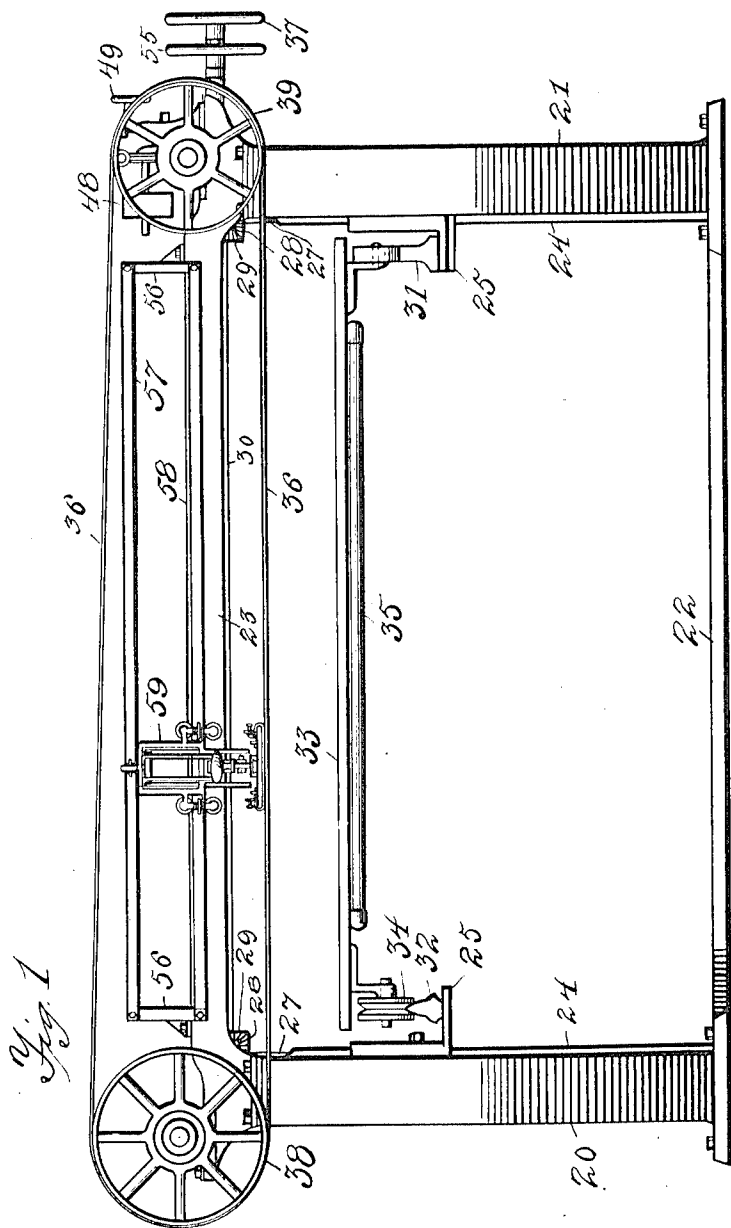


L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 1.



Witnesses

Arthur O. Morse
H. W. Harris

Inventor

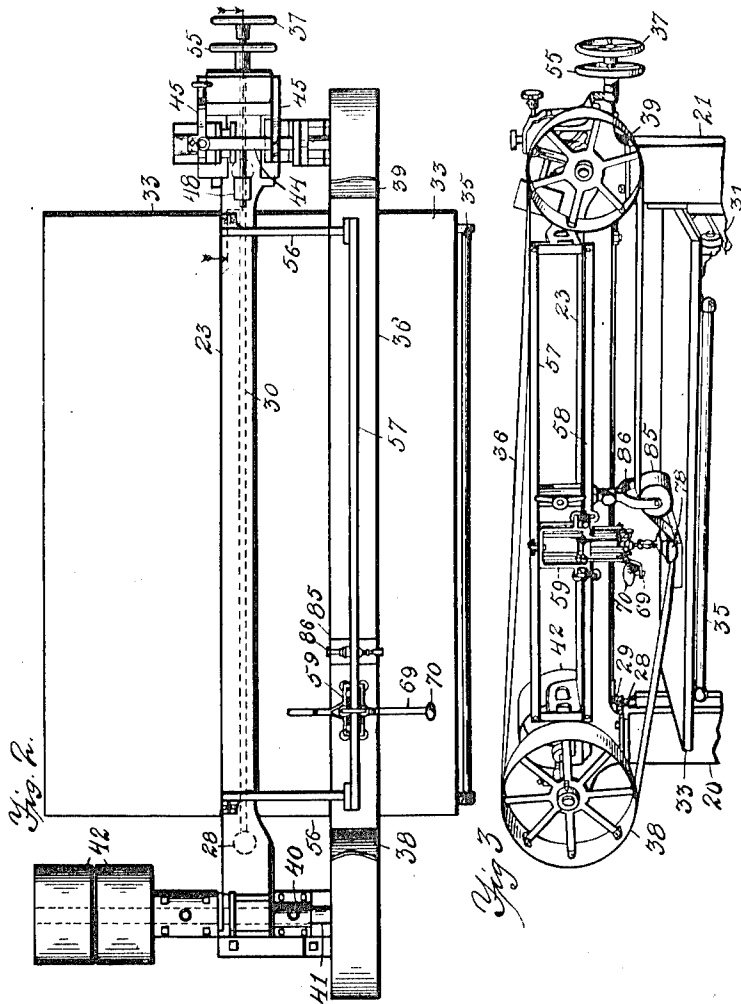
Louis Lucas
By Arthur O. Morse
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 2.



