Nov. 10, 1970 A. POLLAK 3,538,650

BELT SANDERS

Original Filed March 12, 1965 2 Sheets-Sheet 1

Fig. 1.

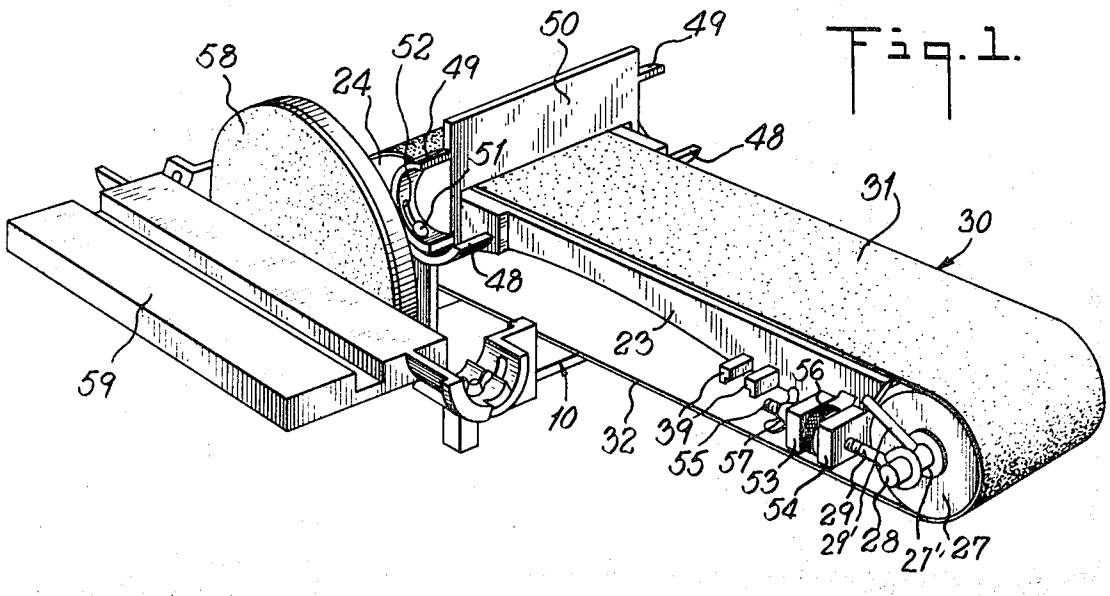


Fig. 2.

