, arc isolating ribs thereof are often arranged on a shell only, or a base only. For example, when the arc isolating ribs are arranged on the shell only, the base is provided with grooves corresponding to the arc isolating ribs, where a corresponding relationship between the arc isolating ribs and arc isolating grooves is adopted completely; in addition, the arc isolating ribs on the shell are often not separated into regions, and there is no any difference for the arc isolating ribs in an conducting sheet plug bush region, an intermediate transition region and a wiring end region, where a solution that all regions are penetrated with a long rib is adopted. And, all regions on the base are also penetrated with similar arc isolating ribs, such that the problem of poor insulating property is brought to the eight inserts, and therefore, electric arcs are generated among the inserts to affect the safety level, the service life and the control reliability of the product. Based on a working principle of the time relay socket, the basic structural requirements includes: an plug bush for a contact to be plugged is arranged at one end of each insert, and each plug bush is arranged against respective jack on the base; the other end of each insert is a wiring end for a lead wire to access, and each wiring end is arranged against respective wiring seat; because eight jacks need to be densely arranged in the center of the base, the eight plug bushes need to be close to each other, such that a distance between every two adjacent plug bushes may be less than a creepage distance; because of a requirement to a wiring space, each wiring end needs to have a wider size, and therefore a distance between every two adjacent wiring ends is very small, even less than a creepage distance. In order to satisfy the insulation requirement, with respect with the existing time relay socket, a structure of arc isolating ribs is generally adopted between each plug bush and the corresponding wiring end, but owing to the limitation from a structure in which the inserts are mounted on the base with jacks, a fit clearance between each arc isolating rib and the base or the bottom plate is very close to the inserts, and especially the problem on a harmful clearance near the plug bush and the wiring end is extremely prominent, thereby leading to poor insulation effect among the inserts, and said clearance may still cause generation of electric arcs.

[0003] The existing time relay socket adopts a structure of arranging arc isolating ribs and arc isolating grooves near the plug bushes of the inserts to reduce the damage degree of harmful clearances. But such structure has the following defects in that: owing to the reasons of technology, each arc isolating groove may not be made to be deep, an area of staggered overlap between each arc isolating rib and each arc isolating groove is very small, and therefore the structure in which the arc isolating ribs and the arc isolating grooves are arranged near the plug bushes is still not ideal for the insulation effect among the plug bushes, or to say, the effect of reducing the damage degree of harmful clearances is limited. In addition, the butt-joint plugging manner between the arc isolating ribs and the arc isolating grooves (the top edge of each arc isolating rib is aligned and plugged to each arc isolating groove), under the limitation from a forming technology of the base and the bottom plate, is difficult to ensure the alignment precision of the arc isolating ribs and the arc isolating grooves (unless the manufacturing cost of the base and the bottom plate is greatly increased), however, the alignment precision is directly related to the assembly efficiency of the time relay socket and the scrappage rate of parts. In order to not affect the assembly efficiency and reduce the scrappage rate, the fit clearance between each arc isolating rib and each arc isolating groove cannot be small, and the increase of the fit clearance is not conductive to the insulation among the plug bushes obviously.

[0004] There never has been no an ideal solution for the existing time relay socket in terms of reducing the damage of harmful clearances near the wiring ends of the inserts, with the reason possibly residing in that: it is very difficult to form a solution with good practicability in terms of structural design and manufacturing technology.

SUMMARY OF THE INVENTION

[0005] An objective of the present invention is to overcome the defects of the prior art and provides a time relay socket. According to the time relay socket, by means of the improvement to a wiring seat structure, harmful clearances possibly initiating electric arcs near wiring ends of conducting sheets is avoided, and meanwhile due to the adoption of a structure of arc isolating ribs that are mutually plugged in a staggering manner, harmful clearances possibly initiating electric arcs near jacks is avoided, and therefore the safety level of the product is effectively promoted, the service life of the product is prolonged, the control reliability of the product is improved, and the as-

sembly between the shell and the cover plate can also be facilitated. In order to insulate electric arcs and provide a time relay socket with strong voltage resistance and high safety performance, the present invention adopts the following technical solutions.

[0006] A time relay socket comprises a shell 1, a cover plate 2, and eight conducting sheets 3, wherein the shell 1 is provided with eight jacks 14, each jack 14 corresponding to one conducting sheet 3; plug bush ends 3b of the eight conducting sheets 3 are arranged against the eight jacks 14 on the shell 1; the shell 1 and the cover plate 2 are fixedly connected to form a cavity in which the eight conducting sheets 3 are located. Each end of two ends of the cover plate 2 is provided with: four wiring seats 21, one cover plate screw seat 25, and two insulated baffles 22; each cover plate screw seat 25 separates four wiring seats 21 at the same end into two groups, with two wiring seats 21 being in each group; the two wiring seats 21 of each group are separated by a raised insulated baffle 22 on the cover plate 2, and wiring ends 3a of the eight conducting sheets 3 are mounted on the eight wiring seats 21 respectively. Each of the two ends of the shell 1 is provided with: two sunken hole grooves 11 and a shell screw seat 15, wherein the shell screw seat 15 is located between the two hole grooves 11 at the same end and separates the two hole grooves 11 at the same end, and a sunken space of each hole groove 11 is accommodated with a group of two wiring seats 21 provided with one insulated baffle 22 and two wiring ends 3a. An insulated baffle is arranged on the cover plate of each wiring end. The solution in which two wiring seats share one hole groove of the shell enhances an isolation effect on electric arcs near the wiring ends of the conducting sheets, such that the voltage resistance of the product is improved.

