Oct. 8, 1957 H. S. BROWN 2,808,687

SANDING TOOL

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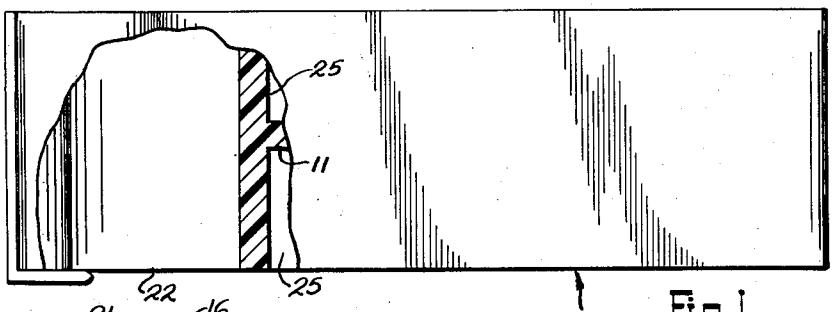


Fig. 1

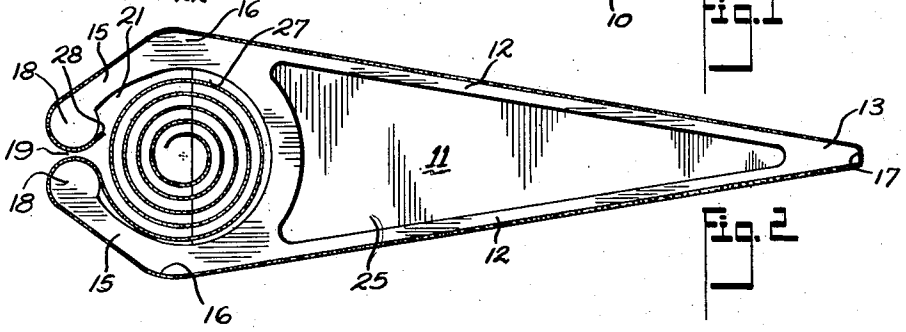


Fig. 2

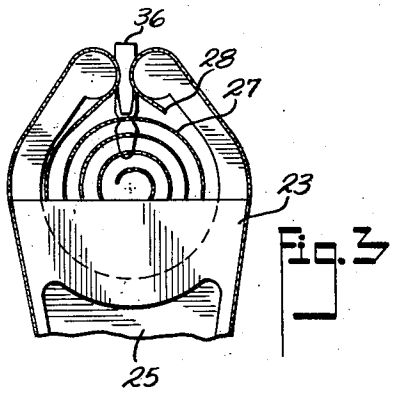


Fig. 3

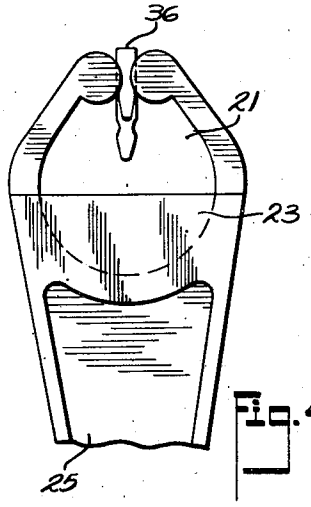


Fig. 4

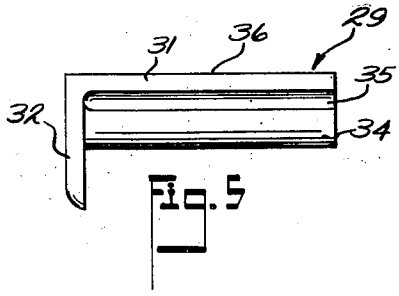


Fig. 5

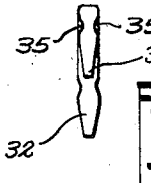


Fig. 6

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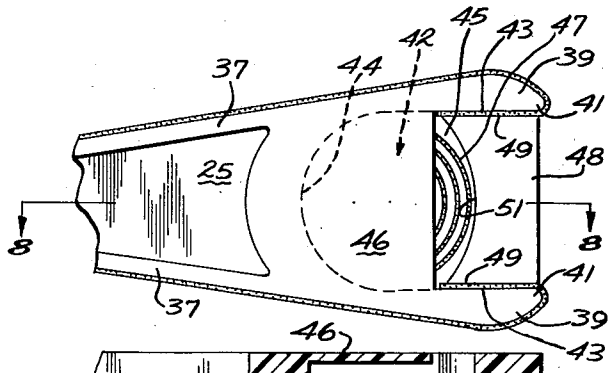


