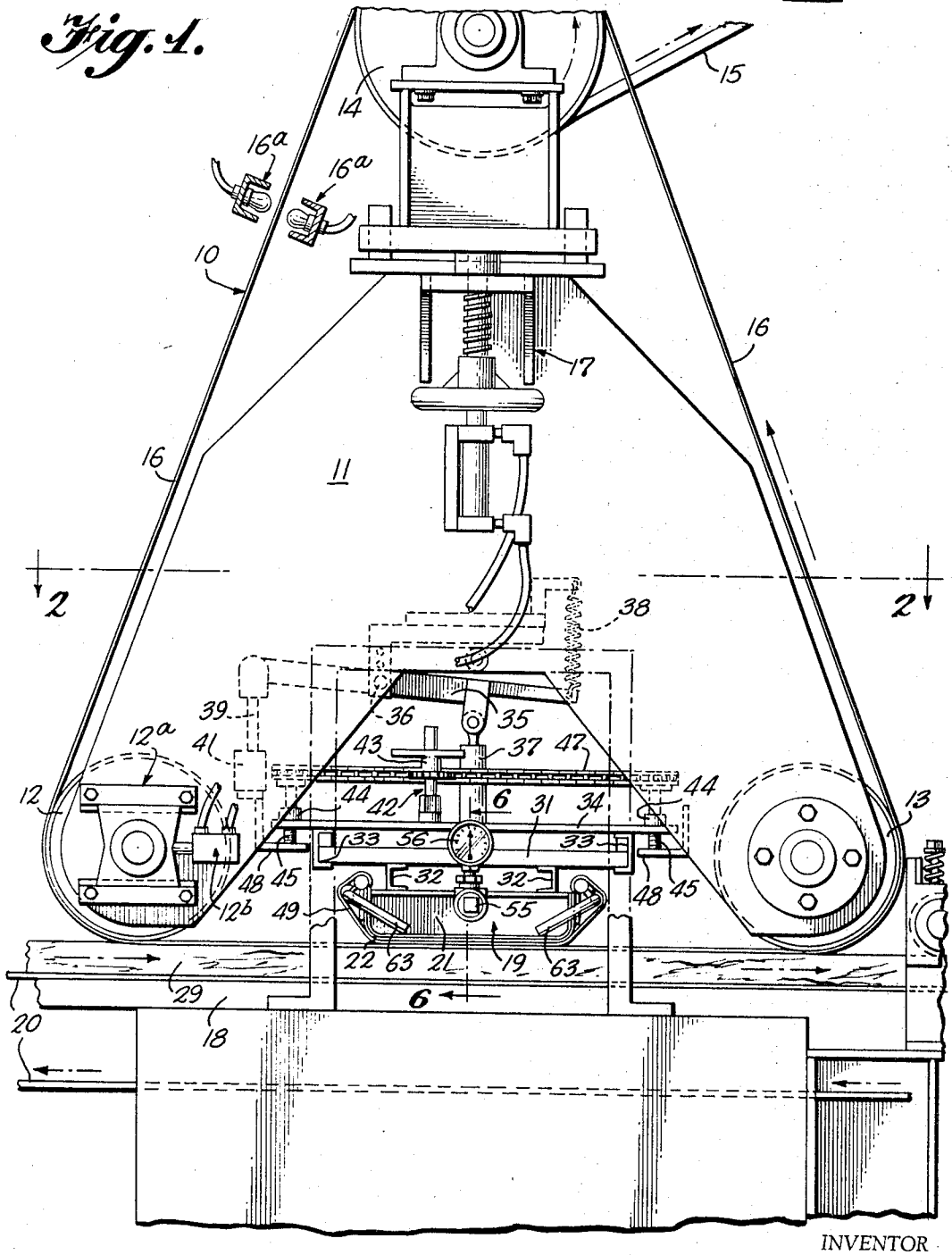
Feb. 25, 1969 V. H. WINEBARGER 3,429,079

SANDING PLATEN

Filed June 8, 1965 Sheet 1 of 4

Fig. 1.



