

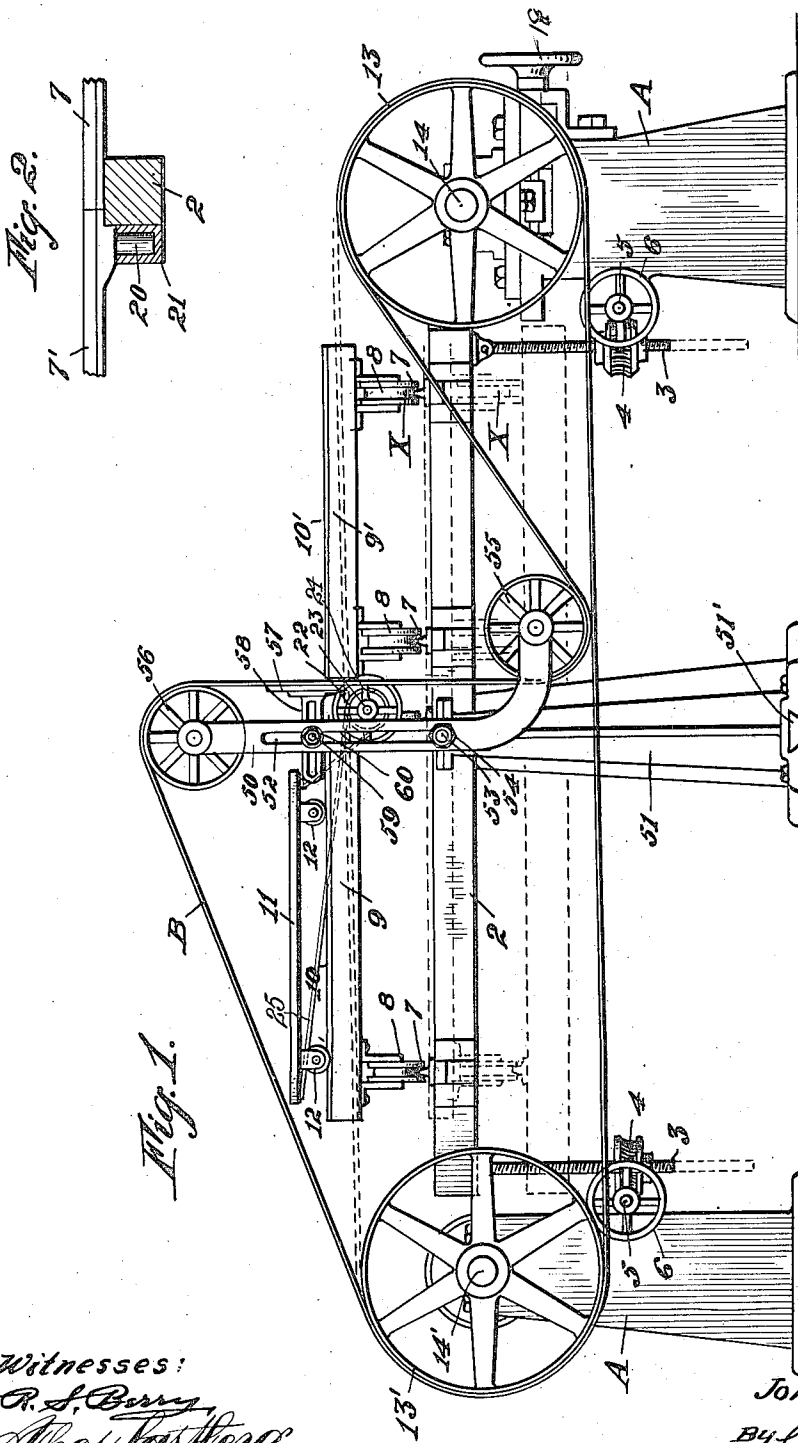
SANDING MACHINE.

APPLICATION FILED APR. 22, 1912.

Patented Oct. 22, 1912.

3 SHEETS—SHEET 1.

1,042,354.



Witnesses:

P. S. Barry

Witnesses:
R. S. Berry,
Thos. Eastberg.

Inventor:

John W Kroeze

By G. H. Strong.

Atty.

