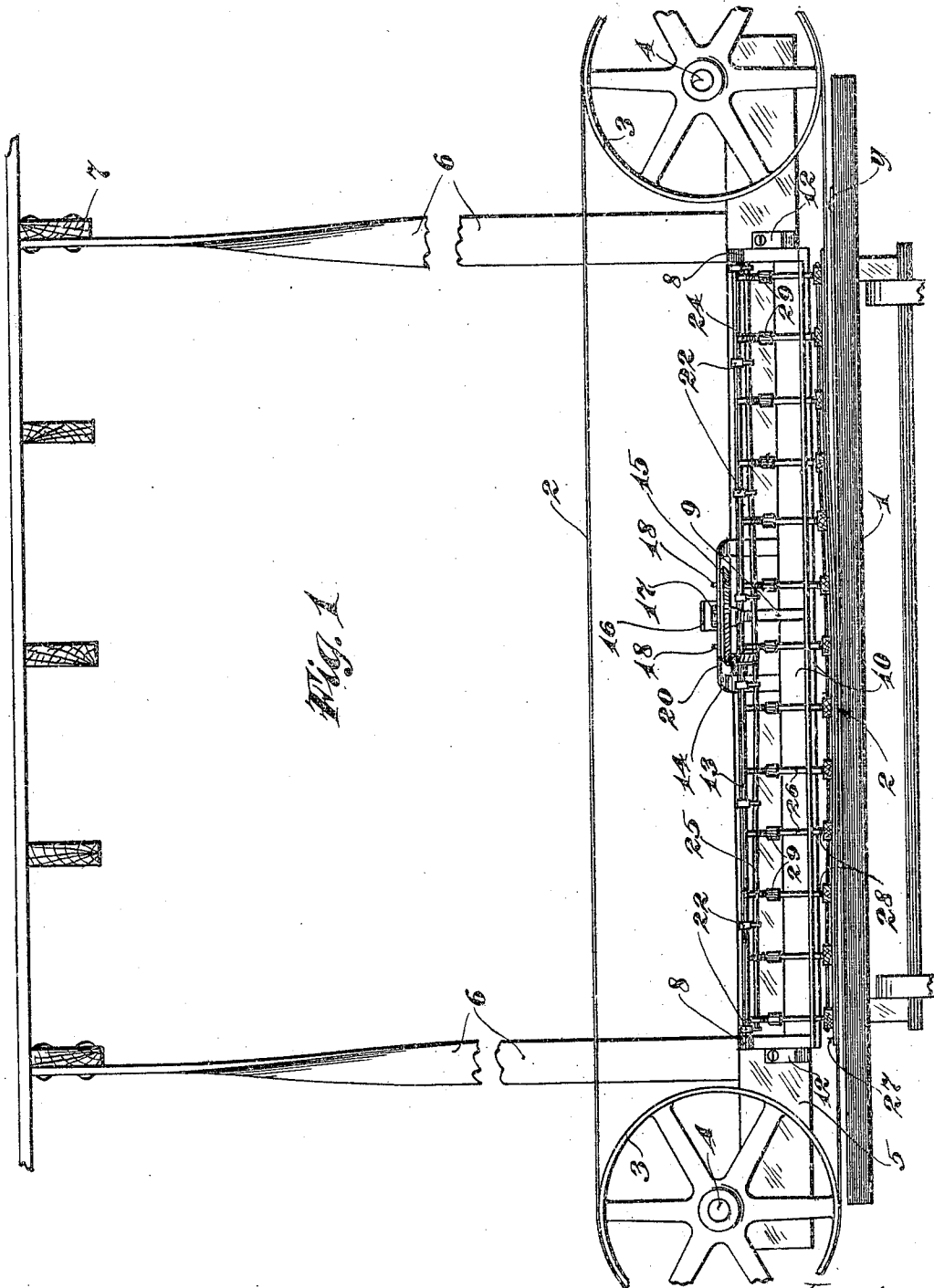


F. SCHIMMEL.
SANDPAPERING MACHINE.
APPLICATION FILED MAY 3, 1908.

959,614.

Patented May 31, 1910.

3 SHEETS—SHEET 1.



Witnesses:
R. F. Hicks.
L. L. Simpson.

