Aug. 5, 1952 H. T. OPLAND 2,605,593

SANDER TOOL

Filed Oct. 29, 1951

Fig. 1

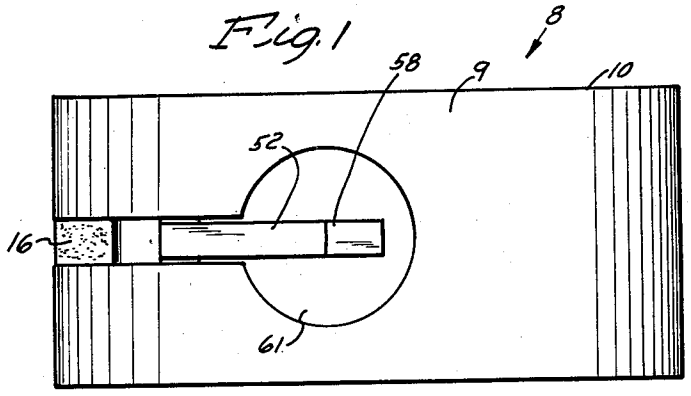


Fig. 2

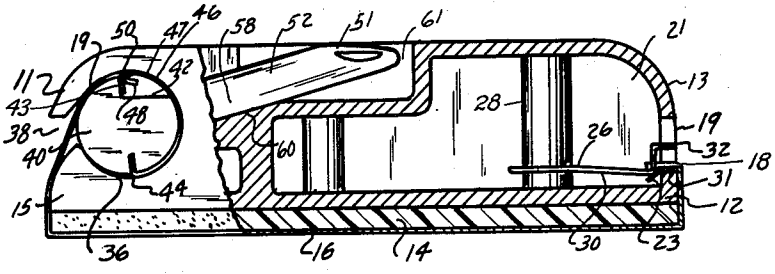


Fig. 5

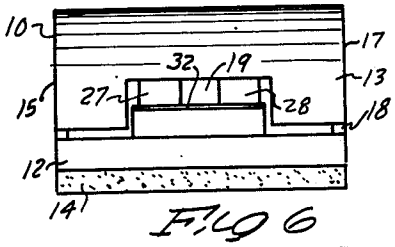


Fig. 3

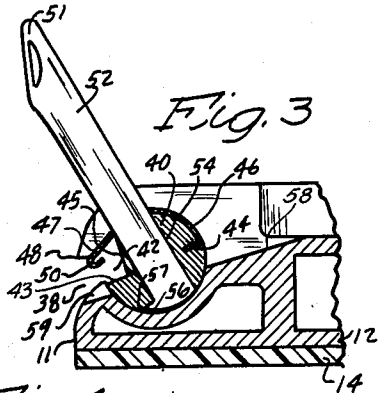


Fig. 6

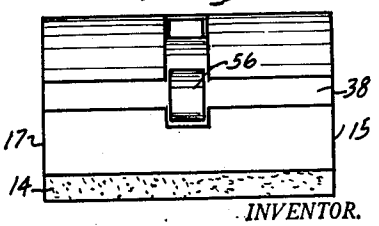
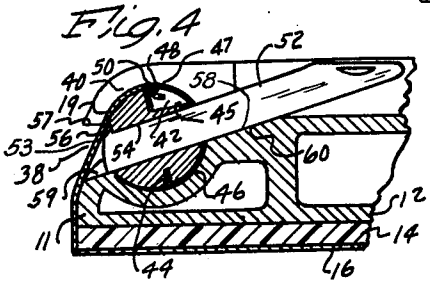


Fig. 4



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2,605,593

SANDER TOOL

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6 Claims. (Cl. 51—187)

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This invention relates to an abrasive device and especially to improvements in hand sander tools. This invention is an improvement on the sander tool disclosed in Patent No. 2,569,253, issued September 25, 1951. Heretofore the hand sander tools of the prior art were provided with securing means for fastening an abrasive strip to the body portion of the tool which would damage the ends of the abrasive strip. The fastening means for the abrasive strip of the prior art hand sander tools were also either cumbersome and inefficient in operation or such fastening means were separate and independent elements of the tool which did not remain integral elements of the tool when these fastening elements were actuated to release the abrasive strip from the body of the tool. The present hand sander tool provides resilient elements which are integral parts of the tool for securing the abrasive strip to the body of the hand sander tool.

It is an object of this invention to provide in a hand sander tool securing means which are integral elements of the tool for fastening an abrasive strip to the body of the tool.

It is another object of this invention to provide in a hand sander tool means for securely fastening an abrasive strip to the body of the tool without damaging the abrasive strip.