Witnesses
Arthur O. Morse
H. U. Harris

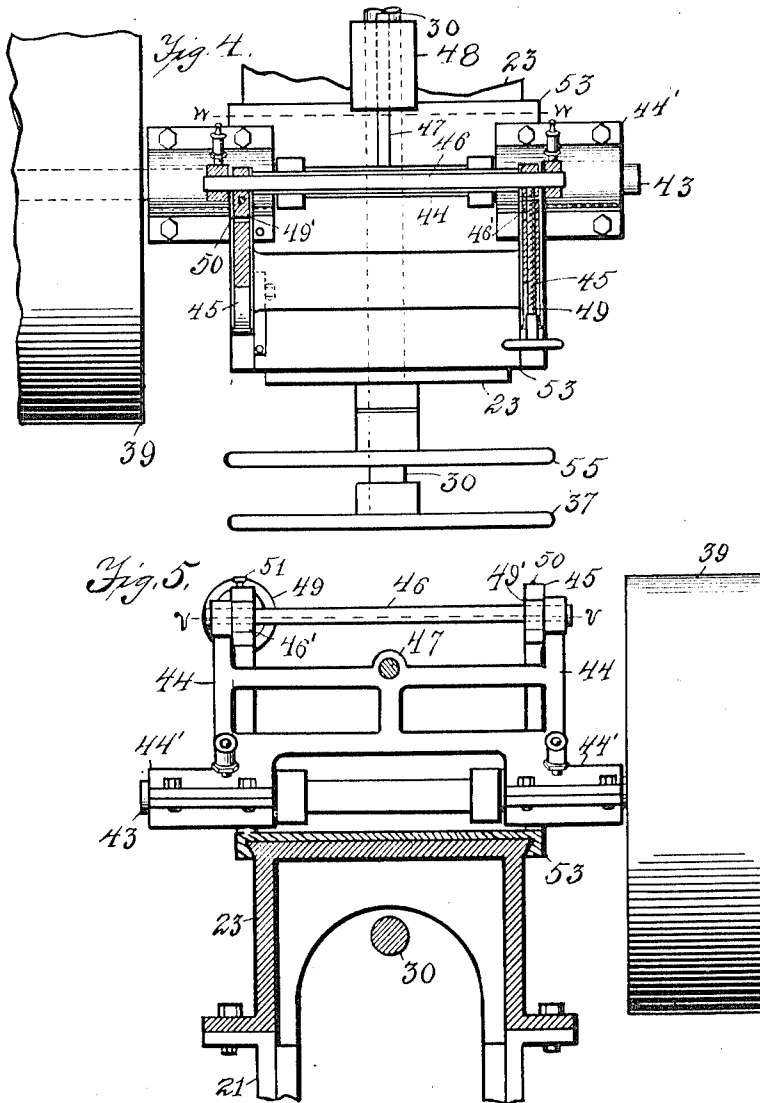
Inventor
Louis Lucas
By
S. Arthur Baldwin
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 3.