[0007] Furthermore, as a more preferred solution, a conducting sheet plug bush region arc isolating rib 13 is arranged between every two jacks 14 of the eight jacks 14 on the shell 1, the cover plate 2 is provided with eight insulated ribs 23 for separating the plug bush ends 3b of the eight conducting sheets 3, each conducting sheet plug bush region arc isolating rib 13 on the shell only corresponds to one insulated rib 23 on the cover plate, and the conducting sheet plug bush region arc isolating ribs 13 on the shell and the insulated ribs 23 corresponding thereto on the cover plate are mutually parallel and are mutually plugged in a staggering manner.

[0008] The time relay comprises a conducting sheet plug bush region 51, an intermediate transition region 52 and a wiring end region 53; the shell 1 is provided with arc isolating ribs only in the conducting sheet plug bush region 51 and the intermediate transition region 52, rather than the wiring end region 53. In other words, the arc isolating ribs include: plug bush region arc isolating ribs 13 in the conducting sheet plug bush region 51, intermediate transition region arc isolating ribs 16 in the intermediate transition region 52 and insulated baffles 22 in the wiring end region 53. The insulated baffles 22 in the wiring end region 53 are arranged on the cover plate, the intermediate transition region arc isolating ribs 16 in the intermediate transition region 52 are arranged on the shell, and therefore the sealing property and the isolation property are further improved, the problem of the harmful clearances possibly initiating electric arcs near the wiring ends of the conducting sheets is solved, and the insulation effect is good.

[0009] As a preferred solution, the intermediate transition region arc isolating ribs 16 and the corresponding conducting sheet plug bush region arc isolating ribs 13 are arranged in a staggering manner.

[0010] Further, each intermediate transition region arc isolating rib 16 is wider than each conducting sheet plug bush region arc isolating rib 13.

[0011] Furthermore, the cover plate 2 in the intermediate transition region 52 is provided with guide grooves 26 for accommodating conducting sheets, the conducting sheet plug bush region 51 of the cover plate 2 is provided with insulated ribs 23, and the guide grooves 26 and the insulated ribs 23 are arranged in a staggering manner.

[0012] When the outer shell 1 and the cover plate 2 are connected, the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs corresponding thereto on the cover plate 2 may be positioned at different sides, or staggered from left to right or staggered from right to left. But as a preferred solution, all the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs 23 corresponding thereto are located at the same side.

[0013] Preferably, two opposite side surfaces of each hole groove 11 on the shell 1 are respectively provided with plug grooves 12 which are in plugging fit with the insulated baffles 22. Furthermore, each hole groove 11 on the shell 1 is of a penetrated structure preferably, and the insulated baffle 22 accommodated in each hole groove 11 extend out of the shell 1 from the interior of the hole groove 11 to form an insulated baffle for a lead wire to access. More preferably, a descending step 27 is arranged at each of two sides of the upper edge of each insulated baffle 22 of the cover plate 2, wherein the lower edge of each step is plugged into the corresponding plug groove 12 of the shell 1, and the upper edge of each step can extend out of the shell.

[0014] Preferably, each insulated baffle 22 is higher than a wiring end mounting surface 2a of each wiring seat 21, and longer than an end surface 2b of each wiring seat 21. A height difference H capable of isolating electric arcs is formed between each insulated baffle 22 and the wiring end mounting surface 2a of each wiring seat 21, wherein the height difference H is 0.5 to 1 time of a creepage distance; a length difference L capable of isolating electric arcs is formed between each insulated baffle 22 and the end surface 2b of each wiring seat 21, wherein the length difference L is 0.5 to 1 time of a creepage distance.

[0015] Preferably, a height size of an overlap part

formed when the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs 23 are mutually plugged in a staggering manner is 0.5 to 1 time of a creepage distance.

[0016] By means of a series of above technical solutions, the isolating property to electric arcs is improved, not only a solution is provided to perform electric arc blocking between the electric arc conducting sheet plug bush region and the intermediate transition region, but also a solution is provided to perform electric arc blocking between the intermediate transition region 52 and the wiring end region 52. Moreover, due to the adoption of the technical solutions of the present invention, both the isolating effect among wiring ends in the wiring end region and the isolating effect among plug bush ends in the electric arc conducting sheet plug bush region are improved. Owing to the staggered arrangement structure, the shell can be well fit with the cover plate, such that the assembly is more convenient and compact, harmful clearances possibly initiating electric arcs are avoided, the safety level and the voltage resistance level of the product are effectively promoted, the service life of the product is prolonged, the control reliability of the product is improved, and meanwhile the wiring convenience is achieved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a schematic stereogram of an overall structure of the embodiment of the time relay socket of the present invention.

Fig. 2 is an exploded view of the embodiment of the time relay socket of the present invention as illustrated in Fig. 1.

Fig. 3 is a planer structural schematic drawing of shell parts of the embodiment of the time relay socket of the present invention as illustrated in Fig. 1.