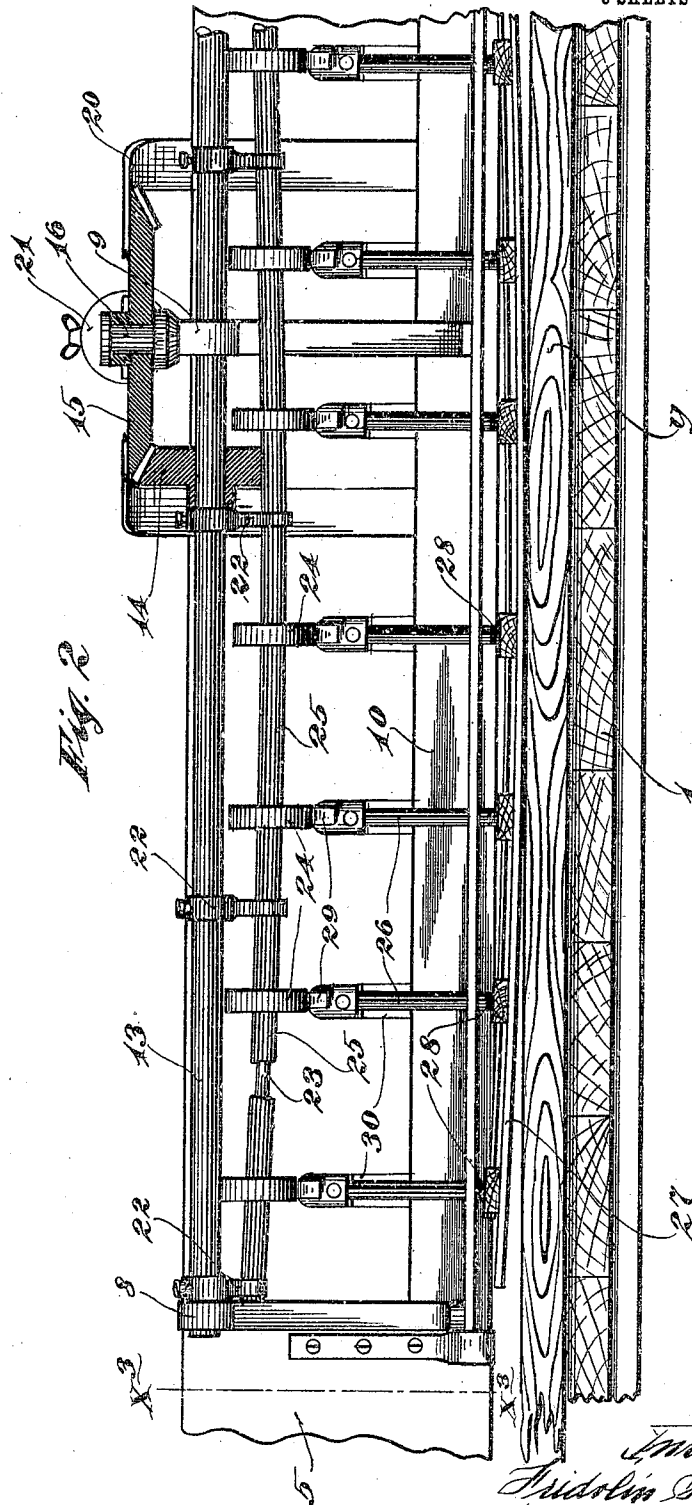
Inventor:
Friedrich Schimmel
By his Attorneys
Williamson & Merck

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3 SHEETS—SHEET 2.



Witnesses.
T. F. Hicker,
L. L. Simpson.