Fig. 7

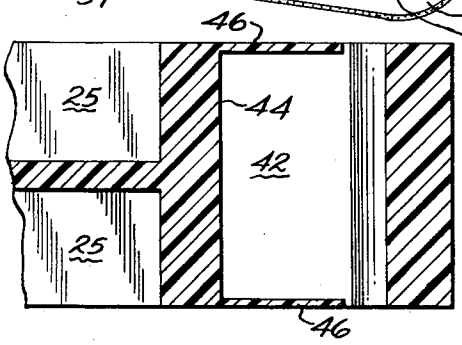


Fig. 8

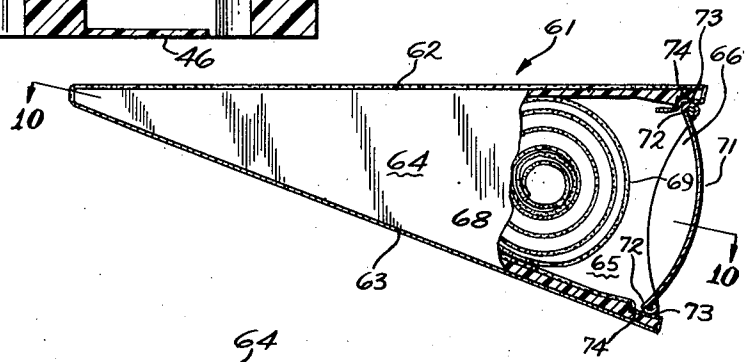


Fig. 9

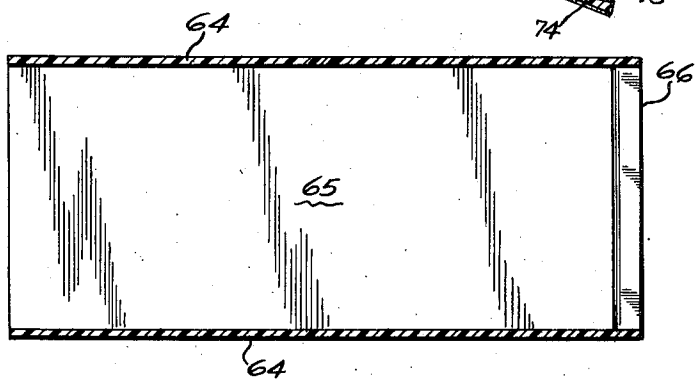


Fig. 10

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Fig. 11

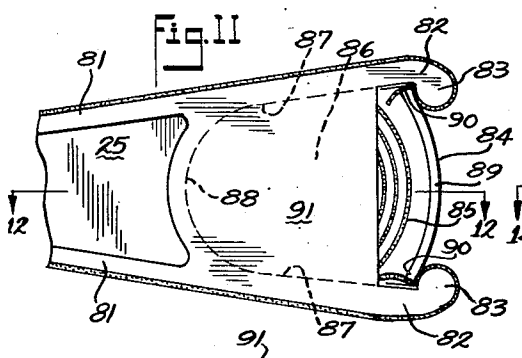
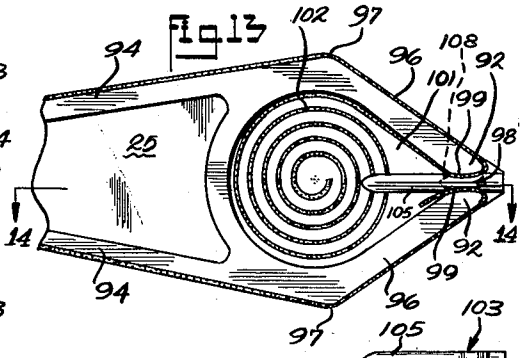


