

(No Model.)

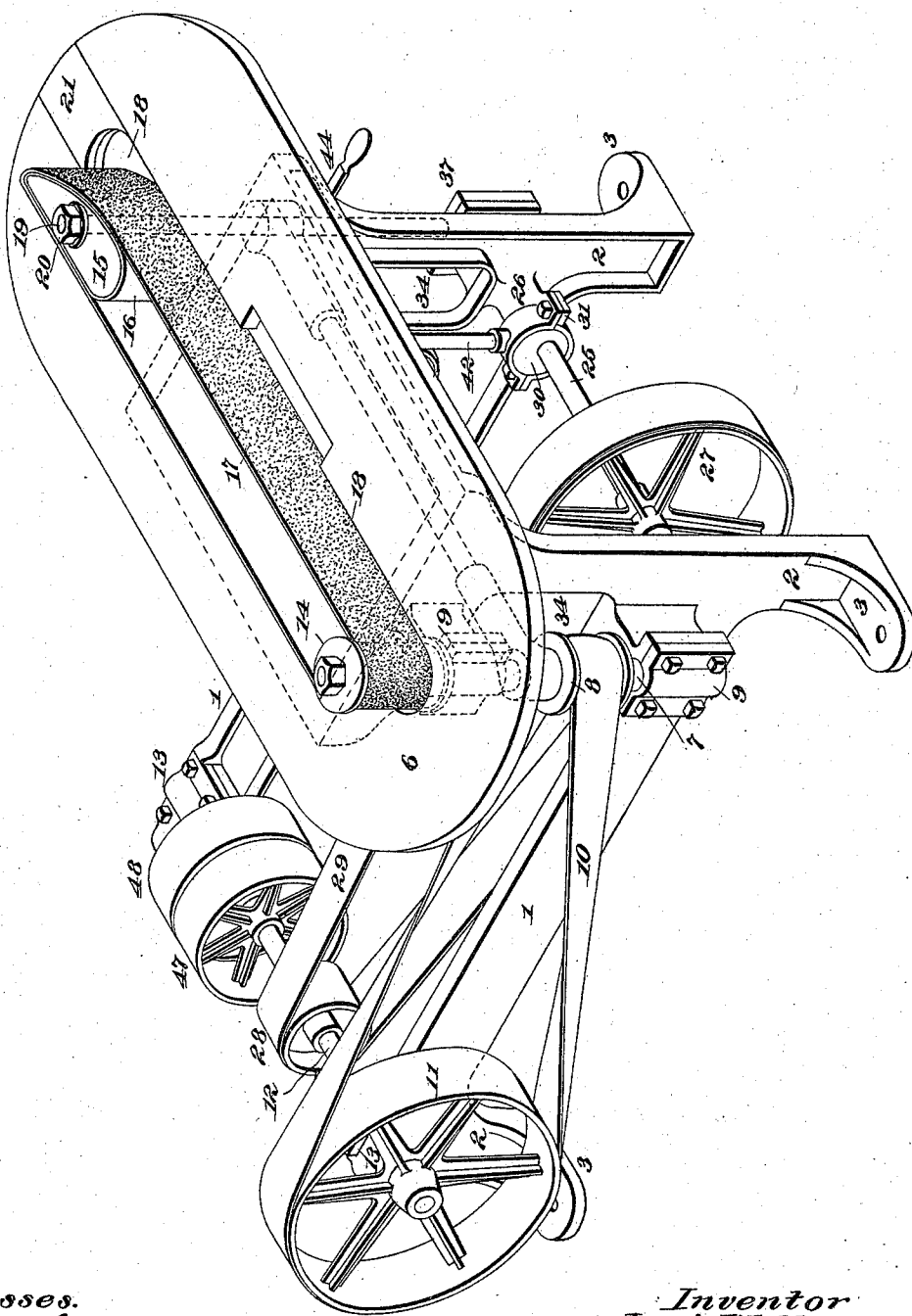
3 Sheets—Sheet 1.

L. WELKER.
SANDING MACHINE.

No. 575,187.

Patented Jan. 12, 1897.

Fig. 1



Witnesses.

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Atty.

(No Model.)

