June 9, 1964 M. LIARD 3,136,097

WORKING HEAD OF A SANDING MACHINE AND SUPPORT THEREFOR

Filed April 13, 1962 3 Sheets-Sheet 1

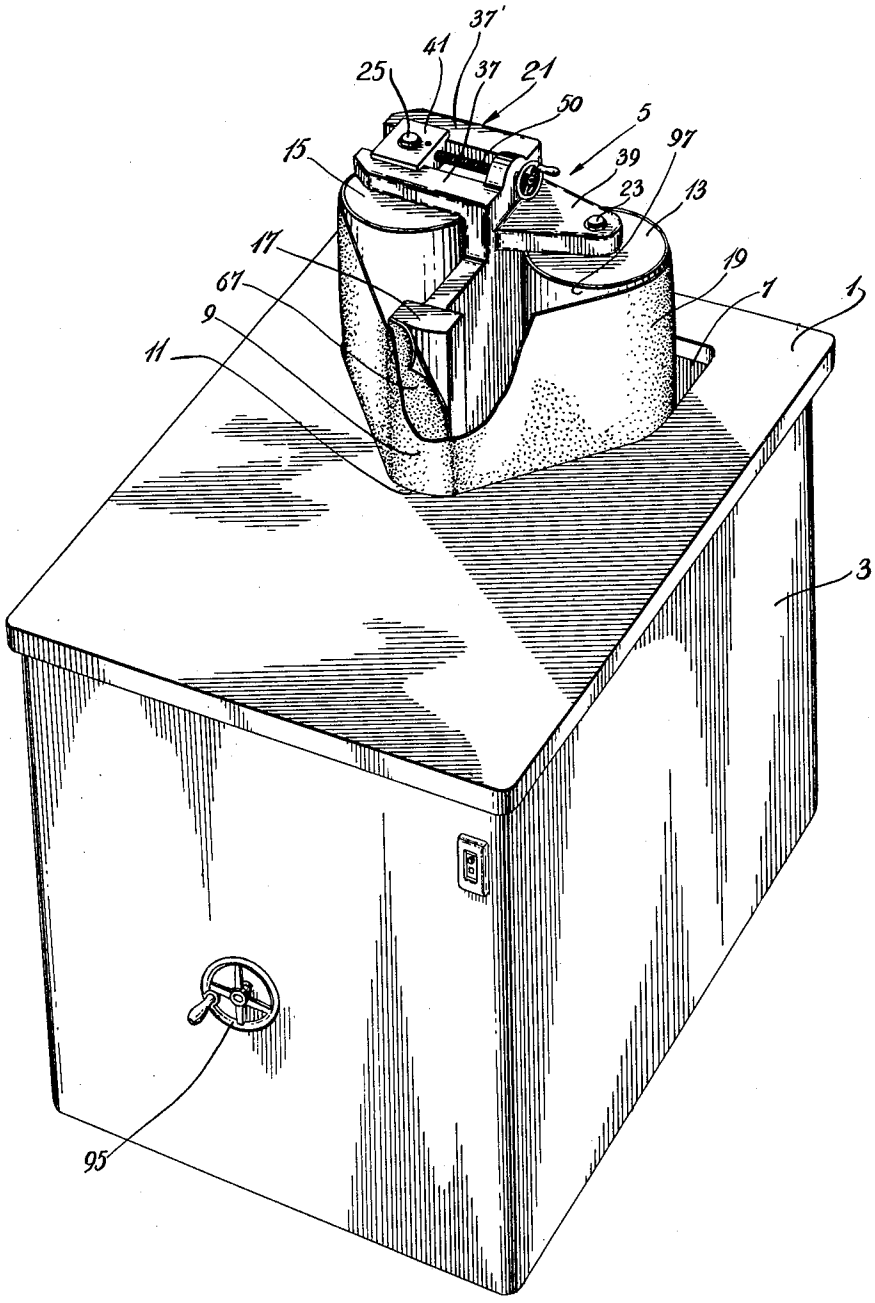


FIG. 1

