EUROPEAN PATENT SPECIFICATION

(54) Compact terminal board for an electric motor
   Kompaktes Verbindungsgehäuse für elektrischen Motor
   Boîte de connexion compacte pour moteur électrique

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Description

[0001] The present invention relates to a terminal board for an electric motor.

[0002] As is known, an electric motor is normally connected to a power line by means of a terminal board, which comprises a number of contacts, including a ground contact, and is housed in a seat in the motor casing.

[0003] The contacts are normally defined by threaded metal pins carried by a supporting body of insulating material; and the electric connecting cables must have eyelet terminals, which are fitted to respective threaded pins and tightened with nuts.

[0004] A number of screws on the bottom of the terminal board fix the supporting body to the electric motor casing, and hold the terminal board inside the seat.

[0005] Terminal boards of the above type have several drawbacks. Firstly, grounding the motor is complicated by involving a specific assembly step to connect an electric cable, by means of a screw, directly to a projection on the motor casing.

[0006] Secondly, wiring the motor is complicated and involves numerous operations. In particular, bridging to connect individual pins directly, e.g., to form Y and delta connections for three-phase motors, calls for repeatedly tightening and loosening the nuts.

[0007] GB-A-2288082 which is considered to represent the closest prior art discloses a terminal board having the features of the preamble of claim 1.

[0008] More recently, terminal boards with blade (faston-type) contacts have been proposed, as described in the Applicant's Italian Patent Application MI2001A000090 of 18 January 2001, in which a terminal board, comprising a supporting body, a number of supply contacts, and a ground contact, is housed inside an electric motor supported on an assembly base. More specifically, the ground contact, which is provided with a hole, is inserted in a through seat formed in a bottom wall of the supporting body, and is fixed directly to the assembly base by means of a screw inserted through the hole. The ground contact also comprises a contrasting tab, which, in use, rests against a portion of the bottom wall to grip the supporting body of the terminal board between the ground contact and the assembly base of the motor.

[0009] The motor is therefore grounded and the terminal board fastened to the motor easily and effectively, and terminal boards with blade (faston) contacts can be used, so that wiring the motor is also greatly simplified.

[0010] This solution, however, also has several drawbacks. That is, the supply contacts used are of complex design and difficult to manufacture; and, though each has a number of utility terminals to save space, the supply contacts are fairly bulky, so that the overall size of the terminal board is also considerable, particularly when making three-phase connections.

[0011] It is an object of the present invention to provide a terminal board designed to eliminate the aforementioned drawbacks, and which, in particular, is compact and cheap and easy to produce.

[0012] According to the present invention, there is provided a terminal board for an electric motor, comprising a supporting body; a number of electric supply contacts; and an electric ground contact; characterized in that each of said electric supply contacts comprises a blade having a supporting portion, at least a first longitudinal extension, and a pair of opposite lateral extensions; said first longitudinal extension and said lateral extensions being bent substantially at right-angles on the same side of said supporting portion to form respective utility terminals.

[0013] Electric supply contacts of this type have the advantage of being easy to produce and extremely compact, so much so that they can be arranged side by side both longitudinally and transversely with respect to the supporting body. Moreover, each supply contact has a number of utility terminals for making any motor wiring connections easily and quickly, so that the terminal board as a whole is extremely compact.

[0014] According to a further aspect of the invention, each of said electric supply contacts can be fitted to said supporting body selectively in a first position, in which said first longitudinal extension is oriented on the opposite side to a bottom wall of said supporting body, and in a second position rotated substantially 180° with respect to said first position.

[0015] If necessary, the electric supply contacts can therefore be connected easily to cables of an external supply line. More specifically, the supply contacts to be connected directly to the supply line are fixed to the supporting body so that the first longitudinal extension, in which a through hole is preferably formed, faces upwards and is therefore easily accessible. The other supply contacts, on the other hand, are rotated 180° so that all the utility terminals can be connected easily. Supply contacts of only one type, however, need be produced, thus reducing cost.

[0016] According to a further aspect of the invention, said ground contact comprises a root portion which slides inside a seat on said supporting body; and a connecting portion, which rests on contrasting ribs extending from said bottom wall of said supporting body; said root portion being fixed inside said seat by fastening means.