Fig. 13



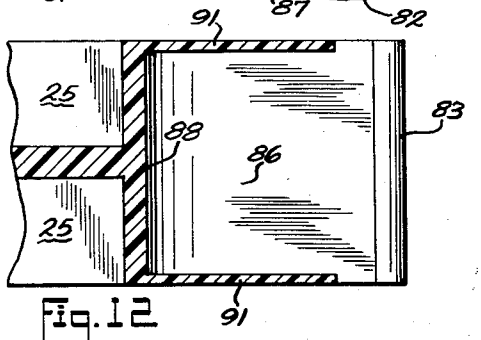


Fig. 12

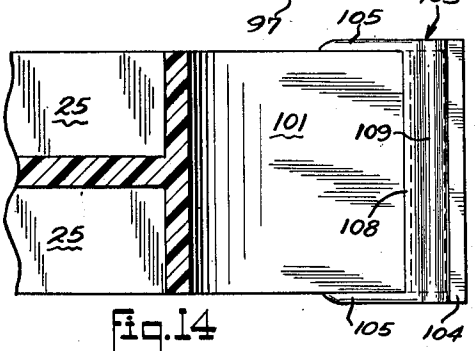


Fig. 14

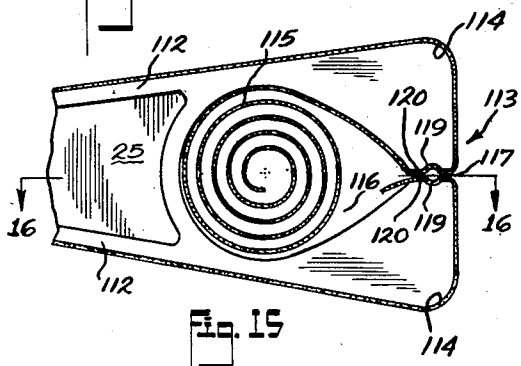


Fig. 15

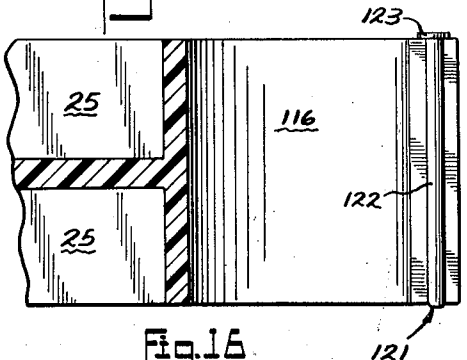


Fig. 16

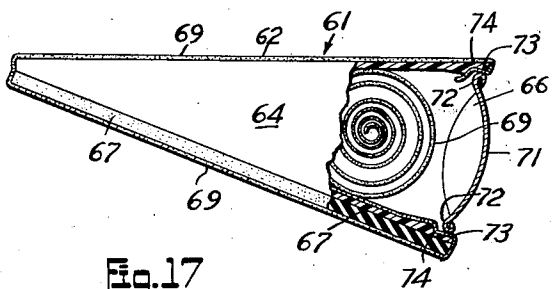


Fig. 17

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United States Patent Office

2,808,687

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SANDING TOOL

Howard S. Brown, Wabasso, Fla.

Application March 9, 1955, Serial No. 493,086

7 Claims. (Cl. 51—187)

This invention relates to sanding devices and more particularly to a hand operable sanding block having a plurality of flat surfaces over which abrasive material may be tautly stretched and secured thereon, resulting in a device wherein a particular size of abrasive material may be selectively utilized, depending upon the configuration of the work piece.

Heretofore, in devices of this class, one of the paramount disadvantages has been that means have not been provided whereby the operator is easily able to replenish the abrasive material when it has become worn. Usually the device has to be dismantled, and a new supply of abrasive material measured and cut to the required size, and then secured to the sanding device.

One advantage of the applicant's invention over the devices of the prior art is that more than one surface is adaptable to be used as the sanding surface.

Another advantage is that a reserve supply of abrasive material of the correct size is carried within the confines of his device in such manner so as not to hamper the operator in using said device.

Still another advantage of his device is that the abrasive material once worn may be removed and replaced very easily and with very little skill required.

Other advantages will be readily realized by use of said device, and a more thorough understanding will be realized by reference to the accompanying description of several embodiments thereof, which description is illustrated by the drawings herein, and which are included as a part of this specification.

