Oct. 23, 1956 J. O. MORAN 2,767,526

RESILIENT PRESSURE FINGER FOR A SANDING MACHINE

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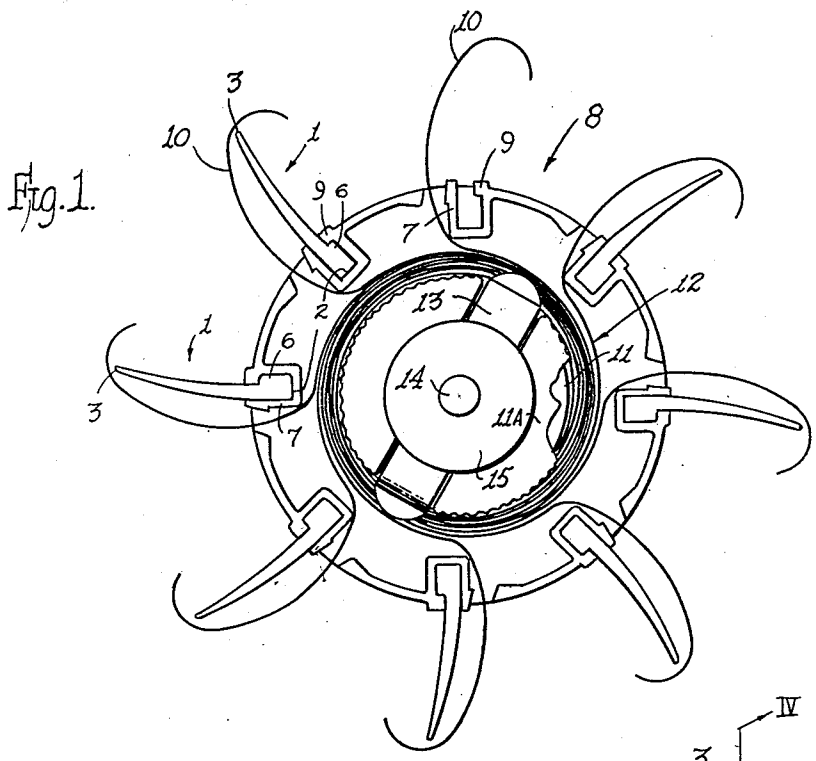


Fig. 1.

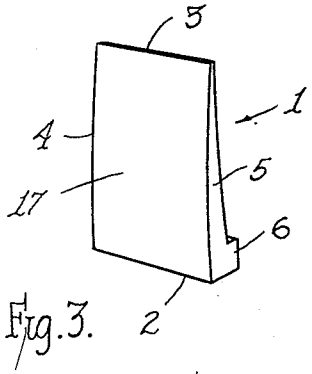


Fig. 3.

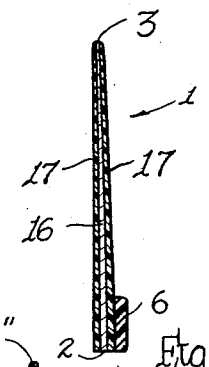


Fig. 4.

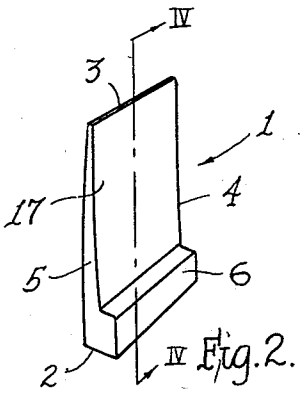


Fig. 2.

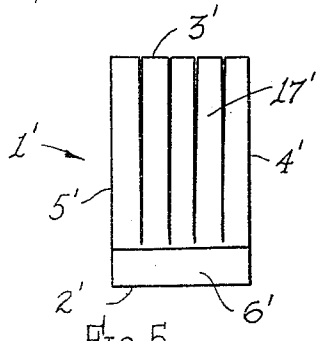


Fig. 5.

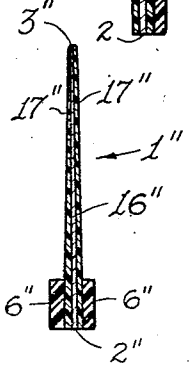


Fig. 6.

INVENTOR.
JOHN O. MORAN
BY R. W. Hodgson

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RESILIENT PRESSURE FINGER FOR A SANDING MACHINE

John O. Moran, Los Angeles, Calif.