3 Sheets—Sheet 2.

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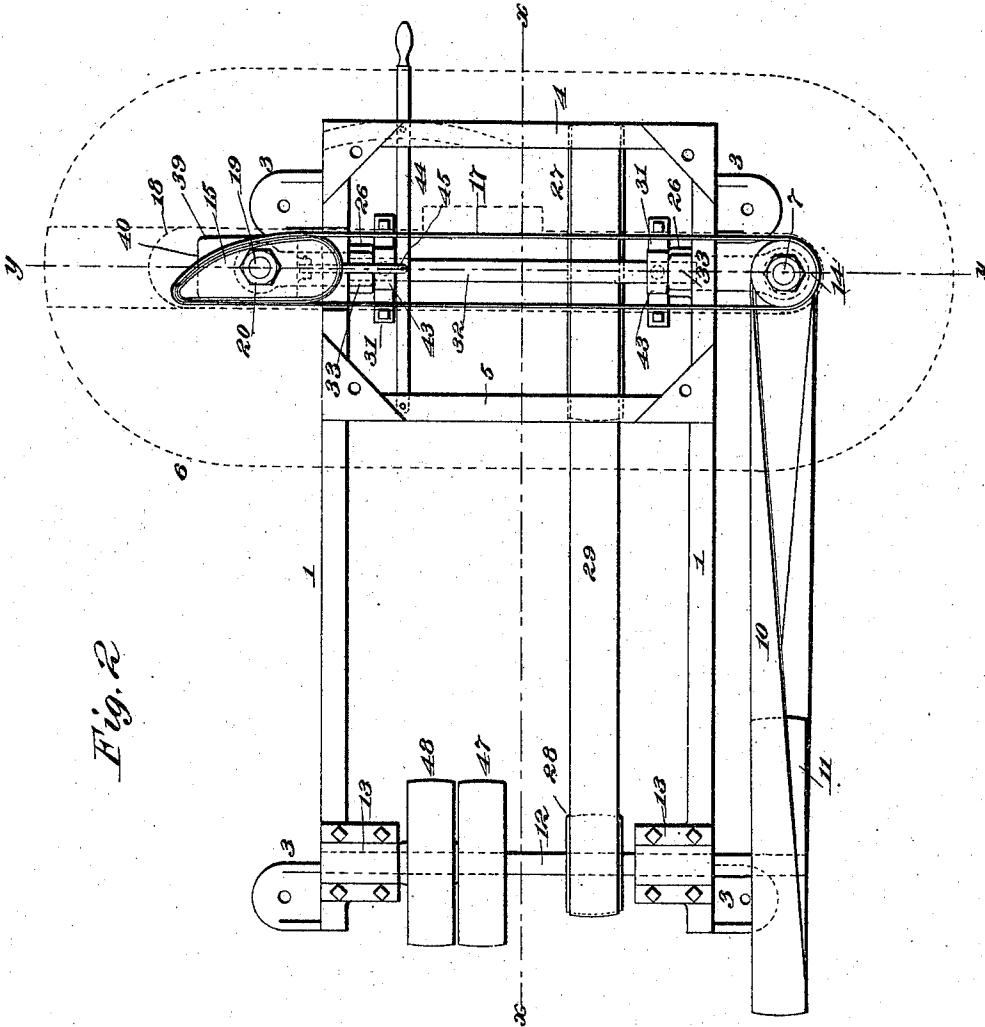


Fig. 2

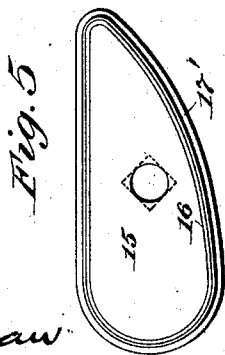


Fig. 5

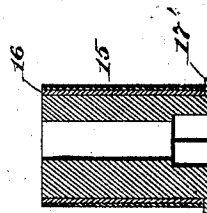


Fig. 6

Witnesses.

