Abstract:
The present invention relates to a socket for cutting units (1) used in cutting machines, comprising a fixed part which makes it easy to replace the cutting part, and a removable part.
DESCRIPTION

SOCKET FOR A CUTTING UNIT

5 Field of the Invention

The present invention relates to a socket for cutting units, which is mounted on the linear or circular cutters in marble cutting machines and which enables easy replacement of the cutter part.

10 Prior Art

Nowadays, many methods are utilized for the cutting marble. One of these methods is the linear cutting of marble via gangsaw sheets. The sheets used for cutting the marble with gangsaw sheets are lined up side by side and a preferred space is left between them. These sheets are stretched to a certain tensile value. Sheets are moved parallel to the ground plane by the marble cutting machine and at the same time they move towards the marble surface at a very low speed. This constant and periodical movement ensures the cutting of the marble through the removal of shavings from the marble surface. The cutting element, which removes the shavings from the marble by having direct contact thereon, is placed on the side of the gangsaw sheets facing the marble. These cutting elements are preferably welded on the gangsaw sheets via silver welding. The aforementioned welding method is a powerful one. However, the tensile load on the cutting elements during the removal of shavings from the marble is considerably high. In such cases, due to periodical exposure to such tension, the cutting elements connected to the gangsaw sheets break off from the places they have been placed over time. When such a breaking occurs, the sheets are rendered useless and have to be sent off to maintenance for welding. This situation causes a significant loss of time. Furthermore, the aforementioned cutting elements have a certain service life. When this service life is over, depending on the condition of the metal bodies
they are welded to, the cutting unit can be welded again and used for cutting purposes.

Another method is the circular cutting method. Similarly to the gangsaw sheets, a cutting unit and a metal body is used. These metal bodies have diameters ranging from 300 mm to 2000 mm. The cutters are connected to the circular bodies with silver welding by utilizing the same method; when the cutting service life of the cutting units is over, depending on the condition of the metal bodies they are welded to, the cutting unit can be welded again and used for cutting purposes.

**Objective of the Invention**

The objective of the present invention is the provide a socket for cutting units, which enable the cutting elements utilized in linear or circular cutting systems to be replaced easily after their service lives are over.

Another objective of the present invention is to provide a socket for cutting units which prevent significant downtime in case of malfunctioning.

Yet another objective of the present invention is to provide a socket for cutting units which enable the cutting elements to be replaced without removing the cutting system from where it is located.

**Brief Description of the Invention**

The socket for cutting units according to the present invention comprises a fixed part and a removable part. Preferably, the fixed part is welded to the cutting system. A cutting element is placed on the surface of the removable part which cannot be mounted on the fixed part. The aforementioned removable part can be placed to and removed from the space in the fixed part, when desired.
Detailed Description of the Invention

The socket for a cutting unit provided to meet the objectives of the present invention is illustrated in the attached figures, where:

Figure 1. is a perspective view of the socket for a cutting unit, shown with the cutting element and the cutting system.

Figure 2. is a perspective view of the socket for a cutting unit from another angle, shown with the cutting element and the cutting system.

Figure 3. is a perspective view of the socket for a cutting unit.

Figure 4. is a perspective view of the socket for a cutting unit, shown without the support element and support part on one side.

Figure 5. is an exploded perspective view of the socket for a cutting unit.

Figure 6. is another exploded perspective view of the socket for a cutting unit.

Figure 7. is a perspective view of the fixed part.

Figure 8. is a perspective view of the fixed part from another angle.

Figure 9. is a perspective view of the fixed part from yet another angle.

Figure 10. is a perspective view of the removable part.

Figure 11. is a perspective view of the removable part from another angle.

Figure 12. is a perspective view of the connecting part.

Figure 13. is a perspective view of the connecting element.

Figure 14. is a perspective view of the support part.

Figure 15. is a perspective view of the support element.
The parts shown in the figures are enumerated separately, and the numbers correspond to the following.

1. Socket for a cutting unit

2. Fixed part
   2.1. Connection surface
   2.2. Space
   2.3. Groove
   2.4. Lower housing

3. Removable part
   3.1. Mounting surface
   3.2. Clearance
   3.3. Protrusion

4. Locking element
   4.1. Body
   4.2. Stand

5. Upper protrusion
   A. Cutting element
B. Cutting system

The socket for cutting units (1) which is included in the cutting systems (B) utilized in marble cutting machines and which enables the cutting element (A) to be replaced comprises, in its most basic form,

- at least one fixed part (2) which is fixed to the cutting system (B), and
- at least one removable part (3) where the cutting element (A) is fixed and which can be removed from and mounted to the fixed part (2) and/or the cutting system (B), if so desired.

The socket for cutting units (1) according to one embodiment of the invention includes a fixed part (2) and a removable part (3). The aforementioned fixed part (2) is connected to the cutting systems (B) used in marble cutting machines and stays fixed thereon. The removable part (3) can be mounted on the aforementioned part (2) and removed if desired. The removable part (3) can be directly mount on the fixed part (2) and locked thereon, or, if preferred, locking can be performed via a locking element (4).