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WORKING HEAD OF A SANDING MACHINE AND SUPPORT THEREFOR

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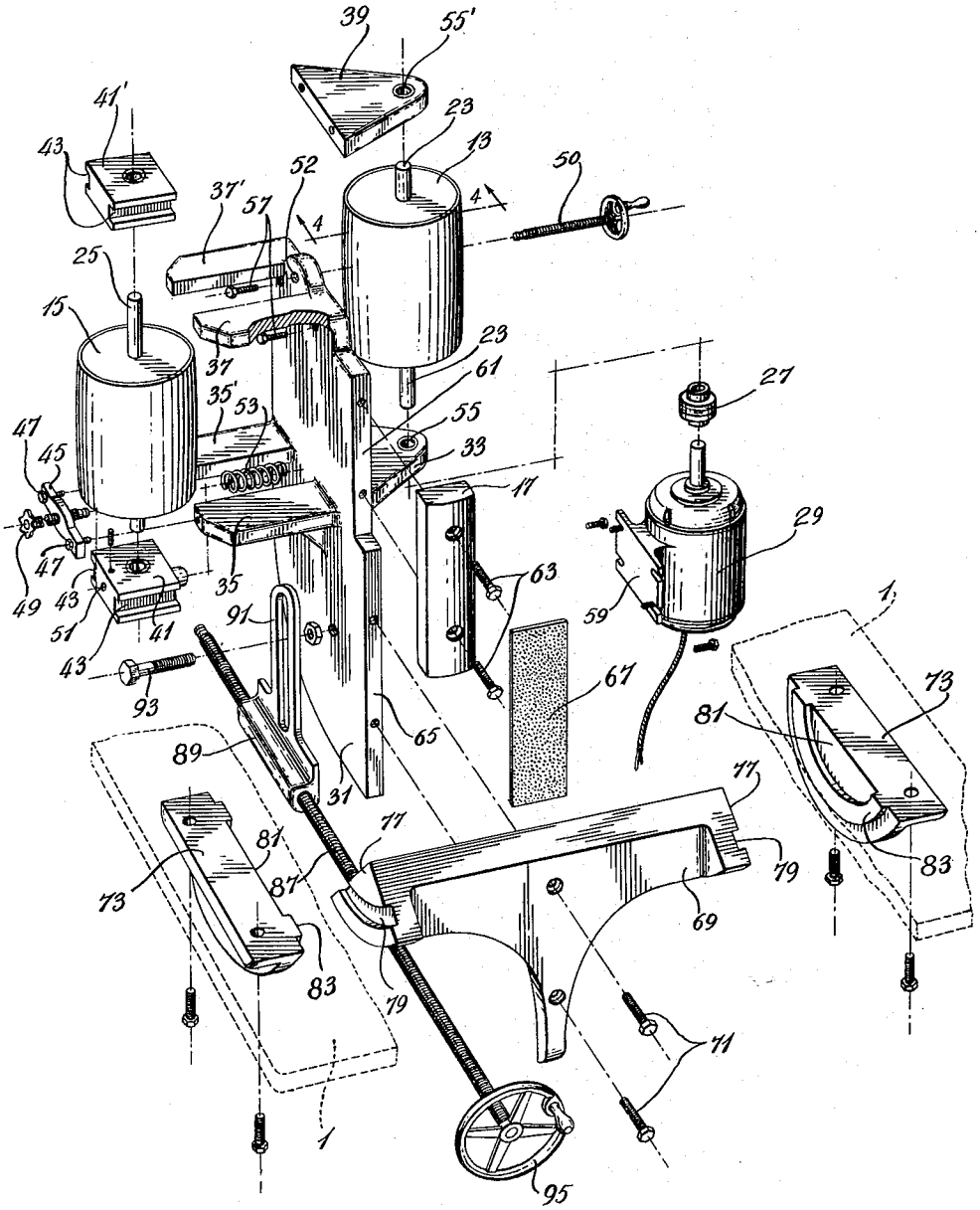