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Feb. 25, 1969 V. H. WINEBARGER 3,429,079

SANDING PLATEN

Filed June 8, 1965 Sheet 2 of 4

Fig. 2.

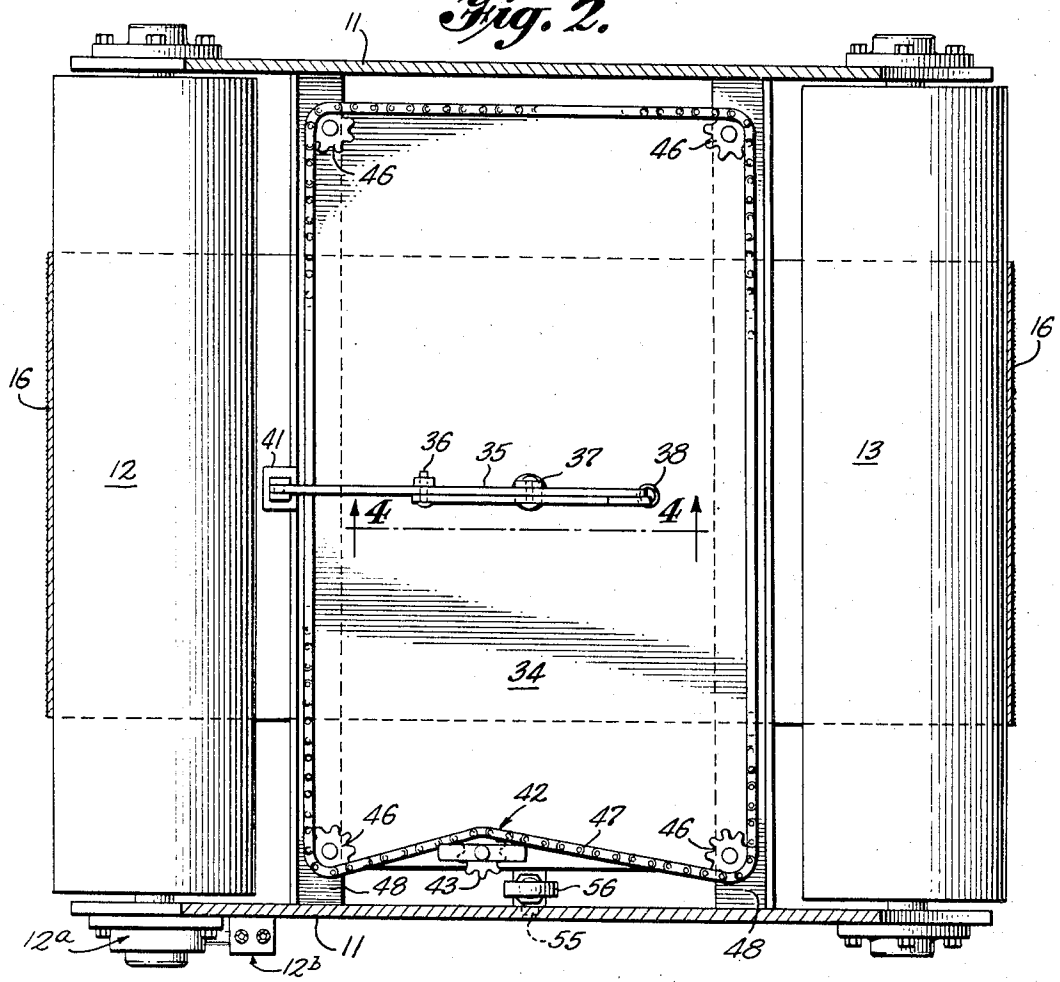
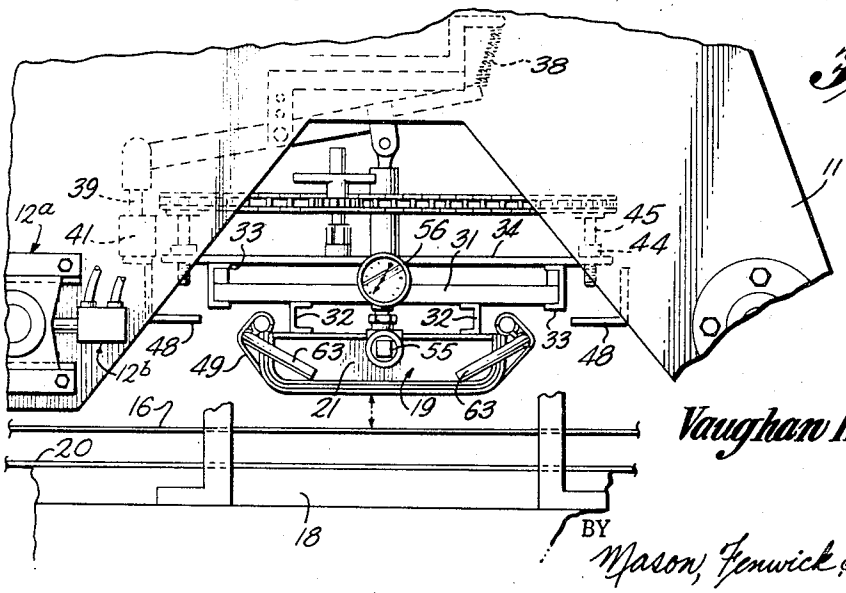


