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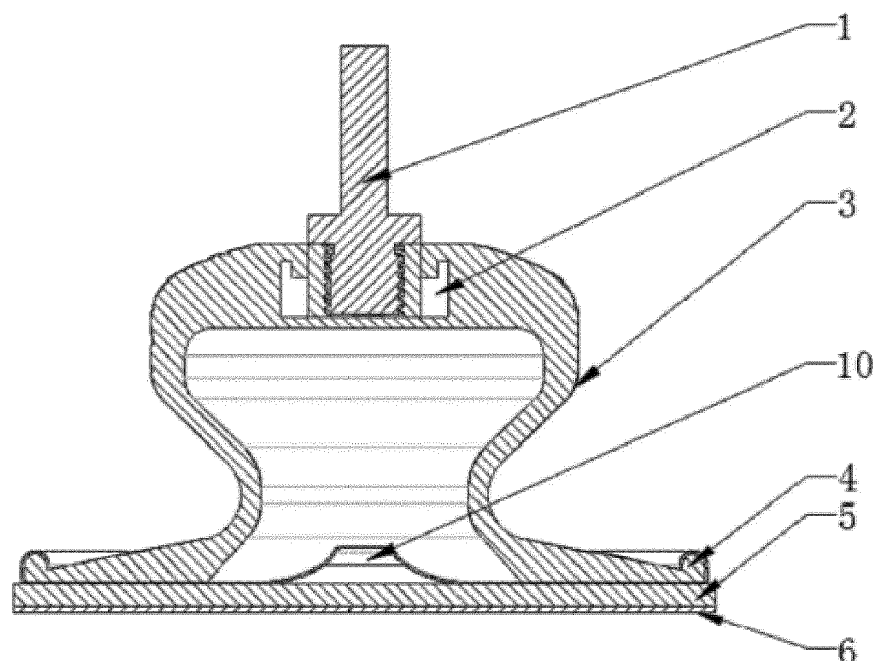
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(54) **MULTIPURPOSE GRINDING DISC**

(57) The present invention concerns a multi-purpose grinding disc, comprising an angle adjusting device (3) and a connecting device (1) connected to a grinding machine ; said multi-purpose grinding disc is remarkable in that an upper end of the angle adjusting device (3) is equipped with a connecting kit (2) that matches the connecting device (1); the angle adjusting device (3) is con-

nected to the connecting device (1) through the connecting kit (2); a lower part of the angle adjusting device (3) is provided with a fixing piece (4) for fixing the angle adjusting device (3); an adhesive device (5) is provided under the fixing piece (4), and is adhered to the fixing piece (4); and an abrasive paper (6) for dull polishing is attached below the adhesive device (5).

FIG. 1



Description

Technical Field

[0001] The present application relates to the field of the mechanical grinding machine, and specifically to a multi-purpose grinding disc.

Background Arts

[0002] The market for the engineering field is very large. Various machines are often used, especially in the field of the grinding machine, various mechanical parts or some decorated walls are often polished. However, grinding discs are often used in the field of the grinding machine. The existing grinding discs only have a single function, and there is no way to adjust the angle of those grinding disc. For tiny positions, people have to directly polish tiny positions by hands, resulting in much inconvenience.

[0003] Aiming at the problem of a single use function and an inability of adjusting the angle of the grinding disc by the existing grinding machine, no effective solution has been proposed so far.

Summary of the Utility Model

[0004] The main purpose of this application is to provide a multi-purpose grinding disc to solve the technical problem of a single use function in the grinding disc and an inability of adjusting its angle.

[0005] In order to achieve the above purpose, according to one aspect of the present application, a multi-purpose grinding disc is provided, which comprises an angle adjusting device and a connecting device connected to a grinding machine. An upper end of the angle adjusting device is equipped with a connecting kit that matches the connecting device, and the angle adjusting device is connected to the connecting device through the connecting kit. The angle adjusting device mainly serves the purpose of rotating at multiple angles, and solves the technical problem that the grinding disc of the grinding machine cannot adjust the angle. One end of the connecting device is connected to the grinding machine, and the other end of the connecting device is connected to the connecting kit that is located in the angle adjusting device and matches the connecting device.