Witnesses

Arthur O. Morse
H. W. Harris

Inventor

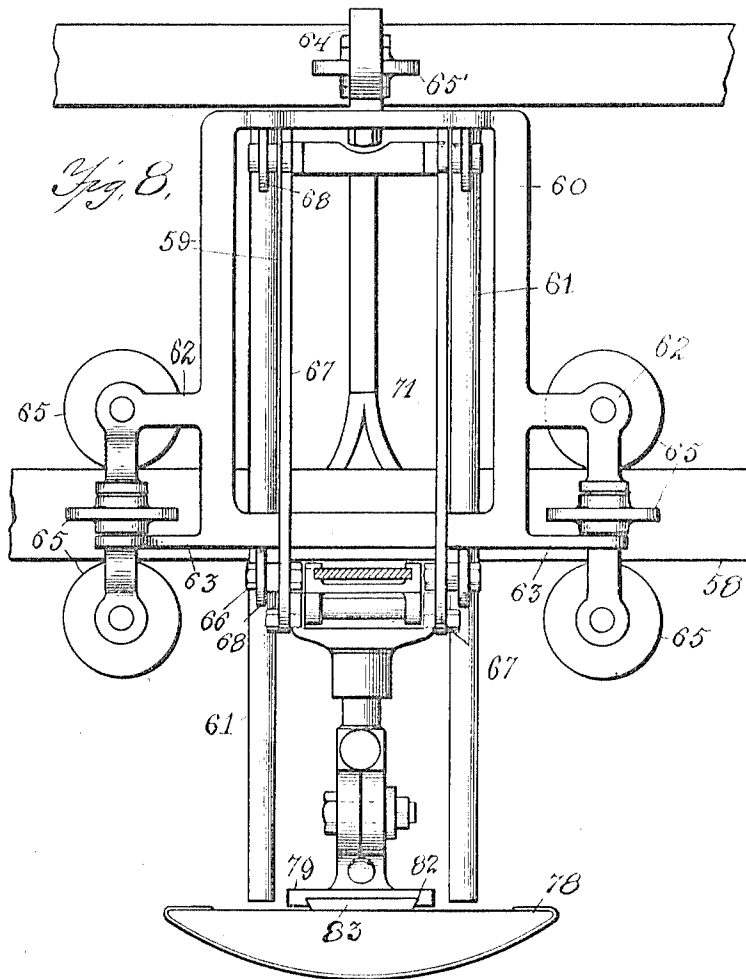
Louis Lucas
By J. Arthur Baldwin
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 5.



Witnesses

Arthur O. Morse
H. M. Harris

Inventor

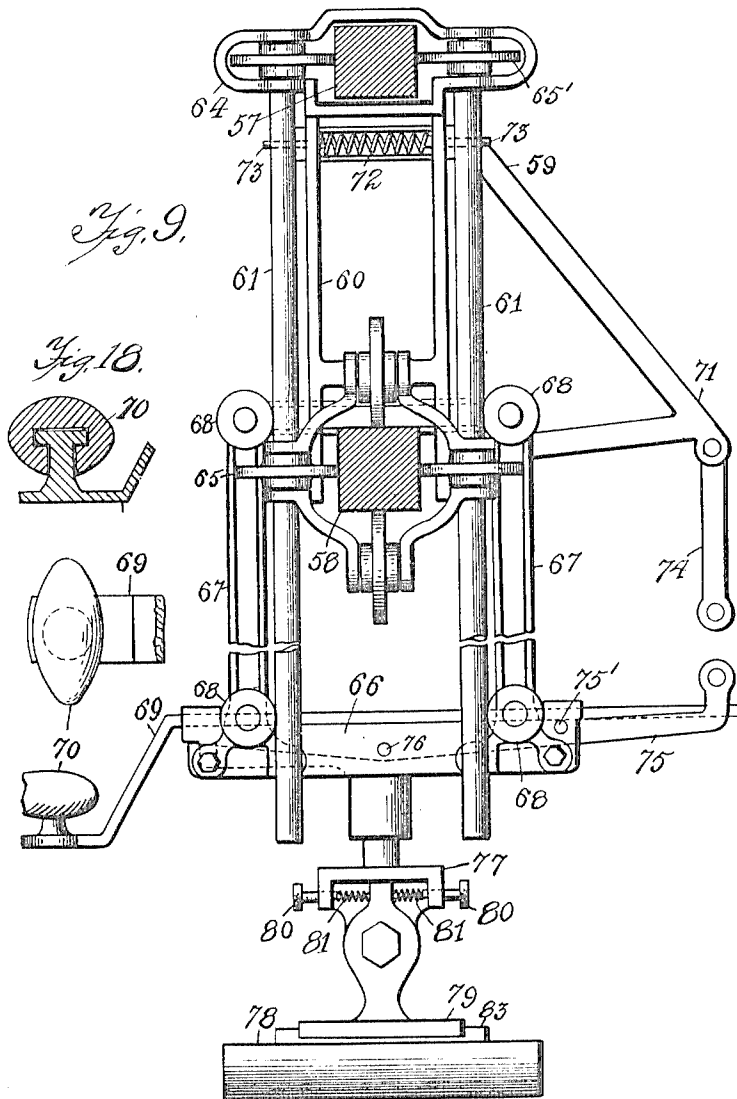
Louis Lucas
By S. Arthur Baldwin
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 6.