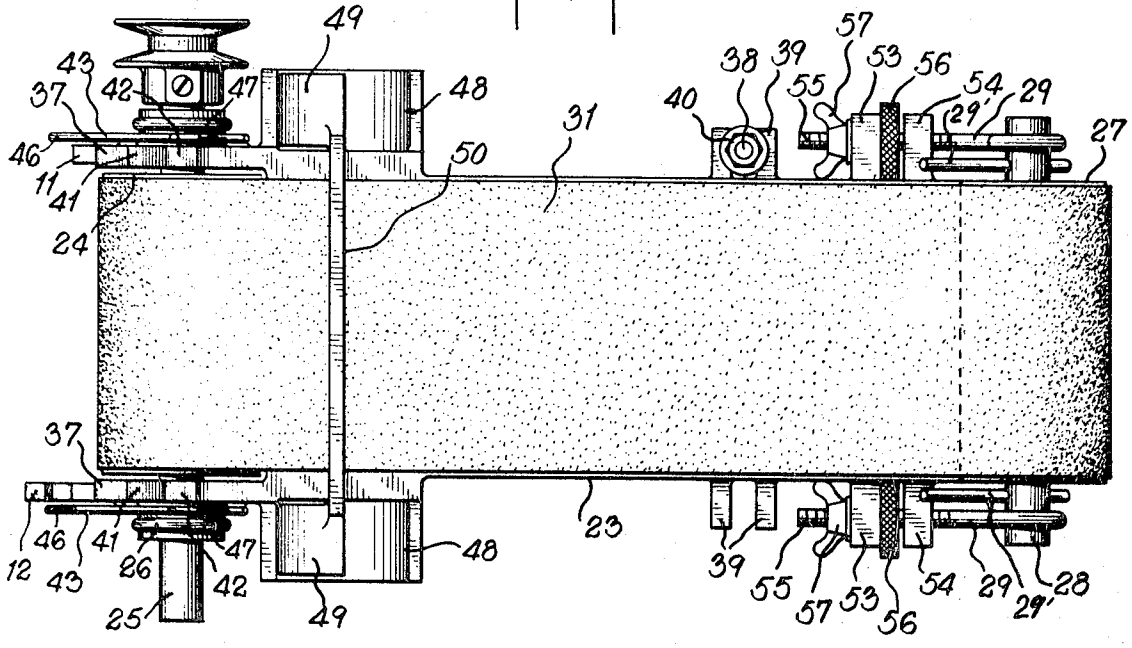
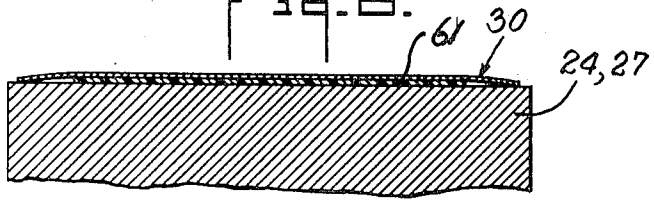


Fig. 6.



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Fig. 3.

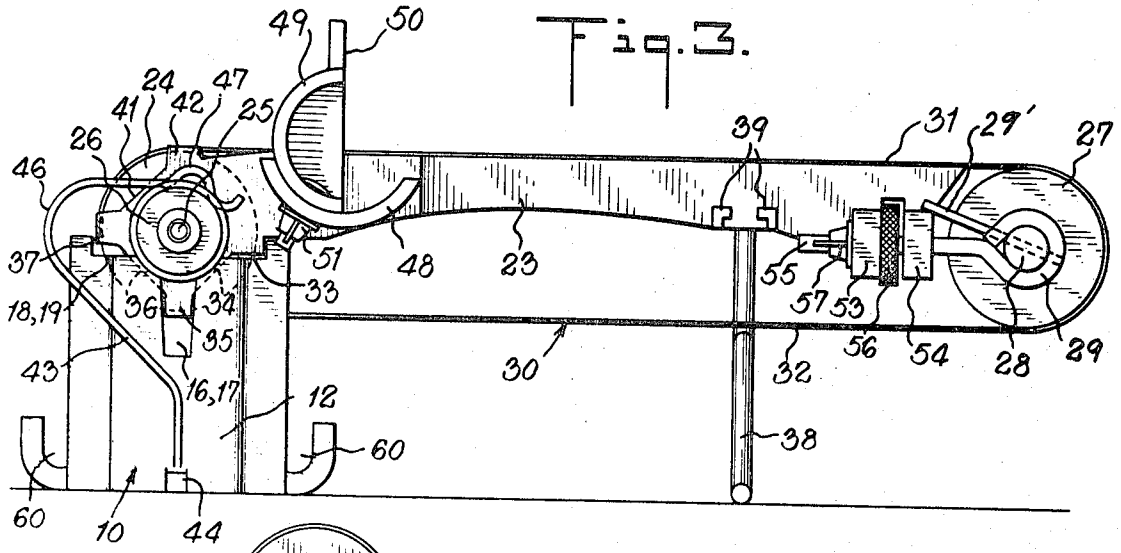


Fig. 4.