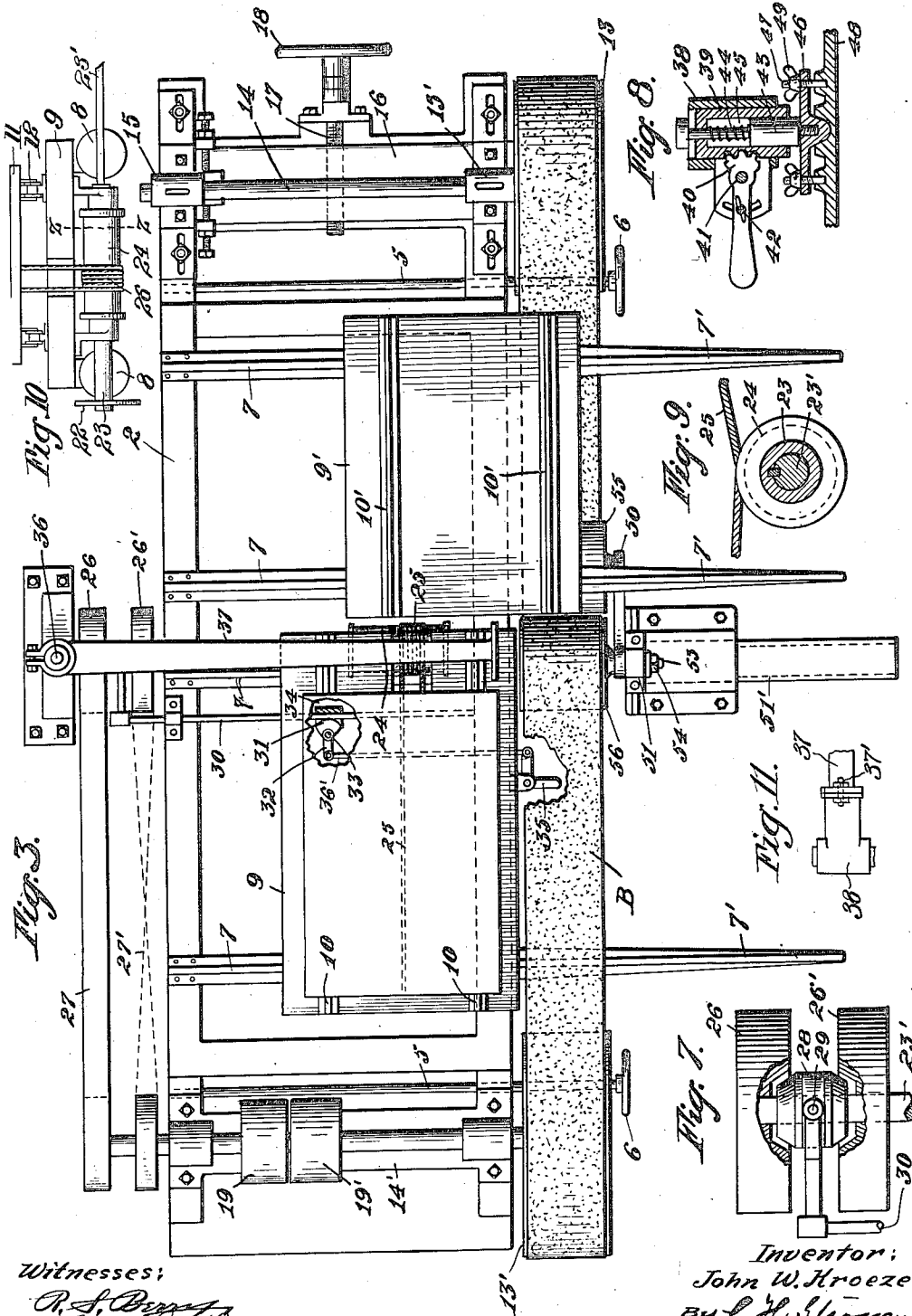
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3 SHEETS-SHEET 2.