Fig. 4 is a planer structural schematic drawing of cover plate parts of the embodiment of the time relay socket of the present invention as illustrated in Fig. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] Specific embodiments of the time relay socket of the present invention are further illustrated as below in conjunction with the embodiments provided by Figs. 1 to 4. The time relay socket of the present invention is not limited to the description in the following embodiments.

[0019] Referring to Figs. 1-4, the time relay socket of the present invention comprises a shell 1, a cover plate 2 and eight conducting sheets 3. The shell 1 is provided with eight jacks 14 for plugs (not shown in drawings) to plug. Each conducting sheet 3 adopts a known structure, wherein one end of the conducting sheet is a wiring end 3a for a lead wire (not shown in drawings) to assess, and the other end of the conducting sheet is a plug bush end 3b for pins (not shown in drawings) of a plug to access and connect. The plug bush ends 3b of the eight conducting sheets 3 are arranged against the eight jacks 14 respectively, such that pins of the plug are plugged into the corresponding plug bush ends 3b respectively from the eight jacks 14, and are electrically connected with the plug bush ends 3b. The shell 1 and the cover plate 2 are fixedly connected to form a cavity in which the eight conducting sheets 3 are encapsulated. The time relay as illustrated in drawings comprises a conducting sheet plug bush region 51, an intermediate transition region 52 and a wiring end region 53. There are a plurality of forms provided for a structure in which the shell 1 and the cover plate 2 are fixedly connected, wherein a preferred form is as illustrated in Figs. 1-4, where the shell 1 and the cover plate 2 are fixedly connected by adopting a buckling structure.

[0020] Each of two ends of the cover plate 2 is provided with four wiring seats 21, one cover plate screw seat 25 and two insulated baffles 22, and there are eight wiring seats 21, two cover plate screw seats 25 and four insulated baffles 22 at two ends in total. Each cover plate screw seat 25 separates four wring seats 21 into two groups, each group including two wiring seats 21, i.e., each cover plate screw seat 25 separates the four wiring seats 21 at one end into two groups with two wiring seats 21 in one group, and there are four groups of wiring seats at two ends in total. The two wiring seats 21 in each group are separated by one insulated baffle 22, i.e., the two wiring seats 21 in each of four groups are separated by one insulated baffle 22, that is, each of the four insulated baffles 22 are arranged between the two wiring seats of each of four groups, such that a structure of separating the wiring seats 21 as illustrated in Fig. 4 is formed at each end of the cover plate 2, according to an arrangement sequence from left to right: the wiring seat 21, the insulated baffle 22, the wiring seat 21, the cover plate screw seat 25, the wiring seat 21, the insulated baffle 22 and the wiring seat 21. The wiring ends 3a of the eight conducting sheets 3 are mounted on the eight wiring seats 21 respectively, i.e., the wiring ends 3a of the eight conducting sheets 3 are mounted on wiring end mounting surfaces 2a of the eight wiring seats 21 respectively, and wiring holes in the wiring ends 3a are aligned to wiring holes in the wiring seats 21 to realize guide access. After the wiring ends 3a of the conducting sheets 3 are mounted on respective wiring seats 21 respectively, the wiring ends 3a on the two conducting sheets 3 on the same group of wiring seats 21 are isolated and insulated by the insulated baffle 22, and the wiring ends 3a of the two conducting sheets 3, close to the cover plate screw seat 25, on two groups of wiring seats 21 at the same end are also isolated and insulated by the cover plate screw seat 25. Because each insulated baffles 22 is located on a cover body, rather than the shell, the insulated baffle 22 cannot generate gaps on the surface of the cover body to play a role of isolating electric arcs, and especially

when the insulated baffle 22, the cover plate screw seat 25 and the wiring seat 21 are of an integrally formed piece, the insulated baffle 22, the cover plate screw seat 25 and the wiring seat 21 are combined seamlessly to further avoid harmful clearances possibly initiating electric arcs near the wiring seats 3a of the conducting sheets 3.

