

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 January 2007 (18.01.2007)

PCT

(10) International Publication Number
WO 2007/007329 A2

(51) International Patent Classification:
B24D 11/00 (2006.01)

(21) International Application Number:
PCT/IL2006/000800

(22) International Filing Date: 10 July 2006 (10.07.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
169606 10 July 2005 (10.07.2005) IL
172079 21 November 2005 (21.11.2005) IL

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FINGER ADHESIBLE ABRASIVE PAD

(57) Abstract: A finger adhesible abrasive pad that comprises an abrasive layer, a substantially planar substrate for the abrasive layer which is made of flexible material, an adhesive layer applied to the underside of the substrate, and a peelable layer applied to the adhesive layer. The abrasive pad is attachable to a fingertip by means of the adhesive layer prior to the commencement of a sanding operation.



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FINGER ADHESIBLE ABRASIVE PAD

Field of the Invention

The present invention relates to the field of sanding. More particularly, the invention relates to a finger adhesible abrasive pad.

Background of the Invention

Several types of sanding gloves have been recently introduced to woodworkers, to minimize fatigue to the hand and fingers while carrying out a sanding operation. Rather than having to constantly grip sandpaper, sanding blocks, and the like, which normally increases user fatigue, abrasive pads attached to a glove allow users to sand any desired contour of a workpiece by free and relatively tireless movement of the fingers. Such abrasive pads are generally releasably attached to the glove by means of loop fastening material such as Velcro so that the pads may be replaced when worn or when a different grade abrasive material is desired to be used. Exemplary sanding gloves are disclosed in GB 2368776 and US 6,557,178.

Sanding gloves suffer from several deficiencies. Firstly, the type of sanding operations that can be carried out with sanding gloves is limited by the thickness of a finger or by the glove fabric. Consequently, accurate abrading or polishing operations for thin and delicate workpieces such as jewelry cannot be performed with sanding gloves. Secondly, a user wearing a sanding glove cannot feel the

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roughness of an object that needs to be sanded. Therefore, those sanding operations that require the sense of touch, such as a manicure or the repair of a punctured bicycle tire, preclude the use of sanding gloves. Another reason that sanding gloves cannot be used for manicures is that the abrasive pads attached to a sanding glove are generally used for more than one sanding operation and are liable to transmit skin diseases such as fungus from one subject to another.

It is an object of the present invention to provide an abrasive pad by which accurate abrading or polishing operations for thin and delicate workpieces can be performed.

It is an additional object of the present invention to provide an abrasive pad by which a user can feel the roughness of an object that needs to be sanded.

It is an additional object of the present invention to provide an abrasive pad that precludes the transmission of skin diseases such as fungus from one subject to another.

It is yet an additional object of the present invention to provide an abrasive pad that does not limit hand and finger movement.

Other objects and advantages of the invention will become apparent as the description proceeds.

Summary of the Invention

The present invention provides a finger adhesible abrasive pad, comprising an abrasive layer, a substantially planar substrate for said abrasive layer which is made of flexible material, an adhesive layer applied to the underside of said substrate, and a peelable layer applied to said adhesive layer, wherein the abrasive pad is attachable to a fingertip by means of said adhesive layer prior to the commencement of a sanding operation.

The substrate is of sufficient size and is adhesible to the fingertip in such a way so as to prevent injury to the fingertip during a sanding operation.

In one aspect, the substrate is substantially of the same size as the abrasive layer.

In one aspect, the substrate is produced in strip form or in rolls.

In one aspect, a plurality of abrasive pads are releasably adhered to a common peelable layer.

The abrasive pad is suitable for sanding operations selected from the group of abrading or polishing operations for jewelry, manicures, the repair of a

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punctured bicycle tire, the smoothening of the casing of electronic equipment, metalworking applications, and woodworking applications.

The abrasive layer is preferably made from abrading particles selected from the group of aluminum oxide, garnet, ceramic, and silicon carbide having an average particle diameter ranging from approximately 60 to 1000 microns [(which can be also expressed in grit size code according to FEPA's (Federation of European Producers of Abrasives) standard].

Brief Description of the Drawings

In the drawings:

- Fig. 1 is a side view of a finger adhesible abrasive pad, in accordance with one embodiment of the invention;
- Fig. 2 is a top view of an array of abrasive pads; and
- Fig. 3 is a perspective view of an abrasive pad attached to a fingertip prior to a sanding operation.

