April 10, 1928. 1,665,749

C. L. MATTISON

DOUBLE BELT SANDER

Filed March 24, 1924 2 Sheets-Sheet 1

Fig. 1.

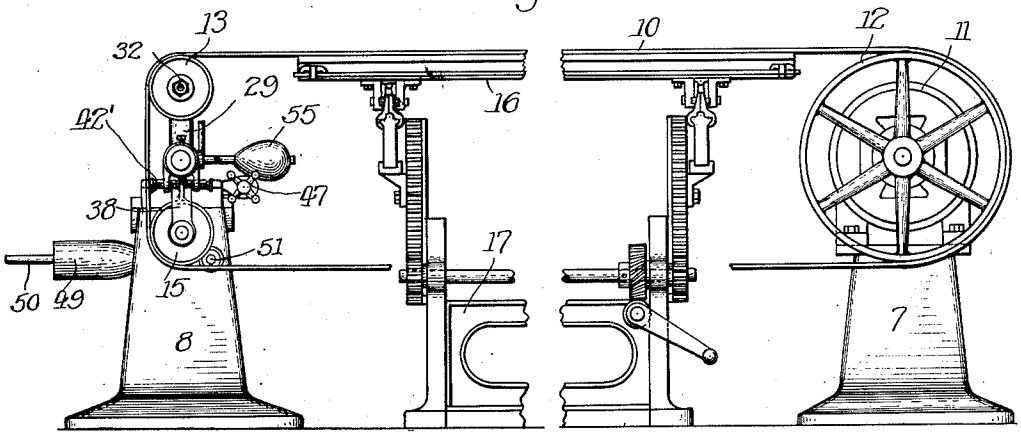

Fig. 2.

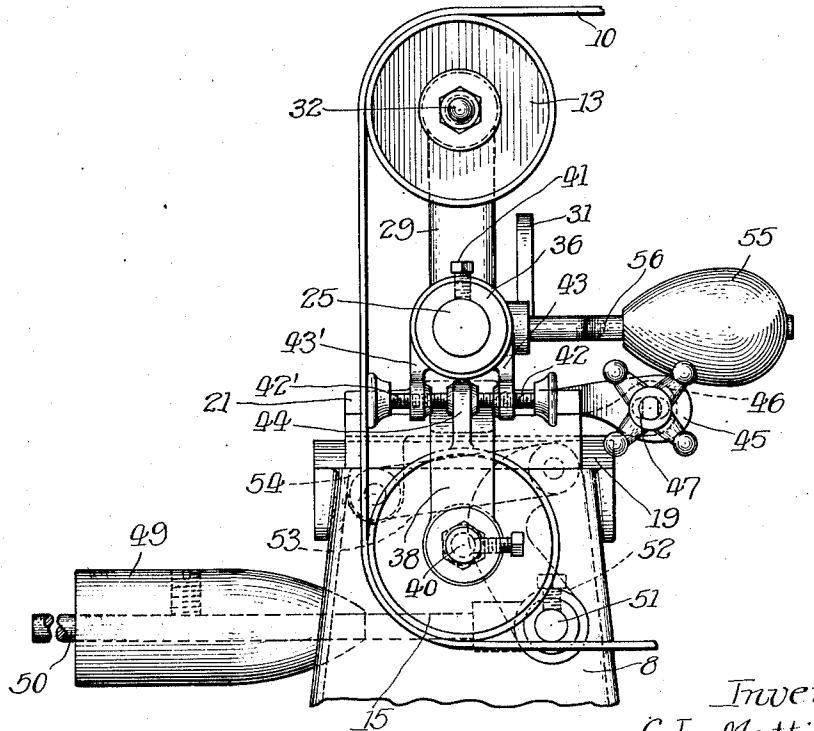

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Fig. 3.