Witnesses:

O. S. Dwyer
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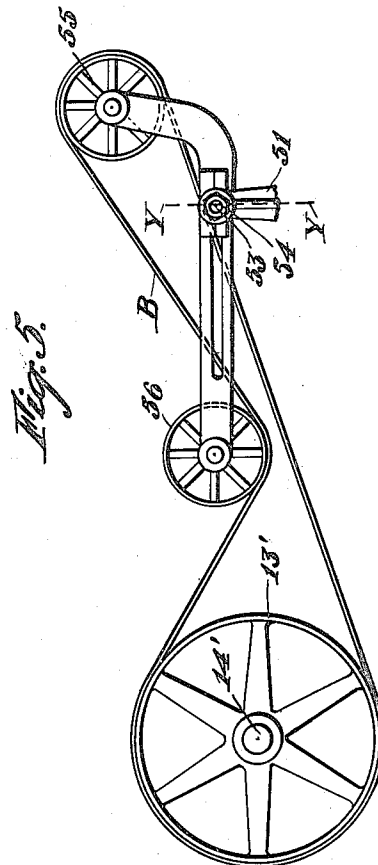
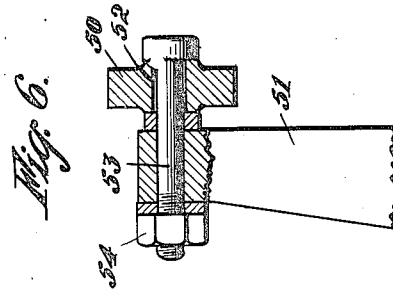
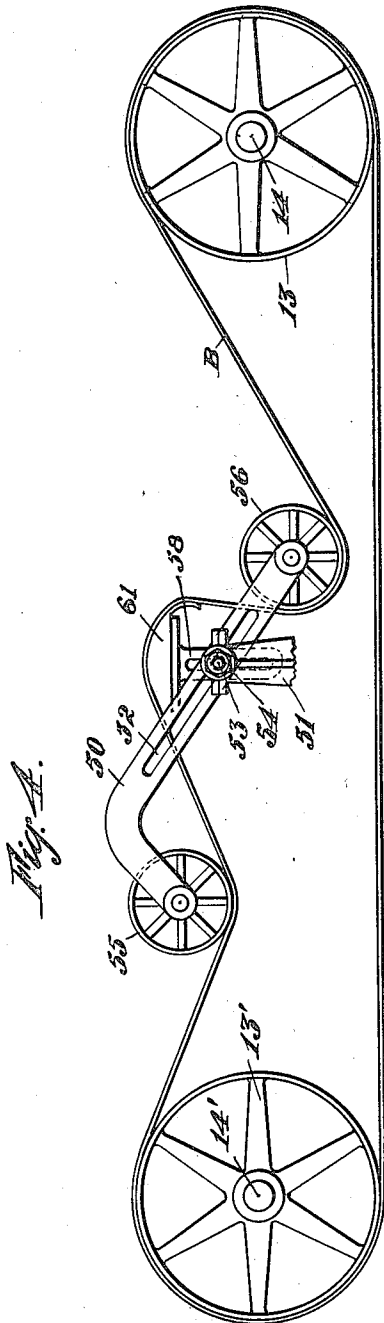
Inventor:
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3 SHEETS—SHEET 3.



Witnesses:

R. S. Berry,
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UNITED STATES PATENT OFFICE.

JOHN W. KROEZE, OF BURLINGAME, CALIFORNIA.

SANDING-MACHINE.

1,042,354.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed April 22, 1912. Serial No. 692,316.

To all whom it may concern:

Be it known that I, JOHN W. KROEZE, a citizen of the United States, residing at Burlingame, in the county of San Mateo and State of California, have invented new and useful Improvements in Sanding-Machines, of which the following is a specification.

This invention relates to improvements in a sanding machine, and particularly pertains to a machine for surfacing lumber, such as described in Patent No. 998,351 issued to me July 18, 1911.

It is the object of this invention to provide a machine which is adapted to the sanding of surfaces and edges of panels and which may be utilized for sanding the curved surfaces of moldings, columns and the like.