[0006] A lower part of the angle adjusting device is provided with a fixing piece for fixing the angle adjusting device, an adhesive device is provided under the fixing piece, and the adhesive device is adhered to the fixing piece. An abrasive paper for dull polish is installed below the adhesive device.

[0007] Further, the angle adjusting device is a rubber sleeve.

[0008] Further, the angle adjusting device is gourd-shaped, and it is configured to have a small upper part and a large lower part.

[0009] Further, a distance between the center of the cross-sectional of the upper end of the connecting device and a peripheral edge of the cross-section is not equal. It mainly functions to facilitate the disassembly. When there is a need to polish small parts by hands, pliers, wrenches and other tools are used to perform the disassembling work. Since the existing device generally is circular in the prior art, it is very inconvenient to carry out the disassembling work, and skidding easily occurs.

[0010] Further, the connecting kit is an insert nut, and the lower end of the connecting device is provided with a thread that matches the connecting kit. The insert nut has a very wide range of functions. The contact between the connecting kit and the connecting device becomes tighter and tighter during the grinding process with the use of the insert nut, and no looseness occurs.

[0011] Further, the fixing piece is circular, and the center of the fixing piece is provided with a through hole.

[0012] Further, the adhesive device is a Velcro.

[0013] Further, the angle adjusting device is provided with an antiskid part around the circumference of the angle adjusting device.

[0014] Further, the antiskid part comprises, but is not limited to, a sawtooth antiskid pattern, a spiral antiskid pattern and a polygonal antiskid pattern. The antiskid pattern mainly plays a role of antiskid. When the connecting device is disassembled and a polishing process is carried out by hands, the antiskid pattern can play a better antiskid effect.

[0015] Regarding the utility model of this application, the angle adjusting device is adopted, the connecting device and the angle adjusting device are combined, and the connecting device and the angle adjusting device can be detached, so as to provide a grinding disc with multiple functions and an adjustable angle just for generating the technical effects of realizing the adjustment of the angle of the grinding disc angle, a hand-operated grinding disc and a dual use of the grinding machine. Further, the technical problem of a single use function in the grinding disc and the inability of adjusting the angle can be solved.

Brief Description of the Figures

[0016] The drawings constituting a part of the application are used to provide a further understanding of the application, so that other features, purposes and advantages of the application become more obvious. The drawings and descriptions of the schematic embodiments of the application are used to explain the application, and do not constitute an improper limitation of the application.

[0017] In the attached drawings, Fig. 1 is a schematic structural diagram of a multi-purpose grinding disc according to an embodiment of the utility model of the present application;

Fig. 2 is a schematic cross-sectional view of a multi-purpose grinding disc according to an embodiment of the present application;

Fig. 3 is a perspective view of the structure of a multi-purpose grinding disc according to an embodiment of the present application;

Fig. 4 is a schematic structural diagram of a connecting device for a multi-purpose grinding disc according to an embodiment of the present application.

[0018] The reference signs and their corresponding technical terms go as follows:

1, a connecting device; 2, a connecting kit; 3, an angle adjusting device; 4, a fixing piece; 5, an adhesive device; 6, an abrasive paper; 7, an antiskid part; 10, a through hole.

Detailed Description

[0019] In order to enable those skilled in the art to better understand the solution of the application, the technical solutions in the embodiments of the application will be clearly and completely described below in conjunction with the drawings in the embodiments of the application. Obviously, the described embodiments are only a part of the embodiments of this application instead of all the embodiments. Based on the embodiments in this application, all the other embodiments obtained by those of ordinary skills in the art without paying off creative work should fall within the protection scope of this application.