Fig. 3.



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Feb. 25, 1969 V. H. WINEBARGER 3,429,079

SANDING PLATEN

Filed June 8, 1965 Sheet 3 of 4

Fig. 4.

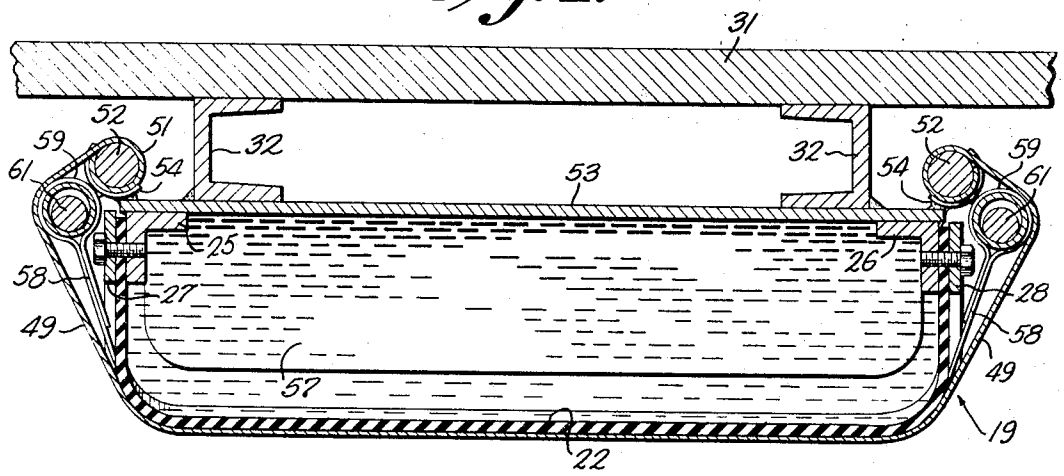
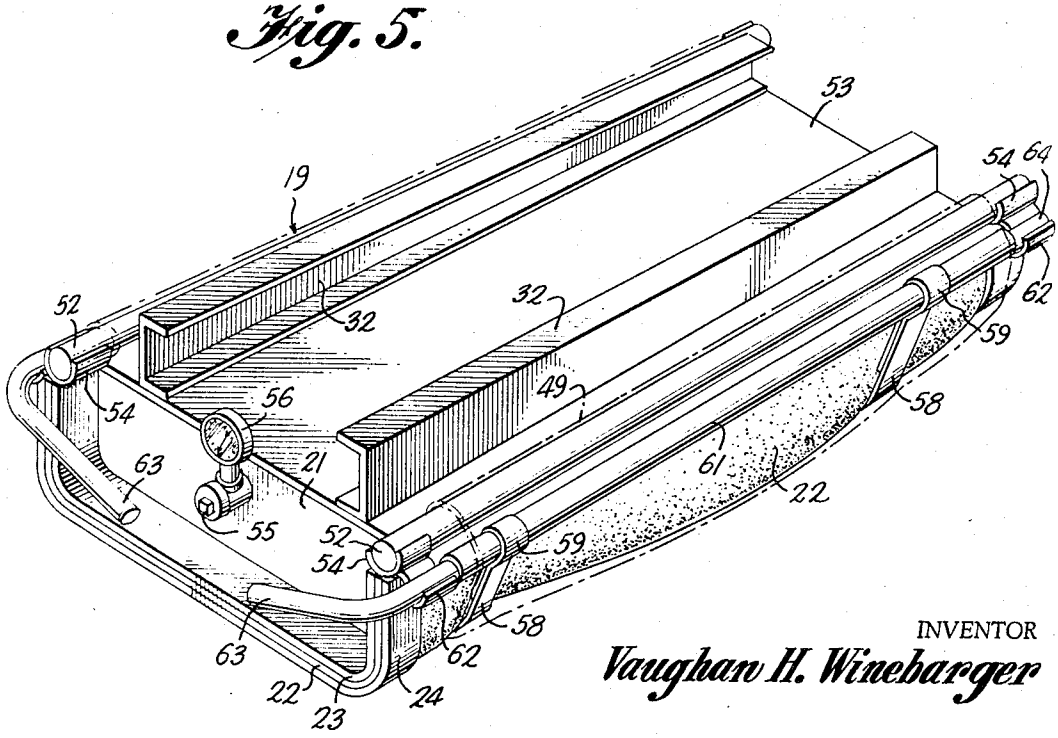