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3 Claims. (Cl. 51—193.7)

Generally speaking, the present invention relates to the power sanding art and, more specifically, relates to a resilient pressure finger adapted for removable engagement with respect to a power sanding machine (usually, though not necessarily, of the kind including a power-rotated sanding wheel provided with suitable thin-sheet abrasive paper, or the like) whereby to resiliently apply pressure to the rear side of the thin-sheet abrasive strip. This arrangement makes it possible, by using a plurality of said pressure fingers, to bias a plurality of strips of the thin-sheet abrasive, to very effectively power sand surfaces of various contours, including irregular contoured surfaces, and the like, which would be extremely difficult to effectively sand with other sanding machines rigidly supporting the abrasive paper. This arrangement is also extremely effective for sanding surfaces susceptible to damage when sanded with other sanding machines rigidly supporting the abrasive paper or cloth.

Generally speaking, the present invention includes a thin-sheet, elastomeric, longitudinal body defined by a contact end and a base end longitudinally spaced apart and two side edges laterally spaced apart. The base end may be provided with integral (usually, though not necessarily, elastomeric) engaging means (usually, though not necessarily, comprising virtually laterally directed ridge means) cooperable (preferably, though not necessarily, slidably cooperable) for removable engagement with respect to a sanding machine (usually, though not necessarily, with respect to a similar engaging channel carried by a sanding machine) to effectively mount the contact end in resiliently deflectable projecting relationship with respect to the sanding machine.

In one preferred form of the present invention, the thin-sheet elastomeric longitudinal body may be effectively longitudinally tapered from a relatively thick base end to a relatively thin contact end.

In one preferred generic form of the present invention, the thin-sheet elastomeric longitudinal body comprises an interior thin-sheet fibrous matrix and an exterior thin-sheet elastomeric coating effectively bonded thereto or therearound.

From the above description of the basic and several preferred generic forms of the present invention, it will be apparent to those skilled in the art that the sanding machine resilient pressure finger of the present invention overcomes the undesirable features of prior art power sanding machines by making it possible to very effectively power sand relatively delicate or easily damaged surfaces and/or surfaces of contours not readily sanded by power sanding machines relatively rigidly backing-up the abrasive paper or cloth employed.

Furthermore, the sanding machine resilient pressure finger of the present invention is of a construction such as to make it possible to apply various desired amounts of sanding pressure to a surface being sanded without in any way damaging the resilient pressure finger (or plurality thereof).

With the above points in mind, it is an object of the present invention to provide an elastomeric resilient pressure finger adapted for removable engagement with respect to a power sander to effectively apply pressure to the rear side of a thin-sheet of abrasive when the power sander is operated and is forced into sanding relationship with respect to a surface to be sanded.

It is a further object of the present invention to provide a pressure finger of the character set forth in the preceding object, also having integral, elastomeric engaging means adapted for removable engagement with respect to the power sander to effectively mount the pressure finger in outwardly projecting operative relationship with respect to the sander. Usually, a plurality of such pressure fingers are so mounted at a plurality of spaced locations along or around a driven or rotated member of the sanding machine.

Other and allied objects will be apparent to those skilled in the art after a careful perusal, examination and study of the accompanying illustrations, the present specification and the appended claims.

To facilitate understanding, reference will be made to the hereinbelow-described drawings, in which:

Fig. 1 is a fragmentary, elevational view of one embodiment of a rotary power sanding machine with a plurality of the resilient pressure fingers of the present invention shown mounted in operative relationship with respect to a driven sander wheel and with respect to a plurality of abrasive strips, however, in order to facilitate the specific description, one of the pressure fingers has been removed from one of the engaging channels of the driven sander wheel;

Fig. 2 is a perspective view of one of the pressure fingers by itself;

Fig. 3 is another perspective view of the pressure finger shown in Fig. 2 as seen from another viewpoint;

Fig. 4 is a vertical sectional view taken in the direction of the arrows IV—IV in Fig. 2;

Fig. 5 is a side elevational view of a slightly modified form of the invention, and

Fig. 6 is a vertical sectional view, similar in aspect to Fig. 4, but illustrating a slightly modified form of the invention.

Generally speaking, the present invention includes a thin-sheet, elastomeric, longitudinal body defined by a contact end and a base end longitudinally spaced apart and two side edges laterally spaced apart.