Other objects will appear in the following specification.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a view of the invention in side elevation. Fig. 2 is a detail section on the line X—X of Fig. 1. Fig. 3 is a plan view. Figs. 4 and 5 are views in elevation with parts broken away, showing the machine as adapted to sanding curved surfaces. Fig. 6 is a detail vertical section on the line Y—Y of Fig. 5. Fig. 7 is a detail in plan with parts broken away of the clutch mechanism. Fig. 8 is a detail section of the belt-shoe shifting mechanism. Fig. 9 is a detail section on the line Z—Z of Fig. 3. Fig. 10 is a detail elevation of the carriage shifting device. Fig. 11 is a detail showing the manner of mounting the bushing on the supporting arm.

In the drawings, A represents the frame of the machine which may be of any suitable construction. Supported on the frame A is a horizontally disposed table 2, which is designed to be raised and lowered to position it on different levels by means of vertically extending threaded rods 3 attached to the corners of the table 2, which rods pass through worm nuts 4. The worm nuts mesh

with worm gears on shafts 5, which are rotated by means of hand-wheels 6 in the manner common in lumber handling machines to rotate the worm nuts 4 and thereby cause the threaded rod 3 carrying the table 2 to move up and down therein as desired.

Extending laterally across the top of the table 2 are rails 7, in this case four in number, and mounted to travel on each pair of the rails 7 are trucks 8 carrying platforms 9—9'. The upper surfaces of the platforms 9—9' are on a common level and have longitudinally extending rails 10—10' mounted thereon on which a panel carrying carriage 11 is designed to travel; the carriage 11 being provided with rollers 12 which rest on the rails 10—10'. The rails 10—10' on the platforms 9—9' are designed to be connected together by means of fishplates, or in any suitable manner, so that the carriage 11 may be moved in any desired manner, either manually or mechanically, as will be later described, back and forth on the platforms 9—9'.

Rotatably mounted on each end of the frame A is a pulley wheel 13—13', around which an endless sanding belt B is adapted to travel; the belt being composed of a suitable fabric with an abrasive substance on either one or both of its surfaces. The pulley 13 is mounted on a shaft 14 extending through adjustable bearing blocks 15—15', which in turn are supported upon a movable frame 16, slidable in suitable bearings on the frame A and adapted to be adjusted thereon by means of a horizontally disposed threaded screw 17 mounted in the threaded bearing on the frame A. This screw 17 is provided with a hand-wheel 18 on its outer end, by means of which the screw 17 may be rotated so as to move the slidable plate 16 backward or forward on its mountings in the frame A to move the pulley wheel 13 in such a manner as to adjust the tension of the abrasive belt B. The bearings 15—15' are adjustable on the plate so as to permit of the shaft 14 being alined to adjust the pulley 13 so that the true travel of the belt B over the pulleys 13—13' will be insured. The pulley 13' is mounted on

a drive-shaft 14' revolvably mounted in fixed bearings on the frame A. The shaft 14' is rotated from any suitable source of power through a pulley 19 which is keyed on the shaft; an idler pulley 19' being provided to which the driving belt, (not shown) may be shifted in the manner and for the purpose commonly employed in driving mechanism. The pulleys 13-13' are designed to be spaced at a considerable distance apart to obtain a long span of the sanding or abrasive belt B, which span will be varied in different machines to suit the length of the material to be handled.

The tracks 7 on the table 2 may be extended some distance forward thereof, as shown in Fig. 3, the projecting portion of the tracks being formed of separate rails 7' which are designed to be attached to or removed from the table 2 as desired. Each rail 7' is provided with a downwardly extending pin 20 on its inner end which is adapted to be inserted in a socket 21 mounted on the table frame 2; the inner end of each rail 7' being squared to abut against the outer end of the rail 7 to prevent the rail 7' from being turned from side to side on the table frame 2. This construction is particularly shown in detail in Fig. 2.

The platforms 9-9' are designed to be moved backward and forward laterally across the table 2 under the upper strand of the belt B and are adapted to be moved in unison when connected together, or they may be moved separately and independently of each other when desired. The carriage 11 is designed to be moved backward and forward on the platforms 9-9' parallel with the belt B in any suitable manner. The carriage 11 is here shown as adapted to be moved by means of a hand-wheel 22, which rotates a hollow shaft or sleeve 23, mounted on the platform 9 on which a drum 24 is securely mounted; a cable 25 wound on the drum 24 having its terminals extending in opposite directions and attached to the ends of the carriage 11 in such a manner that as the drum 24 revolves, one portion of the cable will be wound thereon as another portion unwinds, thus causing the carriage 11 to move along the rails 10-10' on the platforms 9-9'.