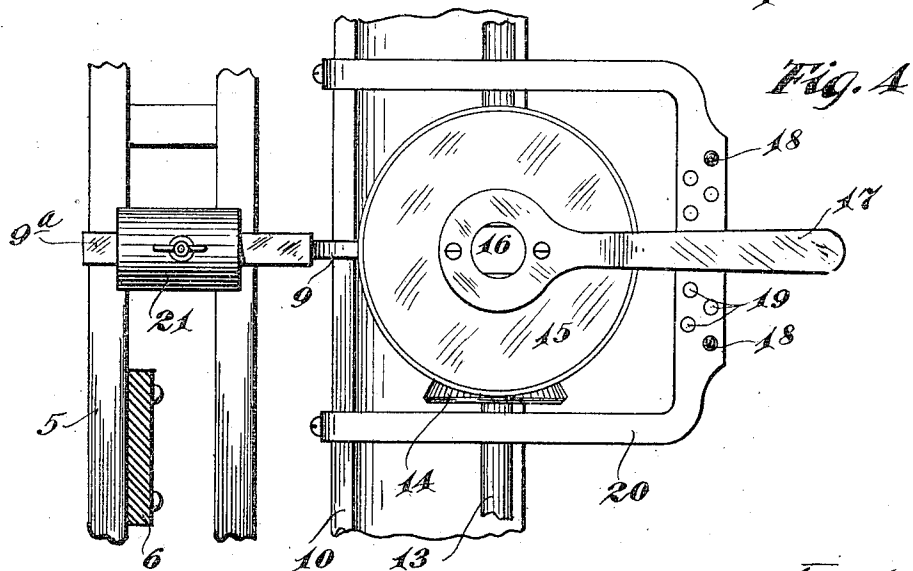
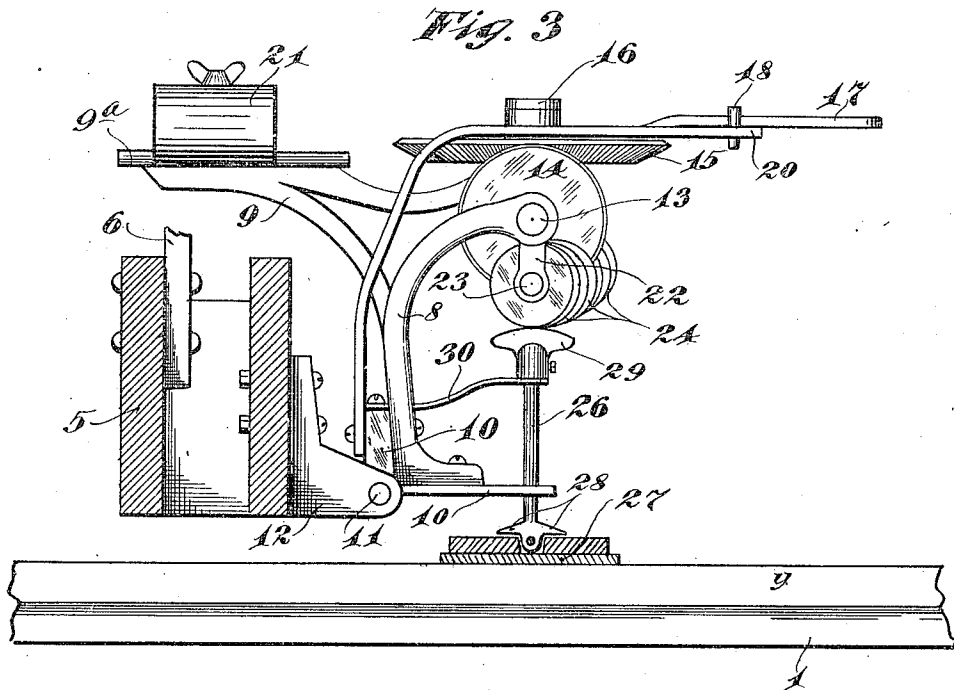
Inventor
Friedrich Schimmel
By his Attorneys
Williamson & Muehler

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3 SHEETS—SHEET 3.



Witnesses
R. F. Hicks,
L. L. Simpson,

Inventor
Fridolin Schimmel
By his Attorneys
William M. Mearns

UNITED STATES PATENT OFFICE.

FRIDOLIN SCHIMMEL, OF FARIBAULT, MINNESOTA.

SANDPAPERING-MACHINE.

959,614.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed May 3, 1909. Serial No. 493,462.

To all whom it may concern:

Be it known that I, FRIDOLIN SCHIMMEL, a citizen of the United States, residing at Faribault, in the county of Rice and State of Minnesota, have invented certain new and useful Improvements in Sandpapering-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its especial object to provide an improved sandpapering machine, and to this end, it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

Particularly, this invention is directed to the provision of improved means for applying pressure on a sandpaper belt or similar belt used for smoothing or polishing wood or other materials. It provides a device for use in connection with a belt of this character, whereby instead of pressing a large surface of the belt at one time against the object being sandpapered or polished, it will press the said belt only at one point or a small portion at a time, and this point may be shifted or caused to travel along the belt, and hence, from one place to another on the board or material which is subject to the belt.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings: Figure 1 is a view in front elevation, with some parts broken away, showing the sandpapering machine with my invention incorporated therein; Fig. 2 is an enlarged front elevation of the main body portion of the machine, the end portions thereof being broken off; Fig. 3 is a vertical section taken from front toward the rear of the machine on the line $x^3 x^3$ of Fig. 2; and Fig. 4 is a plan view of the parts shown in Fig. 3.