[0017] The ground contact can therefore be fitted easily to the supporting body before fitting the terminal board to the electric motor casing, thus greatly simplifying the assembly procedure.

[0018] A number of non-limiting embodiments of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic view in perspective of a terminal board in accordance with the present invention in course of assembly;
Figure 2 shows a top plan view of a first embodiment of a terminal board in accordance with the present invention;

Figure 3 shows a lateral section of the Figure 2 terminal board along line III-III;

Figure 4 shows a lateral section of the Figure 2 terminal board along line IV-IV;

Figure 5 shows a detached front view of a first detail of the Figure 2 terminal board;

Figure 6 shows a detached top plan view of a second detail of the Figure 2 terminal board;

Figure 7 shows a front view of the Figure 6 detail;

Figure 8 shows a top plan view of a second embodiment of a terminal board in accordance with the present invention;

Figure 9 shows a lateral section of the Figure 8 terminal board along line IX-IX;

Figure 10 shows a detached top plan view of a detail of the Figure 8 terminal board;

Figure 11 shows a side view of the Figure 10 detail;

Figure 12 shows a top plan view of a third embodiment of a terminal board in accordance with the present invention;

Figure 13 shows a lateral section of the Figure 12 terminal board along line XIII-XIII;

Figure 14 shows a detached top plan view of a detail of the Figure 12 terminal board;

Figure 15 shows a side view of the Figure 14 detail;

Figure 16 shows a top plan view of a fourth embodiment of a terminal board in accordance with the present invention;

Figure 17 shows a lateral section of the Figure 16 terminal board along line XVII-XVII;

Figure 18 shows a detached top plan view of a detail of the Figure 16 terminal board;

Figure 19 shows a side view of the Figure 18 detail.

As shown in Figure 1, an electric motor 1 comprises a casing 2, a control box 2a, and a terminal board 3 (shown here schematically in the assembly position), is connected to a known user device (not shown), and may be used, for example, to form a motor-driven pump.

Casing 2 comprises a cylindrical cavity 4 housing moving members (not shown) of electric motor 1; a hollow seat 5 is formed in casing 2, over a portion of cylindrical cavity 4, to receive terminal board 3 in use; and control box 2a is made of insulating material, and has an opening by which to insert terminal board 3 inside hollow seat 5.

An assembly base 7, formed integrally in one piece with casing 2, projects inwards of hollow seat 5 from a wall 8 defining cylindrical cavity 4, and has a pin 9 for mounting terminal board 3; and, in a top face of assembly base 7, a dead hole 10 is formed to receive a screw 11 (e.g. a three-lobed or metric-pitch screw) by which to fix terminal board 3 to casing 2 as shown in detail later on.

With reference to Figures 2-4, terminal board 3 - in this case, for forming a single-phase connection - comprises a supporting body 12, an electric ground contact 13, and a number of electric supply contacts 14.

Supporting body 12, which is made of insulating material, comprises a number of seats 15, each for receiving a respective supply contact 14; and a cavity 17 housing ground contact 13. Seats 15 are arranged side by side in pairs, and have respective access openings 19 facing opposite sides of supporting body 12.

As shown in Figure 5, each supply contact 14 is defined by a blade having a supporting portion 14a, a first and a second longitudinal extension 14b, 14c opposite each other, and a pair of opposite lateral extensions 14d. Longitudinal extensions 14b, 14c and lateral extensions 14d are bent substantially at right-angles on the same side of supporting portion 14a to form respective utility terminals.

More specifically, longitudinal extensions 14b, 14c are parallel; and lateral extensions 14d are parallel to each other and substantially perpendicular with respect to longitudinal extensions 14b, 14c.

First longitudinal extension 14b of each supply contact 14 has a first through hole 20 for receiving a respective wire-clamping screw 21.

Supply contacts 14 are fitted, e.g. clicked by means of fastening teeth 22, to partitions 24 of supporting body 12 separating facing seats 15. More specifically, each supply contact 14 can be fitted selectively to a respective partition 24 of supporting body 12 in a first position, in which first longitudinal extension 14b with respective first through hole 20 is oriented on the opposite side to a bottom wall 25 of supporting body 12, and in a second position rotated substantially 180° with respect to the first position. Supply contacts 14 are also located at a distance from bottom wall 25 to permit connection of all the utility terminals defined by longitudinal extensions 14b, 14c and lateral extensions 14d.