In the drawings:

Fig. 1 is a top plan view shown partly in section of one embodiment of my invention;

Fig. 2 is an elevational view of the embodiment of Fig. 1, with the keeper removed;

Fig. 3 is a fragmentary elevational view showing the position of the keeper and recess or pocket for the storage of the abrasive material;

Fig. 4 is a fragmentary elevational side view showing the keeper in its operative position with the abrasive material removed;

Fig. 5 is a side elevational view of the keeper;

Fig. 6 is an elevational end view of the keeper;

Fig. 7 is a fragmentary elevational side view of a second embodiment of my invention;

Fig. 8 is a fragmentary sectional view taken on lines 8—8 of the embodiment of Fig. 7, with the keeper and abrasive material removed;

Fig. 9 is a side elevational view partly in section of a third embodiment;

Fig. 10 is a sectional view taken on lines 10—10 of the embodiment of Fig. 9, with the keeper and abrasive material removed;

Fig. 11 is a fragmentary elevational side view of a fourth embodiment;

Fig. 12 is a fragmentary sectional view taken on lines 12—12 of the embodiment of Fig. 11, with the keeper and abrasive material removed;

Fig. 13 is a fragmentary side elevational view of a fifth embodiment;

Fig. 14 is a fragmentary view shown partly in section taken on lines 14—14 of the embodiment of Fig. 13, with the abrasive material removed;

Fig. 15 is a fragmentary side elevational view of a sixth embodiment;

Fig. 16 is a fragmentary view partly in section taken on lines 16—16 of the embodiment of Fig. 15, with the abrasive material removed; and

Fig. 17 is a side elevational view of an alternative construction of the embodiment of Fig. 9.

Referring now to the drawings throughout which like elements are designated by like reference characters, the numeral 10, Fig. 1, denotes my sanding block in its entirety, which may be formed of any suitable material such as plastic, and although the drawings show my device constructed of a plastic material, the use is not to be considered a limitation thereof.

In the embodiment shown in Figs. 1–6 my device comprises a central body 11 defined by walls 12 of elongated rectangular configuration, which are joined together at one end to form an apex 13, and which diverge outwardly from said apex in equal angular relation with respect to the bisector thereof. Adjacent the end of the body 11, opposite to said apex 13, the walls 12 are joined to walls 15 which converge sharply toward the horizontal axis of the body 11. At the junction point of said walls 12 and 15, a radial surface 16 is formed, thereby providing a smooth, continuous exterior surface for support of the abrasive material. A radial surface 17 may also be formed at the apex of said walls 12 for the same purpose.

The walls 15 converge toward the axis of said body, and round bosses 18, extending across the width of said walls, are formed integral with the free end of each wall, and are in a predetermined spaced relationship with each other, thereby providing a narrow channel or opening 19 therebetween.

A substantially circular pocket or recess 21 is formed centrally within the body 11 adjacent the radial surfaces 16, and the narrow channel 19 is connected thereto providing access to said pocket. The pocket or recess extends through the body 11, providing an opening 22 on one side thereof, and a plate 23 is secured to the body partially covering the opening at the opposite end of the recess. Said plate may also be formed integrally with the body 11. The purpose for said channel 22 and plate 23 used in conjunction with pocket 21 will be explained in detail hereinafter.

The walls 15 are formed of sufficient thickness to enable them to be flexible within a limited range, and the material may possess an inherent quality of stiffness so as to prevent the walls from buckling while being subjected to said flexure stress.

Cavities 25 are formed centrally within the body 11 adjacent to said recess and are arranged to provide adequate means by which the device may be grasped by the hand, and securely held, while manually manipulating said device during a sanding operation.

A roll of abrasive material 27, having substantially the same width as that of the walls 12 and 15, is placed within the pocket 21. One side of the roll abuts up against the plate 23 which prevents said roll from dropping out of that side of the pocket. The outside end 28 of the roll is grasped and pulled out through the channel 19. It is then stretched over one of the bosses 18, extended over the outside surfaces of one pair of walls 15 and 12, continued around apex 13, and over the opposite pair of walls 12 and 15 and opposite boss 18, and inserted back into and through the channel 19 and into the pocket 21. The position occupied by the abrasive roll in the pocket, and overlying portions thereof at the end of the above procedure is shown in Fig. 2.