In the specific example illustrated in Figs. 1 through 4, inclusive, said body is indicated generally at **1** and is tapered from a relatively thick base end **2** to a relatively thin contact end **3** and is laterally defined by virtually parallel side edges **4** and **5**.

Also, generally speaking, the base end may be provided with integral engaging means cooperable for removable engagement with respect to a sanding machine (to effectively mount said contact end in resiliently deflectable, projecting relationship with respect to the sanding machine).

In the specific example illustrated in Figs. 1 through 4, inclusive, the integral engaging means takes the form of a laterally directed elastomeric ridge **6** of virtually rectangular cross-section carried by the right side (as viewed in the figures) of the base end **2**.

In the example illustrated, the base end **2** and the engaging ridge **6** of the pressure finger shown in Figs. 2, 3 and 4 is adapted to be slidably inserted into the corresponding engaging channel **7** carried by a power driven sanding wheel, indicated generally at **8**, with the shoulder produced by the engaging ridge **6** lying immediately under a retaining lip **9** comprising part of the engaging channel **7** carried by the driven sander wheel **8**.

The arrangement is such that the outer free contact end **3** will be positioned immediately behind an abrasive

strip 10 whereby counterclockwise rotation of the driven sander wheel 8 will effectively cause the contact end 3 to effectively apply pressure to the back of the abrasive strip 10 when the rotating, circumferentially spaced, plurality of contact ends 3 push the plurality of abrasive strips 10 into contact with a surface to be sanded. This will effectively sand surfaces and/or materials which would be extremely difficult to sand with power-driven rigidly backed abrasive means.

While the invention claimed herein comprises a novel, elastomeric, resilient pressure finger, nevertheless it is thought desirable to briefly describe the sanding machine, which is partially illustrated in Fig. 1.

It should be understood that the driven sanding wheel 8 is adapted to be controllably rotated in counterclockwise direction, as viewed in Fig. 1, by suitable motor means, or the like (not shown since such motor means is well known in the art). Each of the eight abrasive strips 10 is adjacently, spirally wound (with the abrasive side in) in close lateral association with the other abrasive strips, around a dispensing hub 11, as indicated generally at 12. The dispensing hub 11 and locking cover 11A and bracket 13, threaded bolt 14 and threaded nut 15 engaged therewith, cooperate to allow the outer ends of each of the abrasive strips 10 to be selectively unreeled from around the drum 11 to allow effective replacement of worn-out-of frayed abrasive strip ends with fresh unused portions thereof. This makes it possible to, at all times, present fresh and effective abrasive surfaces to the areas to be sanded. If desired, the frayed worn-out outer ends of the abrasive strips 10 may be cut off or otherwise suitably removed.

It should be noted that certain portions of the sanding wheel and hub and associated apparatus have been removed for clarity.

Also, generally speaking, in one preferred form of the present invention, the thin-sheet, elastomeric, longitudinal body may include an interior thin-sheet matrix (usually fibrous) and an exterior thin-sheet elastomeric coating effectively bonded thereto or therearound.

In the specific example illustrated in Fig. 4, the fibrous matrix is indicated at 16, and the outer elastomeric coating is indicated at 17. The fibrous matrix 16 may comprise a structure similar to automobile tire cord material, or any other suitable, flexible, thin-sheet reinforcing material. The outer coating 17 may comprise any suitable elastomeric material such as rubber, or the like. This may also be true of the engaging ridge 6.

Fig. 5 illustrates a slightly modified form of the present invention wherein the body 1' and the contact end 3' are effectively, longitudinally slit into a plurality of adjacent upstanding resilient finger portions. This arrangement is particularly effective when the sander is to be used in sanding along a narrow grooved or recessed area in a surface to be sanded rather than across said narrow grooved or recessed area. Parts of this modification similar to the first form of the present invention are designated by similar reference numerals, singly primed, however.

Fig. 6 illustrates another modification of the present invention wherein the engaging means 6'' projects from each side of the base 2'' or, in effect, comprises the whole bottom of the base and the doubly projecting ridges. It should be understood that this version of the present invention is adapted for slidable engagement with an engaging channel slightly different from the engaging channel 7 shown in Fig. 1, and having two retaining lips, similar to the retaining lip 9 shown in Fig. 1, and each adapted to abut one of the engaging ridges 6''.

Numerous modifications and variations of the present invention will occur to those skilled in the art after a careful study hereof. All such properly within the basic spirit and scope of the present invention are intended to be included and comprehended herein as fully as if specifically described, illustrated and claimed herein.