As stated, ground contact 13 is housed inside cavity 17 of supporting body 12. More specifically, bottom wall 25 has a through seat 27 at cavity 17; ground contact 13 comprises a root portion 13a (Figures 6 and 7) housed inside through seat 27, flush with bottom wall 25, and extends laterally over and in contact with a contrasting portion of bottom wall 25 (Figure 3); and root portion 13a has a fastening hole 28 through which screw 11 is inserted inside dead hole 10 in assembly base 7 to grip supporting body 12 against electric motor 1 by means of ground contact 13.

Ground contact 13 comprises, at a first end, a connecting wing 13b having a second through hole 29 for receiving a respective wire-clamping screw 21; and a number of connecting terminals 13c extending parallel with each other from a second end, opposite the first end, of the ground contact.

A second embodiment of the invention will now be described with reference to Figures 8-11, in which any parts identical with those already described are indicated using the same reference numbers.
[0031] In detail, a terminal board 35 for forming a three-phase connection comprises a supporting body 36, a ground contact 37, and a number of supply contacts 14 of the type described with reference to Figures 2, 4 and 5 (in this embodiment, the second longitudinal extension 14c may be dispensed with).

[0032] Supporting body 36 comprises a number of seats 38 defined by walls 39; and a longitudinal cavity 40. Seats 38, each for housing a respective supply contact 14, are arranged facing in pairs, have respective access openings 41 facing opposite sides of supporting body 36, and are spaced apart so that the supply contacts 14 in adjacent seats 38 are substantially equidistant and therefore connectable by identical jumpers 43. Slits 45 are formed in respective mid-portions of walls 39 to fit jumpers 43 in the respective work positions.

[0033] Ground contact 37 is housed inside longitudinal cavity 40, and comprises a root portion 37a (Figures 10 and 11) housed inside a through seat 46, formed in a bottom wall 47 of supporting body 36, and flush with bottom wall 47. A contrasting tab 37b of ground contact 37 extends laterally over and in contact with a contrasting portion of bottom wall 47 (Figure 9); and root portion 37a has a fastening hole 50 through which screw 11 is inserted inside dead hole 10 in assembly base 7 (not shown in figure 9) to grip supporting body 36 against electric motor 1 by means of ground contact 37.

[0034] Ground contact 37 comprises, at a first end, a connecting wing 37c having a second threaded hole 51 for receiving a respective wire-clamping screw 21; and at least a pair of connecting terminals 37d extending laterally on opposite sides of connecting wing 37c.

[0035] Ground contact 37 is seated so that connecting wing 37c and connecting terminals 37d project laterally from supporting body 36.

[0036] Figures 12-15 show a third embodiment of the invention, wherein a terminal board 55, in this case for forming a single-phase connection, comprises a supporting body 56, a ground contact 37, and a number of supply contacts 14 substantially as shown in Figures 2, 4 and 5, but also having lateral ribs 14e and teeth 14f projecting laterally on opposite sides.

[0037] Supporting body 56 comprises a number of seats 58, each for receiving a respective supply contact 14; and a cavity 60 housing ground contact 57. More specifically, supply contacts 14 are slid inside respective seats 58 so that lateral ribs 14e and teeth 14f engage coupling guides 59. A dead seat 61, for receiving, in use, a root portion 57a of ground contact 57, is defined by a recess in a bottom face of a bottom wall 62 of supporting body 56, beneath cavity 60; a slit 66, formed in bottom wall 62, connects dead seat 61 to cavity 60, and permits insertion of ground contact 57 as explained below; and contrasting ribs 64, connected by a connecting portion 65, project from a top face of bottom wall 62 of supporting body 56, and extend crosswise with respect to cavity 60.

[0038] Ground contact 57 comprises, at one end, a connecting wing 57b having a threaded hole 68 for receiving a respective wire-clamping screw 21; and at least two parallel, coplanar connecting terminals 57c extending from a supporting portion 57d, both on the opposite side to connecting wing 57b. Supporting portion 57d is in turn connected to root portion 57a of ground contact 57 by a supporting wing 57e bent substantially at a right-angle with respect to root portion 57a.