It is still another object of this invention to provide in a hand sander tool, a strip of abrasive material which may be quickly and easily changed to present a new abrasive surface.

Other and further features and objects of my invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawing and following specification, wherein is disclosed an examplary embodiment of the invention, with the understanding, however, that such changes may be made therein as fall within the scope of the appended claims without departing from the spirit of the invention.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

Referring to the drawings:

Figure 1 is a plan view of the hand sander tool.

Figure 2 is a side view of the tool, with parts in section.

Figure 3 is a fragmentary sectional view of

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the tool showing one of the securing means for an abrasive strip in its releasing position.

Figure 4 is a fragmentary sectional view of the tool similar to the view disclosed in Figure 3 but with the securing means for the end of the abrasive strip moved approximately ninety degrees in a clockwise direction from the position shown in Figure 3.

Figure 5 is an end view of the rear of the tool.

Figure 6 is an end view of the front of the tool disclosing the fastening means for an end of the abrasive strip in its locked position.

Referring to the drawings in detail, the tool 8 comprises a body 10 generally rectangular in shape, made preferably from plastic substances, or of any other suitable material such as metal, wood, etc. The tool 8 is of such dimensions so that it may be easily grasped in the hand of an operator for convenient use by the operator. The face of the bottom 12 of the tool is flat with a thickness of sponge rubber 14 glued thereto as a pad for an abrasive strip 16.

A narrow slot 18 is formed in the rear end of the body 10 and extends from the side 15 to side 17 thereof. The narrow slot 18 merges into a larger opening 19 in the central portion of the rear 13 of the body 10. A clamping member 26 of resilient material such as metal is provided with a pair of spaced apart apertures adjacent its rear end for receiving posts 27 and 28 extending from the bottom 12 into a recess 21 in the body 10. The edges of the plate around the aperture in plate 26 register with a peripheral groove in the posts 27 and 28 for positioning the plate 26 in the recess 21 of the body 10. The front part of a substantially flat portion 30 of the clamping member 26 is bent below the rear end of the portion 30 of member or plate 26 for abutting the front end of the portion 30 against the inside of the rear 13 of the body 10 below the slot 18 and the front end of the member 26 is thus biased downwardly toward the bottom 12 of the body 10. The clamping member 26 is also provided with an upstanding finger element 32 formed on the front end of the flat portion 30 of the clamping member 26 and positioned in the opening 19 by which the clamping member 26 may be actuated. The finger element 32 may be manually elevated by the fingers of a user of the tool for moving the flat portion 30 of the clamping member 26 upwardly into the recess 21 in body 10 so that when the end 23 of the abrasive strip 16 can be inserted through the slot 18 into the recess

21 in the body 10. When the finger element 32 of the clamping member 26 is released the portion 30 of the clamping member 26 will move downwardly and the front end of portion 30 engages the end 23 of the abrasive strip 16 adjacent the inside of rear end 13 and binds a portion of the end 23 of the strip 16 on the surface portion of the rear end at the bottom edge of the slot 18 as at 31, thus securely holding the end 23 of the abrasive strip 16 on the rear end of the body 10 without damaging the end 23 of the abrasive strip 16.

A tubular bore 36 is formed in the body 10 of the tool 8 adjacent its front end 11 and extends completely through the body 10. A slot 38 is formed completely across the front end 11 of the body 10 and communicates with bore 36. A roller 40 slightly smaller in diameter than the tubular bore 36 is mounted for rotation in the bore 36. The roller 40 is formed with a substantially V-shaped notch 42 consisting of a short leg 43 and a long leg 45 on its periphery which extends from end to end thereof. A small slot 44 is formed in the periphery of the roller 40 substantially diametrically opposite the notch 42. One end of a thin sheet 46 of resilient metal is inserted in the slot 44 in the roller 40 with its body portion wrapped in a counter-clockwise direction around the periphery of the roller 40, see Figures 3 and 4. The sheet of metal 46 is the same length as the roller 40 for a purpose to be set forth hereinafter. The opposite end 47 of the resilient sheet 46 is bent inwardly and upwardly adjacent the short leg 43 of the V-shaped notch 42 at 48 forming a rounded surface on the metal sheet 46 as at 50. The end 47 of the thin metal sheet is biased outwardly from the roller 40 for a purpose to be set forth hereinafter.