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3

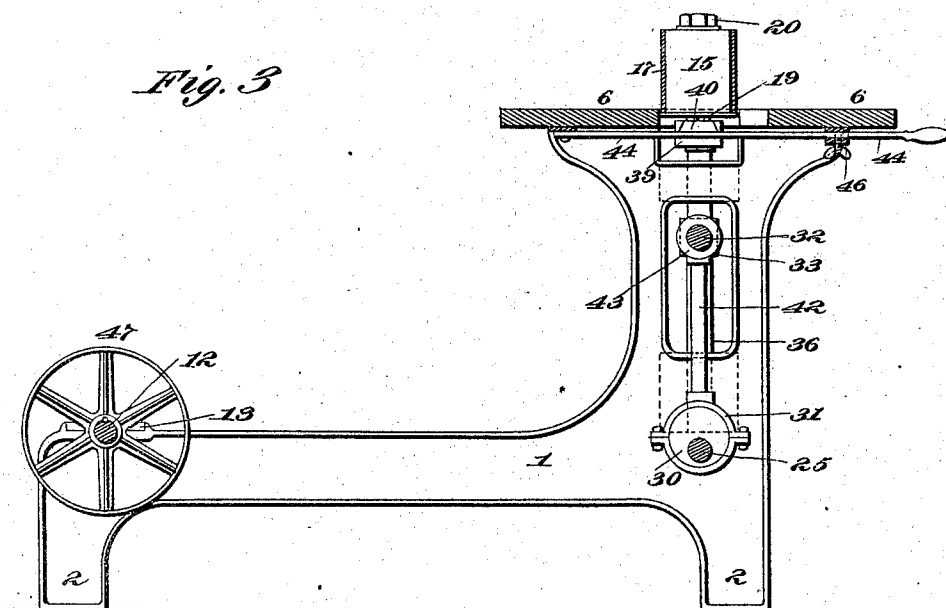


Fig. 4

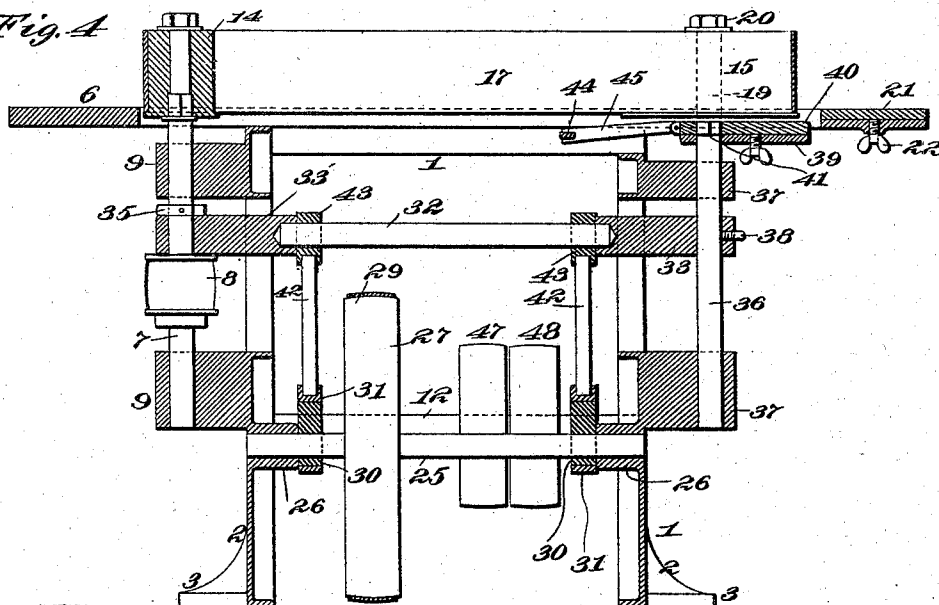
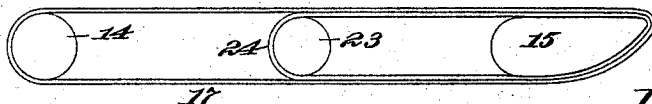


Fig. 7



Witnesses.

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UNITED STATES PATENT OFFICE.

LOUIS WELKER, OF WILLIAMSPORT, PENNSYLVANIA.

SANDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 575,187, dated January 12, 1897.

Application filed March 12, 1896. Serial No. 582,950. (No model.)

To all whom it may concern:

Be it known that I, LOUIS WELKER, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Sanding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to various new and useful improvements in sanding-machines designed particularly for sandpapering irregular flat objects, such as scrollwork, jig-saw work, fancy table-legs, metal-work, &c.; and the object of the invention is to improve the efficiency and durability of such machines, to make them cheaper, and to enable the sandpaper or other abrading surface to wear longer before it is necessary to replenish the same.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of the sanding-machine embodying my present improvement; Fig. 2, a plan view of the same with the table shown in dotted lines; Fig. 3, a section on the line *xx* of Fig. 2; Fig. 4, a section on the line *yy* of Fig. 2; Figs. 5 and 6, detail views of the former, and Fig. 7 a diagrammatic view illustrating an obvious modification in the means for driving the sanding-belt.

In all of the above views corresponding numerals relate to the same parts.

1 1 are side frames of any suitable shape, having supporting-legs 2 2, which may be provided with horizontal lugs 3 3, by which the machine may be bolted to the floor.

4 and 5 are cross-frames for stiffening the side frames and which, together with the tops of the side frames, constitute a bed for supporting a table 6, on which the work to be sanded is held.

