F. SCHIMMEL.

SANDING, ABRADING, OR POLISHING MACHINE.

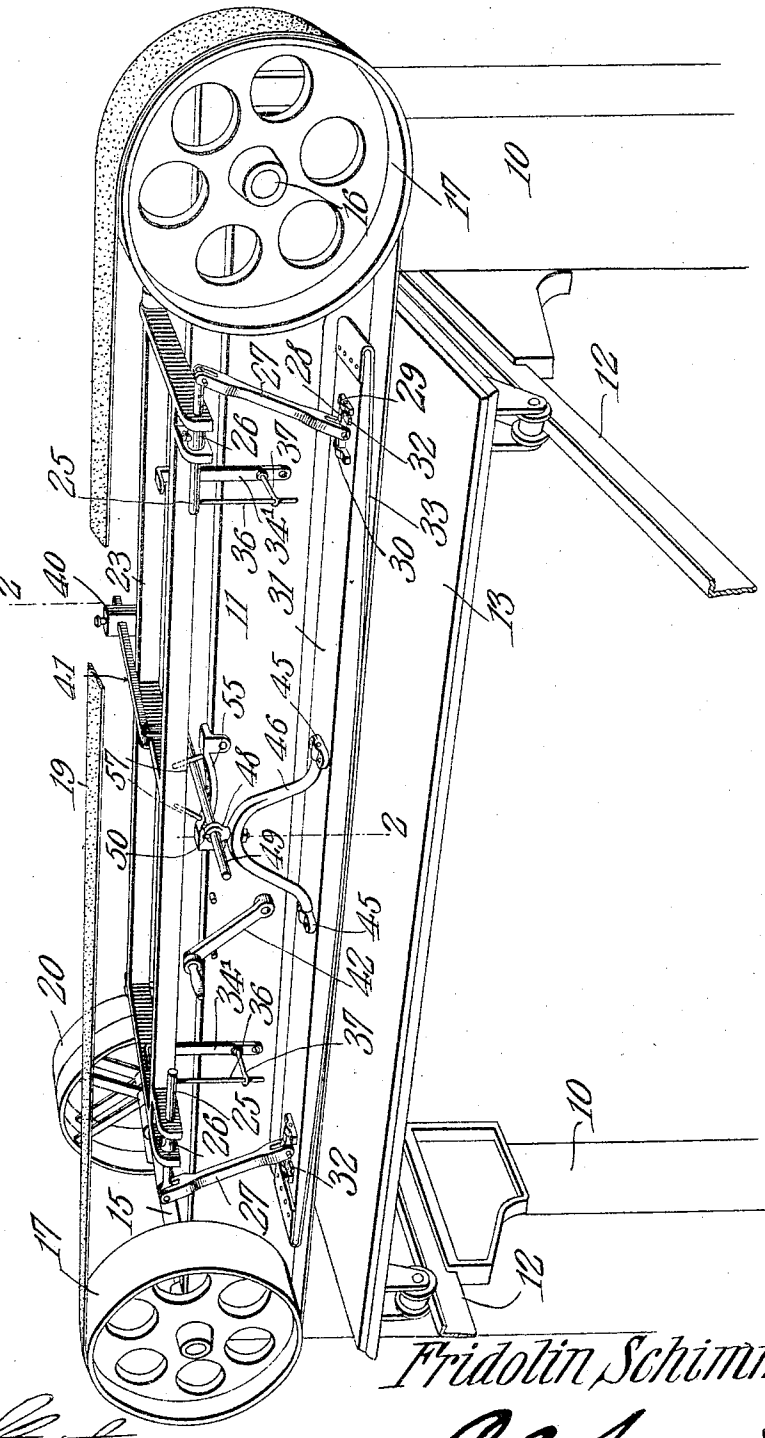
APPLICATION FILED SEPT. 15, 1908.

941,957.