[0020] It should be noted that the terms "comprise" and "have" in the specification and claims of this application and the above-mentioned drawings and any variations of them are intended to cover non-exclusive inclusions. In this application, the orientations or positional relationships indicated by the terms "upper", "lower", "left", "right", "top", "bottom", "inner", "outer", "middle", "vertical", "horizontal", "transverse", "longitudinal", etc. are based on the orientation or positional relationship shown in the drawings. These terms are mainly used to better describe the present application and its embodiments, and are not used to limit that the indicated device, element, or component must have a specific orientation, or is constructed and operated in a specific orientation.

[0021] In addition, some of the above terms may be used to indicate other meanings in addition to the orientation or position relationship. For example, the term "upper" may also be used to indicate a certain attachment relationship or connection relationship in some cases. For those of ordinary skills in the art, the specific meanings of these terms in this application can be understood according to specific circumstances.

[0022] In addition, the terms "installation", "dispose", "provide", "connection" and "socket" should be understood in a broad sense. For example, it can be a fixed connection, a detachable connection, or an integral structure; it can be a mechanical connection or an electrical connection; it can be a direct connection or an indirect connection through an intermediate medium, or can refer to communications between two devices, elements or components. For those of ordinary skills in the art, the

specific meanings of the above-mentioned terms in this application can be understood according to specific circumstances.

[0023] It should be noted that the embodiments in this application and the features in the embodiments can be combined with each other in the case where no conflicts exist. The present application will be described in details with reference to the drawings and in conjunction with embodiments.

[0024] As shown in Figures 1-4, this application relates to a multi-purpose grinding disc. The multi-purpose grinding disc comprises an angle adjusting device 3 and a connecting device 1 connected to a grinding machine. An upper end of the angle adjusting device 3 is equipped with a connecting kit 2 that matches the connecting device 1, and the angle adjusting device 3 is connected to the connecting device 1 through the connecting kit 2. The angle adjusting device 3 mainly serves the purpose of rotating at multiple angles, and solves the technical problem that the grinding disc of the grinding machine cannot adjust the angle. One end of the connecting device 1 is connected to the grinding machine, and the other end of the connecting device 1 is connected to the connecting kit 2 that is located in the angle adjusting device 3 and matches the connecting device 1.

[0025] As shown in Figures 1-4, the lower part of the angle adjusting device 3 is provided with a fixing piece 4 for fixing the angle adjusting device 3, and an adhesive device 5 is provided under the fixing piece 4, and the adhesive device 5 is bonded to the fixing piece 4; an abrasive paper 6 for dull polish is installed below the adhesive device 5. The angle adjusting device 3 is a rubber sleeve. The angle adjusting device 3 is gourd-shaped, and is configured to have a small upper part and a large lower part.

[0026] As shown in Figures 1-4, the upper part of the connecting device 1 is cylindrical, and the upper end of the connecting device 1 is in the shape of a flat-blade screwdriver. It mainly functions to facilitate the disassembly. When there is a need to polish small parts by hands, pliers, wrenches and other tools are used to carry out the disassembling work. Since the existing device generally is circular in the prior art, it is very inconvenient to carry out the disassembling work, and skidding easily occurs. The connecting device 1 is made of a metallic material.

[0027] As shown in Figures 1-4, the connecting kit 2 is an insert nut, and the lower end of the connecting device 1 is provided with a thread that matches the connecting kit 2. The insert nut has a very wide range of functions. the contact between the connecting kit 2 and the connecting device 1 becomes tighter and tighter during the grinding process with the use of the insert nut, and no looseness occurs.

[0028] As shown in Figures 1-4, the fixing piece 4 is circular, and the center of the fixing piece is provided with a through hole 10. The fixing piece 4 is made of galvanized iron sheet to press the rubber sleeve, and the adhesive device 5 is a Velcro.

[0029] As shown in Figures 1-4, the angle adjusting device 3 is provided with an antiskid part 7 around the circumference of the angle adjusting device 3. The antiskid part 7 has a spiral antiskid pattern. The antiskid pattern mainly plays a role of antiskid. When the connecting device 1 is disassembled, and a polishing process is carried out by hands, the antiskid pattern can play a better antiskid effect.

