2 Sheets. Sheet 1.

J. T. Foster,

Reciprocating Saw-Mill.

No. 18,443. Patented Oct. 20, 1857.

Fig. 1.

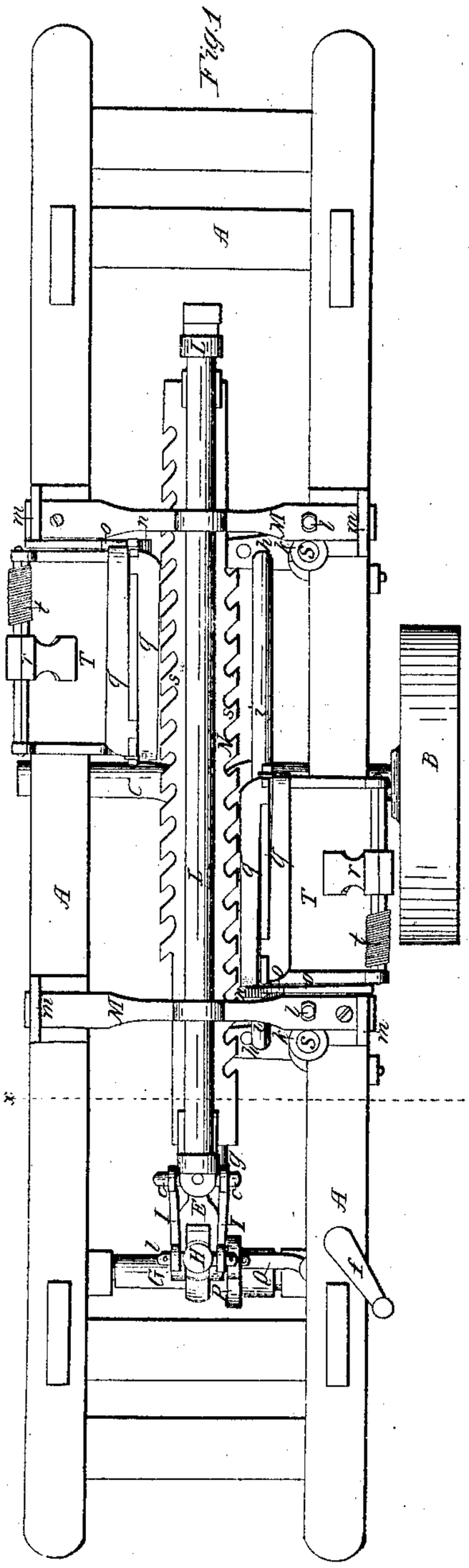
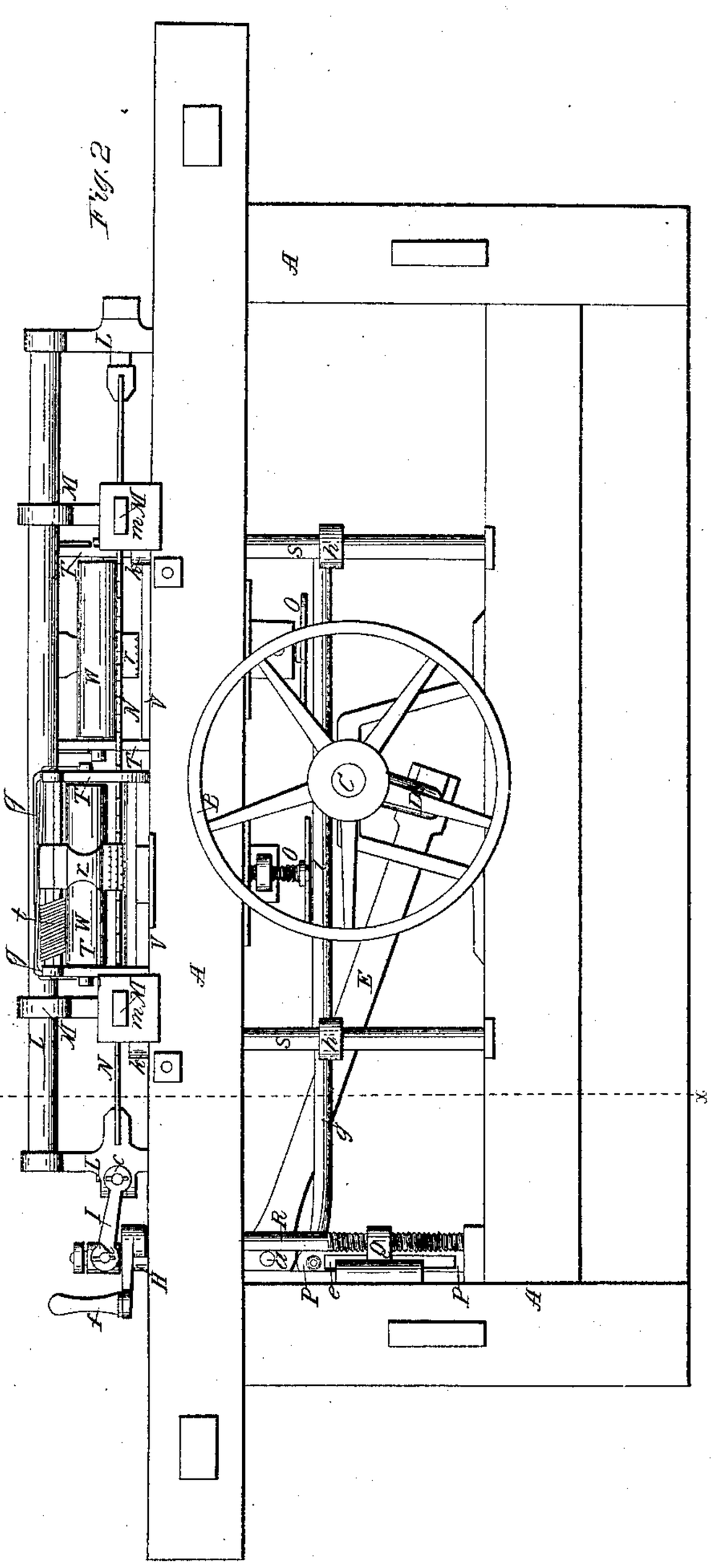