Witnesses

Arthur O. Morse
H. U. Harris

Inventor

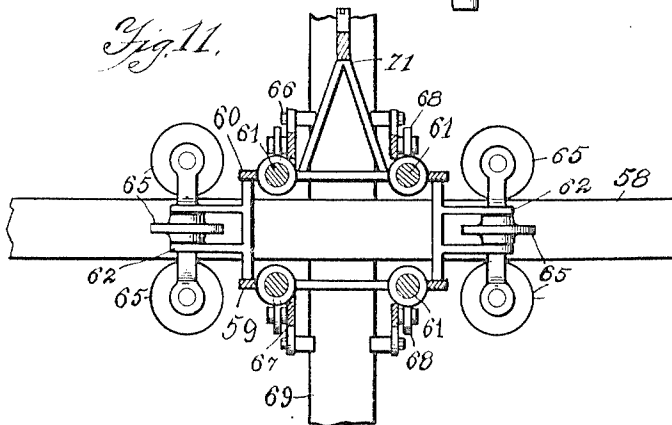
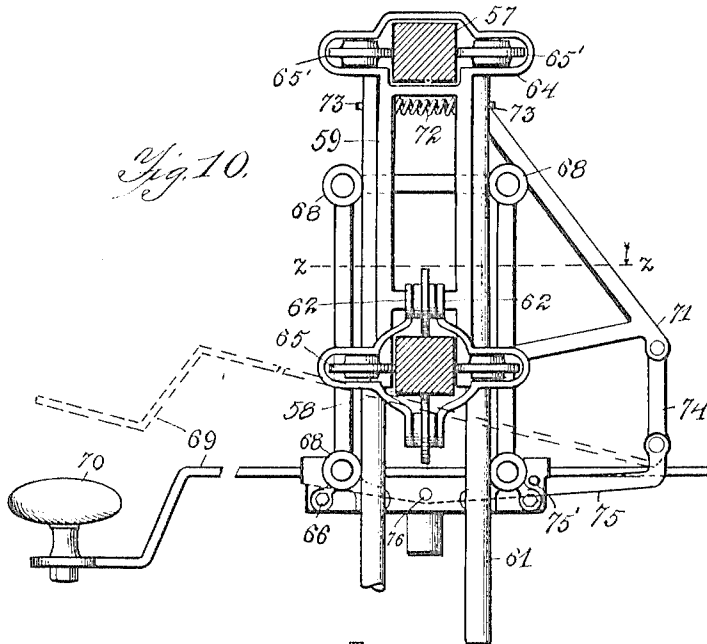
Louis Lucas
By
J. Arthur Baldwin
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 7.



Witnesses
Arthur O. Morse
H. U. Harris

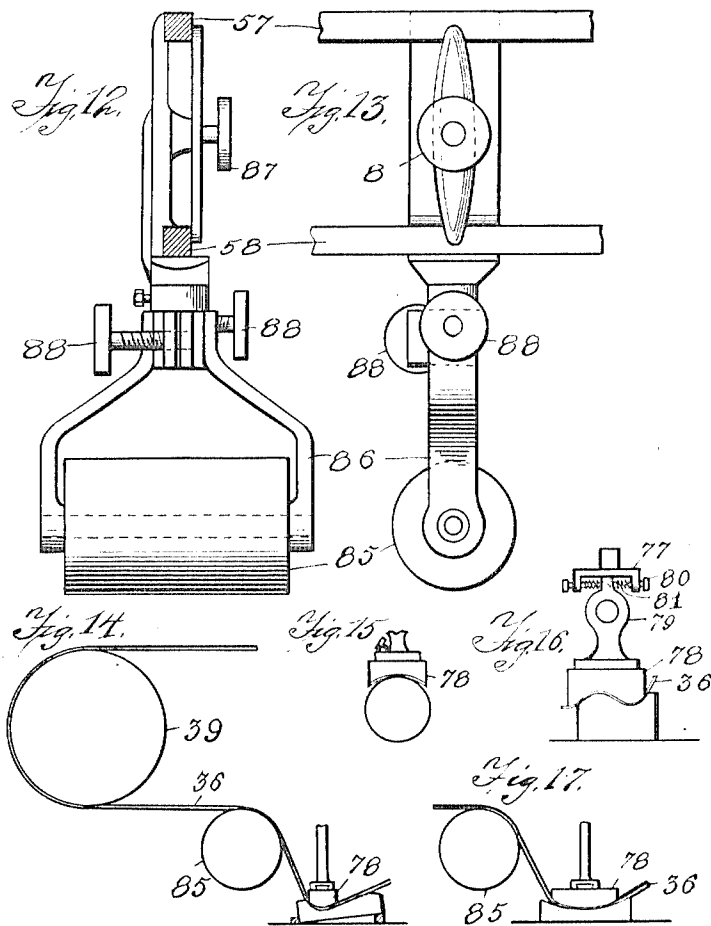
Inventor
Louis Lucas
By *S. Arthur Baldwin*
Attorney