A handle 52 square in cross section is mounted in a square shaped passage 54 extending laterally through the central portion of the roller 40 with an upstanding lip 56 formed on the outer end of the handle 52 for a purpose to be set forth hereinafter. The outer end of the handle is provided with a 45 degree tapered portion 51. A square notch 53 is formed in the periphery of the roller adjacent the outer end of the passage 54 in the roller 40 for receiving the outer end of the handle completely in the roller 40. A groove 58 formed in the top 9 and front end 11 of the body 10 and communicates centrally with the tubular bore 36 in body 10 and the slot 38 in the front end 11 of the body 10. The bottom wall 60 of the groove 58 slopes downwardly from adjacent the central portion of the top 9 of the body 10 to the front end 11 of the tool, intersecting with the bore 36, providing the greater portion of the groove 58 at the rear of the bore 36 but also providing a smaller portion 59 of the groove 58 in front of the bore 36.

When the handle 52 is rotated in a counter-clockwise direction from its position shown in Figure 2 to the position shown in Figure 3 the roller 40 is moved in bore 36 until the end 47 of the metal sheet 46 registers with the slot 38 in the front 11 of the body 10, permitting the end 47 to move outwardly from the notch 42 in the roller 40 into the notch 38 in the front 11 of the body 10 thus communicating the notch 42 with the slot 38. The end 19 of the abrasive strip 16 can be inserted into the notch 42 on the periphery of the roller 40. Now the handle 52 is rotated approximately 90 degrees from position shown in Figure 3 to the position shown in Figure 2 when the side of the handle 52 abuts the bottom 60 of the groove 58 in the top 9 of the body 10 of the sander tool 8.

When the handle 52 is moved to the right from the position shown in Figure 3 to the position shown in Figures 2 and 4 of the drawings, the roller 40 is rotated clockwise which movement also moves the metal sheet 46 carried on its periphery in a clockwise direction and as the roller 40 is moved clockwise the wall of the bore 36 presses the end 47 of the metal sheet 46 inwardly and slightly downwardly in the notch 42 in the roller 40 engaging the rounded surface 50 on the end 47 of the metal sheet 46 with the portion of the end 19 of abrasive strip 16 on the short leg 43 of the V-shaped notch 42 in the periphery of the roller thus securely locking the end 19 of the abrasive strip 16 in the roller 40. The rounded surface 50 on end 47 of the resilient metallic sheet 46 engages the short leg 43 of the V-shaped notch 42 as soon as the short leg 43 is out of alignment with the slot 38 in the front wall 11, but the roller 40 is moved to the position shown in Figure 2 of the drawings for the bottom side of the handle 52 to engage the bottom 60 of the sloping groove 58 and the tapered portion 51 on the outer end of the handle 52 to be positioned below the top of a central recess 61 in the top 9 of the body 10 so that a person can easily hold the body of tool in his hand for sanding operations.

After the handle 52 of the roller 40 is moved to engage the bottom 60 of the sloping groove 58 in the top 9 and front 11 of the body 10, then the handle 52 is pushed forwardly in the groove 58 and the outer end of the handle is moved out of the notch 53 on the periphery of the roller 40 into engagement with relatively small portion 59 of the bottom wall 60 spaced in front of the roller 40, see Figure 4. When the outer end of the handle 52 is engaged with the portion 59 of the bottom wall of the sloping groove 58, the roller 40 is locked in the bore 36 of the body 10 in the position shown in Figures 2 and 4 of the drawings, preventing the roller 40 having any movement for involuntarily releasing the end 19 of the abrasive strip 16 from engagement with the roller 40.

Thus when the ends 23 and 19 of the abrasive strip 16 are secured respectively to the body of the tool by the clamping member 26 and the metal sheet 46 coacting with the notch 42 in roller 40, see Figure 2, the abrasive strip 16 is pulled tautly over the sponge rubber pad 14 on the face of the bottom 12 and the tool can be efficiently employed in sanding operations. Since there are no sharp or cutting edges on the portions of the clamping member 26 and metal sheet member 46 which are adapted to engage the ends 23 and 19 of the abrasive strip 16, then the ends 23 and 19 of the abrasive strip 16 will not be easily damaged when these members secure the ends of the abrasive strip 16 to the opposite ends of the tool 8.

If it becomes necessary to replace the original abrasive strip 16 with a new abrasive strip after the original abrasive strip becomes worn by use, then the handle 52 can be pulled rearwardly in the sloping groove 58 in the front end 11 and top 9 of the body 10 until the outer end of the handle 52 has been moved from engagement with the portion 59 of the bottom wall 60 of groove 58 in front of the bore 36 to fit completely in the notch 57 in the roller 40 so that the handle 52 can rotate the roller 40 to the position shown in Figure 3

when the outer end 47 of the metal sheet 46 spring outwardly communicating the notch 42 in roller 40 with the slot 38 in the front end 11 of the body 10 permitting the end 19 of the abrasive strip 16 to be released from the front end 11 of the body 10. Then a finger of a person engages the finger element 32 of the clamping member 26 elevating the clamping member 26 from engagement with the end 23 of the abrasive strip 16 thus releasing the end 23 of the abrasive strip 16 permitting said end to be pulled out of the rear end 13 of the body 10. Then a new abrasive strip 16 can be secured to the body 10 in the same manner as has been set forth hereinbefore for securing the original abrasive strip 16 to the body 10 of the sander tool 8.

