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(12) # EUROPEAN PATENT APPLICATION

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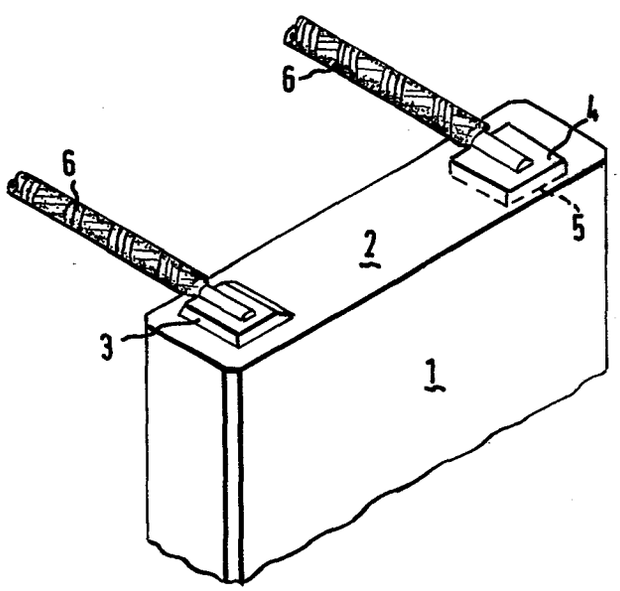
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(54) **Making connections to electrical brushes.**

(57) Displayed herein is a method of making an electrical connector to an electrical brush (1) wherein at least one electrical connector (3, 4) is welded to one or more faces (2) of an electrical brush (1) that is formed of a weldable material and a flexible current shunt (6) is attached to the connector (3, 4); in a preferred method, the connector (3, 4) is resistance welded to the brush and the shunt (6) is resistance welded to the connector (3, 4) in the same operation.



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MAKING CONNECTIONS TO ELECTRICAL BRUSHES

This invention relates to a method of making an electrical connection to an electrical brush, being a device for making electrical contact between surfaces in relative motion, which may be a one, two or multiple part carbon or graphite brush. Such brushes are usually formed by blending or mixing fine carbon powders with temporary binders and/or other fillers which may be metallic, plastics or resinous and then compacting the material into pellets of the desired shape and size by means of high pressure hydraulic or mechanical presses. The thus formed compacts, or green brushes, are then heat treated (kilned) in an inert atmosphere. Graphitic brushes are formed by a further heat treatment.

According to the present invention a method of making electrical connection to an electrical brush comprises the steps of welding at least one electrical connector to one or more faces of an electrical brush, the brush being of a weldable material, and attaching a flexible current shunt to the connector.

It is thought that the weldable brush material should contain a minimum of 65% total metal of which a minimum of 50% should be copper, the balance being other known metals for use in brushes, such as lead, tin or ferro-manganese alloys.

The electrical connector may be a generally flat metal plate and of a weldable material such as copper, iron or mild steel.

The flexible current shunt can be attached by any standard technique of welding, soldering, brazing, crimping, forging or rivetting, depending on the construction of the electrical connector.

By a preferred embodiment, the electrical connector is resistance welded to the brush, and, in the same operation, the flexible current shunt is resistance welded to the electrical connector.

The advantage of the present invention is that a larger area of contact between the electrical connector and the brush face can be achieved than for a direct welded connection between a current shunt and the brush, which larger area of welded contact provides a stronger connection; ideally a connection produced in accordance with the invention should be capable of achieving a pull strength of 9 Kg.

The invention is illustrated by way of example in the drawing which shows an isometric view of the top of an electrical brush with alternative connectors.

As shown, a typical electrical brush 1 has a top face 2 to which either a chamfered-edged, rectangular electrical connector plate 3 has been resistance welded

to the surface of the face 2 or a rectangular electrical connector plate 4 has been resistance welded into a complementary recess 5 in the top face 2 so that the top face of the connector plate is flush with the top face 2 of the brush.

Flexible current shunts 6, which may be of copper, aluminium or other suitable material are shown to be simply welded to the top face of either connector plate 3 or 4.

An electrical brush composite having an electrical connector in accordance with the present invention is particularly susceptible to automated production techniques which may, typically, comprise the steps of:-

(1) Pressing a brush to size from the raw material leaving a flush or recessed top face, to accept an electrical connector plate or plates at a later stage, using automatic presses and feeder equipment.

