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Planing Machine.

No. 201,624. Patented March 26, 1878.

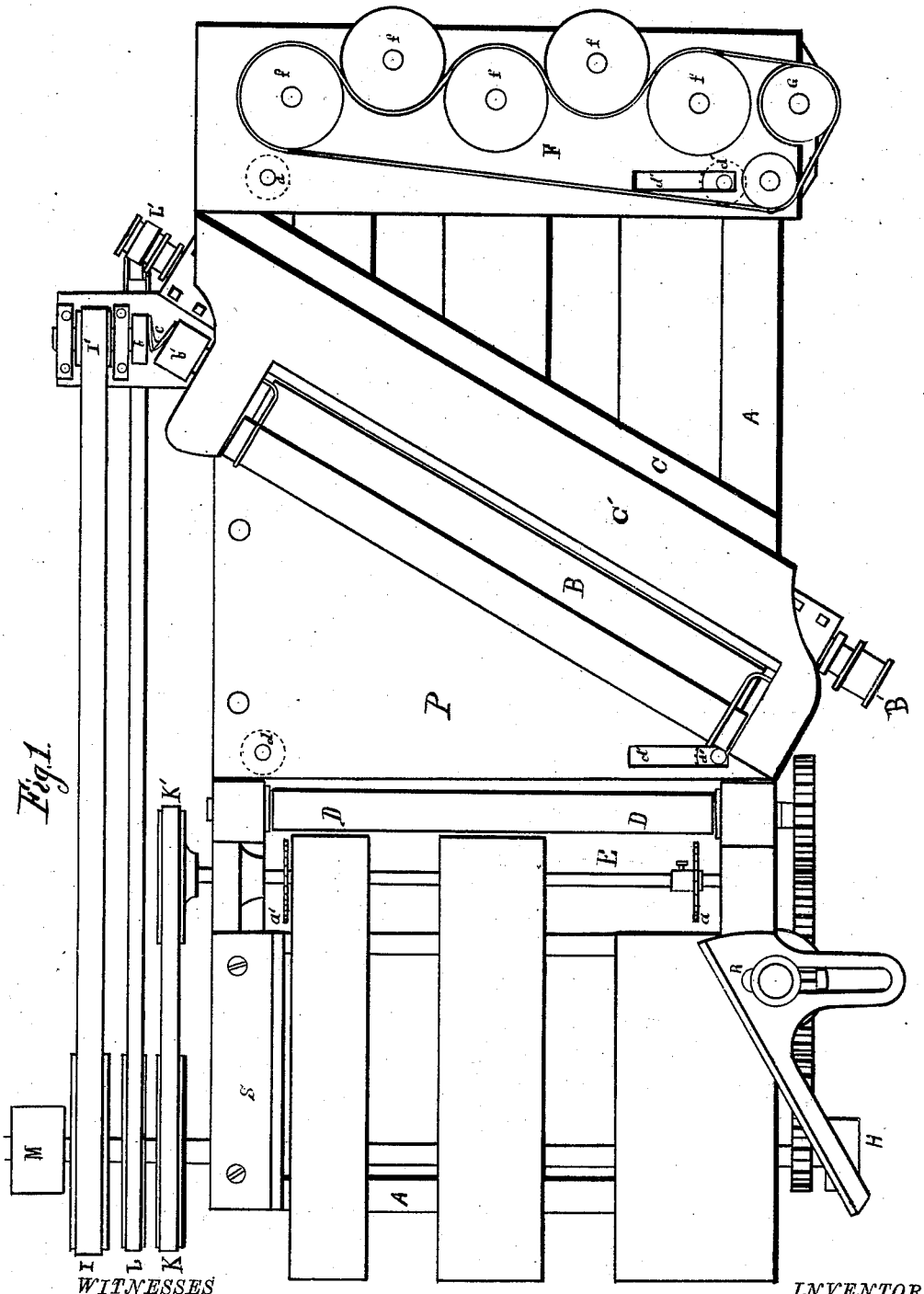

Fig. 1.

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Fig. 2.