The fixed part (2) on the socket for cutting units (1) includes a connection surface (2.1). The fixed part (2) is mounted on the cutting system (B) through the aforementioned connection surface (2.1). Welding is the mounting method provided in this embodiment of the invention and the fixed part (2) can be connected to the cutting system (B) through any preferred connection method. The fixed part (2) preferably has a rectangular geometry and includes, in its middle section, a space (2.2) having a size through which the removable part (3) can fit. The removable part (3) can be mounted on the fixed part (2) through the aforementioned space (2.2). A groove (2.3) is located in the section of the fixed part (2) which is closer to the cutting system (B) and where the space (2.2) is present; the protrusion (3.3) located on the removable part (3) fits inside the aforementioned groove (2.3). Thus, the removable part (3) is prevented from being removed from its location due to the lateral forces exerted on the removable
part (3) during the cutting of marble. The fixed part (2) also has a lower housing (2.4) and an upper housing (2.5) aligned with the groove (2.3) in its middle section. The aforementioned lower housing (2.4) and upper housing (2.5) have been opened in order to mount the locking element (4), which is placed onto the fixed part (2) and which prevents the removable part (3) from being removed from its location. Furthermore, the fixed part (2) includes an extension (2.6). The aforementioned extension (2.6) is located in the groove (2.3) section and facing the direction of the space (2.2) and it fits the cove (3.4) located on the removable part (3). The placement of the extension (2.6) into the cove (3.4) provides an additional locking means other than the locking element (4) in the removable part (3). The fixed part (2) also has a seating surface (2.8), where the mounting surface (3.1) of the removable part (3) that is close to the cutting system (B) is in contact with the aforementioned seating surface (2.8).

The socket for cutting units (1) further includes a removable part (3) which is mounted on the fixed part (2). A clearance (3.2) is located on the side of the removable part (3) where the mounting surface (3.1) is located and preferably in the middle section. The aforementioned clearance (3.2) has been provided on the removable part (3) for the placement of a removal apparatus when it is desired to dislocate the removable part (3). The protrusions (3.3) are located on both sides of the aforementioned clearance (3.2). The protrusions (3.3) located on the removable part (3) are placed on the grooves (2.3) located on the fixed part (2). The removable part (3) further includes an inner space (3.5) on the side where the cove (3.4) is present. When the removable part (3) is mounted on the fixed part (2), the stand (4.2) of the locking element (4) passes through the aforementioned inner space (3.5). Thanks to the stand (4.2) passing through the aforementioned inner space (3.5), it is ensured that the removable part (3) will stay motionless where it is placed. Slits (3.6) are provided in a location close to the section where the cove (3.4) is present. The aforementioned slits (3.6) are opened in an area close to the cove (3.4) so that the part between the cove (3.4) and the slit (3.6) flexes when it is in contact with the extension (2.6). The surface of the removable
part (3) that is farthest from the cutting system (B) is the cutting contact surface (3.10). A cutting element (A) is mounted on the aforementioned cutting contact surface (3.10). In the present embodiment of the invention, the cutting element (A) placed on the aforementioned cutting contact surface (3.10) is connected via welding. However, in different embodiments of the invention, different methods can be employed to connect the cutting element (A).

The socket for cutting units (1) includes a locking element (4) which is mounted on the fixed part (2). The aforementioned locking element comprises a body (4.1), a stand (4.2) and an upper protrusion (4.3) located on the section where the body is present (4.1). The aforementioned upper protrusion (4.3) is placed inside the upper housing (2.5) on the fixed part. The locking element (4) is placed in the lower housing (2.4) and the upper housing (2.5) placed on both sides of the fixed part (2), and after it is placed here, it prevents the removable part (3) from being dislocated by ensuring that the removable part (3) stays motionless in its place, if said part (3) is placed inside the space (2.2).

The fixed part (2) of the socket for cutting units (1) included in another embodiment of the present invention comprises a connecting part (2.9) and a support part (2.10). The connecting part (2.9), which is among the aforementioned parts included in said embodiment of the invention, is located in the middle section and there are support parts (2.10) on both sides of this part (2.9). The connecting part (2.9) and the support part (2.10) have a stabilizing hole (2.9) and all stabilizing holes (2.7) located on the connecting part (2.9) and the support part (2.10) are aligned. In other words, the center axes of the aforementioned stabilizing holes (2.7) overlap. Thus, thanks to a stabilizing part passed through the aforementioned stabilizing holes (2.7), the connecting parts (2.9) and the support parts (2.10) are interlocked and form an integral structure. The fixed part (2) can be manufactured from a single part as described in the aforementioned embodiment, or it can be manufactured from different parts such as the
connecting part (2.9) and the support part (2.10) as described in the present embodiment.