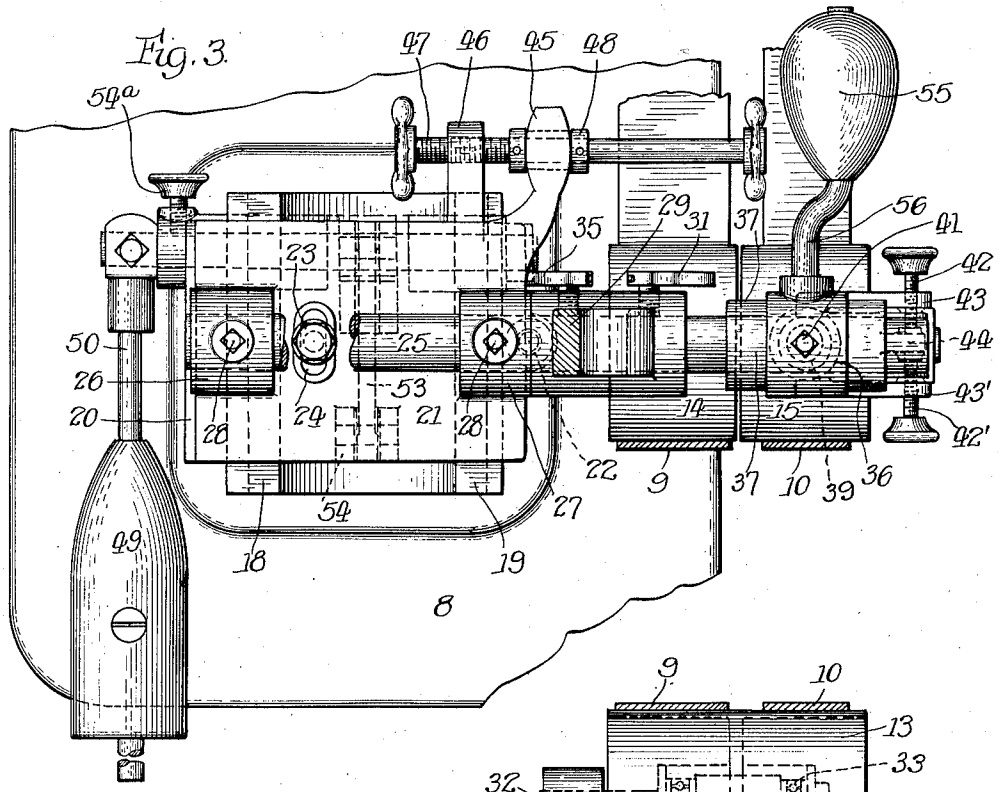
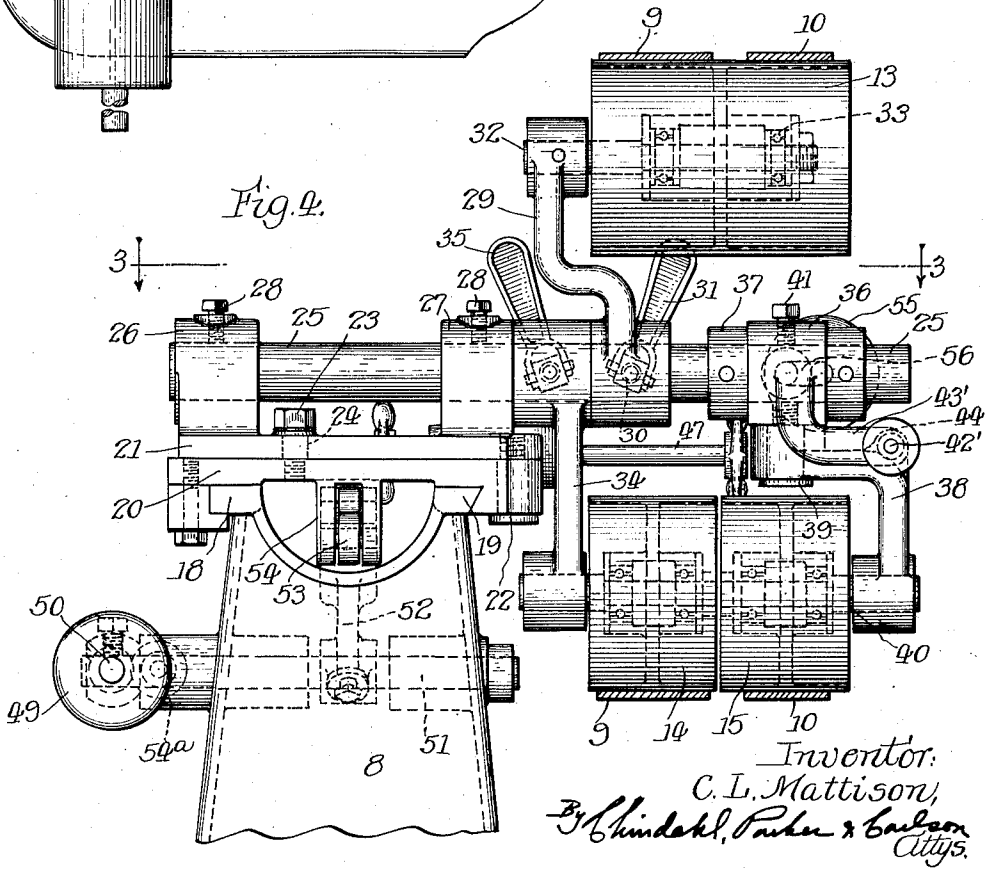