From the foregoing it will be seen that the carriage 11 may be moved into any position desired beneath the belt B; longitudinal adjustment being obtained by moving the carriage 11 on the tracks 10; lateral adjustment by moving the platforms 9-9' on the rails 7 carried by the table 2; and horizontal plane of the carriage 11 in relation to the belt B being adjusted by the hand-wheels 6, by which the table 2 is raised or lowered. The latter adjustment permits of

the distance separating the carriage 11 from the upper strand of the belt B being regulated as desired.

Means are provided by which the carriage 11 may be operated mechanically, that is, driven by power. This is accomplished by mounting a pair of loose pulleys 26-26' on the outer end of a shaft 23' which extends into and is feathered to the hollow shaft 23; the pulley 26 being rotated by a straight belt 27 from the drive-shaft 14' and the other pulley 26' being rotated in the opposite direction through a cross belt 27', indicated in dotted lines in Fig. 3. Disposed between the pulleys 26-26' and keyed on the shaft 23' is a double-faced cone clutch 28 which is adapted to be thrown into engagement with either of the pulleys 26-26', or be retained in an intermediate position out of contact with both pulleys, as shown in Fig. 7. The clutch 28 is adapted to be reciprocated by the shaft 23' by means of a yoke 29 on a rod 30, which rod in turn is reciprocated by means of a grip or clamp. This clamp consists of a segment 31, formed on a lever 32 pivoted at 33 to the platform 9; the segment being disposed adjacent to the rod 30, which admits of its being so disposed in relation to the rod 30 that when it is rocked on the pivot 33 the curved portion of the segment will be caused to contact the bar 30 and press the latter against a guide 34 on the platform 9, thus gripping the rod and causing it to move the segment and operate the clutch 28. The lever 32 is operated by means of a lever 35 mounted on the platform 9 and connected to the lever 32 by means of a rod 36'.

From the foregoing it will be seen that when the segment clutch 31 is out of engagement with the rod 30, it will ride freely on the rod 30 as the platform 9 is moved outwardly and inwardly on the table 2 so that the clutch will be in a position to operate the rod 30 irrespective of the position of the platform 9. It is also apparent that the telescopic connection of the shafts 23-23' will admit of the drum 24 being rotated from the shaft 23' regardless of the position of the platform 9.

Clamped on the upper end of a standard 36 is a horizontally disposed arm or bracket 37 which extends transversely across the machine and terminates above the belt B midway between the pulleys 13-13', and to the outer end of which a vertically disposed tubular member or bushing 38 is attached when it is desired to sand broad flat surfaces; the bushing 38 being removed when it is desired to sand the edges of panels or curved surfaces. The bushing 38 is attached to the arm 37 by means of bolts 37' which pass through a flange formed on

the outer end of the arm and a corresponding flange carried by the bushing, as shown in Fig. 11. Mounted in the bushing 38 is a cylindrical casing 39, which has rack teeth 5 formed on its side adapted to be engaged by gear teeth on a segment 40. The segment 40 is pivoted at 41 and has a lever handle connected thereto, by means of which the segment may be rocked on its bearing to 10 adjust the position of the casing 39 in the bushing 38. A thumb screw 42 on the segment lever extends through a slot on a bracket formed on the bushing 38, and is provided for the purpose of clamping the 15 segment lever in a fixed position.

Mounted in the casing 39 is a plunger 43 on which is secured a stem 44 which extends upward and through the top of the casing 39 and is guided therein. A spring 45, 20 wound on the stem 44 between the top of the plunger 43 and the end of the casing 39, normally retains the plunger in its lowermost position and forms a cushion against the upward pressure of the plunger 43.