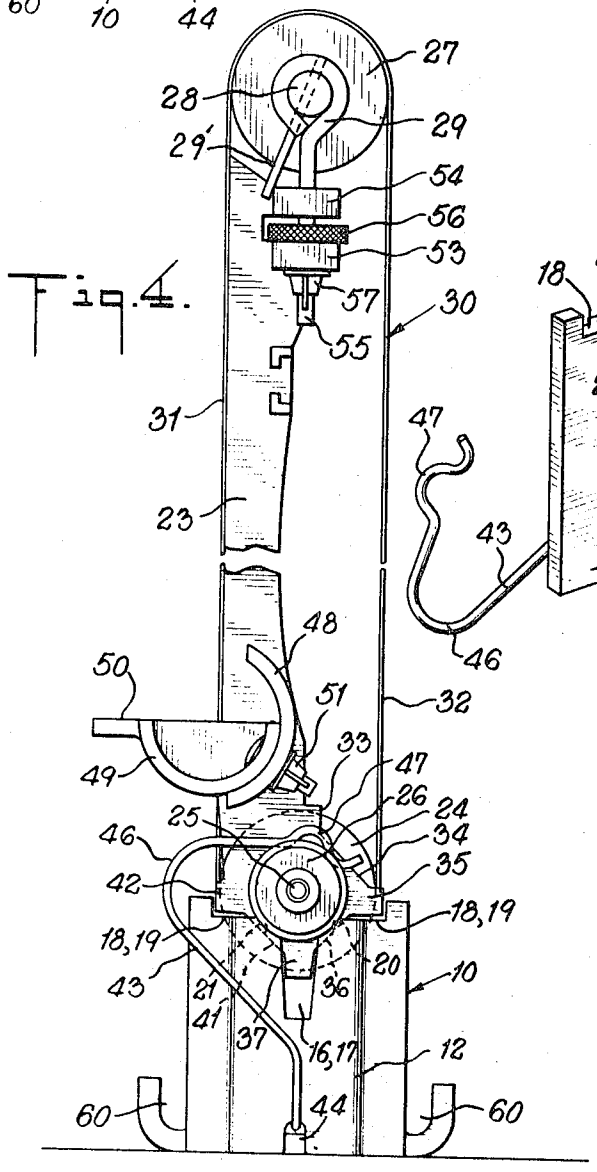
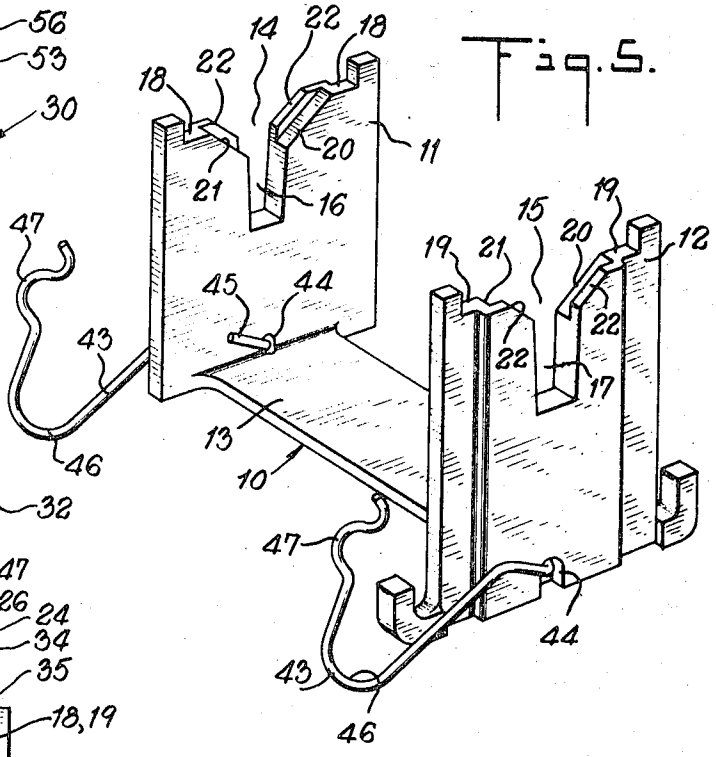


Fig. 5.