A keeper member **29**, Fig. 5, of substantially rectangular configuration, having an elongated bar **31**, and a lug member **32**, extending vertically downward from one end of said bar **31**, is then placed into the opening **19**. The lower end **34** of the bar Fig. 6 is of wedge-shaped formation enabling the keeper to be partially inserted into the opening before pressure thereto need be applied.

A narrow elongated groove **35** having a radial surface similar to that of each boss is formed on each side of the bar **31**, being diametrically opposite each other and directly above the wedge-shaped portion.

The keeper **29** is placed into the opening **19** in such manner that the wedge-shaped portion **34** extends across the width of the opening and the lug **32** is juxtaposed to the opening **22** and the roll of abrasive material **27** within the recess **21**.

In placing the keeper into operative position, pressure is exerted upon the top surface **36** of the keeper forcing the wedge-shaped portion between the bosses **18** and thereby tending to bend the walls **15** outward. The portion of the abrasive material extending over each boss **18** is engaged by the wedge-shaped portion of the keeper, and is carried over the surface of each boss, and forced toward and into the pocket **21**. The abrasive material lying over the walls **12** and **15** is thereby pulled taut to prevent said material from tearing or creasing during a sanding operation.

The pressure is exerted on the keeper member **29** until the grooves **35** are juxtaposed to the center of each boss whereby the walls **15** will tend to spring back to their original position, and will force a part of each boss into the groove on each side of the bar **31**; the result being that the keeper member is locked in place within the opening or channel **19**, as shown in Fig. 3, tautly securing the abrasive material in operative position. The lug **32** extends downward and into proximity with the end of the roll adjacent the end opening **22**, thereby preventing the roll from sliding out of the pocket **21**.

Several additional embodiments, having the same principle of operation, but of slightly different construction are shown in Figs. 7–16.

The embodiment of Fig. 7 has walls **37** that diverge outward from an apex (not shown) and provide two elongated surfaces for supporting abrasive materials. The ends of said walls, opposite to the apex, curve slightly inward at **39**, toward the horizontal axis of the device, and at the extreme tip **41**, turn abruptly inward. A recess **42**, having a semi-circular base **44** and parallel sides **43** extending to and meeting with the tips **41** of walls **37**, is formed centrally within the body, providing a wide opening or channel **45** between the walls **37**. Plates **46** formed integrally with the body of the device extends upwardly from each side of the central portion of the body, and partially incloses the sides of the recess or pocket **42**.

The abrasive material **47** is placed within the pocket **42**, and a continuous portion thereof is extended over the exterior surfaces of walls **37** in the same manner as brought forth hereinabove.

Parts of said continuous portion, upon entering and leaving said pocket, lie juxtaposed to the parallel sides **43** of the channel **45**.

A keeper member **48**, being substantially rectangular in cross-section is arranged to be placed into the channel **45**, and the sides **49** thereof are in pressure engagement with the parallel sides **43** of the channel and the abrasive material lying adjacent thereto. When pressure is applied to the keeper member **48** forcing it into the channel **45**, sufficient friction is created between the sides **49** of the keeper and the abrasive material, to move said material over the sides **43** of the channel toward the base **48** of the pocket **42**, whereby the material lying over the walls **37** is pulled taut, and thereby arranged in operative position for subsequent use of said device. The inner side **51** of the keeper member **48** may be

formed with a concave surface thereby providing additional support for the roll of abrasive material.

The embodiment of Figs. 9 and 17 has a triangular-shaped body **61** having abrasive supporting surfaces **62** and **63** opposite each other, and maintained in spaced relationship by side walls **64**; said walls and supporting surfaces completely enclosing said body and defining a pocket or recess **65**, having an opening **66** provided in one end of said body for placement of the abrasive material therein. The pocket **65**, as shown, extends throughout the interior of the body, but it need only be of sufficient depth to accommodate and store a roll of abrasive material adjacent the opening **66**.

It may be desirable, for a particular use, to provide a sanding device having a predetermined inherent weight, in addition to that disclosed herein, and it is contemplated that said weight could be inserted and secured within the pocket, or made an integral part of the device during its fabrication.

One of the abrasive supporting surfaces may also be comprised of a pliable material **67** such as sponge rubber which may be permanently affixed to wall **68** of the body **61**. The operative position of said rubber material is shown in Fig. 17. This particular construction is exceedingly useful when work is to be performed on soft wood surfaces where it is possible for abrasive particles to be driven into the wood merely by passing the sanding tool thereover.