[0039] Root portion 57a has a fastening hole 67 through which screw 11 is inserted inside dead hole 10 in assembly base 7 (not shown in figure 13) to grip supporting body 56 against electric motor 1 by means of ground contact 57.

[0040] Ground contact 57 is slid on to supporting body 56, so that, in use, root portion 57a is housed inside dead seat 61, flush with bottom wall 62, supporting wing 57e is inserted inside slit 66, and supporting portion 57d rests on contrasting ribs 64 and connecting portion 65 to make the connection more stable. Root portion 57a is then fastened inside dead seat 61 by inserting screw 11.

[0041] A fourth embodiment of the invention will now be described with reference to Figures 16-19, in which any parts identical with those already described are indicated using the same reference numbers, and in which a terminal board 70, in this case for forming a three-phase connection, comprises a supporting body 71, a ground contact 72, and a number of supply contacts 14 substantially as shown in Figures 2, 4 and 5, but also having teeth 14f projecting laterally on opposite sides (in this embodiment, second longitudinal extension 14c may be dispensed with).

[0042] Supporting body 71 comprises a number of seats 73, each for receiving a respective supply contact 14; and a longitudinal cavity 75 housing ground contact 72.

[0043] Seats 73 are arranged in pairs facing opposite sides, and are spaced apart so that supply contacts 14 in adjacent seats 73 can be connected by identical jumpers 43.

[0044] A dead seat 76, for receiving, in use, a root portion 72a of ground contact 72, is defined by a recess formed in a bottom face of a bottom wall 77 of supporting body 71, beneath longitudinal cavity 75; a slit 78, formed in bottom wall 77, connects dead seat 76 to cavity 75, and permits insertion of ground contact 72 as explained below; and contrasting ribs 80 project from bottom wall 77 inside and crosswise with respect to longitudinal cavity 75, and substantially flush with slit 78.

[0045] Ground contact 72 comprises, at one end, a connecting wing 72b having a through hole 81 for receiving a respective wire-clamping screw 21; and at least two connecting terminals 72c projecting laterally from connecting wing 72b on opposite sides.

[0046] Contrasting wings 72d extend from one edge of root portion 72a, and are bent so as to form, together with root portion 72a, a substantially C shape (Figure 19).
[0047] Root portion 72a has a fastening hole 82 through which screw 11 is inserted inside dead hole 10 in assembly base 7 (not shown in figure 17) to grip supporting body 71 against electric motor 1 by means of ground contact 72.

[0048] When ground contact 72 is slid to supporting body 71, root portion 72a is housed inside dead seat 76, flush with bottom wall 77, and contrasting wings 72d are fitted about and rest on contrasting ribs 80 to make the connection more stable. Root portion 72a is then fastened inside dead seat 76 by inserting screw 11.

[0049] Clearly, changes may be made to the electric motor terminal board as described herein without, however, departing from the scope of the present invention. For example, the supporting body of the terminal board may be formed otherwise than as shown; and the terminal board may be fixed to the assembly base by means of a further screw, in which case, a further hole must be formed in the bottom wall, and preferably also guides for easy insertion of the additional screw.

Claims

1. A terminal board for an electric motor, comprising a supporting body (12; 36; 56; 71); a number of electric supply contacts (14); and an electric ground contact (13; 37; 57; 72); characterized in that each of said electric supply contacts (14) comprises a blade having a supporting portion (14a), at least a first longitudinal extension (14b), and a pair of opposite lateral extensions (14d); said first longitudinal extension (14b) and said lateral extensions (14d) being bent substantially at right-angles on the same side of said supporting portion (14a) to form respective utility terminals.

2. A terminal board as claimed in Claim 1, characterized in that each of said electric supply contacts (14) comprises a second longitudinal extension (14c) opposite said first longitudinal extension (14b) and bent substantially at a right-angle on the same side of said supporting portion (14a); said first longitudinal extension (14b) having a threaded hole (20) for receiving a wire-clamping screw (21).