FIG. 2

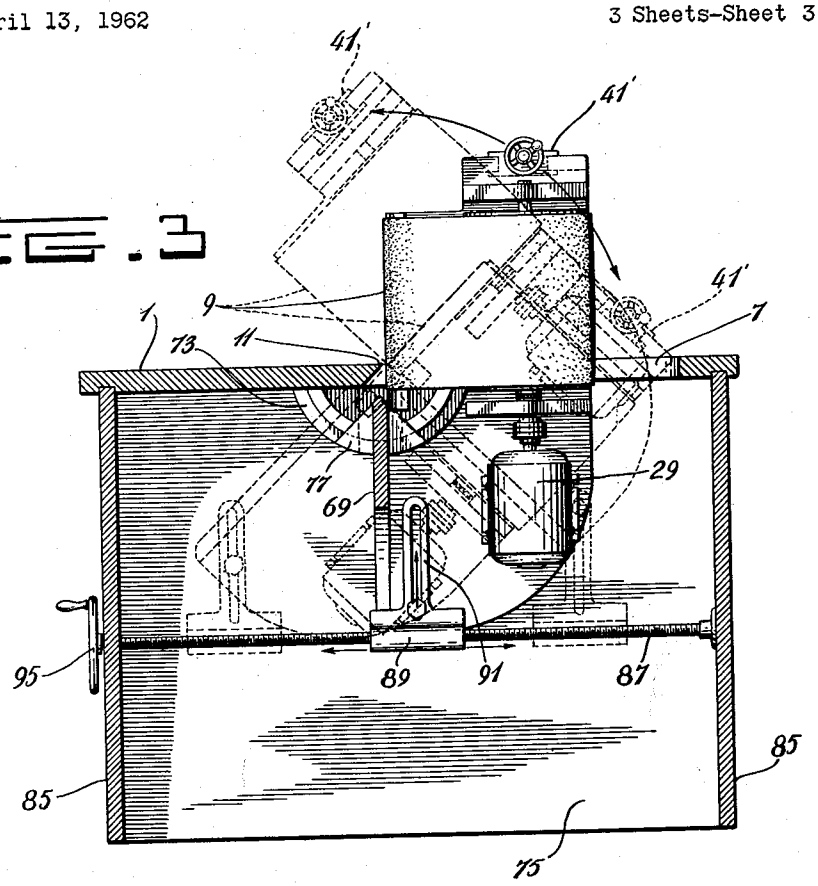
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WORKING HEAD OF A SANDING MACHINE AND SUPPORT THEREFOR

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FIG. 3



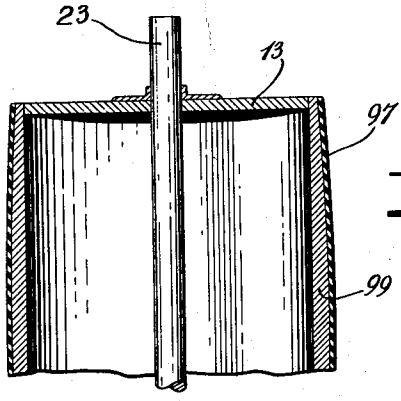


FIG. 4

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3,136,097

WORKING HEAD OF A SANDING MACHINE AND SUPPORT THEREFOR

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5 Claims. (Cl. 51—142)

The present invention relates to a working head for a sanding machine and to a rocking assembly therefor.

The sanding machines as presently used today have either a flat working surface, vertical or horizontal, of a substantial extent or are provided with a working surface which consists of a relatively small diametered vertical roller onto which is applied a sanding strip or sleeve. In the case where a substantial horizontal or vertical working surface is provided, this surface will not provide for the working of an arcuate concave area. In such a case, a machine having a vertical roller onto which a sanding sleeve or strip is applied is used but, due to the limited surface offered by such a roller, it is not possible to obtain satisfactory results where the radius of curvature of the piece to be worked is somewhat large. Rollers having a considerable diameter would have to be used, which rollers are completely impractical.

It is therefore a main object of the invention to provide a working head for a sanding machine that makes it possible to work all types of curved surfaces, particularly concave surfaces having a large radius of curvature.

Yet another object of the invention consists in providing a working head for a sanding machine which is so made that it will automatically rid itself of a substantial amount of the particles, of the material being worked, which are caught between the grains of the abrasive sleeves or strips.