[0021] As illustrated in Figs. 2-4, the shell 1 provided with arc isolating ribs only in the conducting sheet plug bush region 51 and the intermediate transition region 52, rather than in the wiring end region 53; the cover plate 2 is provided with insulated baffles 22 in the conducting sheet plug bush region 51, and provided with insulated ribs 23 in the wiring end region 53, and provided with guide grooves 26 for guiding the conducting sheets, rather than any arc isolating rib, in the intermediate transition region 52. As a preferred solution illustrated in Fig. 3, the intermediate transition region arc isolating ribs 16 and the corresponding conducting sheet plug bush region arc isolating ribs 13 are arranged in a staggering manner. Each intermediate transition region arc isolating rib 16 is wider than each conducting sheet plug bush region arc isolating rib 13. Furthermore, as illustrated in Fig. 4, the cover plate 2 in the intermediate transition region 52 is provided with guide grooves 26 for accommodating conducting sheets, the conducting sheet plug bush region 51 of the cover plate 2 is provided with insulated ribs 23, and the guide grooves 26 and the insulated ribs 23 are arranged in a staggering manner. As can be seen from Fig. 4, a condition under which a width d of each cover plate screw seat 25 is designed to be larger is satisfied, and the size of the width D generally can arrive at the requirement on a creepage distance, therefore, ideal insulating and arc isolating effects can be achieved as long as the cover plate screw seat 25 is higher than the wiring end 3a of each conducting sheet 3; owing to the limitation from an overall size, the thickness S of each insulated baffle 22 cannot be designed to be larger, and the size of the thickness S generally cannot arrive at a requirement on a creepage distance, therefore, it is necessary to perform an optimized design on the height difference H and the length difference L of each insulated baffle 22, in order to prevent electric arcs from passing through the insulated baffles possibly in a height direction and an extension direction. The height difference H refers to a height difference between each insulated baffle 22 and each wiring seat 21, that is, a height from each insulated baffle 22 to the wiring end mounting surface 2a of each wiring seat 21 (see marks in Fig. 2); the length difference L refers to a length difference from each insulated baffle 22 to each wiring seat 21, that is, a length from each insulated baffle 22 to an end surface 2b of each wiring seat 21 (see marks in Fig. 2). Therefore, in order to ensure that the electric arcs can possibly pass through the insulated baffles 22 in a height direction and an extension direction, a preferred solution lies in that: each insulated baffle 22 is higher than the wiring end mounting surface 2a of each wiring seat 21, and has a height difference H capable of isolating electric arcs; each insulated baffle 22 is longer than the end surface 2b of each wiring seat 21, and has a length difference L capable of isolating electric arcs. The larger the sizes of the height difference H and the length difference L, the better the insulating and arc isolating effects. But space wastes will be caused if the sizes are too large, and therefore the preferred numerical range is: the height difference H being 0.5 to 1 time of the creepage distance; the length difference S being 0.5 to 1 time of the creepage distance.

[0022] Referring to Figs. 1-4, each of two ends of the shell 1 is provided with two sunken hole grooves 11 and a shell screw seat 15, wherein the shell screw seat 15 is located between the two hole grooves 11 at the same end and separates the two hole grooves at the same end 11, i.e., there are four hole grooves 11 at two ends of the shell 1 in total. The four hole grooves 11 correspond to four groups of wiring seats 21 at two ends of the cover plate 2 respectively, or to say, one hole groove 1 corresponds to one group of wiring seats 21. Each hole groove 11 is accommodated with a group of two wiring seats 21 that are provided with one insulated baffle 22 and two wiring ends 3a, wherein the specific mounting structure is as follows: eight conducting sheets 3 are mounted on the cover plate 2 respectively, and eight wiring ends 3a are mounted on wiring end mounting surfaces 2a of the eight wiring seats 21 on the cover plate 2 respectively; eight plug bush ends 3b are mounted on fixed positions, are arranged against the eight jacks 14 on the shell 1, on the cover plate 2 respectively; the shell 1 is buckled to the cover plate 2 from a direction of the conducting sheets 3, such that the conducting sheets 3 are buckled inside a cavity between the shell 1 and the cover plate 2, and the four group of wiring seats 21 (each group of wiring seats 21 is provided with two wiring seats 21 and one insulated baffle 22, and there are two wiring ends 3a on the two wiring seats 21 in total) are accommodated (also referred to as embedded) inside four hole grooves 11 of the shell 1 respectively; meanwhile, eight plug bush ends 3b of eight conducting sheets 3 are arranged against eight jacks 14 on the shell 1 respectively; of course, the shell 1 and the cover plate 2 are fixedly connected, such that the eight conducting sheets 3 are located in the cavity. The cavity is arranged inside the shell 1 and inside the cover plate 2 respectively with a well-known method. The cavity structure also has a function of positioning the eight conducting sheets 3 inside the cavity, and meanwhile a penetrated structure (not shown in drawings) by which the eight conducting sheets 3 can be communicated to the eight wiring seats 21 in the four hole grooves 11 respectively is also provided.

[0023] To further improve the insulating and arc isolating effects, a preferred structure is as illustrated in Figs. 1-3, wherein each of two opposite side surfaces of each hole groove 11 on the shell 1 is provided with a plug groove 12 which is in plugging fit with each insulated baffle 22. Of course, by means of plugging fit between each insulated baffle 22 and the plug groove 12 on the

shell 1, the insulating and arc isolating performances of each insulated baffle 22 between the wiring ends 3a of the two conducting sheets 3 on the wiring seats 21 in one group are more reliable. Meanwhile, the connection with ideal connection strength can be established between each insulated baffle 22 and the shell 1. A descending step 27 is arranged at each of two sides of the upper edge of each insulated baffle 22, for example, the insulated baffle 22 as illustrated in Fig. 2 is inversely T-shaped, and each of two ends of the upper edge of the insulated baffle 22 is sunken to form a step.

[0024] In order to ensure that a lead wire can access the wiring end 3a of each conducting sheet 3 from outside, a through hole is formed in a position, corresponding to each wiring end 3a, of the shell 1. Because a series of special structures including wiring seats 21, wiring ends 3a, hole grooves 11, insulated baffles 22, plug grooves 12 and the like are adopted in the present invention, the following preferred structure is possible to be realized: each hole groove 11 of the shell 1 is of a penetrated structure, and each insulated baffle 22 accommodated inside each hole groove 11 extend out of the shell 11 from the interior of the hole groove 11 to form an insulated baffle to which a lead wire accesses. By means of the penetrated structure of each hole groove 11, each wiring end 3a can be exposed out of the shell 1 to facilitate access of a lead wire, and each insulated baffle 22 is also correspondingly exposed out of the shell 11, such that the size of the height difference H of each insulated baffle 22 is designed to be larger; each insulated baffles 22 may also be not only configured to perform isolating and arc isolating among the wiring ends 3a of the conducting sheets 3, but also perform insulating and arc isolating among lead wires. Owing to such structure, harmful clearances caused by combination of the shell 1 and the cover plate 2 can be reduced.