Fig. 5.



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SANDING PLATEN

Filed June 8, 1965 Sheet 4 of 4

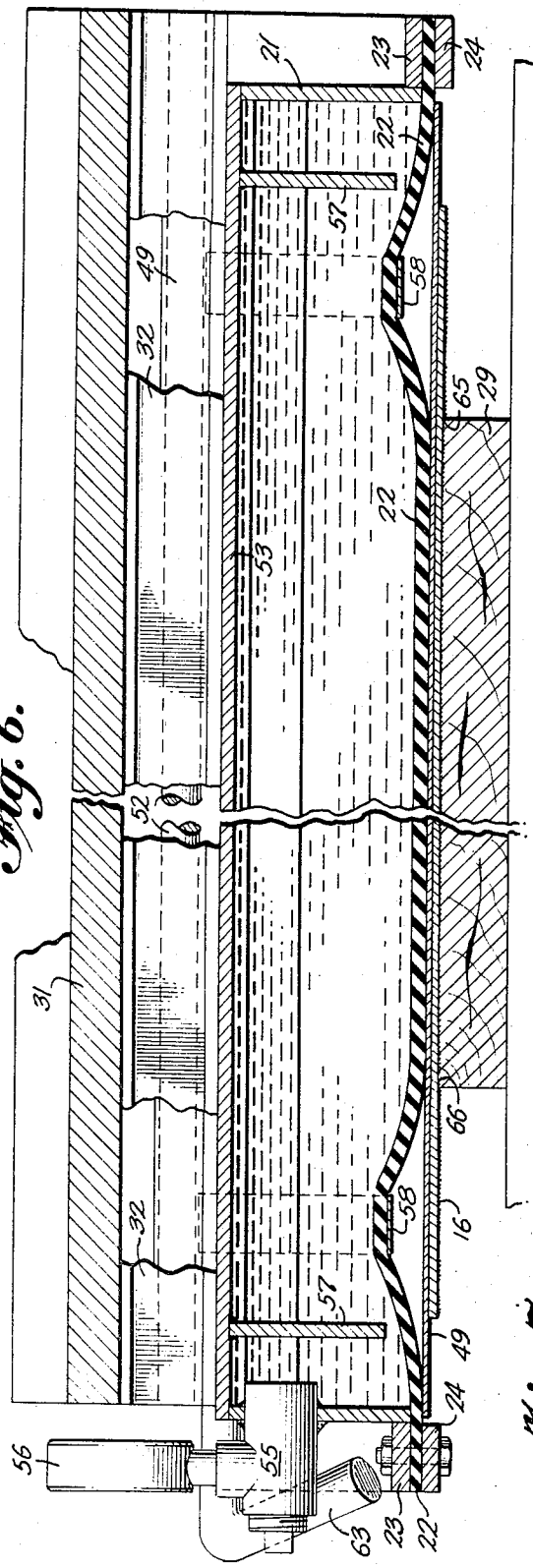


Fig. 6.

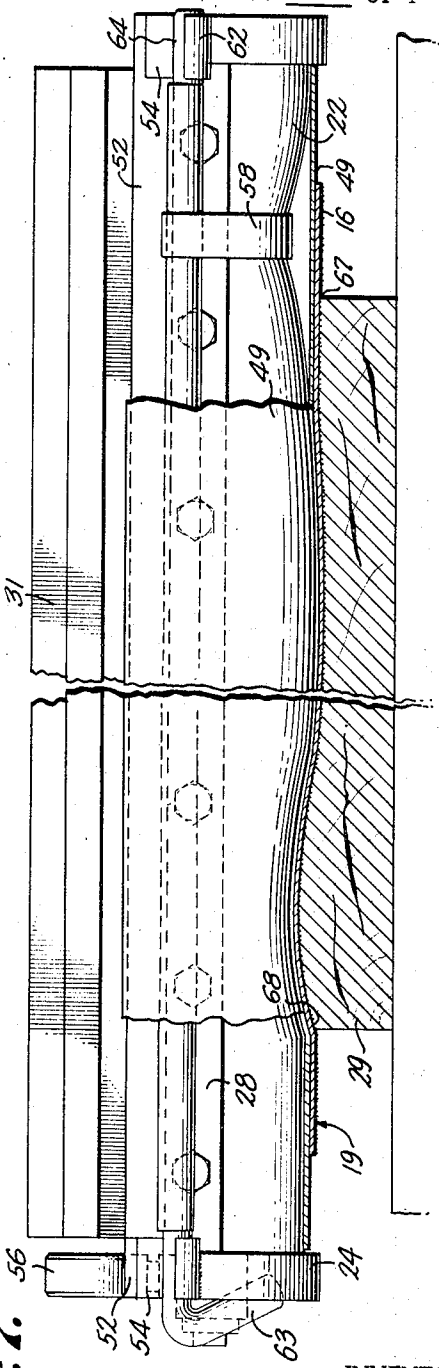


Fig. 7.

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3,429,079

SANDING PLATEN

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Filed June 8, 1965, Ser. No. 462,174
U.S. Cl. 51—141 3 Claims
Int. Cl. B24b 21/00, 23/06, 25/00

ABSTRACT OF THE DISCLOSURE

A sanding platen having movable bands engaging a liquid filled bag to lift portions of the bag away from contact with a flexible member engaging a sanding belt so that only selected portions of the belt are biased against a workpiece.

This invention relates in general to apparatus for sanding lumber, and more particularly to an adjustable sanding platen whose effective bearing surface against a moving sand belt may be changed to selectively sand certain desired areas of materials capable of being sanded.

In previous sanding devices it has not been possible to maintain perfectly square corners because wide moving sanding belts being forced downwardly by a flexible platen will allow the sanding belt to extend over a corner of a piece of work, thereby rounding the corner. Further, the pressure of the platen upon the work needs to be precisely controlled due to the extremely thin veneers now being used in the furniture industry. If the platen pressure is not closely controlled, it is possible to sand through thin veneers in an extremely short time.

Therefore, an object of this invention is the provision of a sanding machine in which square cornered stock may be sanded without rounding the corners.