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DOUBLE-BELT SANDER.

Application filed March 24, 1924. Serial No. 701,275.

The invention relates to belt-sanding machines, and has especial reference to machines of this type employing two sanding belts usually of varying widths.

The object of the invention, generally stated, is to produce a double-belt sander having means capable of quick and easy adjustment to cause the two sanding belts to operate at all times in proper relation to each other and to the work.

Double-belt sanders are especially adapted for use in sanding pieces of work having a number of variously shaped surfaces to be finished, such for example, as moldings, the arrangement being such that the two belts run side by side and thus render it possible to sand or finish separate portions of the work with one handling thereof. Frequently the belts vary substantially in width, some pieces of work requiring one belt as narrow as one inch and the other belt as wide as three or four inches. Because of such variance in the widths of the belts it is obvious that it is impracticable to place both belts under the same tension, the narrower belt having a tendency to stretch more than the wider one. Also, unless the pulleys over which the two belts run are properly alined the belts are apt to shift from their proper positions when pressure is applied thereto.

More specifically stated, my invention has for its object the provision of means in a double-belt sander whereby the idler pulleys for the two sanding belts are capable of independent adjustment to vary the degree of tension placed upon the two belts and to vary the alinement of the pulleys, thus maintaining the belts in their proper relation and preventing them from shifting when pressure is applied thereto.

The object of my invention thus set forth is attained by the construction and arrangement illustrated in the accompanying drawings forming part hereof wherein:

Figure 1 is a fragmentary front elevational view of a sander embodying my invention. Fig. 2 is a fragmentary front elevational view on an enlarged scale of one of the standards, showing upper and lower idler pulleys adjustable in accordance with my invention. Fig. 3 is a fragmentary horizontal sectional view taken in the plane of line 3—3 of Fig. 4. Fig. 4 is a fragmentary end view, the two belts being shown in section.

The sanding machine which I have selected for purposes of illustration comprises two standards 7 and 8 arranged in longitudinally spaced relation and adapted to support pulleys over which run a pair of sanding belts 9 and 10, the belt 10 being shown of narrower width than the belt 9. On the standard 7 I have shown an electric motor 11 to the armature shaft of which is directly connected a large driving pulley 12 over which both of the belts 9 and 10 run. The standard 8 on the other hand carries an upper idler pulley 13 and two lower idler pulleys 14 and 15. Between the two standards I have shown a work table 16, mounted for vertical and lateral adjustment upon a base 17 in any suitable or preferable manner.