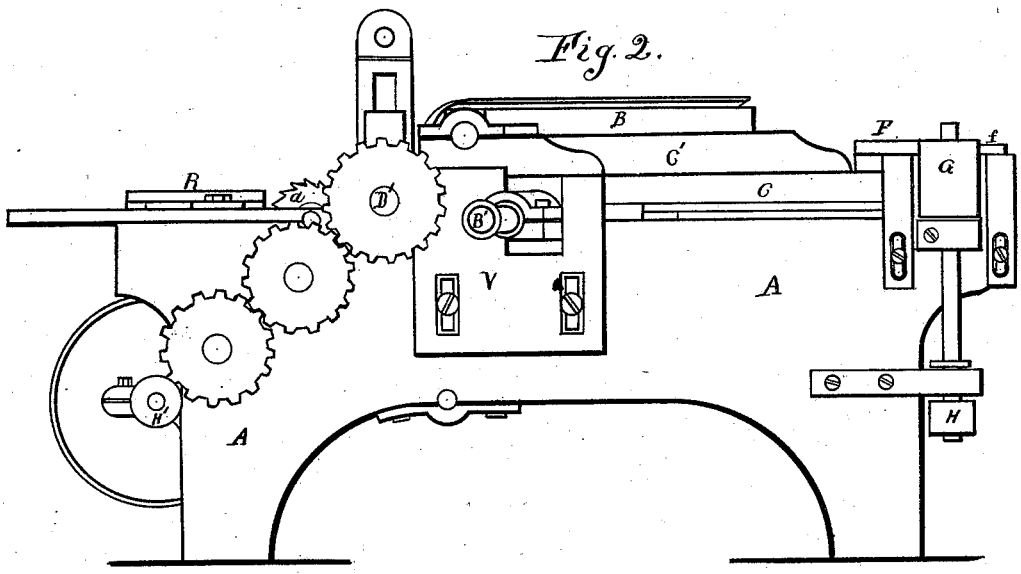
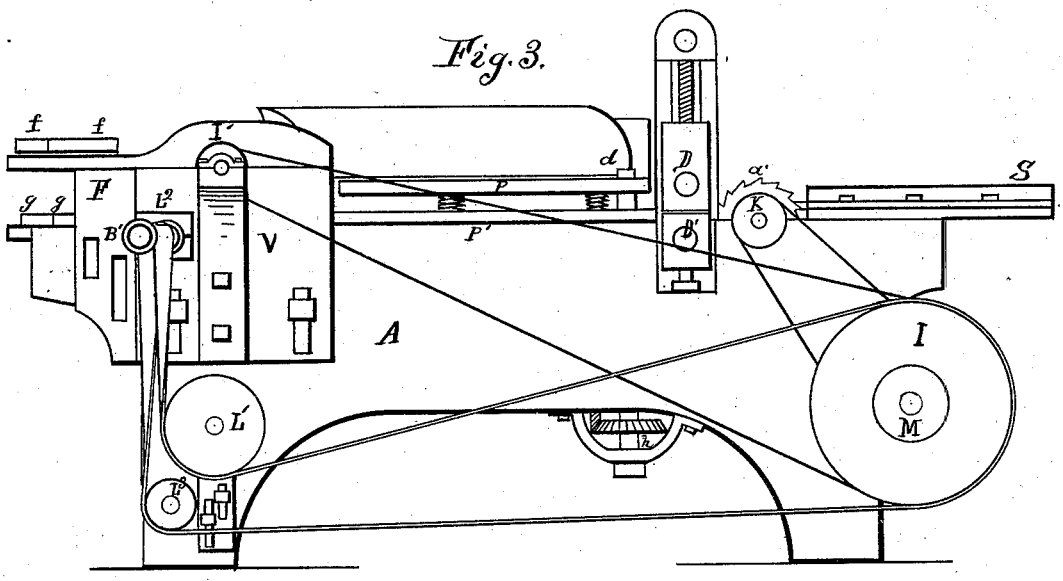


Fig. 3.