The lip 56 on the outer end of the handle 52 extends above the upper edge of the passage 54 in the roller 40 so that when the outer end of the handle 52 is moved into the notch 57 in the periphery of the roller 40 adjacent the outer end of the passage 54, the lip 56 engages the roller 40 and prevents the handle 52 being pulled farther rearwardly in the passage 54 in the roller 40.

Since the clamping member 26 and the metal sheet member 46 are integral members of the tool 8, the securing means will not be lost or misplaced as is the case with independent or non-integral fastening means for securing abrasive strips to the body of a hand sander tool.

From the foregoing it will be seen that due to the construction shown and described, I have provided a hand sander which will be exceptionally handy in sanding surfaces, and one wherein the sanding strip may be readily and easily secured to and removed from the body of the tool without the use of fastening means which would damage the sanding strip.

What is claimed is:

1. A hand sander comprising a body portion having a rear end, front end and a bottom, the body provided with a recess, the rear end of the body having a first slot communicating with the recess in the body, a resilient clamping member mounted in the recess in the body adjacent the slot for securing one end of an abrasive strip to the rear end of the body, the front end of the body provided with a bore, a member tightly fitting the bore adapted for movement in said bore, the front end of said body having a second slot communicating with said bore, the movable means provided with a notch having a wall in its outer surface, a resilient member comprising a body having a one end and an opposite end, the resilient member having one end secured to the movable means with a portion of the body of the resilient member adapted to completely overlie the notch in the outer surface of the movable means, a rounded surface formed adjacent the opposite end of the resilient member, the opposite end of the resilient member being biased outwardly from the movable means, the opposite end of the resilient member moving outwardly from the notch in the movable means when the movable means is in a first position in the bore communicating the notch on the movable means with the second slot in the front end of the body permitting the opposite end of the abrasive strip to be inserted through the second slot into the notch in the movable means, actuating means for moving the movable means to a second position in the bore in the body pulling the intermediate portion of the abrasive strip taut over the bottom of the body, and when the movable means is moved to said second position in the bore the wall of the bore actuates the resilient member inwardly for engaging the rounded surface on the opposite end of the resilient member with the wall of the notch in the movable means for securely holding the opposite end of the abrasive strip to the front end of the body.

2. A hand sander comprising a body portion consisting of a rear end, a front end, a top and a bottom, the body being provided with a recess, the rear end having a first slot communicating with the recess in the body, a resilient clamping member mounted in the recess in the body adjacent the slot for securing one end of an abrasive strip to the rear end of the body, the front end of the body provided with a bore, a member tightly fitting the bore adapted for movement in said bore, the front end of said body having a second slot communicating with said bore, the movable means provided with a notch having a wall in its outer surface, a resilient member comprising a body provided with a one end and an opposite end, the resilient member having the one end secured to the movable means, with a portion of the body of the resilient member adapted to completely overlie the notch in the outer surface of the movable means, a rounded surface formed adjacent the opposite end of the resilient member, the opposite end of the resilient member being biased outwardly from the movable means, the opposite end of the resilient member moving outwardly from the notch in the movable means when the movable means is moved to a first position in the bore communicating the notch in the movable means with the second slot in the front end of the body permitting the opposite end of the abrasive strip to be inserted through the second slot into the notch in the movable means, and actuating means for moving the movable means to a second position in the bore in the body pulling the intermediate portion of the abrasive strip taut over the bottom of the body, and when the movable means is moved to said second position in the bore the wall of the bore actuates the resilient member inwardly for engaging the rounded surface on the opposite end of the resilient member, with the wall of the notch in the movable means for securely holding the opposite end of the abrasive strip to the front end of the tool, the front and top of the body provided with sloping groove for receiving the actuating means of the movable means when the movable means is in its second position in the bore in the body, the top of the body also provided with a recess communicating with the sloping groove for completely receiving the outer end of the actuating means when the movable means is in the second position in the bore of the body whereby the tool can be conveniently grasped in the hand of an operator.

3. In a hand sander tool as set forth in claim 2 wherein the actuating means for the movable means is a handle, the roller provided with a lateral passageway therethrough for receiving the handle, an upstanding lip on the outer end of the handle to limit the inward adjustment of the handle.

