O. SAWYER.

Sand Papering-Machine.

No. 165,762. Patented July 20, 1875.

Fig. 1.

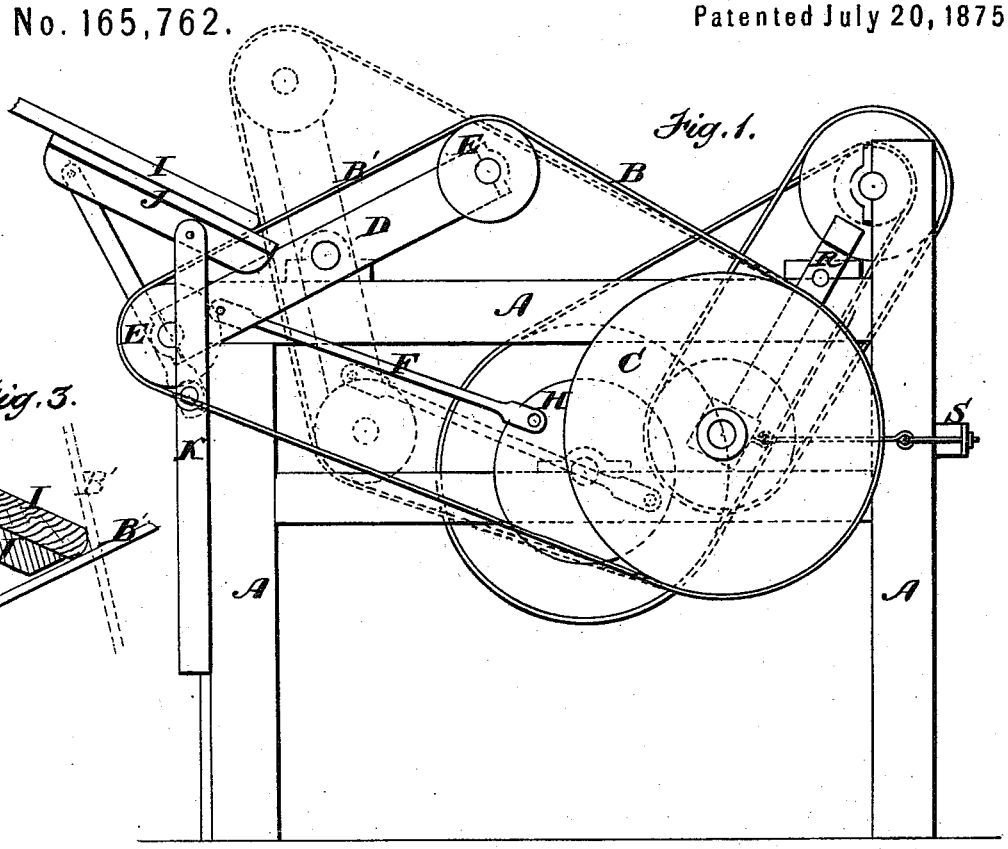


Fig. 3.

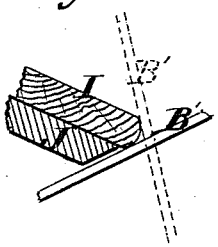


Fig. 2.