Detailed Description of Preferred Embodiments

The present invention is an abrasive pad that is releasably adhesible to a finger. A finger to which such a pad is adhered is able to feel the roughness of an object to be sanded and to carry out a sanding operation in a desired area of roughness.

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Fig. 1 illustrates an abrasive pad, according to one embodiment of the invention. The abrasive pad generally designated by numeral 10 comprises abrasive layer 5, e.g. sandpaper, which is produced in a manner well known to those skilled in the art and made with suitable abrading particles such as aluminum oxide, garnet, ceramic, and silicon carbide having an average particle diameter ranging from approximately 60-1000 microns. a substantially planar substrate 7 of abrasive layer 5 made of flexible material such as cloth, polyester film, and multi-layer impregnated paper, adhesive layer 12 applied to the underside of planar substrate, and peelable layer 15 applied to adhesive layer 12. Substrate 7 may be of the same size as abrasive layer 5. Alternatively, substrate 7 may be considerably larger than abrasive layer 5, e.g. produced in strip form, so that substrate 7 may be wrapped around a finger or applied along the length of the finger.

Fig. 2 illustrates an exemplary commercial product that may include an array of adhesible abrasive pads 10, six of which are shown. The plurality of abrasive pads 10 are releasably adhered to common peelable layer 25. Each abrasive pad 10 is preferably detached from layer 25 prior to the application of an abrasive pad 10 onto a finger.

Fig. 3 illustrates a typical sanding operation carried out with the abrasive pad of the invention. Abrasive pad 10 is adhered to the fleshy part of the

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fingertip 29 in such a way that the fingertip will not be injured during a sanding operation. Although abrasive pad 10 is preferably adhered to the thumb due to the superior force that may be applied by the thumb with respect to the other fingers, it will be appreciated that the abrasive pad may be applied to the other fingers as well. Alternatively, abrasive pads may be applied to more than one finger, if the need of such a sanding operation arises. After the user observes that surface 35 has an undesirable area 37 of roughness, abrasive pad 10 is placed on area 37 of roughness and fingertip 29 is moved in reciprocating or rotary motion in such a way so as to smoothen area 37. By employing an abrasive pad in such a way, the other fingers of the hand are free to move in any desirable fashion. Also, the hand may grasp an object when the sanding operation is being performed. When the abrasive layer of pad 10 is worn, the pad is detached from fingertip 29 and is replaced by a new abrasive pad 10.

The abrasive pad of the present invention is particularly useful for carrying out accurate abrading or polishing operations for thin and delicate workpieces such as jewelry. The fingertip can remove areas of roughness that are detected on the piece of jewelry which are generally inaccessible when conventional sanding devices such as sandpaper and sanding blocks are used. The abrasive pad is also useful for those sanding operations that require the sense of touch, such as a manicure whereby the abrasive pad is replaced at the completion of the manicure in order to prevent the transmission of skin diseases such as fungus, or the

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repair of a punctured bicycle tire whereby the puncture site is generally detected by the sense of touch and the area surrounding the puncture site is abraded in order to adhere thereto a repair unit for occluding the puncture site. An additional application for the abrasive pad is for the smoothening of the casing of electronic equipment. At times metallic fragments, which may cause damage to wires or may result in a short circuit, remain in the vicinity of the casing apertures, following the milling of the casing. Similarly, the abrasive pad of the invention is also suitable for metalworking and woodworking applications.

While some embodiments of the invention have been described by way of illustration, it will be apparent that the invention can be carried into practice with many modifications, variations and adaptations, and with the use of numerous equivalents or alternative solutions that are within the scope of persons skilled in the art, without departing from the spirit of the invention or exceeding the scope of the claims.

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CLAIMS

1. A finger adhesible abrasive pad, comprising an abrasive layer, a substantially planar substrate for said abrasive layer which is made of flexible material, an adhesive layer applied to the underside of said substrate, and a peelable layer applied to said adhesive layer, wherein the abrasive pad is attachable to a fingertip by means of said adhesive layer prior to the commencement of a sanding operation.