United States Patent Office 3,538,650 Patented Nov. 10, 1970

3,538,650

BELT SANDERS

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Original application Mar. 12, 1965, Ser. No. 439,211, now Patent No. 3,406,487, dated Oct. 22, 1968. Divided and this application Dec. 15, 1967, Ser. No. 712,881

Int. Cl. B24b *21/00*

U.S. Cl. 51—148 3 Claims

ABSTRACT OF THE DISCLOSURE

A belt sander apparatus having a means for individually adjusting the idler pulley with respect to the driving pulley. The adjusting mechanism comprises a pair of eye-bolts which are mounted in brackets extending from the sides of the platen. The stems of the eye-bolts are threaded and an adjusting nut operating against the brackets permit individual adjustment of the idler.

This is a division of application Ser. No. 439,211, filed Mar. 12, 1965, now Pat. 3,406,487.

My invention relates to belt-disc sanders or belt sanders designed for wood, plastic, or metal working.

The well engineered belt sander requires provision for three basic mechanical adjustments:

(1) method of adjusting tension on sanding belt;
(2) method of tracking the sanding belt; and
(3) method of changing belt from vertical to horizontal operating position.

In prior designs the methods used to accomplish these adjustments were costly and in some cases mechanically unsound.

In practically all common designs there is but one mechanism to accomplish the tension and tracking adjustments. In most cases it employs the use of two parallel slidable pins or screws attached in some manner at approximate right angles one each to the respective ends of the shaft carrying the adjustable belt roller. Since the pins or screws move in parallel but the belt roller shaft must be free to move not only at a constant angle to the pins for tension control but also at a variable angle to the pins for tracking control, the angle change has necessitated, on prior designs, an additional linkage, pivot, or costly machining operations to provide the motion and eliminate binding or twisting.

In my invention I employ a single mechanism to provide for the tension and tracking control. For the parallel moving slides or screws I use inexpensive eye-bolts. The bolts are threaded through adjusting elements so that they can be adjusted to position and then locked in position. The shaft which holds the idler pulley passes through the eyes of the bolts.

Since the eye-bolt is of round cross section, the shaft becomes tangent to the eye in a line on the inner circle. Because of this minimal contact it is possible to vary the position of the pulley shaft in the eye from a position at perfect right angle to the eye-bolt to positions at a variable angle to the eye-bolt without the necessity of any additional linkages or additional machining. Thus, since the tension on the idler pulley is always in one direction it is easy to adjust the tension on, and track, the idler pulley by simply moving either or both eye-bolts in one direction or the other in their mounting.

In my construction I completely eliminate machine work or axles for pivoting but I still provide means for mounting the belt in a vertical or horizontal position. This is done by forming a seat in the base for mounting the belt that accepts a mating configuration from two positions on a platen (carrying the sander belt). Thus by simply inserting the platen in the base from either of two positions I achieve alternatively vertical or horizontal belt position.

With the drive belt from the motor in normal mounting position there is sufficient tension applied between platen casting and base casting to hold them rigidly together. For additional locking purposes I also supply two spring clips which are easily releasable when change of position is required.

With my design I accomplish all three of the necessary belt sander adjustments in a unique manner and a very inexpensive manner.

The various features of my invention are illustrated by way of example in the accompanying drawings in which

FIG. 1 is approximately an isometric view of a belt sander embodying my invention with the belt in a horizontal position;

FIG. 2 is a plan of the belt sander as shown in FIG. 1;

FIG. 3 is a side elevation of a belt sander showing the sander belt in a horizontal position;

FIG. 4 is a side elevation of a belt sander showing the sanding belt in a vertical position;

FIG. 5 is an isometric view of a base on which a belt carrying platen is mounted, and

FIG. 6 is a section of a part of a driving pulley for the sander belt.