The supply of abrasive material **69** is placed within the pocket **65**, and one end thereof is extended through the opening **66**, over surfaces **62** and **63**, and then placed back into the opening **66** of pocket **65**.

A keeper member **71**, in the form of a thin plate which may be metallic or any other suitable material having resilient qualities, is placed over the opening **66**, with its ends **72** thereof residing in notches **73** formed on the inner faces of walls **62** and **68**. The inner wall of each of the notches **73** is parallel to the axis of the body, thereby providing an equal spaced relationship between said walls at the top and bottom of the notch. Said relationship enables the keeper to engage the abrasive material with the same compressive force throughout the length of the notches. The ends **72** of the keeper may be bent in the form of loops to prevent tearing the abrasive material. The resilient qualities of the keeper press the ends **72** thereof against the abrasive material, and force it against the shelf **74** formed on the inner end of each notch **73**, and the portions of the abrasive material lying over the surfaces **62** and **63** are thereby pulled taut, and readied for use.

The sides **64** may be grasped by the fingers with the palm of the hand lying over the surface **62** or **63**, and securely held thereby while manually manipulating said sanding tool over the work piece.

The embodiment of Fig. 11 shows a device having walls **81**, extending from an apex (not shown) providing two elongated supporting surfaces for abrasive material. The ends **82** of said walls **81** are formed with round bosses **83** in a predetermined spaced relationship thereby forming an opening **84** therebetween. A recess or pocket **86** is formed centrally within the body of the device having side walls **87** parallel to walls **81**, and a circular base **88**. A supply of abrasive material **85** is placed within said pocket, and the exterior layer thereof is extended through the opening **84**, over one boss **83**, exterior surfaces of walls **81**, and then placed over the opposite boss **83** and back into the pocket **86**.

A keeper member **89**, having inherent resilient properties is then placed across the opening **84**. The ends **90** of the keeper **89** engage the abrasive material lying on the surface of each boss adjacent to the sides **87** of the pocket, and force said material over said surfaces, and onto the side walls **87**, and thereby pull said material over the surfaces of walls **81**.

The side plates **91**, partially enclosing the pocket **86**,

may be formed integrally with the body of the device, or attached to the outside edges of the pocket.

The keeper **89** and side plates **91** are operative to retain the supply of abrasive material within the pocket while using said device.

The embodiment of Fig. 13 shows a sanding device having a pair of side walls **94**, which diverge outwardly in equal, angular-spaced relationship with respect to the horizontal axis of the device, meeting on one end to form an apex (not shown), and extending outward from said apex to join walls **96** at junction points **97**. The walls **96** converge angularly toward the axis of the device from said junction points, and the free ends **92** terminate with a predetermined spaced-relationship forming an opening or channel **98** therebetween. The ends **92** of said walls may be rounded off to present smooth surfaces for the abrasive material.

A recess or pocket **101** is formed centrally within the body of the device, and is connected to the channel **98**, providing a means for retaining and supplying abrasive material **102** to the exterior surfaces of said devices.

A keeper member **103**, having a central rectangular portion **104**, and a lug **105** formed on each end of said central portion, is slidable between the ends **92** of walls **96** and into the channel **98** wherein it is releasably secured by means of an elongated groove **109**, formed on each side of the central portion **104**, and which are engaged by the ends **92** or walls **96**. The surfaces of said end portions and said grooves are complementary to each other thereby providing more efficient engagement therebetween.

The lower part **108** of the central portion **104** is wedge-shaped in form in the same manner as the lower end **34** of bar **31**, of my first embodiment, shown in Fig. 5.

When the keeper member is in its operative position, the lugs **105** extend toward the pockets or recess **101** and lie adjacent to the ends thereof, and prevent the roll of abrasive material **102** from falling out of the pocket.

Preparatory to using the device, the roll of abrasive materail **102** is placed in the pocket **101**, and one end thereof is extended outward through the opening or channel **98**, over and around one end portion **92**, over one wall **96**, walls **94**, opposite wall **96** and end portion **92**, and then inserted back through the opening **98**, and into the pocket **101**.