L. LUCAS.
SANDING MACHINE.
APPLICATION FILED JAN. 12, 1912.

1,063,923.

Patented June 3, 1913.

8 SHEETS—SHEET 3.



Witnesses

Arthur O. Morse
H. U. Harris

Inventor

Louis Lucas
By—
S. Arthur Sullivan,
Attorney

UNITED STATES PATENT OFFICE.

LOUIS LUCAS, OF JAMESTOWN, NEW YORK, ASSIGNOR TO CURTIS MACHINE CORPORATION, OF JAMESTOWN, NEW YORK, A CORPORATION OF NEW YORK.

SANDING-MACHINE.

1,063,923.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed January 12, 1912. Serial No. 670,735.

To all whom it may concern:

Be it known that I, LOUIS LUCAS, a citizen of the United States, resident of Jamestown, county of Chautauqua, and State of New York, manufacturer, have invented new and useful Improvements in Sanding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of the specification, and to the figures and reference-numerals marked thereon.

The invention relates to machines for sanding or polishing plain or curved surfaces of the type having an endless abrading or sanding belt running on spaced pulleys; and the object of the improvement is to provide an automatically adjustable tension for the sanding belt, and mechanism for running said belt in combination with mechanism for manually pressing the belt to its work; and the invention consists in the construction and arrangement of the parts as shown in this specification and the accompanying drawings, and pointed out in the claims.

In the drawings, Figure 1 is a front elevation of the sanding machine with the sanding belt in the normal position when not in use. Fig. 2 is a plan view of the machine, the belt being broken away to show the arrangement of the guide bar and presser block carriage. Fig. 3 is a perspective view showing the machine as arranged for sanding a molding. Fig. 4 is a plan view of one end of the cross rail of the frame and the pulley sustaining bracket slidably mounted thereon, the arms of the bracket being shown in section at line V V in Fig. 5, to show the pivotal adjustment of the swing bracket for the pulley. Fig. 5 is a sectional view of the cross rail at line W W in Fig. 4 showing an elevation of the swing frame for supporting one of the pulleys for the abrading belt. Fig. 6 is a sectional view from the rear side, as shown by the arrows, at line X X in Fig. 2. Fig. 7 is a crosswise view of the standard and bracket at line Y Y in Fig. 6 and may represent either one of the standards since they are precisely the same in section except that they are placed opposite one another. Fig. 8 is a front elevation of the carriage for the presser block with a curved block on said carriage and a portion of the

fixed guide bars upon which said carriage runs, the manipulating lever being shown in section; Fig. 9 is a side elevation of the carriage for the presser block with the lever controlled portion of the carriage disconnected for raising and lowering the presser block, as used in sanding curved surfaces; and Fig. 10 is a similar side elevation with the lever controlling portion of the carriage connected to the main frame of the carriage as used in sanding plain surfaces. Fig. 11 is a sectional view at line Z Z in Fig. 10 giving a plan view of the lower part of the carriage and portions of the lower guide bar and the hand lever. Fig. 12 is a front elevation and Fig. 13 a side elevation of an idler roll as attached to the fixed guide bars for controlling the sanding belt. Fig. 14 is a diagram of the arrangement of the idler roll in connection with a presser block, sanding belt, and table as used in sanding a molding; and Figs. 15, 16 and 17 show front elevations of different styles of presser blocks for different forms of curved surfaces. Fig. 18 shows sectional and plan views of the turn knob for the lever.

Similar numerals refer to corresponding parts in the several views.

In the drawings, the numerals 20 and 21 indicate the end standards of the supporting frame, which standards are preferably connected at their lower ends by the bed plate 22 and at their upper ends by the cross rail 23, said standards and upper cross rail being made hollow to receive therein controlling mechanism for the machine.