[0025] There is no exception to the present invention. In order to improve insulating and arc isolating effects between plug bush ends 3b of the conducting sheets 3, there is a need to adopt a structure of arc isolating ribs. Compared with the prior art, the arc isolating ribs of the present invention are different from existing arc isolating ribs in structure and effect, and the specific structure is as illustrated in Figs. 1-4: the conducting sheet plug bush region arc isolating rib 13 is arranged between every two jacks 14 of the eight jacks 14 in the shell 1, the cover plate 2 is provided with eight insulated ribs 23 for separating the plug bush ends 3b of the eight conducting sheets 3, and the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs 23 are parallel and mutually plugged in a staggering manner. For example, in the solution as illustrated in Fig. 3 and Fig. 4, all the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs 23 corresponding thereto are located at the same side when the shell 1 is connected with the cover plate 2. This staggered mutually plugging structure has the advantages that: each conducting sheet plug bush region arc isolating rib 13 and each insulated rib 23 can form an overlap of a larger size in a height direction, or to say, a height size of a larger overlap part can be obtained between each conducting sheet plug bush region arc isolating rib 13 and each insulated rib 23, and a full double-layer overlapped structure can be realized if necessary, without affecting the assembly convenience between the shell 1 and the cover plate 2, because the trouble caused by alignment is avoided. In order to achieve better insulating and arc isolating effects, a preferred solution lies in that: a height size of an overlap part formed when the conducting sheet plug bush region arc isolating ribs 13 and the insulated ribs 23 are mutually plugged in a staggering manner is 0.5 to 1 time of a creepage distance.

Claims

1. A time relay socket, comprising a shell (1), a cover plate (2) and eight conducting sheets (3), wherein the shell (1) is provided with eight jacks (14), each jack (14) corresponds to one conducting sheet (3), and plug bush ends (3b) of the eight conducting sheets (3) arranged against the eight jacks (14) on the shell (1) respectively; the shell (1) and the cover plate (2) are fixedly connected to form a cavity in which the eight conducting sheets (3) are located, wherein:

   each end of two ends of the cover plate (2) is provided with: four wiring seats (21), one cover plate screw seat (25), and two insulated baffles (22); each cover plate screw seat (25) separates four wiring seats (21) at the same end into two groups, with two wiring seats (21) being in each group; the two wiring seats (21) of each group are separated by a raised insulated baffle (22) on the cover plate (2), and wiring ends (3a) of the eight conducting sheets (3) are mounted on the eight wiring seats (21) respectively;
   each of the two ends of the shell (1) is provided with: two sunken hole grooves (11) and a shell screw seat (15), wherein the shell screw seat (15) is located between the two hole grooves (11) at the same end and separates the two hole grooves (11) at the same end, and a sunken space of each hole groove (11) is accommodated with a group of two wiring seats (21) provided with one insulated baffle (22) and two wiring ends (3a).

2. The time relay socket according to claim 1, wherein a conducting sheet plug bush region arc insulating rib (13) is arranged between every two jacks (14) of the eight jacks (14) on the shell (1), the cover plate (2) is provided with eight insulated ribs (23) for separating the plug bush ends (3b) of the eight conducting sheets (3), each conducting sheet plug bush re-

gion arc insulating rib (13) on the shell only corresponds to one insulated rib (23) on the cover plate, and the conducting sheet plug bush region arc isolating ribs (13) on the shell and the insulated ribs (23) corresponding thereto on the cover plate are mutually parallel and are mutually plugged in a staggering manner.

3. The time relay socket according to claim 1, comprising a conducting sheet plug bush region (51), an intermediate transition region (52) and a wiring end region (53); the shell (1) is provided with arc isolating ribs only in the conducting sheet plug bush region (51) and the intermediate transition region (52), rather than in the wiring end region (53); the arc isolating ribs (16) in the intermediate transition region and the arc isolating ribs (13) in the conducting sheet plug bush region corresponding thereto are arranged in a staggering manner.

4. The time relay socket according to claim 3, wherein the cover plate (2) in the intermediate transition region (52) is provided with guide grooves (26) for accommodating conducting sheets, the conducting sheet plug bush region (51) of the cover plate (2) is provided with insulated ribs (23), and the guide grooves (26) and the insulated ribs (23) are arranged in a staggering manner.

5. The time relay socket according to claim 3, wherein each intermediate transition region arc isolating ribs (16) is wider than each conducting sheet plug bush region arc isolating rib (13).

6. The time relay socket according to claim 2 or 4, wherein all the conducting sheet plug bush region arc isolating ribs (13) and the insulated ribs (23) corresponding thereto are located at the same side when the shell (1) is connected with the cover plate (2).

7. The time relay socket according to claim 1, wherein each of two opposite side surfaces of each hole groove (11) on the shell (1) is provided with a plug groove (12) which is in plugging fit with each insulated baffle (22).