The board which is indicated by the character Y, is shown as placed upon a suitable supporting table 1, which latter may be of any suitable construction, such for instance, as that disclosed and claimed in the companion application, filed by me of date May 3rd, 1909, under S. N. 493,461, entitled "Vertically adjustable table." It may be

here stated that in Fig. 2, the part Y is shown as a quite thick board, while in Fig. 1, it is shown as a very thin board or veneer.

The sandpaper or polishing belt 2 is arranged to run over pulleys 3, the shafts 4 of which are journaled in suitable bearings on a horizontally extended frame 5, which latter may be supported in any suitable way, but as shown, is suspended and rigidly held by hanger brackets 6, secured at their upper ends to beams of an overhead floor or ceiling 7. One of the pulleys 3 will, in practice, be driven by suitable means forming no part of the present invention, and hence, not illustrated.

A rocking supplemental frame shown as made up of end brackets 8, an intermediate bracket 9, and a horizontally extended guide bar 10 is pivotally connected to the frame 5, as shown, by means of trunnions 11 on the ends of the said bar 10, which are journaled in bearings 12 on the front face of said frame 5. In the upwardly extended portions of the brackets 8 and 9, a rock shaft 13 is journaled, and this rock shaft, at its intermediate portion, is provided with a beveled pinion 14 that meshes with a bevel gear 15, shown as journaled on a stud 16 of the intermediate bracket 9. This gear 15 is provided with a forwardly extended arm 17, that is arranged to work between stop pins 18, adjustably mounted in perforations 19 of a yoke-like bracket 20, the ends of the down-turned prongs of which are rigidly secured to the back of the guide bar 10 of the oscillatory supplemental frame. The intermediate bracket 9 is provided with a rearwardly extended guide flange 9^a on which a counter-weight 21 is adjustably mounted. The purpose of this counter-weight and also of the arm 17 above described, will appear in the description of the operation.

The rock shaft 13 is provided at intervals along its length, with short depending arms 22 that are set circumferentially one ahead of the other progressively from one end toward the other of said rock shaft. The free ends of these arms 22 support a slightly spiral rod 23, on which, at points between the arms 22, presser rollers 24 are loosely journaled, but are held properly spaced preferably by sleeves 25. These rollers, which in a broad sense, constitute plunger actuating tappets, are located with their axis

on a spiral line, but equi-distant from the axis of the rock shaft 13.

Located immediately below each presser roller 24, is a presser plunger 26. These plungers 26 are arranged to work vertically through perforations in the forwardly projecting portion of the oscillatory frame bar 10, and at their lower ends, they are pivotally connected to a flexible presser bar 27, and are provided with forwardly and rearwardly projecting stop fingers 28 that permit slight transverse oscillatory movements of said presser bar in respect to the said plungers, as best shown in Fig. 3. At their upper ends, the plungers 26 are provided with segmental heads 29 that are engaged each by one of the presser rollers 24. Leaf springs 30 attached at their rear ends to the rear portion of the oscillatory frame bar 10, engage the respective heads 29 at their forwardly projecting free ends, and yieldingly press the respective plungers upward and maintain engagement between the heads 29 and the cooperating presser rollers 24. It is here important to note that after the presser rollers 24 are offset on a spiral or irregular line, the lower portions thereof will always be at different altitudes, and will engage with different portions of the heads 29, so that the flexible presser bar 27, while nearly horizontal, is never truly horizontal, but is always bent on a curved or wave-like line with one point or small portion thereof always pressed below other portions thereof. Obviously, the presser roller which is located with its axis vertically below the axis of the rock shaft 13, and hence, alined with the axis of the cooperating plunger 26, will press the underlying portion of the flexible presser bar 27 to its lower position. It is further obvious that by oscillatory movements of the arm 17, the rock shaft 13 may be oscillated, so as to throw any one of the several presser rollers into its lower position. Furthermore, it is evident, that when the arm 17 is moved from one extreme position to another, the flexible presser bar 27 will be depressed with a wave-like action in which its lowermost portion will travel from one end to the other. Of course, the said flexible presser bar may be given a lowermost depression at any desired point, by the proper manipulation of the said arm 17.