Another object of this invention is the provision of a sanding machine in which the pressure of the platen upon the sanding belt, and ultimately upon the wooden stock, may be precisely controlled.

A further object of this invention is the provision of a flexible sanding platen in which certain portions of the working surface of the platen may be raised from active engagement with the portion or portions of the sanding belt that overlie the square corners of the stock thereby preventing the occurrence of corner rounding.

Yet another object of this invention is the provision of a sanding platen that is flexible to such a degree that it conforms to the shape of the stock that is being sanded.

Other objects, advantages and capabilities of the invention will become apparent from the following description, taken in conjunction with the accompanying drawings showing only a preferred embodiment of the invention.

In the drawings

FIGURE 1 is a front elevation view of the sanding platen of the present invention in a lowered position and showing the associated machinery needed for support and operation;

FIGURE 2 is a horizontal side view taken along lines 2—2 of FIGURE 1;

FIGURE 3 is a front elevation view similar to that in FIGURE 1; however, showing the sanding platen in a raised position;

FIGURE 4 is a vertical section view taken along lines 4—4 of FIGURE 2;

FIGURE 5 is a perspective view of the sanding platen when looking at the top portion thereof;

FIGURE 6 is a vertical section view taken along lines 6—6 of FIGURE 1 showing the platen against a piece of work to be sanded; and

FIGURE 7 is a side elevation view partially broken away showing the sanding platen engaging an irregular contoured piece of work to be sanded.

Referring to the drawings wherein like reference characters designate corresponding parts throughout the several figures, and especially to FIGURE 1, there is shown a known type of wide belt sanding machine indicated by the numeral **10**. The sanding machine **10** is of the type having a pair of upside-down yoke sections **11** wherein the two lowermost arms of the yoke have respective idler rollers **12** and **13**. At the topmost extremity **11** there is mounted a drive roller **14** driven from a suitable power source (not shown) by V-belt **15**. Placed about the rollers **12**, **13**, and **14** in an endless fashion, is a sanding belt **16**. The sanding belt **16** is caused to move about the three rollers at such times as the drive roller **14** is moved by belt **15**. For adjusting the position of the sanding belt **16**, upon the roller **14**, there is provided a sanding belt adjusting apparatus **17** for imparting vertical movement to the drive roller **14**. A photoelectric cell system **16***a* maintains the belt centered on roller **14**. Upon the yoke **11** is located a table **18** upon which a conveyor belt **20** is placed so that the work may be moved beneath the sanding belt **16** and operated upon in the normal fashion. Between the downwardly projecting legs of the yokes **11** is located the sanding platen **19** of the present invention. To adjust the tension of the belt **16** an adjusting apparatus **12***a* is provided on roller **12** and includes a double acting air cylinder **12***b* to move the roller.

The sanding platen **19** generally comprises an inverted rectangular box-like member **21** having an open bottom and two open sides. So that the sanding platen **19** may be made watertight and be resilient, the open sides and bottom are covered by a unitary piece of flexible watertight material formed into a bag structure **22**. The bag **22** is clamped to the box structure **21** by means of inner and outer end clamps **23**, **24** respectively. The remaining two ends which run the longitudinal length of the sanding platen **19** are clamped in a watertight fashion to the L-shaped supports **25**, **26** by the outer longitudinal clamps **27**, **28**. The sanding platen is supported above the work **29** by means of a platen support platform **31** attached to the sanding platen by channel members **32**. The platen support platform **31** is suspended by a pair of channel shaped supports **33** attached to the bottom of the platen hanger plate **34**.

The platen **19**, by means of the hanger plate **34**, is adapted for vertical movement when the platen control lever **35** is pivoted about pivot pin **36**. Interconnecting the control lever **35** and the platen hanger plate **34** is the platen hanger **37**. At one end of the platen control lever **35** is tension spring **38** which counterbalances the weight of the platen. At the remote end of the control lever **35** is an operating rod **39** which acts to raise or lower the control lever **35** upon energization of the double acting air cylinder **41**. The air cylinder **41** may be of any suitable design; however, it must perform the function of reciprocating the operating rod **39** which is pivotally connected with the control lever **35** so that downward pressure may be extended upon the platen hanger **37** to force the platen toward the work **29**.