The standards 20 and 21 are provided on their inner edges with slotted ways 24 for the brackets 25 to slide up and down thereon, a screw block 26 being provided on bracket 25 and extending through the slot within standards 20 and 21 to receive therethrough the vertical screws 27. Screws 27 are revolubly and vertically mounted within standards 20 and 21 in the same manner in each standard, as shown in Figs. 6 and 7, and bears on its upper end the bevel gear 29 on rod 30, which rod 30 extends lengthwise through the top rail 23, as shown in Figs. 1, 2, 3 and 6, and connects the two vertical rods 27 in the standards 20 and 21 to simultaneously turn the screw rods 27 and thereby simultaneously raise and lower the holding brackets 25.

Holding brackets 25 sustain thereon the

tracks 31 and 32. Tracks 31 and 32 extend crosswise of the frame. The work table 33 is mounted on tracks 31 and 32 by means of suitable wheels. Track 32 is made with a V-shaped edge and the wheels 34 at that end of the work table 33 have a corresponding V-shaped annular groove therein. The track 31 is flat on its upper surface and the wheels at that end are left flat, it only being necessary to have the V-shaped track and wheels at one end so as to guide the work table 33 perfectly in line, as it rolls back and forth. The guiding of the work table perfectly in line is necessary for the perfect sanding of moldings and similar pieces which are laid crosswise of the work table, the work table being moved backward and forward beneath a presser block and the belt 36 as hereinafter fully described. Work table 33 has a hand rail 35 for the operator to manually control the work table as he moves it back and forth beneath the sanding belt 36, and it is apparent that the work table may be raised and lowered in relation to the belt 36 by means of the screw rods 27 and gears 28 and 29 and rod 30, which rod 30 is manually turned by hand wheel 37.

The sanding or abrading belt 36 is mounted upon pulley wheels or rollers 38 and 39. Pulley 38 is mounted on one end of a shaft 41 which is revolubly mounted in journal 40 on one end of cross bar 23. Shaft 41 bears on its opposite end the pulleys 42 to receive thereon the power belt for driving the machine. Pulley 39 is keyed on shaft 43. Shaft 43 is revolubly mounted in boxes 44' on the lower part of a swing frame 44. Frame or plate 44 is swung upon vertical arms 45 on cross shaft 46. Arms 45 are a portion of the bracket 53 which bracket is slidably mounted upon the end of cross rail 23 preferably with a dove-tail-shaped joint, as shown in Fig. 5. Bracket 53 is adjustably controlled by means of the holding block 53' which is attached to the under side of bracket 53 by means of a suitable belt. Block 53' extends down through a slot 52 in the upper side of cross rail 23 and has a suitable threaded opening therein to engage the horizontal adjusting screw 54. Adjusting screw 54 is manually operated by means of hand wheel 55 to give tension to belt 36. Swing frame or plate 44 has extending out therefrom the arm 47 upon which is slidably mounted a weight 48. It is apparent that the frame 44 will swing with its pulley 39 toward the pulley 38 when pressure is applied to the belt 36, thereby allowing manipulation of the belt 36 yet holding a constant tension by means of weight 48. The swing frame 44 may be locked in the vertical position by means of latch 45', which latch is pivotally attached to the side of one of the brackets 45. Latch 45' engages a small opening in one of the journals 44' thereby holding the

frame 44 firmly in the vertical position. Swing frame 44 may be instantly released by throwing catch 45' out of engagement. Shaft 46 upon which frame 44 is swung is revolubly mounted in journal blocks 46' and 49'. Journal block 49' is pivotally attached in a suitable opening in one of the arms 45 by means of pin 50. Journal block 46' is slidably mounted in a suitable opening in the other arm 45. An adjusting screw 49 is attached to journal block 46' by means of a pin. Adjusting screw 49 extends out through a threaded opening in arm 45 and has a hand wheel for manually turning the same. A set screw 51 is provided in the upper face of arm 45 over block 46' to secure said block in the desired position when adjusted by means of screw 49. It is now apparent that block 46' with the end of shaft 46 therein can be slidably adjusted thereby turning said shaft pivotally on pin 50 and turning frame 44 and pulley 39 so that the face of said pulley is correctly adjusted in line with the face of pulley 38 so that the abrading belt will run smoothly and in line upon said pulleys.

In order to economize space and to keep both the rod 30 and screw 54 in perfect alinement screw 54 is preferably made hollow to receive therethrough the rod 30 thereby supporting the rod 30. It is apparent that by means of screw 54 as it is attached to bracket 53 and hand wheel 55 the bracket may be adjusted horizontally, thereby giving the desired tension to abrading belt 36 when held by latch 45'.