It will be apparent that by reason of the independent character of the two standards 7 and 8, it is desirable that means be provided to avoid the necessity of positioning exactly the two standards relative to each other to secure the proper alinement of the pulleys and the desired tension upon the belts. To this end I have provided a construction for supporting the pulleys 13, 14 and 15 on the standard 8, which renders it possible to position the standards in generally the proper location, and then adjust the idler pulleys to obtain the exact degree of tension on the belts and also proper alinement. This construction will now be described.

The standard 8 is constructed at its upper end to provide ways 18 and 19 upon which is mounted for longitudinal movement a slide 20 (Fig. 4). The slide in turn carries a table 21, and this table is secured upon the slide so as to be capable of turning thereon on a vertical axis. In the present instance I provide a headed depending stud 22 screw-threaded into the table at the right hand edge thereof (Figs. 3 and 4) and journaled in the slide. A headed screw 23 anchored in the slide passes through an arcuate slot 24 in the table and is adapted to clamp the table in the desired position of adjustment.

Above the table and extending transverse-

ly thereof is a shaft 25 which is mounted in upstanding heads 26 and 27 preferably formed integrally with the table. The shaft is adjustably held in said heads as by means of screws 28, and its free end projects forwardly from the standard in an overhanging fashion for the purpose of supporting the upper and lower idler pulleys 13, 14 and 15.

To support the upper pulley 13 I provide a bracket or arm 29 having its lower end adjustable upon the shaft both axially thereof and circumferentially. Any suitable means may be provided for clamping the bracket in position. Herein I have shown a screw 30 operated by means of a hand lever 31. The free end of the bracket arm carries a forwardly extending shaft 32 upon which the idler pulley 13 is mounted through the medium of suitable roller bearings 33.

The lower idler pulley 14 is similarly mounted on the shaft 25 by means of a bracket arm 34 which extends downwardly from the shaft along the front side of the standard 8. The hand lever for operating the clamping screw in this instance is indicated by the numeral 35.

The lower idler pulley 15 is also mounted upon the shaft 25, but in a manner so as to be movable independently of the pulleys 13 and 14 both for purposes of alinement and tension adjustment. Thus I have provided a support for the pulley 15, of a sectional construction, comprising a head section 36 which is mounted upon the shaft 25 between a pair of collars 37 fast upon the shaft. A lower or arm section 38 is pivoted to the head section so as to be capable of turning on a vertical axis. This is accomplished by means of a headed stud 39 screw-threaded into the lower side of the head 36. The lower or free end of the arm 38 carries a shaft 40 projecting toward the shaft which carries the pulley 14.

It will be seen that the supporting means thus provided for the pulley 15 is capable of adjustment around the shaft 25 as an axis, to vary the degree of tension on the belt 10, and the pulley is capable of turning on the vertically disposed stud 39 to adjust the alinement of the pulley. The head 36 may, if desired, be provided with a clamping screw 41 adapted to hold the sectional support against turning on the shaft; and I provide means for controlling the adjustment of the lower section 38 of the support on a vertical axis. This means comprises in the present instance a pair of screws 42 and 42′ mounted respectively in a pair of spaced arms 43 and 43′ formed in the present instance integral with the opposite sides of the head 36 and projecting forwardly therefrom as shown clearly in Figs. 3 and 4. The arm 38 also has a forwardly projecting horizontal portion upon which is formed an upstanding lug 44 disposed between the arms 43 and 43′. The arrangement is such that the screws 42 and 42′ may engage with opposite sides of said lug 44 and thus adjust the lower swinging portion 38 of the support relative to the head section 36.