8. The time relay socket according to claim 1, wherein each insulated baffle (22) is higher than a wiring end mounting surface (2a) of each wiring seat (21), and longer than an end surface (2b) of each wiring seat (21).

9. The time relay socket according to claim 1, wherein a descending step (27) is arranged at each of two sides of the upper edge of each insulated baffle (22).

10. The time relay socket according to claim 1, wherein each hole groove (11) of the shell (1) is of a penetrated structure, and the insulated baffle (22) accommodated in each hole groove (11) extends out of the shell (1) from the interior of the hole groove (11) to form an insulated baffle to which a lead wire access.

11. The time relay socket according to claim 2, wherein a height size of an overlap part when the conducting sheet plug bush region arc isolating ribs (13) and the insulated ribs (23) are mutually plugged in a staggering manner is 0.5 to 1 time of a creepage distance.

12. The time relay socket according to claim 8, wherein a height difference H capable of isolating electric arcs is formed between each of the insulated baffle (22) and the wiring end mounting surface (2a) of each wiring seat (21), wherein the height difference H is 0.5 to 1 time of a creepage distance; a length difference L capable of isolating electric arcs is formed between each of the insulated baffles (22) and an end surface (2b) of each wiring seat (21), wherein the length difference L is 0.5 to 1 time of a creepage distance.