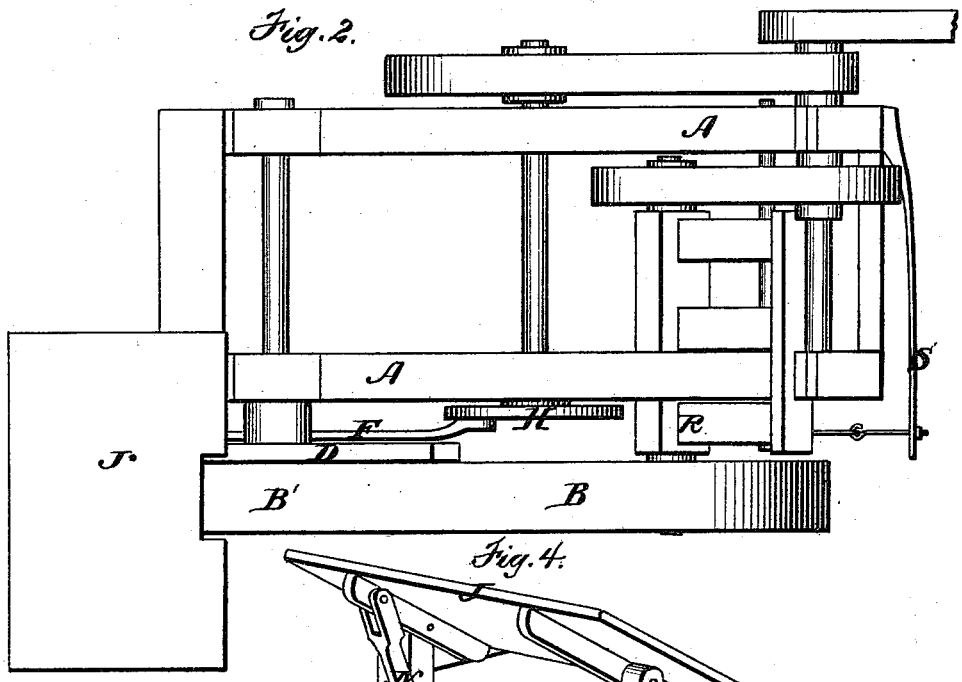
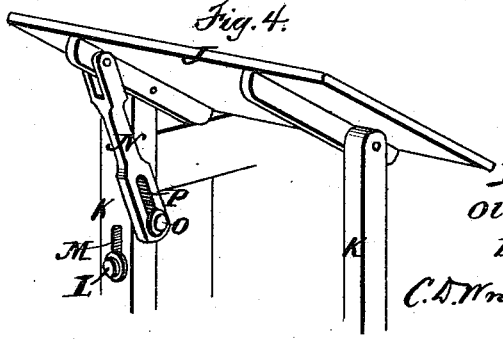


Fig. 4.



Witnesses.

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C. D. Wright & Brown

UNITED STATES PATENT OFFICE.

OLIVER SAWYER, OF WINCHENDON, MASSACHUSETTS.

IMPROVEMENT IN SANDPAPERING-MACHINES.

Specification forming part of Letters Patent No. **165,762**, dated July 20, 1875; application filed March 27, 1875.

To all whom it may concern:

Be it known that I, OLIVER SAWYER, of Winchendon, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Sandpapering-Machines, of which the following is a specification:

In the accompanying drawing forming part of this specification, Figure 1 is a side elevation of my invention. Fig. 2 is a top view, and Fig. 3 a detached sectional view, showing the action of the belt on a convex edge; and Fig. 4, a perspective view of the supporting-table.

My invention relates to that class of machines in which a belt coated with emery, sand, or other like material, is employed for smoothing wooden or other surfaces, the belt being driven by suitable means, and its coated surface pressing against the surface of the object to be smoothed. In machines of this class heretofore used the line of motion of the belt has been fixed and unchangeable—that is to say, the belt has been run upon drums or pulleys located in immovable bearings, and consequently the belt has been adapted to operate only on plane surfaces, and not on convex or curved surfaces, excepting by presenting the surface to the belt in different positions, thus necessitating frequent manipulations of the article undergoing the smoothing operation.

My invention has for its object to enable a smoothing-belt to operate automatically on rounded or convex surfaces without changing the position of such surfaces; and to this end it consists, first, in giving the portion of the belt which runs between two supporting-points and performs the smoothing operation a longitudinal oscillation by reciprocating said supporting-points simultaneously in opposite directions. This oscillation I prefer to accomplish by means of two loose pulleys, constituting the supporting-points of the smoothing portion of the belt, and journaled in the opposite ends of a substantially straight oscillatory arm or lever, the latter being pivoted at the center to the frame-work of the machine, and so connected to the prime motor that drives the belt as to be oscillated thereby, thus reciprocating the loose pulleys which support the belt as it passes from a driving pulley or drum, and giving that portion of the belt which passes between them a longitudinally-oscillating movement, which enables the belt to act uniformly and successively on all parts of a convex or rounded surface presented to it.

My invention consists, secondly, in the combination of parts employed for oscillating the belt.

It consists, thirdly, in the combination, with an oscillating belt, of an adjustable supporting-table, adapted to hold the stock or object to be smoothed, and present it to the belt in such position as to insure the uniform and successive action of the belt on all parts of a convex surface.

It consists, fourthly, in the means employed for keeping the smoothing-belt under the proper degree of tension, all of which I will now proceed to describe.