The air cylinder **41**, cooperating with the control lever **35**, maintains maximum downward pressure on the platen against the work **29** passing underneath. However, to make a fine adjustment of the pressure of the sanding platen **19** against the work **29** a platen pressure adjusting mechanism **42**, including generally a chain control sprocket **43** for control of the adjusting mechanism, is mounted atop of the platen hanger plate **34**. At each of the four corners of the platen hanger plate **34** there is affixed a nut **44** through which is threaded an adjusting screw **45**. The screw **45** also projects through the

hanger plate 34. The uppermost end of the adjusting screws 45 each have a sprocket 46 which interconnects with the fine pressure adjustment chain 47. The chain 47 also engages the control sprocket 43 so that upon rotation of the sprocket 43 each of the adjusting screws 45 are moved vertically in a direction determined by the direction of rotation of sprocket 43.

As is seen in FIGURE 1 the adjusting screws are adapted to move vertically downward to the platen stops 48, thereby limiting the vertical drop of the sanding platen depending, of course, upon the amount of travel imparted to the screws 45. By adjusting the mechanism 42 in one direction or the other it is easily seen that, as the screws 45 are either drawn upwardly or lowered, the platen 19 will exert greater or lesser pressure upon the work 29 as the case may be. Of course, air cylinder 41 always provides maximum downward, or upward, pressure to the platen when the cylinder is actuated, however, the final precise pressure upon the work may be controlled by the adjusting mechanism 42.

Referring more particularly to the construction of the sanding platen 19, there is seen that wear spacer 49 overlies the flexible bag 22 to prevent undue wear to the bag because of the fact that the sanding belt 16 moves at a high speed relative to the bag. The movement of the sanding belt obviously will cause wear upon the bag and it has been found that a better course of action is to place between the belt and the bag a wear spacer which is relatively inexpensive and is easily replaced. The loose ends 51 of the wear spacer are wrapped about wear spacer supports 52 lying along the longitudinal upper portion of the top surface 53. The supports 52 should be of rigid metal and the wear spacer should be wrapped approximately one turn about each support after which the supports will then be placed within the U-shaped carriers 54. Since the U-shaped carriers 54 face inwardly with respect to the platen 19, it can be seen that the wear spacer 49 will be kept taut until the supports 52 are released from the carriers 54.

The platen box 21 has at one end thereof an inlet 55 for fluid so that a desired quantity of coolant might be placed within the platen. Attached for fluid communication with the filling access 55 is a pressure gauge 56 which is adapted to measure the pressure of water within the platen. This effectively measures relative pressure of the platen 19 against the work 29 passing underneath. While the present drawings indicate only that the platen 19 may be initially filled with water or other suitable coolant, it is anticipated that a need might arise for having an access at each end of the platen to provide for exchanging the coolant within the platen. With this in mind, the platen is equipped with a pair of baffles 57, and mounted so that one is near each end of the platen. These baffles will, as the coolant is being exchanged, cause agitation and thoroughly mix the cooler incoming coolant with the contained warmer coolant. Also, in this embodiment there would be need of suitable controls to maintain fluid pressure within the platen.