7 is a vertical shaft carrying a pulley 8 and mounted in suitable bearing-boxes 9 9. Said shaft is driven by a belt 10 from a band-wheel 11, mounted on the end of a main drive-shaft 12, which is mounted in the bearings 13 in the side frames 1.

The shaft 7 carries at its upper end a removable pulley 14, which projects above the table 6 and which is preferably faced with a layer of rubber, leather, or similar material, so as not only to better drive the sanding-belt, but also to offer an elastic resistance to any work which may be held against the sanding-belt in line with said spindle.

15 is a former which is removably mounted at the other side of the machine, in line with the pulley 14. Preferably this former is made with its operative face cut on a parabolic curve, as shown more particularly in Figs. 2 and 5, so that any curve of the work may be held thereon at a suitable point and be properly sandpapered. I consider this a very important feature. This former 15 may be made of wood or metal, and it preferably is provided with an elastic face 16, which may be of felt or cloth covered with hard leather or similar horny material, over which the sanding-belt may be run.

By providing the former with an elastic surface the danger is overcome of forcing the belt so tightly against it as to break the belt, for it will be understood that if the former were perfectly rigid a careless workman might force the belt so tightly against it, to offer thereby so great a resistance to the driving of the belt, as to cause the belt to be broken. The employment of such an elastic pad is moreover of importance, as I find that by its use better work can be obtained.

17 is a sanding-belt, which is preferably a strip of ordinary sandpaper, such as is used in furniture factories in this country, the edges whereof have been accurately fitted together. I find that this may be conveniently done in practice by gluing a strip of strong muslin to the sandpaper, at the joint thereof, and by subjecting the parts to heavy pressure, so that a very strong and perfect joint is obtained. Said sanding-belt extends directly between the spindle 14 and the former 15. In order to keep the sanding-belt on the former 15 and cause it to run smoothly thereon, said former may be provided with a flange 17' at its lower end. The table 6 is provided with a slot 18 therein, in which the sanding-belt travels.

Preferably the former 15 is removably carried on a spindle 19, being secured thereon

in any suitable way, as by means of a clamping-nut 20, whereby, when desired, the round rear end of the former may be turned around, and over which the belt will travel. In order therefore that the table may at all times be sufficiently close to the sanding-belt as to enable the work to be properly sanded, I provide the table with a removable section 21, adjacent to the former and which is adjustable in the table, being locked at any desired position by means of a thumb-screw 22, as shown in Fig. 4.

Preferably, though not necessarily, I drive the sanding-belt 17 by the pulley 14, as will be understood, as thereby a very convenient arrangement is produced; but it will be obvious that instead of doing this the belt may be driven in other ways, for instance, by the arrangement shown in Fig. 7. In this figure the belt extends around the pulley 14 and the former 15, to neither of which is power applied, and between said pulley and former is mounted a drive-wheel 23, around which is passed a belt 24, which extends around the former 15 inside of the sanding-belt. In this instance power is applied to the intermediate drive-wheel 23, and by employing a belt 24, which may be made of rubber or leather, the sanding-belt may be very conveniently driven and will be relieved of all wear due to friction. It will be understood, of course, that with this modified arrangement power may instead be applied to the spindle 14; but I consider it preferable with this form of my device to apply the power to the intermediate drive-wheel.

Preferably the sanding-belt as it is working is given a slight oscillating movement up and down, so as to prevent the possibility of the work becoming grained, and I show mechanism by which this may be done. Before describing that mechanism, however, it may be stated that since a very long belt is employed the danger of the work being grained is almost, if not entirely, overcome, whereas in the ordinary forms of machines, since a very short sanding-surface is obtainable, it is absolutely necessary to reciprocate the spindle, because otherwise a few prominent grains of sand would entirely spoil the work.

Having reference now to the particular form of reciprocating mechanism shown, 25 is a horizontal shaft mounted in bearings 26 in the side frames. 27 is a large band-wheel keyed to said shaft and driven from a smaller pulley 28 on the main driving-shaft 12 by a belt 29. The relative size of these elements is a matter of choice, but it is desirable that they should be so proportioned as not to reciprocate the belt too rapidly.

30 30 are two eccentrics keyed to the shaft 25 close to the bearing-boxes 26, so as to center the said shaft in said boxes, and 31 are eccentric-straps engaging with said eccentrics.

32 represents a cross-bar having enlarged heads 33 at its ends, which heads work within slots 34 in the side frames. One of the heads

33 surrounds the shaft 7 immediately above the pulley 8, and is held in that position by means of a collar 35, so that when the same is reciprocated the shaft 7 will be moved therewith, while at the same time the shaft is free to revolve.