In the drawings, A represents a frame-work adapted to support the driving mechanism of the smoothing-belt B. C represents the driving-pulley of the belt, which pulley is driven by suitable power, and is located preferably at one side of the frame-work A. The belt B is coated with sand, emery, or other like material, in the usual manner; and for the purpose of enabling it to have a smoothing effect on all parts of a convex surface without moving said surface, I give that portion of the belt that bears against the object to be smoothed an automatic longitudinal oscillation, in such manner as to enable the belt to act successively upon all parts of the convex surface presented to it. To effect this movement of the belt a variety of mechanical arrangements may be employed. I prefer, however, as the most simple and practicable, to employ an oscillatory arm or lever, D, pivoted at or near its center to the frame-work A, and carrying at its ends the loose pulleys E E, which support the belt B, as shown in Fig. 1, the intermediate portion B′ of the belt being the part to which the object to be smoothed is presented. The arm D is connected by a pitman, F, to a disk or pitman-head, H, or its equivalent, journaled in the frame A, and rotated by the same power that drives the belt B. The rotation of the disk H causes the arm D to oscillate on its

pivot, thereby reciprocating the belt-supporting points or pulleys E E simultaneously in opposite directions, and thereby oscillating the intermediate portion B′ of the belt B, as shown in dotted lines in Fig. 1. This oscillation of the portion B of the belt enables it to act successively on all portions of a convex surface, as shown clearly in Fig. 5, in which the position of the belt is shown at the end of each oscillation, all parts of the edge or convex portion of the article I being acted on successively by the belt in passing from one of the positions shown to the other. The surface to be smoothed is presented to the action of the belt at the point where the position of the belt at one extreme of oscillation intersects the position at the other extreme, as shown in Figs. 1 and 3, and an adjustable shelf, J, is provided for the purpose of supporting the article in this position. The shelf J is pivoted to a vertical frame, K, which is adapted to slide vertically on the end of the frame A, being confined to the frame A, and limited in its vertical movement, by a bolt, L, passing through a slot, M, in the frame K. The outer edge of the shelf J is supported by an arm, N, pivoted at one end to the shelf, and attached at the other to the frame K by a bolt, O, passing through a slot, P. This construction of the supporting-table J adapts it to be raised and lowered, and its inclination to be varied according to the nature and shape of the object it supports. To secure the necessary tension of the belt B I locate its driving-pulley C in a dependent frame, R, pivoted to the main frame A, the frame R and pulley C being so arranged that their weight has a tightening effect on the belt, this effect being increased by a spring, S, of any suitable form, attached to the frame A and pivoted frame R in such manner as to have a tightening effect on the belt.

Although I have thus described certain specific devices for oscillating the rubbing portion of a smoothing-belt, I do not desire to limit myself to them. Several devices would naturally suggest themselves to the mind of a skilled mechanic for reciprocating simultaneously in opposite directions two points supporting an intermediate portion of a belt; for instance, the supporting points or pulleys E may be located on carriages reciprocated simultaneously in opposite directions. This and other colorable variations may be employed without departing from the spirit of my invention, which is essentially a belt having two points of support in addition to its motor or driving-pulley, these points of support reciprocating simultaneously in opposite directions, and imparting an oscillating movement to the intermediate portion of the belt. Any suitable devices may be employed for varying the stroke or length of reciprocation of the pulleys E, for the purpose of enabling the belt to operate on surfaces of different degrees of convexity, the simplest way being to vary the point of attachment of the pitman F to the arm D, and means may be provided for this purpose adapted to be used while the machine is in operation, so as to avoid stopping the machine when a diversified surface is being operated on.

I claim as my invention—

1. In combination with a smoothing-belt, two supporting-pulleys, E E, adapted to be automatically reciprocated simultaneously in opposite directions, and thereby oscillate the intermediate portion of the belt, substantially as described, for the purpose specified.

2. The combination of the pivoted oscillatory arm D, having the supporting-pulleys E E, with the smoothing-belt B and driving-pulleys C, substantially as described, for the purpose specified.

3. The combination of the arm D, having the pulleys E E, supporting the belt B, with the pitman F and disk H, substantially as and for the purpose specified.

4. The combination of the adjustable shelf or table J with the oscillating belt B, substantially as described.

5. The combination of the pendent frame R, spring S, and pulley C with the belt B, substantially as described.

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

OLIVER SAWYER.

Witnesses:

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C. F. BROWN.