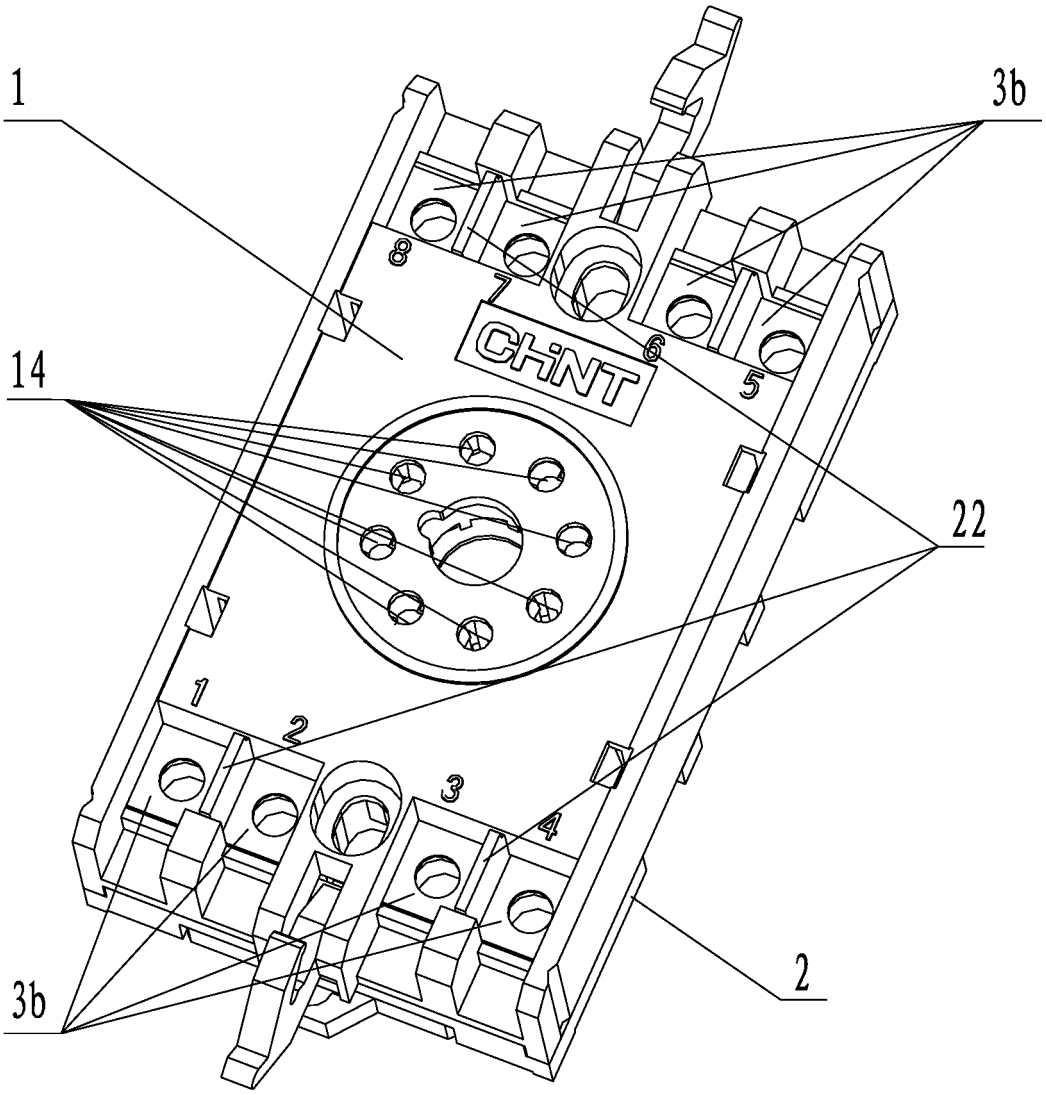

Fig. 1

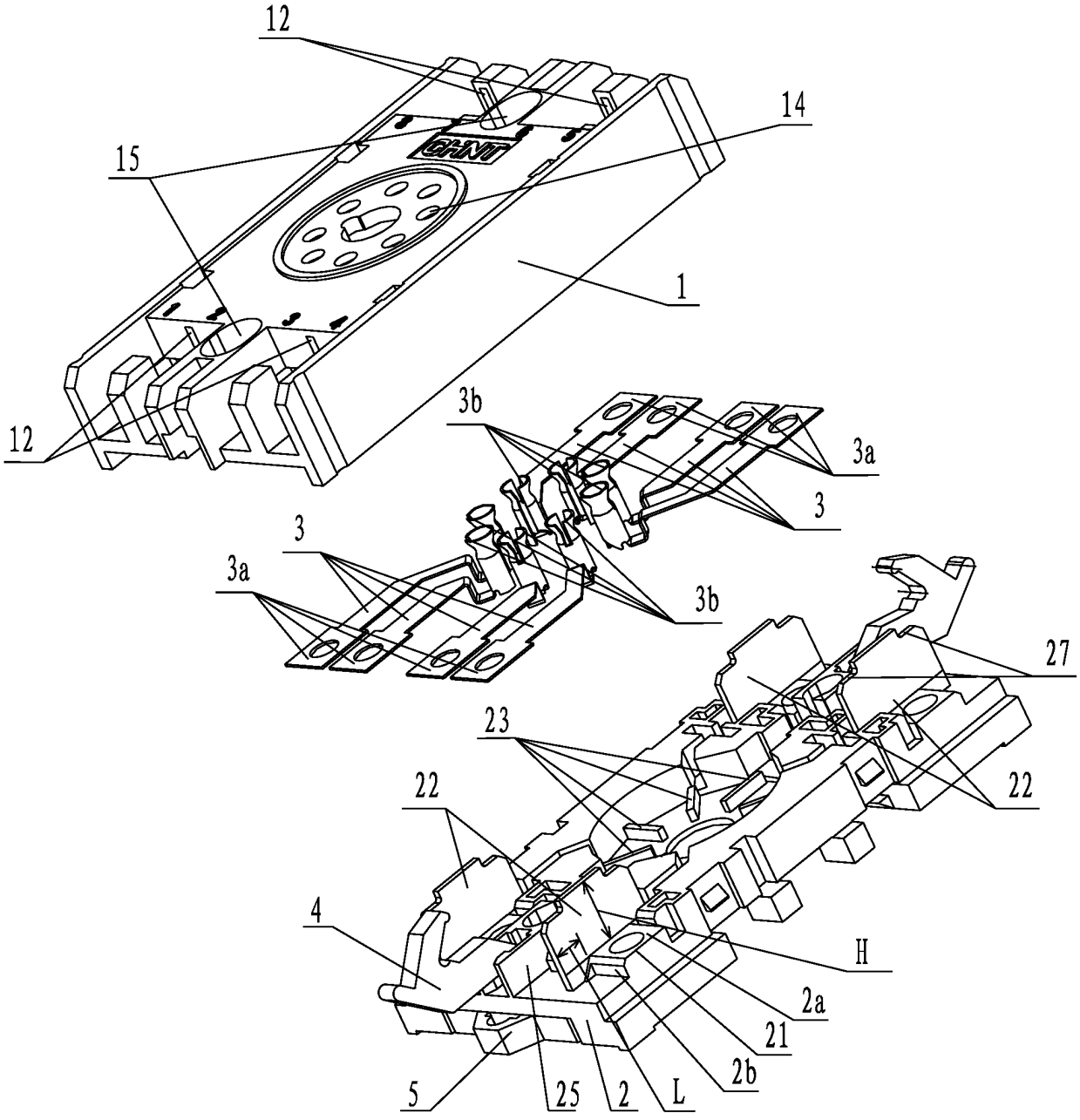

Fig. 2

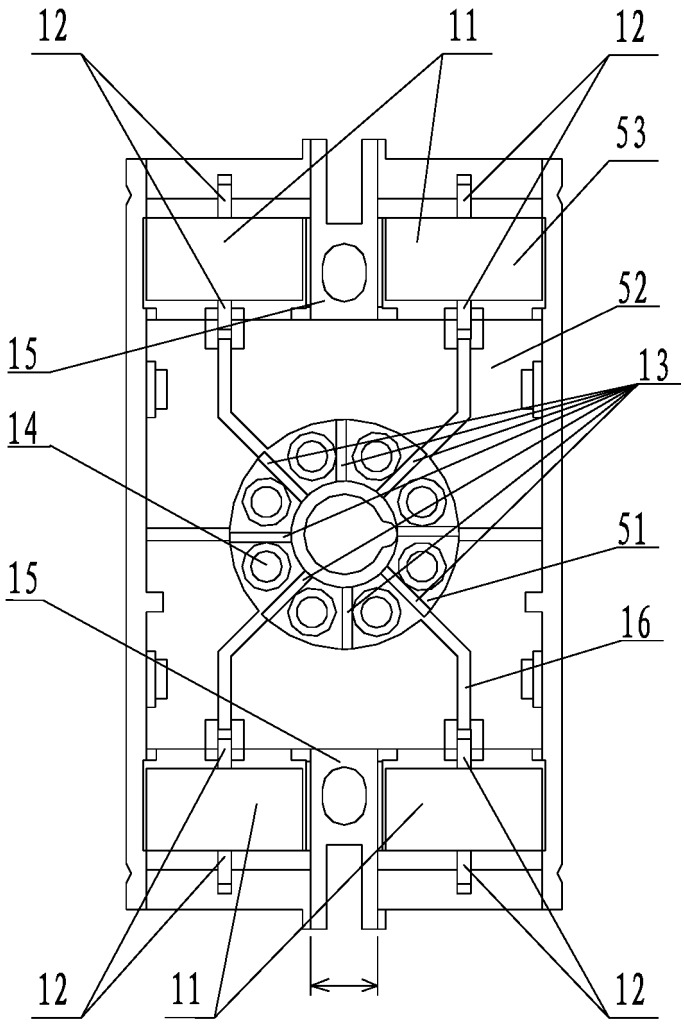

Fig. 3

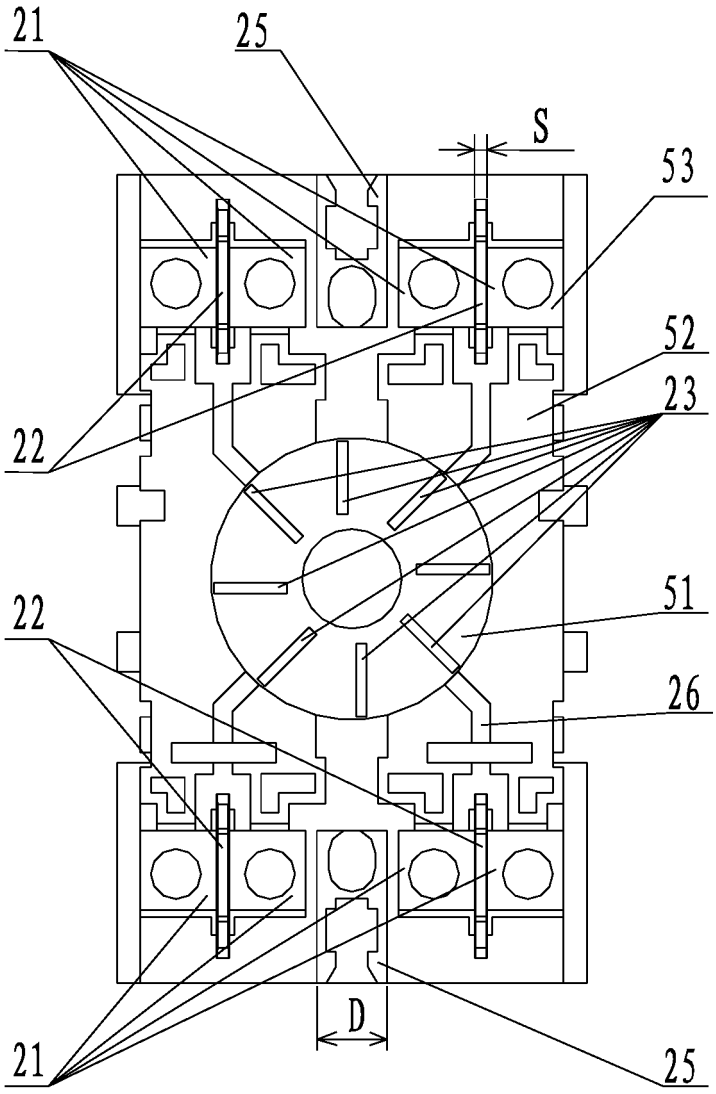

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/095121

A. CLASSIFICATION OF SUBJECT MATTER

H01R 13/53 (2006.01) i; H01R 13/40 (2006.01) i
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: H01R; H01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNTXT, CNKI, DWPI: time, relay, socket, case, housing, base, terminal, conduct, separate, slot, recess, hole, opening.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 204349073 U (ZHEJIANG CHINT ELECTRICS CO., LTD.) 20 May 2015 (20.05.2015) claims 1 to 12	1-12
PX	CN 104505655 A (ZHEJIANG CHINT ELECTRICS CO., LTD.) 08 April 2015 (08.04.2015) description, paragraphs [0005] to [0015], and figures 1 to 4	1-12
A	CN 202840092 U (ZHEJIANG CLION RELAY CO., LTD.) 27 March 2013 (27.03.2013) the whole document	1-12
A	CN 202094394 U (XIAMEN HONGYUANDA ELECTRIC APPLIANCE CO.) 28 December 2011 (28.12.2011) the whole document	1-12
A	JP 10-289742 A (MATSUSHITA ELECTRIC WORKS LTD.) 27 October 1998 (27.10.1998) the whole document	1-12

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"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	Date of mailing of the international search report
25 January 2016	04 February 2016
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer RAN, Chunyan Telephone No. (86-10) 62089118

Form PCT/ISA /210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2015/095121

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 204349073 U	20 May 2015	None	
CN 104505655 A	08 April 2015	None	
CN 202840092 U	27 March 2013	None	
CN 202094394 U	28 December 2011	None	
JP 10-289742 A	27 October 1998	None	

Form PCT/ISA /210 (patent family annex) (July 2009)