Disclosed herein is a rotary-type polishing device having protrusion members. The rotary-type polishing device includes a rotary shaft, a disc-type body, an elastic rubber, and a plurality of protrusion members. The disc-type body has a concavely curved outer surface, which is formed on the underside of the outer circumferential surface thereof. The elastic rubber, having a predetermined thickness, is attached to the outer surface and conforms to the shape of the outer surface. The protrusion members are attached to or partially embedded in the rubber.
Fig. 3
Fig. 4
ROTARY-TYPE POLISHING DEVICE HAVING PROTRUSION MEMBERS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a rotary-type polishing device having protrusion members, and, more particularly, to a rotary-type polishing device having protrusion members, which polishes the edge of a material, such as stone, through a rounding process.

[0003] 2. Description of the Related Art

[0004] A prior art rotary-type polishing device is shown in FIGS. 1 and 2. Referring to FIGS. 1 and 2, the rotary-type polishing device includes a rotary shaft 1, which is rotated by a rotational means, and a disc-type body 2, which is coupled with the rotary shaft 1 and is configured to integrally rotate together with the rotary shaft 1, and which is made of hard material. A concavely curved outer surface 2a is formed on the underside of the outer circumferential surface of the disc-type body 2 to enable holding of and contact with the curved, round surface 12 of target material 11 to be processed. A hard abrasive stone 3, having a predetermined thickness, is attached to the outer surface 2a and conforms to the shape of the outer surface 2a.

[0005] The rotary-type polishing device, which is constructed as described above, polishes the round surface 12 of the target material 11 to be smooth when the abrasive stone 3 is brought into contact with the target material 11 along the round surface 12. The abrasive stone 3 functions as abrasive material in which diamonds are contained.

[0006] However, in the prior art rotary-type polishing device, which is constructed as described above, when the round surface 12 of the target material 11 to be processed is located so as to be brought into contact with the abrasive surface 3a of the abrasive stone 3 and then the rotary shaft 1 is rotated by applying power to the rotational means, the abrasive stone 3 polishes the round surface 12 of the target material 11 while continuously rotating along the round surface 12 of the target material 11. In the case where polishing work is performed through the repeated contact of the abrasive stone 3, a problem occurs in that the polishing effect is remarkably lowered in portions of the round surface of the uneven target material that does not come into contact with the abrasive stone 3, because the abrasive stone 3 does not have any elasticity.

SUMMARY OF THE INVENTION

[0007] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and the present invention is directed to provide a rotary-type polishing device having protrusion members, in which polishing protrusion members, which contain diamonds, are attached to or partially embedded in a polishing rubber via a net-shaped member, in which a plurality of grid holes is formed to pass therethrough, thus maintaining constant contact between the polishing protrusion members and the target material thanks to the elasticity of the rubber.

[0008] The present invention provides a rotary-type polishing device having protrusion members, including: a rotary shaft; a disc-type body coupled with the rotary shaft and configured to integrally rotate together with the rotary shaft, the disc-type body having a concavely curved outer surface, which is formed on the underside of the outer circumferential surface thereof; an elastic rubber, having a predetermined thickness, attached to the outer surface to conform to the shape of the outer surface; and a plurality of protrusion members attached to or partially embedded in the rubber.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The above and other objects, features and advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0010] FIG. 1 is a perspective view showing a prior art rotary-type polishing device;

[0011] FIG. 2 is a sectional view showing the prior art rotary-type polishing device;

[0012] FIG. 3 is a sectional view showing a rotary-type polishing device according to a first embodiment of the present invention; and

[0013] FIG. 4 is an enlarged view of a principal portion showing a rotary-type polishing device according to a second embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] Embodiments of the present invention are described in detail with reference to the accompanying drawings below.

[0015] FIG. 3 is a sectional view showing a rotary-type polishing device according to a first embodiment of the present invention. The first embodiment of the present invention is described in conjunction with FIG. 3, and descriptions of the repeated reference characters, described in FIGS. 1 and 2, are omitted.

[0016] Referring to FIG. 3, the rotary-type polishing device having protrusion members according to the present embodiment includes a rotary shaft 1, and a disc-type body 2, which is coupled with the rotary shaft 1 and is configured to integrally rotate together with the rotary shaft 1, and which is made of hard material.

[0017] An elastic rubber member 25, having a predetermined thickness, is attached to the outer surface 2a of the disc-type body 2. A plurality of protrusion members 30 is attached to the rubber member 25.

[0018] The concavely curved outer surface 2a is formed under the outer circumferential surface of the disc-type body 2 to enable holding of and contact with the convexly curved surface of the target material to be processed.

[0019] The elastic rubber 25, having the predetermined thickness, is attached to the outer surface 2a to conform to the shape of the outer surface 2a. The protrusion members 30 are attached to the circumferential surface of the elastic rubber 25, which is attached to the curved outer surface 2a, via a net-shaped member 20.