Referring to the accompanying drawings, the belt sander of my invention comprises a base **10**, shown more particularly in FIG. 5, having a pair of spaced uprights **11** and **12** joined by a cross piece **13** to provide a space to receive a sander belt platen. The uprights **11** and **12** shown in this specific embodiment are vertically flat parallel plates, each having a recess **14** and **15**, and notches **16** and **17** respectively. The upper edges of the plates have horizontal surfaces **18** and **19** respectively, and in the embodiment illustrated each recess is formed of surfaces **20** and **21** extending downwardly at an angle of preferably 45° to the notches **16** and **17**, the notches having substantially vertical side edges. Side flanges **22** may be provided at one side of the downwardly inclined surfaces **20** and **21**. The recesses **14** and **15** and notches **16** and **17** and the horizontal surfaces **18** and **19** form a support for a sanding belt platen **23**, positioned alternatively in either a horizontal or vertical position.

The sanding belt platen **23** for mounting in the base is shown more particularly in FIGS. 1, 2, 3 and 4. It has mounted at the end supported in the base a driving pulley **24** fixed on a shaft **25** journalled in a bearing **26**. At the opposite end of the platen is an idler pulley **27** rotatable on an axle shaft **28** mounted on the platen by means of a pair of eye-bolts **29**, one at each side of the platen. The shaft **28** is held from rotating by pins **29'** which abut a part of the frame. These pins serve to locate the idler pulley transversely. A belt **30** is trained about the pulleys **24** and **27** in an upper reach **31** supported by the platen **23** and a lower reach **32** below the platen **23**. In operation the upper reach of the belt moves toward the driving pulley **24**.

The platen **23** in its horizontal position shown in FIG. 3 is supported at the end carrying the driving pulley **24** by surfaces **34** and **36** resting on and complementary to the inclined surfaces **20** and **21** of the upright and retained within the flanges **22**, and also held in position at each side by a projection **35** which extends into one of the notches **16** or **17**. This positions and supports the driving end of the platen in the horizontal position. Further support for the platen in this position is provided by a supporting leg **38** extending downwardly from the platen at one side thereof and thence horizontally. As shown in FIG. 2 the leg **38** may be supported adjustably in a side bracket **39**

and retained therein by a nut **40** to permit adjustment of the leg **38** to accommodate variations in the surface on which the platen is placed.

When the platen is mounted vertically as shown in FIG. 4, the inclined surface **36** rests on the inclined surface **20**, the projections **37** extend into one of the notches **16** or **17**, and inclined surfaces **41** in this position rest on the inclined surfaces **21**.

It may be observed that in the horizontal position the projection **35** extends into the notches **16** and **17**, and in the position shown in FIG. 4 the projection **37** extends into the notches **16** and **17**, while the projection **35** has a flat horizontal surface above the horizontal surface **18** or **19**. When mounted in either of these positions the platen may be held in position by a pair of spring clips **43**, one at each side of the base, extending through a notch **44** in the bottom part of the base and having a part **45** inturned on the inner surfaces of the uprights **11** and **12** to retain the spring clips in position in the base as shown in FIG. 5 so that they may hold the platen in position as shown in FIG. 4 for the vertical position and for the horizontal position shown in FIGS. 3 and 1. The upper ends of the spring clips **43** are curved as at **46** and thence to a part **47** which in the locking position extends over and in engagement with a groove on the outer surface of the bearing **26**. When moved to the position shown in FIGS. 3 and 4 the spring clips hold the end of the platen firmly onto the upper parts of the uprights **11** and **12**. The bent part **46** of the spring clip gives the requisite amount of spring pressure and enables the spring clips to be grasped and turned counterclockwise as shown in FIGS. 3 and 4 to release the platen.

To change the platen from one position to the other, that is, from horizontal to vertical, or vice-versa, each spring clip **43** is grasped at **46** and swung out of engagement with the bearing part of the platen which is then left free to be again set into the recess either in horizontal or vertical position, whereupon the spring clip may be swung into engagement to hold the platen firmly in engagement with the base. This provides a very simple, inexpensive, construction in which the platen can readily be turned from horizontal to vertical position or from vertical to horizontal position.