Patented Nov. 30, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

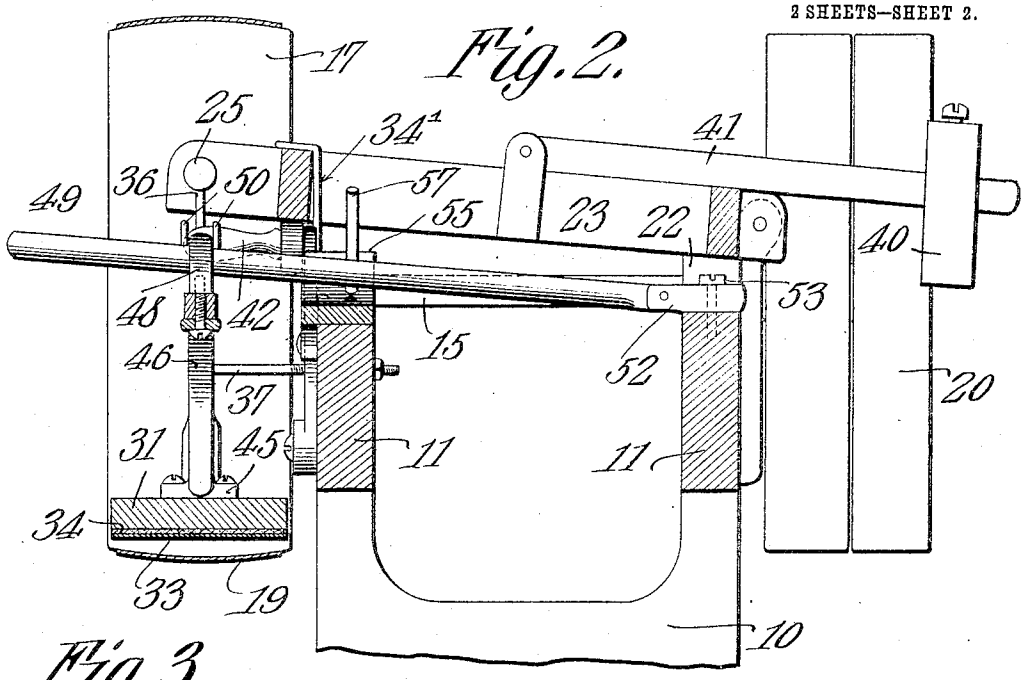

Fig. 3.

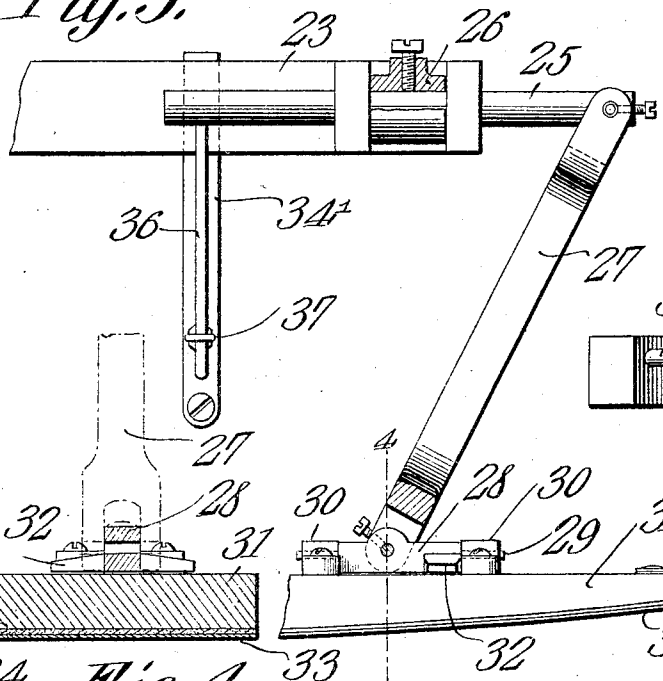

Fig. 5.

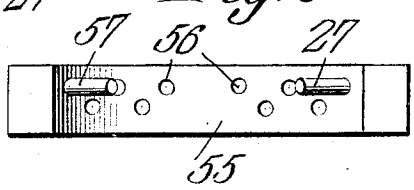

Fig. 4.

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UNITED STATES PATENT OFFICE.

FRIDOLIN SCHIMMEL, OF FARIBAULT, MINNESOTA.

SANDING, ABRADING, OR POLISHING MACHINE.

941,957. Specification of Letters Patent. **Patented Nov. 30, 1909.**

Application filed September 15, 1908. Serial No. 453,109.

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 a new and useful Sanding, Abrading, or Polishing Machine, of which the following is a specification.

This invention relates to machines for sanding, abrading, or polishing, or otherwise finishing plane surfaces of articles of various types, and relates more particularly to improvements in machines of that class known as belt sanders, wherein a strip of sand paper is made into the form of a continuous belt, and mounted on a pair of driving pulleys, the article to be operated upon being held into contact with such belt.