[0020] The net-shaped member 20 is configured to have the shape of a mesh grid, such as a net or a wire net. First ends of the protrusion members 30 are attached and bonded to the surface of the elastic rubber 25. The net-shaped member 20 enables the additional fastening of the protrusion members 30 in such a way that the protrusion members are inserted into grid holes, which are formed to pass through the net-shaped member.

[0021] The protrusion members 30 may be formed using protrusions selected from among a polygonal or cylindrical protrusion 31, a tapered polygonal or tapered cylindrical protrusion 32, which has a shape that is tapered from the surface thereof that is attached to the elastic rubber 25 to the distal portion thereof, a 1-shaped polygonal or 1-shaped cylindrical protrusion 33, which has a shape that is similar to the tapered polygonal or tapered cylindrical protrusion, and in which an
end thereof, which is attached to the elastic rubber 25, is formed to be relatively wider, and a spherical protrusion 34.

[0022] In greater detail, the above-described protrusion members 30 may be formed of one type of protrusion selected from among the above-described polygonal, cylindrical, T-shaped and spherical protrusions 31, 32, 33 and 34, or may be a combination of the above-described polygonal, cylindrical, T-shaped and spherical protrusions 31, 32, 33 and 34, and are attached to the surface of the elastic rubber 25 via the net-shaped member 20 using an adhesive agent.

[0023] In the rotary-type polishing device having protrusion members, which is described above, when the rotary shaft 1 is rotated by a rotational means, the disc-type body 2 rotates, and various types of protrusion members 30, which are attached to the surface of the elastic rubber 25, which is attached to the circumferential surface of the disc-type body 2, via the net-shaped member 20, repeatedly come into contact with the round surface 12 of the target material 11. As a result, polishing is achieved.

[0024] This means that the present invention has a structural characteristic in which the net-shaped member 20 prevents the protrusion members 30 from being released due to centrifugal force or impact when rotated at high speed.

[0025] Meanwhile, in another embodiment of the present invention, the elastic rubber 25 may be manufactured along with the protrusion members 30, in which diamonds are contained, in a double injection manner. When the bottoms of the protrusion members 30 are embedded in the elastic rubber 25 as shown in FIG. 4, more elastic and reliable protrusion members 30 may be manufactured.

[0026] As described above, according to the present invention, the plurality of protrusion members is coupled to the elastic rubber via the net-shaped member, so that the protrusion members, which are supported so as not to be released from the elastic rubber using the net-shaped member, are repeatedly brought into contact with a target material thanks to the elastic force of the elastic rubber and, in addition, come into contact with an uneven surface at a constant pressure, with the result that the surface of the target material can be polished, durability can be improved because damage to the protrusion members is prevented thanks to the elastic action of the elastic rubber when polishing is performed, and the polishing effect can be maximized.

[0027] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

1. A rotary-type polishing device having protrusion members, comprising:
   - a rotary shaft;
   - a disc-type body coupled with the rotary shaft and configured to integrally rotate together with the rotary shaft, the disc-type body having a concavely curved outer surface, which is formed on an underside of an outer circumferential surface thereof;
   - an elastic rubber, having a predetermined thickness, attached to the outer surface to conform to a shape of the outer surface; and
   - a plurality of protrusion members attached to or partially embedded in the rubber.

2. The rotary-type polishing device as set forth in claim 1, wherein the protrusion members are attached to an outer circumferential surface of the elastic rubber, which is attached to the concavely curved outer surface, via a net-shaped member.

3. The rotary-type polishing device as set forth in claim 2, wherein:
   - the net-shaped member has a shape of an iron net; and
   - first ends of the protrusion members are attached and bonded to the surface of the elastic rubber;
   - wherein the net-shaped member enables additional fastening of the protrusion members in such a way that the protrusion members are inserted into through-holes of the net-shaped member.

4. The rotary-type polishing device as set forth in claim 3, wherein the protrusion members are one type of protrusion selected from among a polygonal or cylindrical protrusion, a tapered polygonal or tapered cylindrical protrusion, which has a shape that is tapered from a surface thereof that is attached to the elastic rubber to a distal portion thereof, a T-shaped polygonal or T-shaped cylindrical protrusion, which has a shape that is similar to the tapered polygonal or tapered cylindrical protrusion and in which an end thereof is attached to the elastic rubber, is formed to be relatively wide, and a spherical protrusion.

5. The rotary-type polishing device as set forth in claim 3, wherein the protrusion members are a combination of a polygonal or cylindrical protrusion, a tapered polygonal or tapered cylindrical protrusion, which has a shape that is tapered from a surface thereof that is attached to the elastic rubber to a distal portion thereof, a T-shaped polygonal or T-shaped cylindrical protrusion, which has a shape that is similar to the tapered polygonal or tapered cylindrical protrusion and in which an end thereof is attached to the elastic rubber via the net-shaped member.

6. The rotary-type polishing device as set forth in claim 4, wherein the elastic rubber is formed together with protrusion members, in which diamonds are contained, in a double injection manner.

7. The rotary-type polishing device as set forth in claim 5, wherein the elastic rubber is formed together with protrusion members, in which diamonds are contained, in a double injection manner.

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