The keeper member **103** is then placed into position over the opening **98** between the abrasive material lying over the surfaces **99** of end portions **92** of walls **96**, and pressure is applied to the central part **104** of the keeper. The wedge-shaped part **108** enters into the opening **98**, and forces the walls **96** slightly outward. The abrasive material lying over the surfaces **99** is engaged and forced toward the pocket or recess **101** whereby the abrasive material lying over the walls **94** and **96**, is pulled taut to ready the device for use.

The groove **109** formed on each side of the central part **104** of the keeper above the wedge-shaped part **108** receives the surface **99** of each of said end portion **92** of wall **96** thereby securing the keeper within the channel or opening **98**. The lugs **105** extend toward the pocket and into proximity with the ends of the roll of abrasive material and prevent said roll from sliding out of the pocket or recess.

The embodiment of Fig. 15 is comprised of a device generally triangular in form having walls **112** diverging outwardly from an apex (not shown) in equal angular-spaced relationship with respect to the horizontal axis of the device, and extending to a base wall **113**. A radial surface **114** may be formed at each junction point of walls **112** and base **113** to provide a continuous smooth surface for support of the abrasive material **115**.

A recess or pocket **116** is formed centrally within the device and an elongated channel **117** is placed centrally across the base **113**, and connected to the recess **116** to provide a means for storing and supplying abrasive material to the surfaces of said device.

Radial grooves **119** are formed diametrically opposite each other on each side **120** of the channel **117**, and are arranged to receive and secure a keeper member **121** in the opening **117**.

The keeper member is comprised of a round elongated bar **122**, and a head **123** formed on one end thereof arranged to engage the body of the device adjacent to said grooves **119**, and thereby prevent said keeper member from sliding completely through and out of the channel **117**.

The roll of abrasive material **115** is placed into the pocket **116**, and one end is extended through the channel **117**, over the exterior surfaces of the base **113** and walls **112** and placed back through the channel and into the pocket **116**.

The keeper member is placed into the grooves **119**, between the abrasive material extending through the opening or channel **117**, whereby said material is forced into the grooves **119**, and thereby pulling taut the abrasive material extending over the surfaces of the base **113** and walls **112**.

Any one or all of the exterior surfaces of the devices illustrated may be provided with a layer of soft resilient material such as rubber, as described in connection with Fig. 9.

While I have disclosed several embodiments of my invention, it is understood that numerous departures may be made therefrom without departing from the scope of my invention.

I claim:

1. A sanding tool comprising a body having a periphery for supporting an abrasive sheet, said body having a pocket therein and an opening leading from said pocket to the periphery of the body, a roll of abrasive sheet received in said pocket and a segment of abrasive sheet extending from said roll out said opening at one side thereof and around the periphery of the body and back into said opening at the opposite side thereof, and a removable keeper engaging the abrasive sheet at said opening and clamping the abrasive sheet against the opposite sides of the opening.

2. A sanding tool comprising a body having a periphery which includes a pair of oppositely disposed major faces, said body having a pocket therein and an opening leading from said pocket to the periphery of the body, a roll of flexible abrasive sheet disposed in said pocket and a segment of said abrasive sheet connected to said roll and leading therefrom out one side of said opening and around the periphery of the body across said major faces and back into said opening at the opposite side thereof, and a manually removable keeper received in said opening between the portions of the abrasive sheet at the opposite sides of said opening and clamping said portions of the abrasive sheet snugly against the opposite sides of said opening.

3. The sanding tool of claim 2, wherein said body is wedge-shaped and said major faces form the opposite sides of the wedge.

4. The sanding tool of claim 3, wherein said body has a wall at one end of said pocket for engaging the corresponding end of the abrasive roll to retain the roll in the pocket.

5. The sanding tool of claim 4, wherein said keeper is formed with a protrusion which engages an end of the abrasive roll to retain the roll in said pocket in the body.

6. The sanding tool of claim 2, wherein said keeper is in the form of a resilient plate having its opposite edges pressing against the abrasive sheet at opposite sides of said opening in the body.

7. The sanding tool of claim 3, wherein said body has side walls at said opening which converge toward each other away from said pocket and which are flexed slightly by the insertion of the keeper into said opening, and

said keeper has grooves for receiving the ends of said side walls.

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