The lower portion of the belt 2, is, of course, arranged to move directly under the veneer or board Y, and directly over the flexible presser bar 27. Hence, by the above noted manipulation of the said presser bar, a very delicate, yet highly efficient action of the belt, may be produced on the board, veneer or other article that is being smoothed or polished. The amount of pressure on the presser bar 27, and hence on the operative portion of the belt, may be varied by

adjustments of the counter-weight 21. A thin veneer will, of course, require much more delicate sandpapering action than a board or heavier strip. Fine veneer, such as used in making piano cases and in various cabinet work, are very thin and expensive, and great care must be taken in sandpapering the same to prevent destruction thereof. Furthermore, it usually happens that a greater amount of dressing is required at some points of the veneer than at others. The improved belt pressing device above described, is especially adapted for this kind of work.

It frequently happens that the article being sandpapered, is shorter than the presser bar 27, and to adapt the machine for this short work, without wasting time, the stop pins 18 are made adjustable so as to properly limit the movements of the arm 17.

The belt 2 may not in all cases be a sandpaper belt, and hence, it is herein treated broadly as a finishing belt.

In actual practice, this improved mechanism has been found highly efficient for the purposes had in view.

What I claim is:

1. The combination with a finishing belt and guides therefor, of means for pressing the operative portion of said belt with a wave-like action, comprising spirally arranged pressure controlling means and cooperating devices for transmitting the variable pressure therefrom to the said operative portion of the belt.

2. The combination with a finishing belt and guides therefor, of a flexible presser bar engageable with the operative portion of said belt, a rock shaft having spirally arranged tappets, and means for transmitting the pressure from said tappets to said presser bar for imparting a wave-like belt-engaging movement thereto.

3. The combination with a finishing belt and guides therefor, of a flexible presser bar overlying the operative portion of said belt, a multiplicity of independently movable plungers operative on said presser bar, and a rock shaft having spirally spaced tappets operative on said plungers, substantially as described.

4. The combination with a finishing belt, of an oscillatory frame, a multiplicity of independently movable plungers mounted thereon, a rock shaft having spirally spaced tappets operative on said plungers, and a flexible presser bar subject to said plungers, and arranged to act upon the operative portion of said belt, substantially as described.

5. The combination with a finishing belt and guides therefor, of a pivoted frame having an adjustable counter-weight, a rock shaft having spirally spaced tappets, a multiplicity of plungers mounted on said frame and subject to said tappets, and a flexible

presser bar subject to said plungers, and arranged to act upon the operative portion of said belt.

5 6. The combination with a finishing belt and guides therefor, of a pivoted frame, a multiplicity of independently movable plungers mounted thereon, a rock shaft having a multiplicity of spirally spaced presser wheels operative on the upper ends of said plungers, and a flexible presser bar subject to said plungers and engageable with the operative portion of said belt, substantially as described.

15 7. The combination with a finishing belt and guides therefor, of an oscillatory shaft having a multiplicity of spirally spaced tappets, a multiplicity of independently movable plungers subject to said tappets, and provided with connections for action on the operative portion of said belt, and a lever for oscillating said shaft.

20 8. The combination with a finishing belt and guides therefor, of an oscillatory frame gravity held in an operative position, a multiplicity of independently movable plungers mounted on said oscillatory frame, a flexible presser bar pivotally connected to

the lower ends of said plungers and arranged to engage the operative portion of said belt, and a rock shaft having spirally spaced tappets operative on the upper ends of said plungers, the said plungers being yieldingly pressed upward.

9. The combination with a finishing belt and guides therefor, of an oscillatory frame gravity held in an operative position, a multiplicity of plungers spring pressed upward and independently mounted on said frame, a flexible presser bar pivotally connected to the lower ends of said plungers, said plungers having heads at their upper ends, a rock shaft mounted on said frame, and provided with spirally spaced presser wheels operative on the heads of said plungers, and a lever connected to said rock shaft by inter-meshing gears, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRIDOLIN SCHIMMEL.

Witnesses:

R. T. HAMMOND,
E. H. GIPSON.