[0030] In the embodiment of this application, the driving cavity of the grinding machine is connected to the connecting part of the grinding disc, the insert nut is tightly connected to the rubber sleeve, and the galvanized iron sheet presses the rubber sleeve. One surface of the Velcro is glued to the galvanized iron sheet with glues, and the other surface of the Velcro is pasted to an abrasive paper 6. When the abrasive paper 6 needs to be replaced, it is just torn off. When there is no need to use the grinding machine, the connecting device 1 is disassembled just through use of the pliers and other tools. Then, people hold the grinding disc to carry out the grinding process, which is very convenient. The angle adjusting device 3 is adopted, the connecting device 1 and the angle adjusting device 3 are combined together, and the connecting device 1 and the angle adjusting device 3 can be detached, so as to provide a grinding disc with multiple functions and an adjustable angle just for generating the technical effects of realizing the adjustment of the angle of the grinding disc, a hand-operated grinding disc and a dual use of the grinding machine. Further, the technical problem of a single use function in the grinding disc and the inability of adjusting the angle can be solved.

[0031] The foregoing descriptions are only preferred embodiments of the application, and are not intended to limit the application. For those skilled in the art, the application may have various modifications and changes. Any modification, equivalent replacement, improvement, etc. made within the spirit and principle of this application shall be included in the protection scope of this application.

Claims

1. A multi-purpose grinding disc, comprising an angle adjusting device (3) and a connecting device (1) connected to a grinding machine, **characterized in that** an upper end of the angle adjusting device (3) is equipped with a connecting kit (2) that matches the connecting device (1); the angle adjusting device (3) is connected to the connecting device (1) through the connecting kit (2); a lower part of the angle adjusting device (3) is provided with a fixing piece (4) for fixing the angle adjusting device (3); an adhesive device (5) is provided under the fixing piece (4), and is adhered to the fixing piece (4); and an abrasive paper (6) for dull polishing is attached below the adhesive device (5).

2. The multi-purpose grinding disc according to claim 1, wherein the angle adjusting device (3) is a rubber sleeve.
3. The multi-purpose grinding disc according to claim 1, wherein the angle adjusting device (3) is gourd-shaped.
4. The multi-purpose grinding disc according to claim 1, wherein the distance between the center of the cross-section of the upper end of the connecting device (1) and a peripheral edge of the cross-section is not equal.
5. The multi-purpose grinding disc according to any one of claims 1 to 4, wherein the connecting kit (2) is an insert nut, and a lower end of the connecting device (1) is provided with a thread that matches the connecting kit (2).
6. The multi-purpose grinding disc according to claim 1, wherein the fixing piece (4) is circular, and a through hole (10) is provided at the center of the fixing piece (4).
7. The multi-purpose grinding disc according to claim 1, wherein the adhesive device (5) is a Velcro.
8. The multi-purpose grinding disc according to claim 1, wherein the angle adjusting device (3) is provided with an antiskid part (7) around the circumference of the angle adjusting device.
9. The multi-purpose grinding disc according to claim 8, wherein the antiskid part (7) comprises, but is not limited to, a sawtooth antiskid pattern, a spiral antiskid pattern and a polygonal antiskid pattern.