In order to press the abrading belt 36 to its work or hold it firmly in position so that the work can be pressed against it, a rigid frame composed of arms 56 which are attached at spaced distances upon cross bar 23 of the machine frame and extend out within the abrading belt 36 and on the front end of the brackets 56 are the two rigidly attached guide bars 57 and 58. Guide bars 57 and 58 are preferably parallel to one another. A carriage 59 for the presser block 78 is movably mounted upon bars 57 and 58. Carriage 59 has a frame 60 with vertical rods 61 firmly supported therein and extending down nearly to the abrading belt. Frame 60 has also the arms 62 and 63 extending out on horizontally opposite sides and supporting therein the rollers 65 on all sides of the horizontal bar 58 so that the carriage 59 is guided perfectly in line horizontally. In order to save the carriage from tipping to one side or the other and hold it vertically in line, frame 60 is extended in a loop piece 64 around upper guide bar 57 and wheels 65' are revolubly mounted within loop piece 64 so as to run on the front and rear sides of bar 57 thereby holding the carriage in perfect vertical alinement. A second carriage 66 is mounted upon the four

vertical rods 61 upon a suitable frame 67 and has the rollers 68 on opposite sides of the vertical rods 61 which hold the rectangular frame 67 firmly in line, yet allows it to move up and down upon the rods 61, said rods forming suitable rails for the wheels 68. A spring catch 72 is provided in the upper end of frame 60 for carriage 66, having the spring pins 73 which extend out beyond vertical rods 61 and automatically catch and sustain carriage 66 when it is raised above said pins.

In the lower end of frame 67 a hand lever 69 is slidably mounted crosswise of guide bars 57 and 58, which hand lever is provided with a turnable hand knob 70 for raising or lowering carriage 66 and also for moving carriage 60 horizontally upon the rails 57 and 58 without releasing the hand grip of knob 70. Lever 69 is made of sufficient length so that different degrees of leverage may be attained in pressing upon the same. The frame 60 has an extension 71 to the rear and when it is desired to sand or abrade plain surfaces the carriage 66 is firmly attached to carriage 59 in the following manner: A link 74 is attached to the rearward extension 71 of frame 60 which link is attached to the rearwardly extending plate 75 in carriage 66. Plate 75 is pivotally mounted at 76 in carriage 66 so that when link 74 is attached to the upturned rear end of plate 75 by means of a suitable pin, the two frames are securely united into one.

It is apparent that the pivotal joining of the upturned rear end of plate 75 forms a fulcrum for lever 69 within the carriage itself and yet allows the vertical carriage 66 to move up and down on rods 61 as far as the cross bar 58 will allow or to the point where the lever 69 reaches the dotted lines shown in Fig. 10. This permits of the raising of a presser block off the belt, relieving the belt from its pressure upon the surface which is being abraded, yet has not sufficient amount of vertical movement to allow for curved surfaces, as for example in sanding the bowed fronts of drawers. The attachment, however, of the two frames, together into a united carriage frame is preferred for abrading plain surfaces as hereinbefore stated. A pin 75' may be inserted beneath lever 69 thereby rendering it rigid as against upward or downward movement.

The lower plate of frame 67 is made sufficiently heavy to support centrally thereon the presser block holder 77 and presser block 78 preferably detachably mounted therein. Holder 77 is composed of the adjustably mounted holding piece 79 which has set screws 80 and springs 81 each side to give a spring tension each side of the central tongue on the upper end of part 79. Holder 79 has the dove-tail-shaped groove 82 on its under side to slidably receive therein the

dove-tail-shaped projection 83 upon the top of the presser block. The presser blocks may be made in any desired shape to conform to the surface to be abraded and by means of the dove-tail-shaped slidable joint between the presser block 78 and holding plate 79 it is apparent that different forms of presser blocks may be quickly adjusted within the holding plate 79 in order to conform to the different surfaces to be abraded. Presser block 78 is provided on the under side with a sheet of felt and canvas or other resilient material for pressing the belt 36 to its work.

In order to control abrading belt 36 so that it may be pressed into curved surfaces, an idler roll 85 is provided which is revolvably supported in frame 86 which is removably attached to guide bars 57 and 58 by means of the screw clamp 87 on the upper end of the frame 86, adjusting screws 88 and a movable joint being provided for the lower portion of frame 86 in order to adjust roll 85 to the proper position. It is apparent that roll 85 may be suspended beneath bars 57 and 58 and abrading belt 36, running over the same, and that the carriage 59 may be moved up adjacent roll 85, thereby causing the abrading belt 36 to abruptly descend from roll 85 upon the work and by means of a suitable presser head 78 the belt may be pressed into concave surfaces as in moldings, which moldings are placed crosswise of the table 33, which table being moved backward and forward beneath the presser block admits of the sanding of concave surfaces next to plain surfaces without impairing the corners, indeed assisting in the correct formation of the corners, as clearly diagrammed in Figs. 12, 14 and 15 and by means of a concave presser block, the belt may be pressed upon a round rod, as shown in Fig. 13.