3. A terminal board as claimed in Claim 2, characterized in that each of said electric supply contacts (14) can be fitted to said supporting body (12; 36; 56; 71) selectively in a first position, in which said first longitudinal extension (14b) is oriented on the opposite side to a bottom wall (25; 47; 62; 77) of said supporting body (12; 36; 56; 71), and in a second position rotated substantially 180° with respect to said first position.

4. A terminal board as claimed in Claim 2 or 3, characterized in that said first and said second longitudinal extension (14b, 14c) are parallel, and said lateral extensions (14d) are parallel to each other and substantially perpendicular to said first and said second longitudinal extension (14b, 14c).

5. A terminal board as claimed in claim 3 or 4, characterized in that said bottom wall (25; 47; 62; 77) of said supporting body (12; 36; 56; 71) comprises a seat (27; 46; 61; 76); and in that said electric ground contact (13; 37; 57; 72) is housed partly inside said seat (27; 46; 61; 76), flush with said bottom wall (25; 47; 62; 77), and extends over and in contact with a contrasting portion of said bottom wall (25; 47; 62; 77); said electric ground contact (13; 37; 57; 72) receiving said fastening means (11) to grip said supporting body (12; 36; 56; 71) against said electric motor (1) by means of said electric ground contact (13; 37; 57; 72).

6. A terminal board as claimed in Claim 5, characterized in that said seat (61; 76) is defined by a recess in a bottom face of said bottom wall (62; 77) of said supporting body (56; 71), beneath a cavity (60; 75) of said supporting body (56; 71) for receiving said ground contact (57; 75) and communicating with said seat (61; 76) via a slit (66; 78); and in that said contrasting portion of said bottom wall (62; 77) comprises a number of contrasting ribs (64, 65; 80) extending transversely from said bottom wall (62; 77) inside said cavity (60; 75).

7. A terminal board as claimed in Claim 6, characterized in that said ground contact (57; 72) comprises a root portion (57a; 72a) which slides inside said seat (61; 76), and a supporting portion (57d; 72d) which rests on said contrasting ribs (64, 65; 80); said root portion (57a; 72a) being fastened inside said seat (61; 76) by means of said fastening means (11).

8. A terminal board as claimed in any one of the foregoing Claims, characterized in that said electric ground contact (13; 37; 57; 72) comprises, at a first end, a connecting wing (13b; 37c; 57b; 72b) having a threaded hole (29; 51; 68; 81) for receiving a respective said wire-clamping screw (21); and a number of connecting elements (13c; 37d; 57c; 72c).

9. A terminal board as claimed in Claim 8, characterized in that said connecting elements (13c; 57c) extend parallel with each other from a second end, opposite said first end, of said electric ground contact (13; 57).

10. A terminal board as claimed in Claim 8, characterized in that said connecting elements (37d; 72c) extend laterally from said first end on opposite sides...
A terminal board as claimed in Claim 11, characterized in that said supporting body (12; 36; 56; 71) comprises a number of seats (15; 38; 58; 73) facing in pairs, and having respective access openings (19; 41) facing opposite sides of said supporting body (12; 36; 56; 71).

11. A terminal board as claimed in any one of the foregoing Claims, characterized in that said supporting body (12; 36; 56; 71) comprises a number of seats (15; 38; 58; 73), each for receiving a respective electric supply contact (14); said seats (15; 38; 58; 73) facing in pairs, and having respective access openings (19; 41) facing opposite sides of said supporting body (12; 36; 56; 71).

12. A terminal board as claimed in Claim 11, characterized in that said seats (38; 73) are spaced apart so that electric supply contacts (14) in adjacent seats (38; 73) are connectable by identical jumpers (43).

13. An electric motor comprising a casing (2) and a terminal board (3; 35; 55; 70); characterized in that said terminal board (3; 35; 55; 70) is formed as claimed in any one of Claims 1 to 12, and is housed in a cavity (5) formed in said casing (2).