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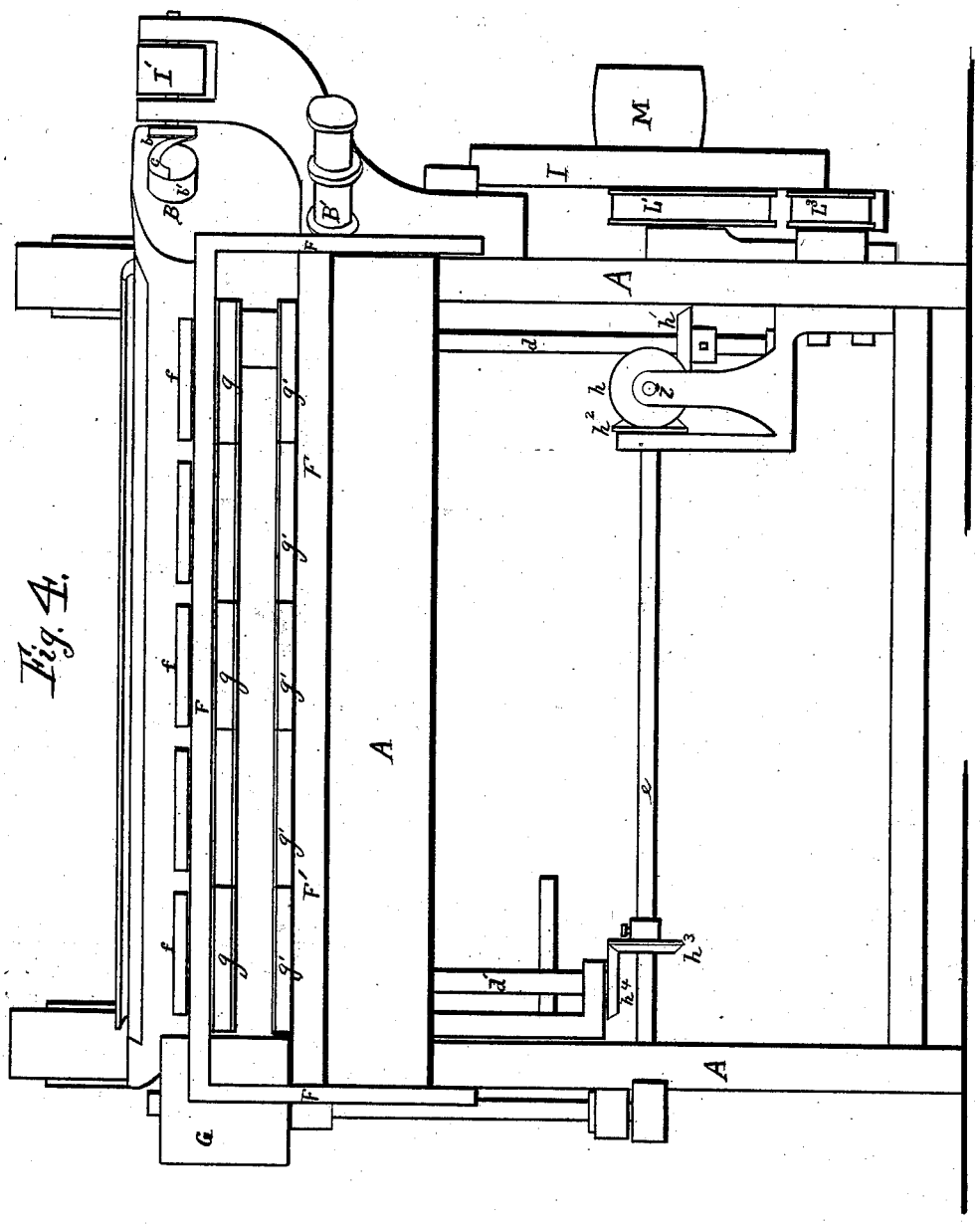

Fig. 4.

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Fig. 5.

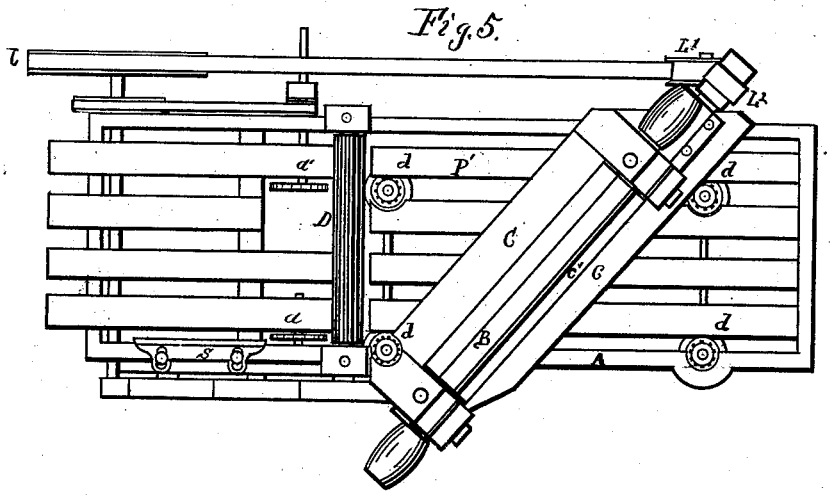


Fig. 6.