4. A hand sander comprising a body consisting of a front end, rear end and bottom, the body provided with a recess, the rear end having a first slot formed therein, a resilient clamping member mounted in the recess in the body adjacent the first slot in the rear end of the body for securing

one end of an abrasive strip to the rear end of the body, the front end of the body provided with a cylindrical bore, a roller tightly fitted in the bore adapted for movement in said bore, the front end of said body having a second slot communicating with said bore, the roller provided with a notch having a wall in its periphery, a resilient member comprising a body provided with a one end and an opposite end, the resilient member having one end secured to the periphery of the roller with the body of the resilient member wrapped around a part of the periphery of the roller with the outer portion of the body of the resilient member adapted to completely overlie the notch in the periphery of the roller, the opposite end of the resilient member which overlies a part of the notch in the periphery of the roller being biased outwardly from the roller, the opposite end of the resilient member moving outwardly from the notch in the periphery of the roller when the roller is in a first position in the bore thus communicating the notch in the periphery of the roller with the second slot in the front end of the body permitting the opposite end of the abrasive strip to be inserted through the second slot into the notch in the roller, actuating means for moving the roller to a second position in the bore in the body pulling the intermediate portion of the abrasive strip taut over the bottom of the body, and when the roller is moved to said second position in the bore the wall of the bore actuates the resilient member inwardly engaging the opposite end of the resilient member with the wall of the notch in the roller for securely holding the opposite end of the abrasive strip to the front end of the body.

5. A hand sander comprising a body consisting of a front end, rear end and a bottom, the body provided with a recess adjacent its rear end, the rear end having a slot formed therein, a resilient member mounted in the recess in the body adjacent the first slot in the rear end of the body for securing one end of an abrasive strip to the rear end of the body, the front end of the body provided with a cylindrical bore, a roller tightly fitted in the bore adapted for movement in said bore, the front end of the body provided with a second slot communicating with the bore, the roller provided with a notch formed in its periphery, a resilient member provided with a body having one end secured to the periphery of the roller with the body wrapped around a portion of the periphery of the roller, the outer portion of the body of the resilient member adapted to completely overlie the notch in the periphery of the roller, a rounded surface formed adjacent the opposite end of the resilient member, the opposite end of the resilient member being biased outwardly from the roller, the opposite end of the resilient member moving outwardly from the notch in the roller when the roller is in a first position in the bore communicating the notch on the roller with the second slot in the front end

of the body permitting the opposite end of the abrasive strip to be inserted through the second slot into the notch in the roller, actuating means for moving the roller to a second position in the bore in the body thus pulling the intermediate portion of the abrasive strip taut over the bottom of the body, and when the roller is moved to said second position in the bore the wall of the bore actuates the opposite end of the resilient member inwardly for engaging the rounded surface adjacent the opposite end of the resilient member with a wall of the notch in the roller for securely holding the opposite end of the abrasive strip to the front end of the body.

6. A hand sander comprising a body consisting of a front end, a rear end and a bottom, the body provided with a recess adjacent its rear end, the rear end provided with a slot, a resilient member mounted in the recess in the body adjacent the first slot in the rear of the body for securing one end of an abrasive strip to the rear end of the body, the front end of the body provided with a cylindrical bore, a roller tightly fitted in the bore for movement in said bore, the front end of the body provided with a second slot communicating with the bore, the roller provided with a V-shaped notch formed on its periphery extending from one end to the opposite end thereof, a resilient member provided with a body which extends from one end to the opposite end of the roller having one end secured to the periphery of the roller with the body of the resilient member wrapped around a portion of the periphery of the roller, the outer part of the body of the resilient member adapted to completely overlie the V-shaped notch in the periphery of the roller, a rounded surface formed adjacent the opposite end of the resilient member, the opposite end of the resilient member being biased outwardly from the roller, the opposite end of the resilient member moving outwardly from the notch in the periphery of the roller when the roller is moved to a first position in the bore thus communicating the notch on the roller with the second slot in the front end of the body permitting the opposite end of the abrasive strip to be inserted through the second slot into the V-shaped notch in the roller, actuating means for moving the roller to a second position in the bore in the body thus pulling the intermediate portion of the abrasive strip taut over the bottom of the body and when the roller is moved to said second position in the bore in the body the wall of the bore moves the opposite end of the resilient member inwardly for engaging the rounded surface adjacent the opposite end of the resilient member with a wall of the notch in the periphery of the roller for securely holding the said opposite end of the abrasive strip to the front of the body.

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No references cited.