A further object of the invention resides in the provision of an assembly for the rocking head of a machine especially adapted for the working of pieces of all sizes without the possibility of causing injury to the user.

The above mentioned objects may be obtained in a working head for a sanding machine according to the invention which comprises: a support having an elongated belt guiding member along a forward sanding edge thereof and generally at an apex of said triangular structure; means mounting said support and belt guiding member on said base structure with the guiding member cutting the plane of said work supporting surface; a belt guiding roller mounted on each side of said central support, rearwardly thereof and generally at the other two apices of said triangular structure; said rollers cutting the plane of said work supporting surface and rotatable about axes parallel to the longitudinal axis of said belt guiding member; one of said rollers being a driving roller, the other a driven roller; driving means for said driving roller, and an endless abrasive belt trained around said rollers and said forward guiding member whereby said belt may travel in a substantially triangular path normal to said roller and guiding member axes.

It is within the scope of the invention to provide the rocking assembly with a downwardly projecting actuating member cooperating with a rotatable but axially non-displaceable threaded element mounted below the table and parallel to the lateral walls. Lost motion means couples the actuating member and the threaded element to cause rocking of the assembly as the said threaded element is rotated. Such lost motion means preferably consists of a directing member having a threaded bore mounted on the threaded element and a normally vertical fork-like member having spaced legs. It also includes a projecting lug on the actuating member; the said lug being guidingly received between the spaced legs.

It is believed that a better understanding of the invention will be had by the following description of a specific but non-limitative embodiment thereof. This description having reference to the appended drawings wherein:

FIGURE 1 is a perspective view of the invention;

FIGURE 2 is an exploded view of the support of the invention;

FIGURE 3 shows a cross-sectional view of the support according to the invention and,

FIGURE 4 is a partial cross-section of a guiding reel, as taken along line 4—4 of FIGURE 2.

The machine, on which the working head of the invention is used, comprises a horizontal working table **1** supported by a generally rectangular body **3**. The working head **5** of the machine projects above the working table **1** through an aperture **7** and comprises a working surface **9**. It should be understood that the aperture **7** may actually be reduced to an edge **11** merely surrounding the working surface **9**.

In the illustration used, the working head of the sanding machine comprises a driving reel **13**, an idler reel **15** and a stationary frontal part **17**. An endless sheet of abrasive paper **19** is set around the three parts **13, 15** and **17** and driven into rotation by driving reel **13**. These components are part of the driving mechanism **21**.

As will be appreciated, the pieces to be worked are layed flat on working table **1** and pressed against the working surface **9** while the abrasive paper band **19** is rotating.

The various components of the driving mechanism and rocking assembly are illustrated on FIGURE 2, particularly.

The driving mechanism consists, as aforesaid, of reels **13** and **15** which are mounted on vertical shafts **23** and **25** respectively. Shaft **23** has one end thereof joined as by means of coupling **27** to a motor **29**. These components are mounted on a normally vertical central support **31** having supporting brackets **33, 35, 35', 37** and and **37'**, all integral with plate **31** or fixedly secured thereto. Bracket **33** lies on one side of support **31** at about the mid-portion thereof and brackets **35, 35'** are located opposite the bracket **33**. Brackets **37** and **37'** stand in the upper part of the support **31**. Finally, a removable bracket **39** is provided which lies across brackets **37, 37'** and above bracket **33**.

Brackets **35, 35'** as well as **37, 37'** are spaced from one another for the reception of guiding blocks **41, 41'**, each of which is provided, on each side, with guideways or grooves **43** in which the opposing edges of brackets **35, 35'** and **37, 37'** are received. The lower arrangement of brackets **35, 35'** and guiding block **41** is further provided with a retaining member **45** in the form of a plate bridging the gap between the brackets **35, 35'** and secured thereto by such means as screw **47**. An adjusting screw **49** threads through retaining plate **45** and has the outer end freely received in a hole **51** in guiding blocks **41**. Finally, a spring **53** tends to drive block **41**, and thus idler reel **15**, away from support **31**. Adjustment may be made by means of the adjusting screw **49** so as to relieve or increase the pressure on the endless sand paper band **19**. Similar changes in pressure may be obtained by the threaded hand operated rod **50** received in threaded hole **52** and bearing against the upper end of shaft **25**.