FIG. 1

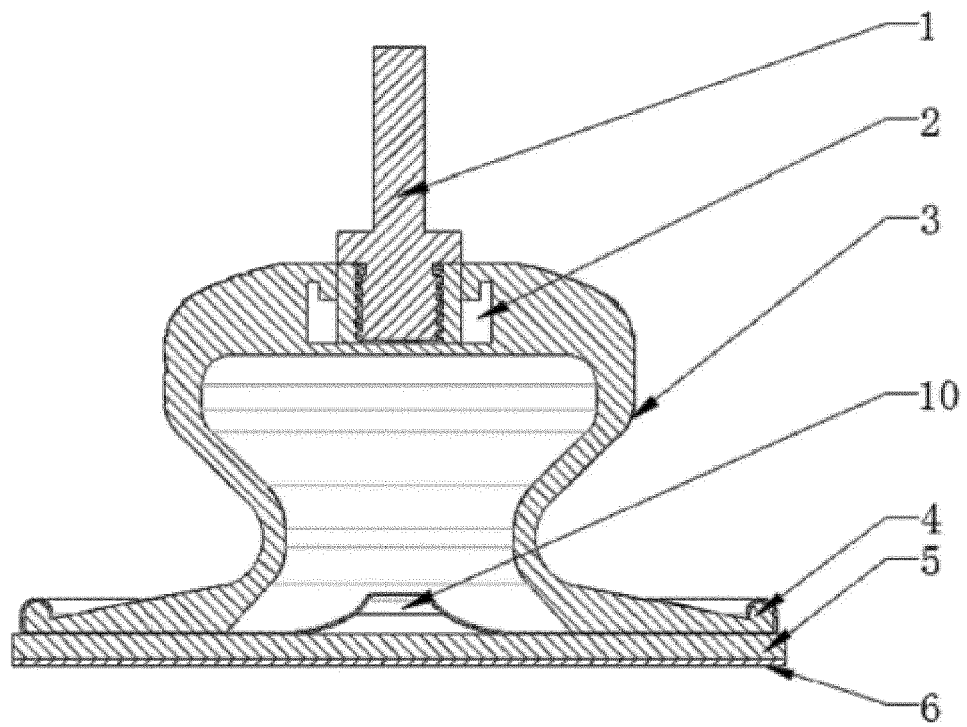


FIG. 2

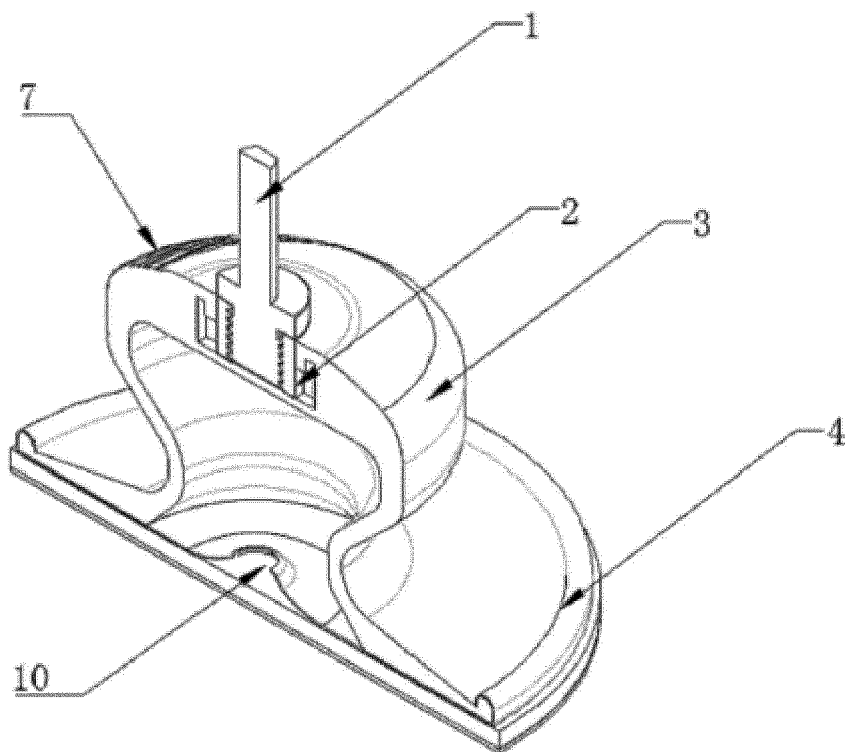


FIG. 3

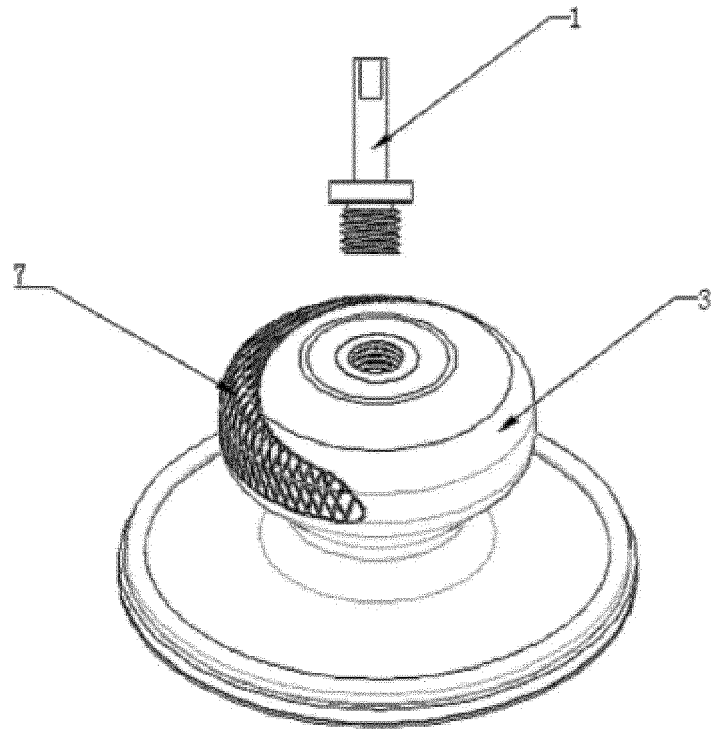
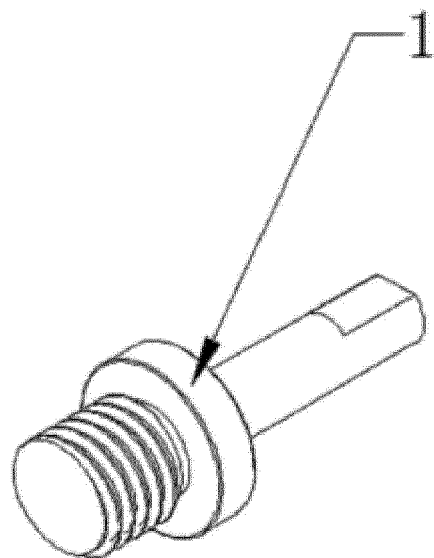


FIG. 4





EUROPEAN SEARCH REPORT

Application Number
EP 20 19 8307

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 106 271 989 A (NINGBO WENKAI ABRASIVE TOOLS CO LTD) 4 January 2017 (2017-01-04)	1-7	INV. B24B23/02
Y	* paragraphs [0004], [0024], [0028], [0045], [0053], [0056]; figures 1, 3, 4 *	8,9	B24B41/047 B24B7/00
T	----- Dhaliwal Major S: "Handbook of Vegetable Crops - Chapter 5 Cucurbits", 1 January 2012 (2012-01-01), XP055778093, ISBN: 978-81-27-24134-6 Retrieved from the Internet: URL:https://www.researchgate.net/profile/Major_Dhaliwal/publication/313098862_CHAPTER_5_Cucurbits/links/589009cbaca272bc14bc6a8e/CHAPTER-5-Cucurbits.pdf [retrieved on 2021-02-19] * p. 98, 103, 107 *	3	
Y	----- CN 108 500 796 A (HUZHOU NANXUN CHUANGXING MACHINERY CO LTD) 7 September 2018 (2018-09-07) * par. 16, 25; figure 1 *	8,9	TECHNICAL FIELDS SEARCHED (IPC) B24B B24D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 February 2021	Examiner Bonetti, Serena
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 L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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19-02-2021

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CN 106271989	A	04-01-2017	NONE	

CN 108500796	A	07-09-2018	NONE	

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