The principal object of the invention is to provide a means for pressing the belt into contact with the work in such manner that but a comparatively small surface of the belt will be in working engagement at one time, and in which the pressure will be equal at all points on the article being finished.

A still further object of the invention is to provide an arc shaped presser or rocker which operates against the belt so as to give uniform action over a large area and to provide means whereby such rocker may be readily oscillated.

A still further object of the invention is to provide a device of this type in which the stroke of the rocker may be varied at will, and in which the center of oscillatory movement may also be varied.

A still further object of the invention is to provide a machine of such nature that the belt may be held in contact with the work at one point where it is necessary to dress a high or rough surface of comparatively small area, thus avoiding the necessity of sand-papering the entire area of the work in smoothing out a small rough spot.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, more fully hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a perspective view of a sanding, abrading, or polishing machine constructed in accordance with the invention. Fig. 2 is a transverse sectional view of the same on the line 2—2 of Fig. 1. Fig. 3 is a side elevation partly in section of one end of the presser bar and connections. Fig. 4 is a transverse section through the presser bar. Fig. 5 is a plan view of guide plate.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the machine are mounted on a suitable frame including standards 10, and a pair of cross bars 11, the standards being provided with tracks 12 for the support of a movable platform or table 13 on which the work is placed. The frame members 11 are provided with bearings for the support of a pair of shafts 15 and 16 on which are mounted pulleys 17 carrying a sanding, abrading or polishing belt 19. The shaft 15 is provided with a suitable driving pulley 20 while the bearings of the shaft 16 are adjustable for the purpose of maintaining the belt taut, as is usual in machines of this general type. On the rear most frame bar 11 are secured standards 22 to which are pivoted the rear end bars of a rectangular frame 23 that projects out beyond the front frame bar to a point between the two runs of the belt. The frame 23 is provided with openings for the reception of a pair of bars 25 that are disposed in axial alinement with each other, and which are held from longitudinal displacement by collars 26 which are locked in place by suitable set screws or other securing means. To the outer ends of the bars 25 are pivoted links 27, the lower ends of the links being pivotally connected to sleeves 28 which are pivotally mounted on small shafts 29 that are carried by bearings 30 secured to the upper face of a curved presser or rocker 31 which is designed to engage with the inner face of the belt and press said belt against the work. The sleeves 28 have a limited rocking movement, excessive movement being prevented by arms 32 that project from the sleeves at diametrically opposite points and are arranged to come in contact with the upper surface of the rocker.

The presser or rocker is in the form of a long bar having a flat upper face and pro-

vided with a lower face that is curved on an arc of long radius, this lower face is provided with a covering 33 preferably of metal, and between the covering and the body of the rocker proper is a padding 34 which may be formed of paper, textile material, or other substance which will form a more or less yieldable backing for the metallic plate.

The distance between the upper ends of the links 27 is much greater than the distance between the points of connection between the lower ends of the links and the presser or rocker so that the links can never assume a position parallel with each other, and when the rocker is moved to and fro, one end of the rocker will always be depressed, while the other is being raised so that there is a swinging oscillatory movement which will bring the entire surface of the presser or rocker against the belt, but only a small portion of this area will be in contact with the belt at the same time and only a small portion of the sanding belt will be pressed in contact with the work at one time, thus reducing the strain on the belt and rendering the work more uniform from the fact that the abrading action is substantially the same throughout the entire surface.

The front end of the rocker carrying frame 23 is arranged to move up and down to a slight extent and is guided in its movement by a pair of arms 34′ having outwardly bent upper ends which overhang the front bar of the upper frame, and as a further guiding means the inner ends of the rods 25 are provided with small vertical bars 36 which pass through openings formed in brackets 37 extending outward from the main frame bar 11. These small guiding bars will also serve to prevent any rotative movement of the rods 25.

The presser or rocker moves down into engagement with the inner surface of the belt by gravity and the pressure thus exerted is under the control of a weight 40 that is adjustably mounted on an arm 41 pivoted to the rocker carrying frame and extending beyond the rear edge thereof. By adjusting this weight any portion or all of the weight of the forward portion of the frame and rocker and its connections may be counterbalanced so that the abrading or polishing belt may be moved into contact with the work with any desired force.

The presser or rocker may be moved up out of operative position by means of a handle lever 42 that is pivoted to the front part of the main frame and is arranged to engage under the front bar of the pivoted frame. When this lever is turned to an approximately vertical position the rocker frame will be elevated and the rocker or presser will be held up out of contact with the belt.