An especially important feature of this invention is the provision of means to raise selected portions of the flexible bag 22 from the sanding belt 16 to prevent the rounding of square corners of the work 29. This is accomplished by providing one or more longitudinally adjustable platen bag deforming members 58. These members are so constructed as to stretch transversely across the flexible bag 22 while having rounded bends intermediate the ends thereof and then terminating some distance from the rounded bends in a circular slide end 59. The circular slide ends 59 are held in place by, and slidable along, a pair of deforming member lock bars 61. The lock bars 61 are held in place parallel to the platen 19 by outwardly extending lock bar support members 62. At one end of each of the lock bars 61 is a tightening handle 63 of reduced diameter which is affixed to the end of each lock bar in an eccentric manner. The ends 64 of lock bars 61 remote from the tightening handles 63 are also of reduced diameter and eccentric with respect to the lock bars 61. It is these ends 64 which are supported by supports 62 at one end of the platen 19, which, concurrently with the handles 63, effect the tightening of the deforming members 58 across the flexible bag 22. As the handles 63 are rotated inwardly toward the center of the platen 19 it is seen that they cause eccentricity of movement of the lock bars 61, thereby tightening the deforming members 58. To release the tension upon the flexible bag 22 it is only necessary to rotate the handles 63 outwardly.

As seen in FIGURES 6 and 7, it is the size and configuration of the work 29 which determines the mode of operation of the present invention. In FIGURE 6 there is depicted a piece of work which is of rectangular configuration having squared corners. It is desired to maintain these corners, indicated by numerals 65, 66, in a squared condition and therefore, two deforming members 58 are used to lift the bag 22 from engagement with the sanding belt 16 at the location of the corners 65, 66. For optimum results it is desired that the deforming members 58 be so placed that the bag 22 lifts from the sanding belt immediately adjacent the squared corners so that there will be no chance of the corners being rounded. To properly guide the work 29 beneath the sanding belt the table 18 may be provided with suitable members for this purpose. In FIGURE 6 it is seen that there is no pressure from the platen being applied to the sanding belt in the area of the corners 65, 66; only the area of the work between these corners is being sanded.

In FIGURE 7 there is shown a piece of work 29 having a contoured surface to be sanded with one corner, indicated by numeral 67, to be left square and the other corner 68 to be rounded. The mode of operation in this instance would be to have only one deforming member 58 across the bag 22 so that corner 67 would be left squared. The bag would then conform to the contoured surface of the work 29 and the contoured panel would be sanded evenly throughout. Since it is desired to leave corners 68 slightly rounded, there is no requirement for a deforming member 58 to be placed in this location. When such is the case, corner 68 would be only slightly rounded with a pleasant finish to the configuration.

The degree of sanding upon the work 29, be it of squared stock or contoured, depends upon the pressure that the platen 19 exerts downwardly against the work. This pressure, as was noted before, is controlled by air cylinder 41 acting through the previously noted linkage mechanisms to force the platen 19 downwardly. The pressure of the platen against the work is registered upon the gauge 56 due to the coolant filling the bag 22. The degree of sanding to take place may be controlled in a number of ways, the obvious ways being the control of pressure of the platen against the work and the movement of the work either in the same direction or in the opposite direction of the travelling sanding belt. It should be noted that any reasonable number of deforming members 58 may be used with the sanding platen 19 to raise the bag 22 from the sanding belt at the areas of work desired not to be sanded.

While I have particularly shown and described one particular embodiment of the invention, it is distinctly understood that the invention is not limited thereto but that modifications may be made within the scope of the invention and such variations as are covered by the scope of the appended claims.

What is claimed is:

1. A sanding machine of the type having a frame, a driven endless sand belt mounted for movement on the frame, work supporting means for supporting a workpiece in contact with the sand belt and a platen mounted on a platen support means attached to said frame for engaging the rear side of said sand belt to urge said sand belt against said workpiece, said platen including a flexible watertight bag means having a flexible wear spacer positioned between said bag means and said sand belt wherein

the pressurized liquid within said bag means urges said bag against said wear spacer which causes said wear spacer to urge said sand belt against said workpiece, bag deforming band means extending about said bag between said bag and said wear spacer and adjustment means for moving said band means against said bag so as to selectively move a portion of said bag in a direction away from said sand belt so that only desired portions of said belt are biassed against a workpiece.

2. The sanding machine of claim 1 wherein said adjustment means includes an eccentric lock bar supported from said support means with said bands being positionable in desired positions along said lock bar.

3. The sanding machine of claim 2 additionally including means for vertically adjusting the position of said platen with respect to said workpiece.

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