For the purpose of adjusting the idler pulleys 13 and 14 to swing on a vertical axis, I provide an arm 45 rigid with the table 21 (Fig. 3) and projecting from the inner side thereof substantially opposite the pivot stud 22. Rigid with the slide and substantially parallel to said arm I provide a member 46 in which an adjusting rod 47 is screw-threaded. Said rod has secured thereto a pair of collars 48 arranged upon opposite sides of the arm 45, and the aperture through the arm for receiving the rod is made sufficiently larger than the rod to permit the latter to swing slightly in the rod. As shown clearly in Fig. 3, the opposite sides of the free end of the arm 45 are rounded for engagement by the spacing collars 48, so as to facilitate the swinging movement of the table relative to the slide, in the operation of the adjusting rod. It will, of course, be understood that the clamping screw 23 entered through the arcuate slot 24 must be loosened to permit of such adjustment of the table. Said vertical axis, it will be observed, is located near the pulleys 13 and 14, so that the latter swing on a small radius.

The means for placing tension on the belts 9 and 10 independently comprises two separate tensioning means, one of which is associated with the slide 20 so as to tend to move the idler pulleys 13 and 14, and the other of which is associated with the sectional support 36, 38 for the pulley 15. The means associated with the slide 20 comprises in the present instance a weight 49 adjustable upon a rod 50, which is fast upon a shaft 51 suitably supported in the standard 8. Also fast upon said shaft 51 is a bent arm 52, the free end of which is connected by a link 53 with a bifurcated lug 54 rigid with the under side of the slide. It will be seen that the weight 49 acting through the connection thus set forth, tends to move the slide bodily in a direction to tension the belt 9, and to assist in tensioning the belt 10 through the upper pulley. If desired, a hand screw 54ª may be provided to hold the shaft 51 against turning in its bearing.

The narrow belt 10, because it has a tendency to stretch more than the wider belt 9, is arranged to be tensioned by the means associated with the support for the pulley 15. This tensioning means comprises a weight 55 (Figs. 2 and 3) adjustable upon a rod 56 which is rigid with the head section 36 of the pulley support. It will be apparent that this weight constitutes an additional tensioning means acting directly upon the support

to move the idler pulley 15 in a direction to tension the belt 10 independently of the belt 9.

It will be seen that I have provided means of an advantageous character for adjusting the tension of the belts, and securing a proper alinement of the idler pulleys on the standard 8. The setting up of the machine is thus materially facilitated, as is also the operation thereof, the adjustments necessary to be made from time to time being capable of quick and easy accomplishment.

I claim as my invention:

1. A double-belt sanding machine comprising, in combination, two longitudinally spaced independent standards, a pair of endless sanding belts, driving and idler pulleys on the respective standards for said belts, means operable to tension both of said belts, and additional means operable to place increased tension on one of said belts.

2. A double-belt sanding machine comprising, in combination, two longitudinally spaced independent standards, a pair of endless sanding belts, driving and idler pulleys on the respective standards for said belts, said idler pulleys being adjustable with respect to their supporting standard on an approximately vertical axis, and one of said idler pulleys being adjustable on a vertical axis independently of the other pulleys.

3. In a double-belt sander, the combination of a support, a shaft carried by said support, an arm adjustable on said shaft, an idler pulley mounted at the free end of said arm, a second arm mounted on said shaft and extending in a direction substantially opposite the first mentioned arm, a second pulley carried by said second arm, and a third arm mounted on the shaft and having a third pulley mounted thereon, one of said arms being constructed to permit the adjustment of its pulley on an axis perpendicular to the axis of the pulley.

4. In a double-belt sander, the combination of a support, a shaft carried by said support, an arm adjustable on said shaft having an idler pulley thereon, and a second arm mounted on the shaft and having a second pulley mounted thereon, one of said arms being constructed to permit the adjustment of its pulley on an axis perpendicular to the axis of the pulley.

5. In a double-belt sander, the combination with a pair of endless belts and a pair of pulleys, a standard, a table mounted on said standard for adjustment on a vertical axis, a shaft carried by said table, and a pair of arms mounted on said shaft and each being arranged to support one of said pulleys, one of said arms being adapted to support its pulley for adjustment on a vertical axis independent of the other pulley.