A cross-head or bracket 46 is rigidly 25 mounted on the lower end of the plunger 43 through which upwardly extending threaded studs 47 on a shoe 48 extend; wing nuts 49 being screwed on the upper ends of the studs to clamp the shoe 48 against a knob 30 formed on the underside of the cross-head 43. The shoe 48 is designed to bear against the upper surface of the belt B, as shown in Fig. 8, when the bushing 38 is mounted on 35 the bracket 37 and the upper leaf of the sanding belt B is positioned so as to extend horizontally between the pulleys 13—13', as indicated in dotted lines in Fig. 1, which arrangement is employed when it is desired 40 to sand flat surfaces.

In the operation of this portion of the invention, the panel or board to be sanded is placed on the carriage 11, which is positioned, as indicated in dotted lines in Fig. 1, 45 beneath the upper leaf of the abrasive belt B; the level of the carriage 11 being adjusted by the hand-wheels 6 and their connections, before described, to suit the thickness of the material to be worked. The 50 platforms 9—9' and the carriage 11 are then moved to the desired position with relation to the belt B and the shoe 48 on the arm 37. The driving pulley 13' then being set in motion and the shoe 48 lowered upon 55 the belt B, the latter is thrown into contact with the panel on the carriage 11 and is drawn thereacross by the rotation of the driving pulley 13'.

It is obvious that the area of working surface of the belt B will be that of the shoe 48, so that in handling a panel of considerable size it will be necessary to shift the 60 panel from side to side and longitudinally,

which is accomplished by operating the platforms 9—9' and the carriage 11, as before 65 described, to bring the entire surface of the panel under the shoe 48.

The valuable feature of this machine is its adaptation for sanding thin veneers and finished panels, and that in subjecting the 70 panel to the action of the abrasive belt B, as just described, the edges and corners of the panel will not be rounded off, for the reason that the belt B slopes downward in passing under and away from the shoe 48, 75 thereby confining the action of the belt to the flat surface of the shoe 48.

When the machine is employed in sanding panel surfaces, as previously described, the belt B is rove on the pulleys 13—13' so 80 that its abrasive surface will be on its inner face, the working face of the upper leaf of the belt thus being on its underside.

Means are provided whereby the belt may be positioned to surface the vertical edges 85 of panels and the like, which means is here shown as consisting of a vertically disposed arm 50, adjustably mounted on a standard 51, which is designed to be positioned adjacent to the outer edge of the abrasive belt 90 B opposite the table 2, midway between the pulleys 13—13', as shown in Fig. 1. The arm 50 is formed with a longitudinally extending slot 52, through which a bolt 53 is passed; the bolt 53 extending through the 95 arm 50 and through the upper end of the standard 51; the head of the bolt bearing against the outer face of the arm 50, as shown in Fig. 6. A jam nut 54 is screwed on the threaded inner end of the bolt 53 so 100 as to clamp the arm 50 against the standard 51 and thereby securely hold it against movement.

Revolubly mounted on the outer ends of the arm 50 are idler pulleys 55—56; one end 105 of the arm 50 being bent so as to offset the pulleys 55 and 56, as shown. When it is desired to sand the edges of panels, the carriage 11 and platform 9 are thrown out of operation, and the platform 9' is disconnected 110 from the platform 9 so that it may be moved independent of the latter. The arm 50 is then disposed in a vertical position, as shown in Fig. 1, and an endless abrasive belt having its abrasive surface on 115 its outer side is rove around the pulleys 13—13', as before described; the upper leaf of the belt being rove under the idler pulley 55 on the arm 50, up and over the idler pulley 56, thus disposing that portion of the 120 abrasive belt B between the pulleys 55 and 56 in a vertical position. The table 2 is then adjusted to such a height that the rails 7' will project over that portion of the abrasive belt B extending between the pulleys 13 and 55. The panel to be sanded is 125

then placed on the platform 9' with its edge to be finished adjacent to the vertical portion of the abrasive belt B. The platform 9' is then moved backward and forward on the rails 7—7' so as to carry the edge of the panel across the vertical face of the abrasive belt B.

A shoe 57, mounted on a bracket 58, is positioned so as to bear against the back of the abrasive belt B opposite the point of contact of the latter with the material being worked. The bracket 58 is attached to the arm 50 by means of a bolt 59 which is passed through a slot in the bracket 58 and the slot 52 formed in the arm 50; a jam nut 60 being screwed on the bolt 59 to clamp the bracket 57 on the arm 50, as shown in Fig. 1.