Patentansprüche

1. Anschlussplatte für einen Elektromotor, aufweisend einen Trägerkörper (12; 36; 56; 71); eine Anzahl elektrischer Versorgungskontakte (14); und einen elektrischen Masseanschluss (13; 37; 57; 72) dadurch gekennzeichnet, dass jeder der elektrischen Versorgungskontakte (14) eine Klinge aufweist, die ein Trägerteil (14a), mindestens eine erste Längsverlängerung (14b) und ein Paar gegenüberliegender seitlicher Verlängerungen (14d) aufweist; wobei die erste Längsverlängerung (14b) und die seitlichen Verlängerungen (14d) im wesentlichen unter rechten Winkeln auf der gleichen Seite des Trägerteils (14a) gebogen sind, um jeweilige Mehrzweckanschlüsse zu bilden.

2. Anschlussplatte nach Anspruch 1, dadurch gekennzeichnet, dass jeder der elektrischen Versorgungskontakte (14) eine zweite Längsverlängerung (14c) aufweist, die der ersten Längsverlängerung (14b) gegenüberliegt und im wesentlichen unter einem rechten Winkel auf der gleichen Seite des Trägerteils (14a) gebogen ist; wobei die erste Längsverlängerung (14b) ein Gewindeloch (20) zur Aufnahme einer Drahtklemmschraube (21) aufweist.

3. Anschlussplatte nach Anspruch 2, dadurch gekennzeichnet, dass jeder der elektrischen Versorgungskontakte (14) an dem Trägerkörper (12; 36; 56; 71) selektiv in einer ersten Position, in der die erste Längsverlängerung (14b) an der zu einer Bodenwand (25; 47; 62; 77) des Trägerkörpers (12; 36; 56; 71) gegenüberliegenden Seite ausgerichtet ist, und in einer zweiten Position, die im wesentlichen um 180° in Bezug auf die erste Position gedreht ist, angebracht werden kann.

4. Anschlussplatte nach Anspruch 2 oder 3, dadurch gekennzeichnet, dass die ersten und zweiten Längsverlängerungen (14b, 14c) parallel sind und die seitlichen Verlängerungen (14d) parallel zueinander und im wesentlichen senkrecht zu den ersten und zweiten Längsverlängerungen (14b, 14c) sind.

5. Anschlussplatte nach Anspruch 3 oder 4, dadurch gekennzeichnet, dass die Bodenwand (25; 47; 62; 77) des Trägerkörpers (12; 36; 56; 71) eine Aushöhlung (27; 46; 61; 76) aufweist; und dass der elektrische Masseanschluss (13; 37; 57; 72) teilweise innerhalb der Aushöhlung (27; 46; 61; 76) bündig mit der Bodenwand (25; 47; 62; 77) untergebracht ist und sich über und in Kontakt mit einem sich abhebenden Teil der Bodenwand (25; 47; 62; 77) erstreckt; wobei der elektrische Masseanschluss (13; 37; 57; 72) das Befestigungsmittel (11) aufnimmt, um den Trägerkörper (12; 36; 56; 71) mittels des elektrischen Masseanschlusses (13; 37; 57; 72) gegen den Elektromotor (1) zu halten.

6. Anschlussplatte nach Anspruch 5, dadurch gekennzeichnet, dass die Aufnahme (61; 76) durch eine Ausnehmung in einer Bodenfläche der Bodenwand (62; 77) des Trägerkörpers (56; 71) unterhalb einer Aushöhlung (60; 75) des Trägerkörpers (56; 71) zur Aufnahme des Masseanschlusses (57; 75) und zum Kommunizieren mit der Aufnahme (61; 76) über einen Schlitze (66; 78) definiert ist; und dass das sich abhebende Teil der Bodenwand (62; 77) eine Anzahl sich abhebender Rippen (64, 65; 80) aufweist, die sich quer von der Bodenwand (62; 77) innerhalb der Aushöhlung (60; 75) erstrecken.

7. Anschlussplatte nach Anspruch 6, dadurch gekennzeichnet, dass der Masseanschluss (57; 72) ein Fußteil (57a; 72a), das in die Aufnahme (61; 76) gleitet, und ein Trägerteil (57d; 72d) aufweist, das an den sich abhebenden Rippen (64, 65; 80) anliegt, wobei das Fußteil (57a; 72a) in der Aufnahme (61; 76) mittels des Befestigungsmittels (11) befestigt ist.