6. A double-belt sander having, in combination with a pair of endless belts and a pair of pulleys for said belts, a standard, a slide on said standard, a supporting member extending laterally from said slide, a pair of arms mounted on said supporting member and each adapted to support one of said pulleys, one of said arms being mounted to turn on said supporting member and having means tending to place tension on the belt running over its pulley, and means tending to move said slide to tension the other one of said belts.

7. In a belt sander, the combination with an idler pulley, a standard, a slide mounted for movement on said standard, a laterally extending supporting member mounted for movement with said slide, means carried by said supporting member for supporting said pulley, and means tending to move said slide in a direction to place tension on a belt running over said pulley, said means comprising a shaft mounted in said standard, a linkage connecting said shaft with said slide, and means tending to operate said linkage so as to move the slide.

8. In a double-belt sander, the combination with a pair of belts and a pair of pulleys, of a standard, a slide mounted for movement on said standard, means carried by said slide for supporting said pulleys including a pair of brackets, means tending to swing one of said brackets whereby to place tension on one of said belts, and means tending to move said slide whereby to place tension on the other one of said belts.

9. A double-belt sanding machine comprising, in combination, two longitudinally spaced independent standards, a pair of endless sanding belts, a driving pulley for said belts on one of said standards, idler pulleys for the belts on the other one of said standards, means operable to aline simultaneously said idler pulleys with said driving pulley, and additional means operable to aline one of said idler pulleys independently of the others.

10. A belt sanding machine having, in combination with a pair of endless sanding belts, idler pulleys for said belts, a shaft, arms mounted to turn on said shaft, each arm carrying one of said pulleys near its free end, one of said arms being sectional in construction and including a part mounted to turn on an axis approximately perpendicular to the axis of the pulley carried by the arm, and means for adjusting said part for purposes of alinement.

11. A belt sanding machine comprising, in combination with a pair of endless belts, idler pulleys for said belts, a support having a shaft mounted thereon, an arm mounted to turn on said shaft carrying one of said idler pulleys, a head mounted to turn on said shaft, a bracket arm having a shaft thereon adapted to support the other of said pulleys, said arm being mounted to turn rel-

ative to said head on an axis approximately perpendicular to the axis of said other pulley, and means for holding said arm in adjusted relation to said head comprising a pair of spaced arms on said head and a pair of adjusting screws carried by said arms and adapted to engage with said bracket arm.

12. In a double-belt sander, the combination with a pair of endless belts and a pair of pulleys, a standard, a support slidable on said standard, a table mounted on said support for adjustment on a vertical axis, a shaft carried by said table, and a pair of arms mounted on said shaft and each being arranged to support one of said pulleys, one of said arms being adapted to support its pulley for adjustment on a vertical axis independent of the other pulley.

13. A double-belt sander having, in combination with a pair of endless belts and a pair of pulleys for said belts, a standard, a slide on said standard, a supporting member pivoted on a vertical axis on said slide and extending laterally therefrom, a pair of arms mounted on said supporting member and each adapted to support one of said pulleys, one of said arms being mounted to turn on said supporting member and having means tending to place tension on the belt running over its pulley, and means tending to move said slide to tension the other one of said belts.

14. In a belt sanding machine, the combination with an idler pulley, means for supporting said pulley comprising a shaft, a head mounted to turn on said shaft, said head carrying a stud perpendicular to said shaft, an L-shaped bracket having one leg thereof pivoted on said stud, and a shaft mounted in the other leg of said bracket with its axis intersecting that of the said stud, said second shaft being adapted to support the pulley, and means for adjusting said bracket with respect to said head.

15. In a belt sanding machine, the combination with an idler pulley, of means for supporting said pulley comprising a shaft, a head mounted to turn on said shaft, a bracket mounted to turn on said head, a second shaft on said bracket adapted to support the pulley, said bracket being mounted to turn on an axis passing through said second shaft centrally of said pulley, and means for adjusting said bracket with respect to said head.

In testimony whereof, I have hereunto affixed my signature.

CARL LAWRENCE MATTISON.