2. The abrasive pad according to claim 1, wherein the substrate is of sufficient size and is adhesible to the fingertip in such a way so as to prevent injury to the fingertip during a sanding operation.

3. The abrasive pad according to claim 2, wherein the substrate is substantially of the same size as the abrasive layer.

The abrasive pad according to claim 2, wherein the substrate is produced in strip form or in rolls.

4. The abrasive pad according to claim 1, wherein a plurality of abrasive pads are releasably adhered to a common peelable layer.

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5. The abrasive pad according to claim 1, which is suitable for sanding operations selected from the group of abrading or polishing operations for jewelry, manicures, the repair of a punctured bicycle tire, the smoothening of the casing of electronic equipment, metalworking applications, and woodworking applications.

6. The abrasive pad according to claim 1, wherein the abrasive layer is made from abrading particles selected from the group of aluminum oxide, garnet, ceramic, and silicon carbide having an average particle diameter ranging from approximately 60 to 1000 microns.

7. A finger adhesible abrasive pad, substantially as described and illustrated.

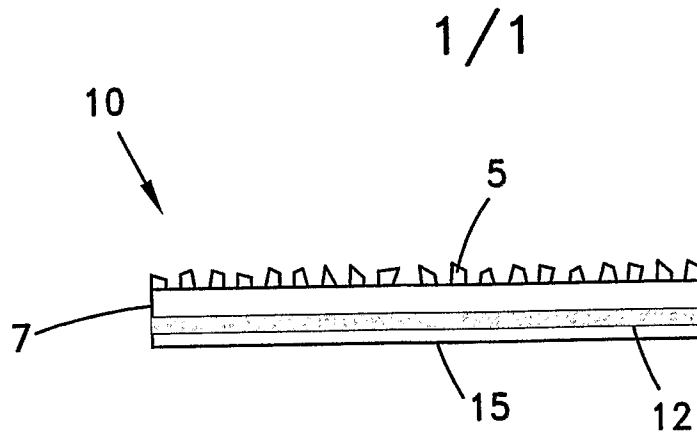


Fig. 1

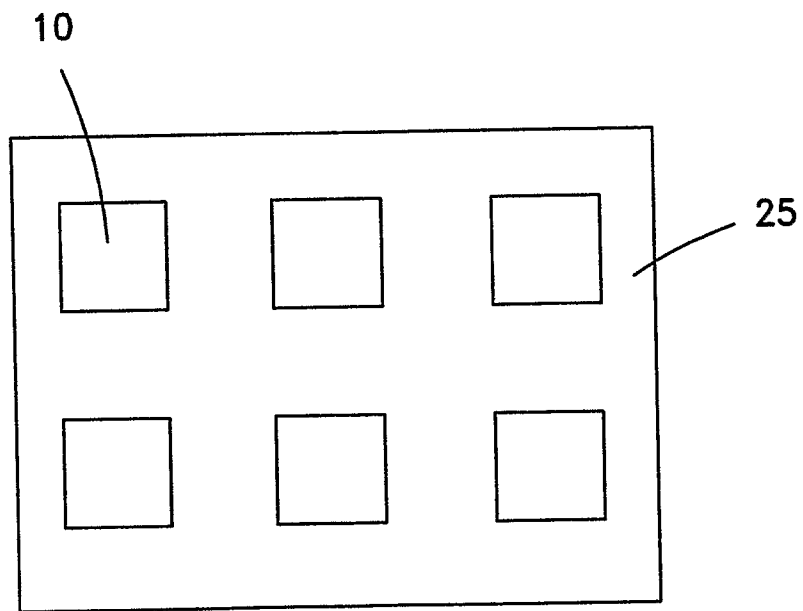


Fig. 2

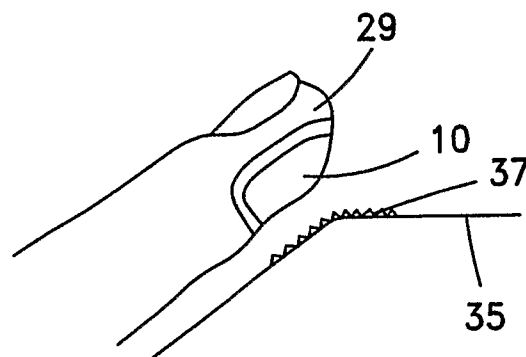


Fig. 3