8. Anschlussplatte nach irgendeinem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass der elektrische Masseanschluss (13; 37; 57; 72) an einem ersten Ende einen Verbindungsfügel (13b; 37c; 57b; 72b) mit einem Gewindeloch (29; 51; 68; 81) zur Aufnahme einer jeweiligen Draht-
9. Anschlussplatte nach Anspruch 8, dadurch gekennzeichnet, dass die Verbindungselemente (13c; 57c) sich parallel zueinander von einem zwei- ten Ende des elektrischen Masseanschlusses (13; 57), das dem ersten Ende gegenüberliegt, erstrek- ken.

10. Verbindungsplatte nach Anspruch 8, dadurch gekennzeichnet, dass die Verbindungselemente (37d; 72c) sich zeitlich von dem ersten Ende auf ge- gegenüberliegenden Seiten des Verbindungsflügels (37c; 72b) erstrecken, wobei der elektrische Mas- seanschluss (37; 72) so untergebracht ist, dass der Verbindungsflügel (37c; 72b) und die Verbindungs- elemente (37d; 72c) zeitlich aus dem Trägerkörper (12; 36; 56; 71) herausragen.

11. Anschlussplatte nach irgendeinem der vorherge- henden Ansprüche, dadurch gekennzeichnet, dass der Trägerkörper (12; 36; 56; 71) eine Anzahl von Aufnahmen (15; 38; 58; 73) aufweist, je zur Auf- nahme eines jeweiligen elektrischen Versorgungs- kontaktes (14), wobei die Aufnahmen (15; 38; 58; 73) einander paarweise gegenüberliegen und je- weilige Zugangsoffnungen (19; 41) aufweisen, die gegenüberliegenden Seiten des Trägerkörpers (12; 36; 56; 71) gegenüberliegen.

12. Anschlussplatte nach Anspruch 11, dadurch gekennzeichnet, dass die Aufnahmen (38; 73) so voneinander beabstandet sind, dass die elektri- schen Versorgungskontakte (14) in benachbarten Aufnahmen (38; 73) durch identische Überbrückun- gen (43) verbindbar sind.

13. Elektromotor mit einem Gehäuse (2) und einer An- schlussplatte (3; 35; 55; 70), dadurch gekenn- zeichnet, dass die Anschlussplatte (3; 35; 55; 70) wie in einem der Ansprüche 1 bis 12 beansprucht gebildet ist und in einer Aushöhlung (5) unterge- bracht ist, die in dem Gehäuse (2) gebildet ist.

Revendications

1. Plaque à bornes pour un moteur électrique, com- prenant un corps de support (12; 36; 56; 71) ; une pluralité de contacts d’alimentation électrique (14) ; et un contact de masse électrique (13 ; 37 ; 57 ; 72) ; caractérisée en ce que chacun desdits con- tacts d’alimentation électrique (14) comprend une lame ayant une partie de support (14a), au moins un premier prolongement longitudinal (14b) et desdits pro- longement latéraux (14d) étant pliés sensiblement à angle droit sur le même côté de ladite partie de support (14a) pour former des bornes utilitaires respectives.

2. Plaque à bornes selon la revendication 1, caracté- risée en ce que chacun desdits contacts d’alimentation électrique (14) comprend un deuxième pro- longement longitudinal (14c) opposé au dit premier prolongement longitudinal (14b) et plié sensiblement à angle droit sur le même côté de ladite partie de support (14a) ; ledit premier prolongement longi- tudinal (14b) ayant un trou taraudé (20) pour re- cevoir une vis de fixation de câble (21).

3. Plaque à bornes selon la revendication 2, caracté- risée en ce que chacun desdits contacts d’alimentation électrique (14) peut être fixé au dit corps de support (12; 36; 56; 71) sélectivement dans une première position, dans laquelle ledit premier pro- longement (14b) est orienté du côté opposé à une paroi de fond (25; 47; 62; 77) dudit corps de sup- port (12; 36; 56; 71), et dans une deuxième posi- tion tournée sensiblement de 180° par rapport à la première position.

4. Plaque à bornes selon la revendication 2 ou 3, ca- ractérisée en ce que ledit premier et ledit deuxiè- me prolongements longitudinaux (14b, 14c) sont parallèles et lesdits prolongements latéraux (14d) sont parallèles l’un à l’autre et sensiblement per- pendiculaires au dit premier et au dit deuxième prolongements longitudinaux (14b, 14c).