For example, in certain forms of the present invention, the body may assume a form other than tapered, and, in width and length, may assume a variety of configurations. The engaging means may also be substantially modified.

The matrix may be substantially modified, and in certain forms of the present invention, may be eliminated entirely. Incidentally, in connection with the matrix, it should be noted that the term "fibrous" as used herein is not intended to limit the matrix to an assembly (woven or otherwise) of natural fibers, but is intended to include and comprehend any flexible, reinforcing matrix material having desirable tensile strength characteristics.

The exact compositions, configurations, constructions, relative positionings, and cooperative relationships of the various component parts of the present invention are not critical, and can be modified substantially within the spirit of the present invention.

The embodiments of the present invention specifically described and illustrated herein are exemplary only, and are not intended to limit the scope of the present invention, which is to be interpreted in the light of the prior art and the appended claims only, with due consideration for the doctrine of equivalents.

I claim:

1. A resilient pressure finger adapted to be removably engaged in projecting relationship with respect to a sanding machine for resiliently applying pressure to the rear side of a thin-sheet abrasive carried by the sanding machine, comprising: a thin-sheet elastomeric longitudinal body defined by a contact end and a base end longitudinally spaced apart and two side edges laterally spaced apart, said base end being provided with integral ridged engaging means extending laterally in a direction virtually parallel to an imaginary lateral axis of said base end and extending from said base end in a direction transverse from said imaginary base end lateral axis in a manner defining a non-circular cross-section having more of said engaging means on one side of said imaginary base end lateral axis in at least one region than in other regions thereby effectively keying said engaging means with respect to said imaginary base end lateral axis, said engaging means being slidably cooperable for removable slidable engagement with respect to a corresponding virtually similarly cross-sectionally shaped engaging channel in a sanding machine to effectively mount said contact end in resiliently deflectable projecting relationship with respect to the sanding machine; said thin-sheet elastomeric longitudinal body including an interior thin-sheet fibrous matrix and an exterior thin-sheet elastomeric coating effectively bonded together.

2. A resilient pressure finger adapted to be removably engaged in projecting relationship with respect to a sanding machine for resiliently applying pressure to the rear side of a thin-sheet abrasive carried by the sanding machine, comprising: a thin-sheet elastomeric longitudinal body defined by a thin contact end and a thicker base end longitudinally spaced apart and two side edges laterally spaced apart, said body being effectively tapered in thickness from said base end toward said contact end, said base end being provided with an integral engaging means extending laterally in a direction virtually parallel to an imaginary lateral axis of said base end and extending from said base end in a direction transverse from said imaginary base end lateral axis in a manner defining a virtually rectangular cross-section thereby effectively keying said engaging means with respect to said imaginary base end lateral axis, said engaging means being slidably cooperable for removable slidable engagement with respect to a corresponding virtually similarly rectangularly cross-sectionally shaped engaging channel carried by a sanding machine whereby to effectively mount said thin contact end in resiliently deflectable outwardly projecting relationship with respect to the sanding machine; said thin-sheet elastomeric longitudinal body including

an interior thin-sheet fibrous matrix and an exterior thin-sheet elastomeric coating effectively bonded together.

3. A resilient pressure finger adapted to be removably engaged in projecting relationship with respect to a sanding machine for resiliently applying pressure to the rear side of a thin-sheet abrasive carried by the sanding machine, comprising: a thin-sheet elastomeric longitudinal body defined by a thin contact end and a thicker base end longitudinally spaced apart and two side edges laterally spaced apart, said body being effectively tapered in thickness from said base end toward said contact end, said base end being provided with an integral engaging means extending laterally in a direction virtually parallel to an imaginary lateral axis of said base end and extending from said base end in a direction transverse from said imaginary base end lateral axis in a manner defining a virtually rectangular cross-section thereby effectively keying said engaging means with respect to said imaginary base end lateral axis, said engaging means being slidably cooperable for removable slidable engagement with respect to a corresponding virtually similarly rectangularly cross-sectionally shaped engaging channel carried by a sanding machine whereby to effectively mount said thin contact end in resiliently deflectable outwardly projecting relationship with respect to the sanding machine; said thin-sheet elastomeric longitudinal body including an interior thin-sheet fibrous matrix and an exterior thin-sheet elastomeric coating effectively bonded together, said contact end of said longitudinal body comprising a plurality of longitudinal, similar, laterally adjacent, resilient finger portions.

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