Normally it is desirable to have a stop plate positioned to take the thrust of a workpiece caused by the drag of the sanding belt. For this purpose there is provided on each side of the platen a part circular bracket **48** on which may be supported a part circular projection **49** of a stop plate **50** which extends across the platen. The projection **49** may be secured on the bracket **48** by means of a bolt **51** passing through a slot **52**, shown in FIG. 1. By loosening the bolt **51** the stop plate **50** may be adjusted to or from a vertical position and then secured by tightening the bolt.

Unless the belt is properly guided onto the driving pulley it shifts toward one end or the other of the pulley. The direction of guiding may be adjusted by an adjustment of the axis of the idler pulley **27** relative to the axis of the driving pulley, that is, by moving one end or the other of the idler pulley toward or from the axis of the driving pulley. For this purpose the threaded stem of each eye-bolt **29** extends through a pair of spaced brackets **53** and **54**, one pair of brackets being secured on each side of the platen, and is threaded through a knurled nut **56** between the brackets of each pair. Each nut bears against its bracket **53** and the eye-bolt is moved in a direction away from the driving pulley. By turning the nuts separately in one direction or the other, the belt may be

tautened and the axis of the pulley **27** adjusted to guide the belt onto the driving pulley **26** in centered position. A wing nut **57** is threaded onto each eye-bolt so that it may be brought up tightly against the adjacent side of the bracket **53** to hold the eye-bolt in adjusted position. To hold the shaft **28** and bearing **27** from rotating, a radially extending pin **29'** is secured on the shaft **28** in position to rest on the bracket **54**. The eye-bolts being of rounded cross section provide a tangential support for the shaft **28** so that the shaft, in adjusting to different positions, may move freely and without stress or stain on the eye-bolts.

The end of the driving shaft **25** projects a substantial distance beyond the side edge of the platen to receive any one of a variety of tools, such, for example, as the sanding disc **58**. A supporting bed **59** for supporting a workpiece **58** may be secured to the base by bolting in slots **60**, as shown in FIG. 3.

As illustrated in the section of a portion of the driving pulley shown in FIG. 6, the mid portion of the puleys **24** and **27** are encircled by a band **61** of resilient material cemented to each of the pulleys to provide in effect a resilient crown portion to hold the belt **30** in mid position on the pulleys.

What is claimed is:

1. A belt sander comprising a platen, a driving pulley rotatably mounted on said platen, an idler pulley mounted on said platen in approximate parallel position relative to said driving pulley, and means to adjust the spacing and angular relation of said idler pulley relative to said driving pulley, said means comprising a pair of eye-bolts, each of said eye-bolts having a rounded cross-section, to define thereby a curved interior surface one on each side of said platen, an idler pulley supporting element extending through the eyes of said eye-bolts and in tangential contact with said curved interior surface of said eyes, and supporting and adjusting means on said platen to support and adjust the position of said eye-bolts individually.

2. A belt sander comprising a platen, a driving pulley rotatably mounted on said platen, an idler pulley spaced from and in approximate parallel position to said driving pulley, an axle shaft on which said idler pulley is rotatably mounted, an adjustable supporting element for said axle shaft having at each side of said platen an eye of rounded surface in cross-section in which an end portion of said shaft is supported tangentially relative to said idler shaft in adjusted position relative to said driving pulley whereby said idler pulley is adapted for space and angular adjustment relative to said driving pulley by said adjustable supporting elements.

3. The belt sander of claim **2** in which said shaft supporting element is an eye-bolt having a threaded stem and said supporting means for said eye-bolt comprising a bracket extending outwardly from said platen and having an opening therethrough through which said threaded stem extends and an adjusting nut threaded on said stem abutting said bracket.

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