When it is desired to sand curved surfaces, the arm 50 is positioned on the standard 51, as shown in Figs. 4 and 5. In the former the abrasive belt B is shown as passing under the idler pulley 56, up and over a curved shoe 61, mounted on the arm 50, and from thence passing under the idler pulley 55 and over the drive pulley 13'. The shoe 61 may be of any desired curvature according to the nature of the surface to be sanded.

In the arrangement shown in Fig. 5 a shorter abrasive belt is employed; the belt being passed from the underside of the drive pulley 13', around and over the idler pulley 55, then under the idler pulley 56 and over the driving pulley 13'; the arm 50 being disposed in a horizontal position. In this case the abrasive surface of the belt B is on the outside and the curvature for sanding curved surfaces is formed by the idler pulley 55.

It is manifest that the arm 50 may be disposed in any suitable position by reason of its adjustable connection or adjustable mounting on the standard 51, and that by the use of the adjustable arm 50 the idler pulleys 55 and 56, I am enabled to employ my sanding machine in the finishing of curved and irregular surfaces as well as the edges of broad surfaces of panels, boards and the like.

The standard 51 is slidably mounted on a rigid dovetail plate 51' and is designed to be moved so as to dispose the idler direction rollers 55—56 in or out of line with the abrasive belt B; the standard 51 being clamped to the plate 51' by means of bolts in any desired manner when it is to be held in a stationary position.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with an endless abrasive belt and means for rotating same, of a pair of idler pulleys adapted to bear against

one leaf of the belt, an adjustable arm on which said idler pulleys are revolubly mounted, said arm formed with a longitudinally extending slot, means for adjusting the arm in various positions, comprising a bolt passing through the slot therein, and a standard carrying said bolt to which the arm is clamped.

2. The combination with an endless abrasive belt and means for rotating same, of a pair of idler pulleys adapted to bear against one leaf of the belt, an adjustable arm on which said idler pulleys are revolubly mounted, said arm formed with a longitudinally extending slot, means for adjusting the arm in various positions, comprising a bolt passing through the slot therein, a standard carrying said bolt to which the arm is clamped, and an adjustable support for the materials to be worked arranged adjacent to the abrasive belt.

3. In a sand papering machine, the combination with an endless abrasive belt and means for driving same, of a pair of idler pulleys engageable with the belt, an arm carrying said idler pulleys, a standard, means for clamping the arm to the standard in various positions, a base plate on which the standard is mounted, a dovetail plate on which the base plate is slidable, and means for clamping the base plate to the dovetail plate.

4. In a sand papering machine, the combination with an endless abrasive belt and means for driving same, of a pair of idler pulleys engageable with the belt, an arm carrying said idler pulleys, formed with a longitudinally extending slot, a standard, a bolt carried by the standard engaging the slot in the arm by which the arm is clamped to the standard in various positions, and means for adjusting the standard in relation to the belt.

5. In a sand papering machine, the combination with an endless abrasive belt and means for driving same, of a pair of idler pulleys engageable with the belt, an arm carrying said idler pulleys, formed with a longitudinally extending slot, a standard, a bolt carried by the standard engaging the slot in the arm by which the arm is clamped to the standard in various positions, means for adjusting the standard in relation to the belt comprising a base plate on which the standard is mounted, a dovetail plate on which the base plate is slidable, and means for clamping the base plate to the dovetail plate.

6. In a sand papering machine, the combination with an endless abrasive belt and means for driving same, of a pair of idler pulleys engageable with the belt, an arm carrying said idler pulleys, formed with a lon-

gitudinally extending slot, a standard, a
bolt carried by the standard engaging the
slot in the arm by which the arm is clamped
to the standard in various positions, an ad-
5 justable support for the materials to be
worked arranged adjacent to the abrasive
belt, means for adjusting the standard in
relation to the belt comprising a base plate
on which the standard is mounted, a dove-
10 tail plate on which the base plate is slidable,

and means for clamping the base plate to
the dovetail plate.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

JOHN W. KROEZE.

Witnesses:

JOHN H. HERRING,

GENEVIEVE S. DONELIN.