(2) Heat treating the thus formed compact either in batches or singly to compound the brush compact.

(3) Resistance welding and pressing an electrical connector plate on to or in to the top face of the brush compact.

(4) Quality inspecting the heat treated brush.

(5) Attaching by various standard engineering methods (preferably resistance welding in the same operation as (3) above) precoated or insulated flexible current

shunts and then cutting the flexibles to required length, heat sealing the connection if required.

(6) Fitting standard connections to the flexibles, if required.

(7) Inspecting the complete assembly.

(8) Packaging the complete assembly.

CLAIMS:

1. A method of making electrical connection to an electrical brush comprising the steps of welding at least one electrical connector to one or more faces of an electrical brush, the brush being of a weldable material, and attaching a flexible current shunt to the connector.

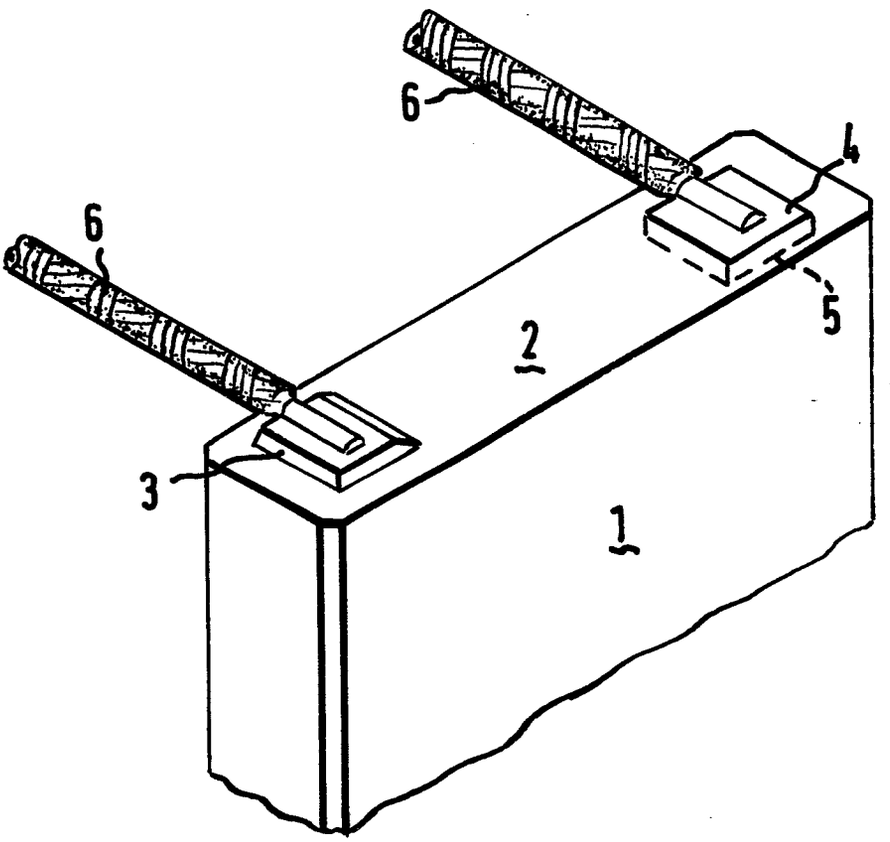
2. A method as claimed in claim 1, wherein said weldable brush material contains a minimum of 65% total metal content of which a minimum of 50% is copper.

3. A method as claimed in claim 1 or claim 2, wherein the connector plate is resistance welded to the brush face.

4. A method as claimed in claim 3, wherein the flexible current shunt is resistance welded to the connector plate in the same operation.

5. A method of making electrical connection to an electrical brush substantially as described with reference to the drawing.

6. An electrical brush made by the method of any of claims 1 to 5.


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EUROPEAN SEARCH REPORT

0107386

Application number

EP 83 30 5836

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
X	US-A-3 067 318 (HANES) * Claims 1, 2; column 4, lines 3-14; figures 3, 4 *	1-6	H 01 R 43/12 H 01 R 43/02
X	US-A-3 067 319 (ZAMBOLDI et al.) * Claims 1-3; column 1, lines 8-37; column 2, line 29 - column 3, line 2; column 3, line 54 - column 4, line 2; figures 1, 3 *	1,2,4-6	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

H 01 R 43/02
H 01 R 43/12

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	21-12-1983	HAHN G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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