In operating the machine any suitable power driven mechanism may be employed, but in small machines it is preferred to accomplish this by hand. For this purpose the central portion of the presser or rocker is provided with a pair of bearings 45 for the reception of the lower ends of an approximately U-shaped bar 46.

In the upper central portion of the bar 46 is pivoted a shank of an eye 48 through which passes an operating lever 49, the two parts being held in proper relative position by a pair of pins or collars 50. The rear end of the lever is pivoted and is free to swing vertically on a rod 52 which in turn is pivoted on a vertical stud or screw 53 carried by the rear bar of the main frame.

The lever 49 may be moved to and fro by hand or by any suitable operating mechanism, and this movement will be transmitted to the presser or rocker and the movement may be stopped at any point so as to hold the presser or rocker in position to force the belt against the work at any one point where a high or rough place is to be smoothed out, and where the abrading action should be more severe than throughout the rest of the surface, this being of especial value in the finishing of veneer, where there is likelihood of rubbing through.

As a guide to the operator a concave bar 55 is secured to the front frame bar 11 and this bar is provided with a plurality of openings 56 for the reception of pins 57 which may be used as stops for limiting the swinging movement of the lever. By adjusting these stop pins at the same distance from the center of the bar 55, the rocker may be given a uniform swinging movement and the length of the arc may be adjusted in accordance with the length of the work, so as to avoid unnecessary swinging of the rocker or presser in short work. The stop pins may moreover be arranged at unequal distance from the center so as to change the center of the arc of oscillation of the presser or rocker.

What is claimed is:—

1. In a machine of the class described, a stationary frame, a rocking frame pivoted thereto, links hung from the rocking frame, and a rocker carried by the links and pivotally connected thereto, the connections of the links to the rocker being closer together than the pivot connections of the links to the rocking frame.

2. In a machine of the class described, a rocker, and links supporting the same, said links being pivotally supported above the rocker at a point more remote than the connections of said links with the rocker.

3. In a machine of the class described, a rocker and links supporting the same, said links being pivotally supported above the rocker at points more remote than the con-

nections of said links with the rocker, an intermediate support for the rocker, and a manually operable lever connected to said intermediate support.

4. In a machine of the class described, a rocker and pivoted non-parallel links attached to the said rocker and having their pivot supports located in the vicinity of the ends of the rocker.

5. In a machine of the class described, a rocker and pivoted non-parallel links attached to said rocker and having their pivot supports separated by a greater distance than the length of the links.

6. In a machine of the class described, a rocker and pendent non-parallel links attached to said rocker and having their pivot supports located in the vicinity of the ends of the rocker.

7. In a machine of the class described, a stationary frame, a rocking frame pivoted thereto, a pair of rods carried by said rocking frame, links hung from the rods, a rocker connected to the lower ends of said links, an approximately U-shaped frame rising from the center of the rocker, and an operating lever connected to said U-shaped frame.

8. In a machine of the class described, a main frame, a second frame pivoted thereto, rods carried by the forward end of the pivoted frame, sleeves secured to said rods and preventing endwise movement of the same, a pair of links suspended from the ends of the rods, sleeves pivoted to the lower ends of the links and having laterally projecting lugs, shafts carried by said sleeves, a rocker, bearings carried by the rocker and supporting the shafts, and means for actuating said rocker.

9. In a machine of the class described, a main frame, a second frame pivoted thereto, a pair of rods carried by the pivoted frame, guiding bars depending from said rods, eye bars carried by the main frame and receiving said depending bars, guiding strips carried by the main frame and engaging the pivoted frame, links depending from the rods, a rocker having a uniform connection with the lower ends of the links, a U-shaped frame or standard pivoted to the central portion of the rocker, an eye pivoted to said frame or standard, a manually operable lever extending through the eye, a block pivoted on the main frame and arranged to swing in a horizontal direction said lever being pivotally connected to said block and being arranged to swing in a vertical direction to engage and elevate the pivoted frame and arranged to engage and elevate the pivoted frame to thereby hold the rocker in inoperative position.

10. In a machine of the class described, a rocker, an operating lever therefor, a perforated bar carried by the main frame, and stop pins adjustably mounted in said perforations and shiftable to vary the stroke of the operating lever.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRIDOLIN SCHIMMEL.

Witnesses:
G. W. BATCHELDER,
CHAS. S. BATCHELDER.