In order to press the work upon curved surfaces as above described, it is apparent that the vertical carriage 66 must be allowed to move downward sufficiently to place the presser block in correct position and also to quickly remove the presser block from the work. It is also apparent that in order to press the abrading belt 36 into the positions shown in Figs. 3, 12, 14 and 15, a slack belt is necessary, yet one upon which the tension is constant. Accordingly for this form of work a slack belt is provided by means of the swinging pulley 39 upon its swing frame 44, upon which the tension may be adjusted by means of the slide weight 48 upon rod 47 attached to frame 44.

I claim as new—

1. In an abrading machine, a frame, spaced arms on said frame, a journal pivotally mounted in one of said arms, a second journal slidably mounted in the other of said arms and a screw attached thereto

to adjust the same, a swing frame mounted in said journals, a pulley on said swing frame, a second pulley on said frame in line with said swing pulley, and an abrading
5 belt on said pulleys.

2. In an abrading machine, a belt, a block to press said belt to its work, a guide bar, a carriage for said block movable on said guide bar, a lever mounted in said carriage
10 to press said block on said belt and move said carriage on said bar, and a fulcrum on said carriage for the rear end of said lever.

3. In a sanding machine having an abrading member, a two-part carriage having a head to engage said member, both of said parts movable in controlling said member and one of said parts of the carriage being
15 movable at right angles to the other part.

4. In a sanding machine having an abrading member, a duplex carriage of movable parts one part of which is movably mounted on the other part in a plane at right angles to the movement of said other part,
20 and means connecting the two parts of the carriage so that they may be moved together in the same direction.

5. In an abrading machine, a belt, a block to press said belt to its work, a fixed guide
30 bar, a carriage for said block horizontally movable on said guide bar, a portion of said carriage vertically movable, and a lever in said vertically movable portion of said carriage and fulcrumed on the remainder
35 of said carriage to manually move it horizontally or vertically.

6. In an abrading machine, a frame, fixed guide bars on said frame, pulleys rev-
40 olubly mounted opposite the ends of said guide bars, one of said pulleys a swing pulley, a carriage slidably mounted on said guide bars, vertical guide rods in said carriage, a portion of said carriage slidably
45 mounted on said vertical rods, a rearward extension on the upper portion of said carriage and a lever fulcrumed on said rearward extension and mounted in the vertically movable portion of said carriage to
50 manually move said carriage vertically and horizontally.

7. In an abrading machine, a belt, a block to press said belt to its work, a fixed guide
55 bar, a carriage for said block horizontally movable on said guide bar, vertical rods in said carriage, a detachable portion of

said carriage movably mounted on said vertical rods, and a lever on said vertical movable portion to manually control said carriage.

8. In an abrading machine, a belt, a block
60 to press said belt to its work, a fixed guide bar, a carriage for said block horizontally movable on said guide bar, vertical rods in said carriage to form guide rods, a portion of said carriage movably mounted on said
65 vertical rods, a spring catch in said carriage to support the vertically movable portion thereof in the raised position, and a lever in the vertical movable position to manually control said carriage both as to
70 vertical and horizontal movement.

9. In an abrading machine, a frame, spaced pulleys on said frame, one of said pulleys a swing pulley, an abrading belt
75 on said pulleys, a block to press said belt to its work, an idler roll beneath said belt, and means for adjusting said idler roll on said frame adjacent said block to receive
said belt thereover.

10. In an abrading machine, a belt, a
80 block to press said belt to its work, a guide bar, a carriage for said block movably mounted on said guide bar, a holder for said block on said carriage, a vertical extension on said holder pivotally attached
85 to the lower side of said carriage, a tongue on said holder extending above the point of pivotal attachment to said carriage, and a horizontal tension spring each side of said tongue on said holder to resiliently hold
90 said vertical extension on said block.

11. In an abrading machine, a belt, a block to press said belt to its work, a fixed
95 guide bar, a carriage for said block, vertical wheels in said carriage traveling on the upper and under sides of said fixed guide bar, a double set of horizontally mounted wheels in said carriage one above the other on each side of said fixed guide bar to hold the carriage in vertical alinement, and a
100 lever fulcrumed in said carriage to move the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS LUCAS.

Witnesses:

A. W. KETTLE,
H. U. HARRIS.