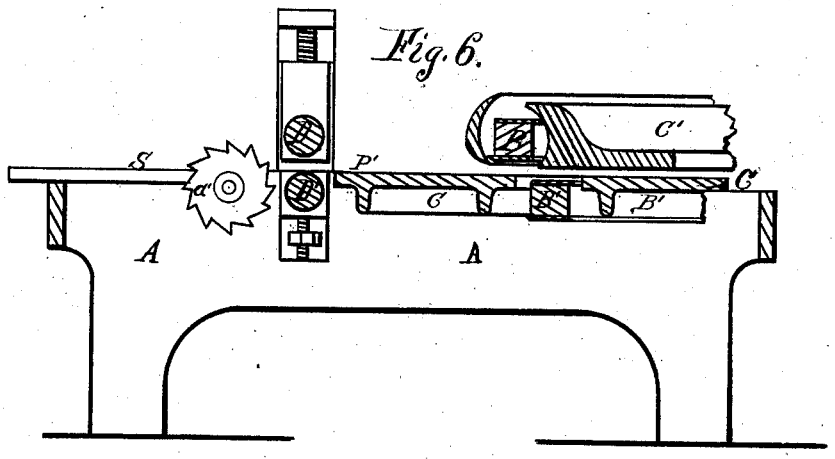
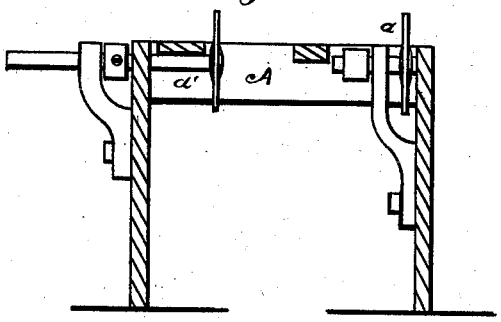


Fig 7.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM R. NORRIS, OF FORT ANN, NEW YORK.

IMPROVEMENT IN PLANING-MACHINES.

Specification forming part of Letters Patent No. **201,624**, dated March 26, 1878; application filed May 19, 1875.

To all whom it may concern:

Be it known that I, WILLIAM R. NORRIS, of Fort Ann, county of Washington, State of New York, have invented new and useful Improvements in Machines for Planing and Sandpapering Doors and other frame-work of like construction, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, making a part of the same.

This invention is more especially designed for planing and smoothing doors; and it consists in certain novel means and combinations of parts, whereby the operations of planing the doors, of sandpapering the same, and of cutting the wedges from the lateral edges of the same are performed with great rapidity and accuracy, and much more cheaply than by the means or mechanism previously in use.

The machine is fully illustrated by the drawings, of which Figure 1 is a top view of the entire machine; Figs. 2 and 3, opposite side elevations of the same; Fig. 4, a rear end view thereof; Fig. 5, a top view, representing a modified construction; Fig. 6, a longitudinal vertical section of the construction shown in Fig. 5; and Fig. 7, a transverse vertical section.

Like letters designate corresponding parts in all the figures.

In the drawings, A represents the frame of the machine; B B′, the two oblique cutter-heads; C C′, the lower and upper beds, which support and hold the door while it is being planed; D D′, horizontal feed-rolls; *d d d′ d′*, four vertical feed-shafts, bearing fluted heads; F F′, upper and lower frames, bearing the sandpapering disks; G, a drum on a vertical shaft for driving both sets of the sand-paper disks *g g g g g′ g′ g′ g′*; H H′, two pulleys, to be connected by a belt, for transmitting motion from the driving-shaft to shaft of the drum G; I I′, two pulleys, connected by a belt, for transmitting motion from the driving-shaft to the upper cutter-head B; K K′, two pulleys, connected by a belt, for transmitting motion from the driving-shaft to the wedge-trimming saws *a a′*; L L^1 L^2 L^3, pulleys, connected by a belt, for transmitting motion from the driving-shaft to the under cutter-head B′; M, the main pulley on the driving-shaft, by which the power is applied to the whole machine; P P′, upper and lower guide-plates, placed between the feed-rolls and cutter-head, to guide and keep in horizontal position articles passing from the rolls to the cutter-heads; R, a movable guide, to direct the door or other article properly between the saws *a a′*; S, a stationary edge-guide, to keep the door in position between the said saws; V V, vertically-adjustable supports on the sides of the frame, to which is attached the upper bed C′, and on which the cutter-head B has its bearings.