5. Plaque à bornes selon la revendication 3 ou 4, ca- ractérisée en ce que ladite paroi de fond (25; 47; 62; 77) dudit corps de support (12; 36; 56; 71) comprend un siège (27; 46; 61; 76); et en ce que ledit contact de masse électrique (13; 37; 57; 72) est logé en partie à l’intérieur dudit siège (27; 46; 61; 76), appuyant avec ladite paroi de fond (25; 47; 62; 77), et s’étend sur et en contact avec une partie de contrasté de ladite paroi de fond (25; 47; 62; 77) ; ledit contact de masse électrique (13; 37; 57; 72) recevant ledit moyen de serrage (11) pour serrer ledit corps de support (12; 36; 56; 71) contre ledit moteur électrique (1) au moyen dudit con- tact de masse électrique (13; 37; 57; 72).

6. Plaque à bornes selon la revendication 5, caracté- risée en ce que ledit siège (61; 76) est défini par un évidement dans une surface de fond de ladite paroi de fond (62; 77) dudit corps de support (56; 71), au-dessous d’une cavité (60; 75) dudit corps de support (56; 71) pour recevoir ledit contact de masse (57; 75) et communiquer avec ledit siège (61; 76) via une fente (66; 78); et en ce que ladite partie de contraste de ladite paroi de fond (62; 77)
comprend une pluralité de nervures de contraste (64, 65 ; 80) s’étendant transversalement à partir de ladite paroi de fond (62 ; 77) à l’intérieur de ladite cavité (60 ; 75).

7. Plaque à bornes selon la revendication 6, **caractérisée en ce que** ledit contact de masse (57 ; 72) comprend une partie de pied (57a ; 72a) qui coulis-se dans ledit siège (61 ; 76) et une partie de support (57d ; 72d) qui appuie sur lesdites nervures de contraste (64, 65 ; 80) ; ladite partie de pied (57a ; 72a) étant fixée à l’intérieur dudit siège (61 ; 76) au moyen dudit moyen de serrage (11).

8. Plaque à bornes selon l’une quelconque des revendications précédentes, **caractérisée en ce que** ledit contact de masse électrique (13 ; 37 ; 57 ; 72) comprend, à une première extrémité, une aile de connexion (13b ; 37c, 57b ; 72b) ayant un trou taraudé (29 ; 51 ; 68 ; 81) pour recevoir une respective desdites vis de fixation de câble (21) ; et une pluralité d’éléments de connexion (13c ; 37d ; 57c ; 72c).

9. Plaque à bornes selon la revendication 8, **caractérisée en ce que** lesdits éléments de connexion (13c ; 57c) s’étendent parallèlement les uns aux autres à partir d’une deuxième extrémité, opposée à ladite première extrémité, dudit contact de masse électrique (13 ; 57).

10. Plaque à bornes selon la revendication 8, **caractérisée en ce que** lesdits éléments de connexion (37d ; 72c) s’étendent latéralement à partir de ladite première extrémité sur des côtés opposés de ladite aile de connexion (37c ; 72b) ; ledit contact de masse électrique (37 ; 72) étant logé de manière que ladite aile de connexion (37c ; 72b) et lesdits éléments de connexion (37d ; 72c) fassent saillie latéralement dudit corps de support (12 ; 36 ; 56 ; 71).

11. Plaque à bornes selon l’une quelconque des revendications précédentes, **caractérisée en ce que** ledit corps de support (12 ; 36 ; 56 ; 71) comprend une pluralité de sièges (15 ; 38 ; 58 ; 73), chacun pour recevoir un contact d’alimentation respectif (14) ; lesdits sièges (15 ; 38 ; 58 ; 73) se faisant face par paires et ayant des ouvertures d’accès respectives (19 ; 41) faisant face à des côtés opposés dudit corps de support (12 ; 36 ; 56 ; 71).

12. Plaque à bornes selon la revendication 11, **caractérisée en ce que** lesdits sièges (38 ; 73) sont espacés de manière que des contacts d’alimentation électrique (14) dans des sièges adjacents (38 ; 73) soient connectables par des cavaliers identiques (43).