36 is a reciprocating bar or shaft working in boxes 37 at the other side of the machine and to which the head 33 at that side of the machine is rigidly secured by means of a set-screw 38. The said reciprocating bar 36 carries a bracket 39 at its upper end, and dovetailed into said bracket is a short bed-plate 40, which carries the spindle 19 of the former. By this construction the bed-plate 40 is movable with respect to the bracket 39, so that the proper tension may be imposed on the sanding-belt. These parts may be locked together by means of a thumb-screw 41.

42 42 are connecting-rods secured at their lower end to the eccentric-strap 31 and connected at their upper ends to collars 43, which surround the cross-bar 32. By means of this construction it will be noted that as the shaft 25 is driven from the main driving-shaft the eccentric 30 will reciprocate the pulley 14 and the former 15 simultaneously, so that the belt will thereby be moved up and down to the required extent and at the desired velocity.

In order that the bed-plate 40 may be moved to take up slack in the sanding-belt, I prefer to employ a lever 44, pivoted at one side of the frame and extending underneath the table 6, being connected to the bed-plate 40 by means of a link 45. If desired, a thumb-screw may be employed for locking this lever at any desired position, in which case the thumb-screw 41 may be dispensed with. Power is applied to the machine through a pulley 47, keyed to the main driving-shaft. 48 is a loose pulley on said shaft to which the main driving-belt may be thrown when desired.

It will of course be understood that any other suitable mechanism for reciprocating the sanding-belt may be employed; but the mechanism I have shown is very simple and effective, and I shall claim the same specifically.

It will be understood that, instead of employing a horizontal table, as explained, the table may be made to tilt and be held in any tilting position to suit special work.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In a sanding-machine, the combination of a pulley, a stationary former, a sanding-belt extending around said pulley and former, the operative face of which belt is vertically arranged, and a table arranged adjacent to said belt and on which the work is held, said table being cut away for the reception of said belt, substantially as set forth.

2. In a sanding-machine, the combination of a pulley, a former, means for vertically reciprocating said pulley and former, a sanding-belt extending around said pulley and

former, the operative face of which belt is vertically arranged, and a table arranged adjacent to said belt and on which the work is held, said table being cut away for the reception of said belt, substantially as set forth.

3. In a sanding-machine, the combination of a pulley, a stationary former, a sanding-belt extending between said pulley and former, and means for adjusting said former, substantially as set forth.

4. In a sanding-machine, the combination of a pulley, a stationary former, a sanding-belt extending between said pulley and former, a bed-plate on which said former is held, a lever, and connections between said lever and bed-plate, substantially as set forth.

5. In a sanding-machine, the combination of a pulley, a former, a sanding-belt extending between said pulley and former, a table on which the work is held, and an adjustable section on said table adjacent to said former, substantially as set forth.

6. In a sanding-machine, the combination of a shaft 7, a pulley 14, at the upper end of said shaft, means for rotating said shaft, a reciprocating rod 36, a former 15 at the upper end of said rod, a sanding-belt extending between said pulley and former, a cross-bar connecting said shaft 7 and said reciprocating rod 36, and means for reciprocating said cross-bar, substantially as set forth.

7. In a sanding-machine, the combination of a shaft 7, a pulley 14 at the upper end of

said shaft, a reciprocating rod 36, a former 15 at the upper end of said reciprocating rod, a sanding-belt extending between said pulley and former, a cross-bar connecting said shaft and said reciprocating rod, a shaft 25, eccentrics 30 mounted on said shaft, and connections between said eccentrics and said cross-bar, substantially as set forth.

8. In a sanding-machine, the combination of a shaft 7, a pulley 14 at the upper end of said shaft, a reciprocating rod 36, a bracket at the upper end of said reciprocating rod, a former 15, adjustably carried on said bracket, a sanding-belt extending between said pulley and former, and means for reciprocating said pulley and former, substantially as set forth.

9. In a sanding-machine, the combination of a shaft 7, a pulley 14 at the upper end of said shaft, a reciprocating rod 36, a bracket at the upper end of said reciprocating rod, a bed-plate adjustably mounted in said bracket, a former 15 removably mounted on said bed-plate, a sanding-belt extending between said pulley and former, and means for reciprocating said pulley and former, substantially as set forth.

This specification signed and witnessed this 9th day of March, 1896.

LOUIS WELKER.

Witnesses:

KIMBALL S. MILLER,
ROY M. STRONG.