In addition to, or instead of, the horizontal feed-rolls D D′, I employ the four vertical feed-shafts and heads *d d d′ d′*, the two former being stationary at one side, while the two latter are movable and laterally adjustable, that they may be made to work against the edges of different widths of doors.

These rolls working upon the edges of the doors prevent their working sidewise, as there is a tendency to do on account of the oblique action of the knives of the cutter-heads, while at the same time they propel the doors forward, and thus very materially reduce the pressure it is necessary to apply to the surfaces of the door at the horizontal feed-rolls D D′, and thereby entirely obviate the compression of the timber, which is very injurious.

To give positive and equal motions to these vertical feed-shafts, they are connected with the main driving-shaft at the front of the machine by means of shafts properly located, and provided with suitable bevel-cog wheels, as shown, or other equivalent means.

In order to communicate motion freely to the oblique cutter-head B from the shaft of the pulley I′, which is at right angles to the frame, I employ a suitable flexible or universal-joint connection or coupling between their two shafts.

In the drawings, a device consisting of disks or cranks *b b′* on the respective shafts, and connected by a flexible spiral rod or coiled spring, *c*, is represented.

The cutter-head B′ receives its motion through a single belt passing from the pulley L on the driving-shaft around the guide-pulleys L^1 L^3, suitably located on the frame, as shown in Fig. 3, and thence around the pulley L^2 on the end of the cutter-head. This ar-

rangement may be used as a substitute for the universal-joint connection, as above described.

The lower bed C C consists of two plates, one on the front and one on the rear side of the cutter-head B′, and quite close to it. The plate in the rear is made to be adjusted vertically, to bring it into proper position to serve as a rigid support of the door, after it has been planed by the under cutters and while the upper surface is being borne upon by the upper bed C′. Said upper bed C′ is made to be adjusted to suit the different thicknesses to be planed, and is secured to the frames V V with the bearings of the upper cutter-head B, with which it rises and lowers when different thicknesses are to be planed.

The guide-plates P P′ occupy the space between the feed-rolls and cutter-heads, and serve to keep the articles in proper horizontal position while passing from the feed-rolls to the cutter-heads. The upper plate P is vertically adjustable, that different thicknesses of articles may pass between it and the lower plate P′, which latter may be stationary.

The wedge-trimming saws *a a′* may be on one single shaft, as shown in Fig. 1, or on separate arbors, as shown in Figs. 5 and 7, one or both being adjustable, to bring them into proper position to trim the wedges from doors of different widths. In Fig. 1 the saw *a′* is shown as adjustable on its shaft, while in Figs. 5 and 7 the arbor upon which the saw *a′* is secured can be extended inwardly by loosening the set-screw that confines the pulley to it.

The upper set of sandpapering-disks *g g g* are mounted in a vertically-adjustable frame, F, in a zigzag position, or in two lines, as represented, so that they may cover the entire surface of the article during its passage under them. They are revolved by means of a belt passing around the pulleys *f f* on their respective shafts above the frame F, and also around the drum G, as shown in Fig. 1. The lower disks *g′ g′*, mounted in the frame F′, may be revolved in a similar way by belt and pulleys, but are represented as caused to revolve by frictional contact at their peripheries from one to another, the one next to the drum G being revolved by contact with it.

Although the oblique cutter-heads are represented as parallel, and one nearly over the other, I do not confine my invention to this arrangement. One cutter-head may be oblique in the opposite direction, as, for instance, crossing like the letter X; and one need not be placed over the other, nor their degree of obliquity be the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the cutting-cylinder, a flat revolving sandpapering-surface, and suitable feeding mechanism to carry the work to both simultaneously, substantially as and for the purpose herein set forth.

2. In combination with the oblique cutter-heads B B′, vertical feed-rolls acting upon the edges of the door or other article, substantially as and for the purpose herein specified.

3. The combination of saws *a a′* and guides R S, arranged in a planing-machine, and operating substantially as and for the purpose herein specified.

4. The revolving sandpapering-disks *g g g′ g′*, in combination with the feeding device of a planing-machine, substantially as herein specified.

WILLIAM R. NORRIS.

Witnesses:

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E. M. GALLAHER.