The removable part (3) of the socket for cutting units (1) included in another embodiment of the present invention comprises a connecting element (3.8) and a support element (3.9). The connecting element (3.8), which is among the aforementioned parts included in said embodiment of the invention, is located in the middle section and there are support elements (3.9) on both sides of this element (3.8). The connecting element (3.8) and the support element (3.9) have a connection hole (3.7) and all connection holes (3.7) located on the connecting element (3.8) and the support element (3.9) are aligned. In other words, the center axes of the aforementioned connection holes (3.7) overlap. Thus, thanks to a stabilizing part passed through the aforementioned connection holes (3.7), the connecting element (3.8) and the support elements (3.9) are interlocked and form an integral structure. The removable part (3) can be manufactured from a single part as described in the aforementioned embodiment, or it can be manufactured from different parts such as the connecting element (3.8) and the support element (3.9) as described in the present embodiment.
1. A socket for cutting units (1) which is used in the cutting systems (B) present in marble cutting machines and which enables the cutting element (A) to be replaced, characterized in that it comprises, in its most basic form,
   - at least one fixed part (2) fixed to the cutting system (B) and at least one removable part (3) where the cutting element (A) is fixed and which can be removed from and placed again on the fixed part (2) and/or cutting system (B).

2. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a removable part (3) which can be directly placed on the fixed part (2) and locked thereon, or, if preferred, which can be locked via a locking element (4).

3. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a connection surface (2.1) on the fixed part (2), which serves as the surface where the fixed part (2) is mounted on the cutting system (B) via welding.

4. A socket for cutting units (1) according to Claim 1, characterized in that it comprises fixed part (2) which has a space (2.2) with a rectangular geometry and includes, in its middle section, a space (2.2) having a size through which the removable part (3) can fit.

5. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a groove (2.3) on the area of the fixed part (2) with the space (2.2) which is close to the cutting system (B) and on which the protrusion (3.3) located on the removable part (3) is seated.
6. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a fixed part (2) having a lower housing (2.4) and an upper housing (2.5), aligned with the groove (2.3), for the locking element (4) to be seated.

7. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a locking element (4) placed in the lower housing (2.4) and the upper housing (2.5) of the fixed part (2) and which prevents the removable part (3) from being dislocated.

8. A socket for cutting units (1) according to Claim 1, characterized in that it comprises an extension (2.6) which is located in the groove (2.3) area of the fixed part (2) and which faces in the direction of the space (2.2) and fits the cove (3.4) located on the removable part (3).

9. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a seating surface (2.8) on the fixed part (2) which is in contact with the mounting surface (3.1) of the removable part (3) that is close to the cutting system (B), when the removable part (3) is placed in the space (2.2).

10. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a clearance (3.2) opened in the removable part (3), which is located on the side of said part (3) where the mounting surface (3.1) is located and preferably in the middle section and which is provided for the placement of a removal apparatus when it is desired to dislocate the removable part (3).

11. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a protrusion (3.3) which is preferably located on both sides of the clearance (3.2) and which is seated on the grooves (2.3) of the fixed part (2).

12. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a space (3.5) which is located on the side of the fixed part (3) where the cove (3.4) is present and through which the stand (4.2) of the locking
element (4) passes when the removable part (3) is mounted on the fixed part (2).

13. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a slit (3.6) which is opened in an area close to the cove (3.4) so that the part between the cove (3.4) and the slit (3.6) flexes when it is in contact with the extension (2.6).

14. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a cutting contact surface (3.10) which is the surface of the removable part (3) that is farthest from the cutting system (B) and where a cutting element (A) is mounted.

15. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a locking element (4) mounted on the fixed part (2) and which comprises a body (4.1), a stand (4.2) and an upper protrusion (4.3) located on the section where the body is present (4.1).

16. A socket for cutting units (1) according to Claim 1, characterized in that it comprises an upper protrusion (4.3) located in the upper housing (2.5) of the fixed part (2).

17. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a locking element (4) placed in the lower housing (2.4) and the upper housing (2.5) located on both sides of the fixed part and which prevents the removable part (3) from being dislocated by ensuring that the removable part (3) stays motionless in its place, if said part (3) is placed inside the space (2.2).

18. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a fixed part (2) which comprises two different parts, namely the connecting part (2.9) and the support part (2.10), wherein the connecting part
(2.9) is located in the middle section and the support parts (2.10) are located on both sides of the connecting part (2.9).

19. A socket for cutting units (1) according to Claim 1, characterized in that it comprises stabilizing holes (2.7) which are aligned in the connecting part (2.9) and the support part (2.10) and the center axes of which overlap.

20. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a stabilizing hole (2.7) which forms an integral structure by ensuring that the connecting part (2.9) and the support parts (2.10) are interlocked via a stabilizing part passed through said hole.

21. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a removable part (3) which comprises two different elements, namely the connecting element (3.8) and the support element (3.9), wherein the connecting element (3.8) is located in the middle section and the support elements (3.9) are located on both sides of the connecting element (3.8).

22. A socket for cutting units (1) according to Claim 1, characterized in that it comprises connection holes (3.7) which are aligned in the connecting element (3.8) and the support element (3.9) and the center axes of which overlap.

23. A socket for cutting units (1) according to Claim 1, characterized in that it comprises a connection hole (3.7) which forms an integral structure by ensuring that the connecting element (3.8) and the support elements (3.9) are interlocked via a stabilizing part passed through said hole.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. B28D1/12
ADD.

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)
B28D  B23D

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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search
20 June 2016

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