The mounting of driving reel **13** is simply obtained by extending shaft **23** through bearings **55, 55'** on brackets **33** and **39**. For that purpose, bracket **39** has been made removable and may be connected to the support **31** by means of screws **57**. As aforesaid, shaft **23** is connected to motor **29** through the coupling **27**. The motor itself is secured to the support **31** through connecting bracket **59** and suitable screws or other fixing elements.

A notch **61** is cut off the frontal edge of plate **31** for the reception of the slightly arcuate frontal part **17**

which is secured thereto by means of screws 63. The depth of notch 61 is such that the frontal face of part 17 will lie flush with the frontal edge 65 of support 31. Finally, a graphite covered sheet 67 is glued or otherwise secured to the frontal part 17.

With the arrangement above described and with the particular shape of reels 13 and 15 as further described in relation to FIGURE 4, the abrasive sleeve or belt 19 can be put on the head of the machine while the latter is rotating, simply by tilting the idler reel slightly towards the support 31, slipping the abrasive band on and gradually straightening the idler reel by means of the screw and handle 50. Similarly, whenever it is desired to remove the sleeve or belt it is simply necessary to again tilt idler reel 15 towards supporting plate 31 while the machine is operating.

The rocking mechanism is composed of a central portion 69 transversally connected to supporting plate 31 by means of screws 71. The mechanism also comprises side portions 73 either connected to the lateral walls 75 of body 3 or to the under surface of working table 1, as shown in dotted lines in FIGURE 2.

The outer lateral faces 77 of portion 69 are shown provided with segmental circular grooves 79 while the lateral faces 81 of side portions 73 are provided with mating segmental circular projections 83. It will be understood that, in assembled position of the supporting device, the circular projections ride in the circular grooves 79. Also, the position of the grooves and projections are interchangeable.

An important feature of the invention is that the centers of the grooves or projections lie in the plane of the surface of the working table 1. Also, the axis of rotation or of rocking of the central portion 69 and the supporting assembly preferably lies in the plane of the working surface 9, although good results are obtained when this rotation or rocking axis lies between the working surface 9 and the edge 11 of the working table.

Rocking of support 31 and of the rocking assembly may be obtained by means of a threaded rod 87 mounted parallel to lateral walls 75 and between the further lateral walls 85. Threaded rod 87 is rotatable but is non-displaceable axially. A directing member 89 has a threaded bore mounted on the threaded rod 87 and is further provided wtih a normally vertical fork-like member 91 having spaced parallel legs. A lug, which in this case may be a bolt or screw 93, is secured to support 31 to extend loosely between the legs of the fork member 91. Finally, a handle 95 is used for rotating threaded rod 87. As will be appreciated, the rotation of handle 95 and rod 87 will displace the directing member 89 along rod 87 and cause rocking of support 31 while lug 93 rides the fork 91. The extreme positions of such displacements are shown in dotted lines in FIGURE 3.

With an arrangement such as above described, and as best illustrated in FIGURE 3, it will be understood that rocking action of the working head will not change the width of the space between the edge 11 of the working table 1 and the working surface 9 of the working head.

In the illustration of FIGURE 4, the driving reel 13 is shown provided, on the active face thereof, with a rubber covering 97 in order to provide a better frictional and gripping action on the sand paper band 19. It should also be observed that the outer wall 99 is somewhat barrel-shaped, as is also the case with the idler reel 15. The purpose of this particular shape is to prevent the sand paper band 19 from sliding off the reels.

Although a specific embodiment of the invention has just been described, it will be understood that various modifications may be made thereto without departing from the spirit of the invention or from its scope as set forth in the appended claims.

I claim:

1. In a sanding machine having a base structure including a work supporting surface, a generally triangular working head structure therefor comprising:

(a) a support having an elongated belt guiding member along a forward sanding edge thereof and generally at an apex of said triangular structure;

(b) means mounting said support and said belt guiding member on said base structure with the longitudinal axis of the guiding member cutting the plane of said work supporting surface;

(c) a belt driving roller mounted on one side of said support, rearwardly thereof, for rotation about an axis parallel to the longitudinal axis of said belt guiding member; said roller being mounted generally at another apex of said triangular structure;

(d) driving means on said support for rotating said driving roller;

(e) a driven roller mounted on the opposite side of said central support, rearwardly thereof, for rotation about an axis parallel to the longitudinal axis of said belt guiding member; said roller being mounted generally at the third apex of said triangular structure;

(f) an endless abrasive belt trained around said rollers and said forward guiding member whereby said belt may travel in a substantially triangular path normal to said roller and guiding member axes;

(g) means shifting said driven roller angularly in relation to said support to force vertical movement of said belt to cause engagement and disengagement thereof from said head.

2. In a sanding machine having a base structure including a work supporting surface, a generally triangular working head structure therefor, comprising:

(a) a support having an elongated belt guiding member along a forward sanding edge thereof and generally at an apex of said triangular structure;

(b) means pivotally mounting said support and belt guiding member on said base structure with the longitudinal axis of the guiding member cutting the plane of said work supporting surface; said pivotal means allowing rocking movement in a path substantially normal to said work supporting surface;

(c) a belt driving roller on one side of said support, rearwardly thereof, for rotation about an axis parallel to the longitudinal axis of said belt guiding member; said roller being mounted generally at another apex of said triangular structure;

(d) driving means, on said support, for rotating said driving roller;

(e) upper and lower bearing means projecting laterally from said support, rearwardly thereof;

(f) a driven roller mounted on and between said upper and lower bearing means and generally at the third apex of said triangular structure;

(g) an endless abrasive belt trained around said roller and said forward guiding member whereby said belt may travel in a substantially triangular path normal to said path of rocking movement;

(h) said upper bearing means including a bearing block and means moving said block to and from said support whereby to angularly shift said driven roller in relation to said support to force vertical movement of said belt to cause engagement and disengagement thereof from said head.

3. A working head structure as claimed in claim 2, wherein said lower bearing means includes a bearing block resiliently pressed outwardly in relation to said support and means to adjust the lateral position of said block in relation to the support whereby lateral bodily displacement of said driven roller may be obtained by control of said upper and lower bearing means.

4. In a sanding machine having a base structure including a work supporting surface, a generally triangular working head structure therefor comprising:

(a) a central support having an elongated belt guiding

member along a forward sanding edge thereof and generally at an apex of said triangular structure;

(*b*) a rocking plate connected transversely of and on the forward edge of said central support to extend on both sides thereof with the support projecting above said work supporting surface;

(*c*) means pivotally connecting said plate along the upper edge thereof to said base structure, whereby said support may rock in a path normal to said work supporting surface;

(*d*) a rotatable threaded rod mounted on said base structure parallel to said central support;

(*e*) a threaded directing member displaceable on said rod as the latter rotates;

(*f*) lost motion means on said member and central support whereby said support may be rocked as said threaded rod rotates;

(*g*) a belt driving roller on one side of said central support, rearwardly thereof and extending above said work supporting surface, for rotation about an axis parallel to the longitudinal axis of said belt guiding member; said roller being mounted generally at another apex of said triangular structure;

(*h*) driving means on said support, for rotating said driving roller;

(*i*) upper and lower bearing means projecting laterally from said central support, rearwardly thereof;

(*j*) a driven roller mounted on and between said upper and lower bearing means and generally at the third apex of said triangular structure;

(*k*) an endless abrasive belt trained around said rollers and said forward guiding member whereby said belt may travel in a substantially triangular path normal to said path of rocking movement;

(*l*) said upper bearing means including a bearing block

and means moving said block to and from said central support whereby to angularly shift said driven roller in relation to said support to force vertical movement of said belt to cause engagement and disengagement thereof from said head.

5. A working head structure as claimed in claim 4, wherein said lower bearing means includes a bearing block resiliently pressed outwardly in relation to said central support and means to adjust the lateral position of said block in relation to the support whereby lateral bodily displacement of said driven roller may be obtained by control of said upper and lower bearing means.

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