Fig. 2.



2 Sheets. Sheet 2.

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Fig. 4

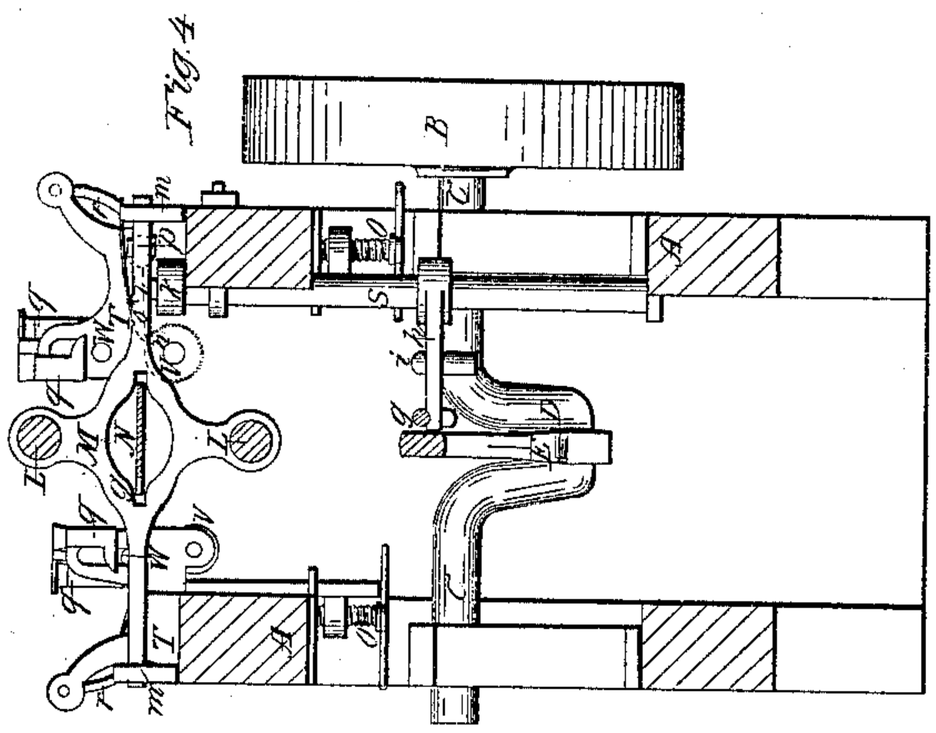


Fig. 5

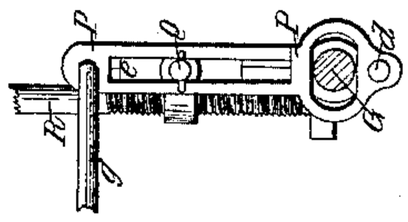
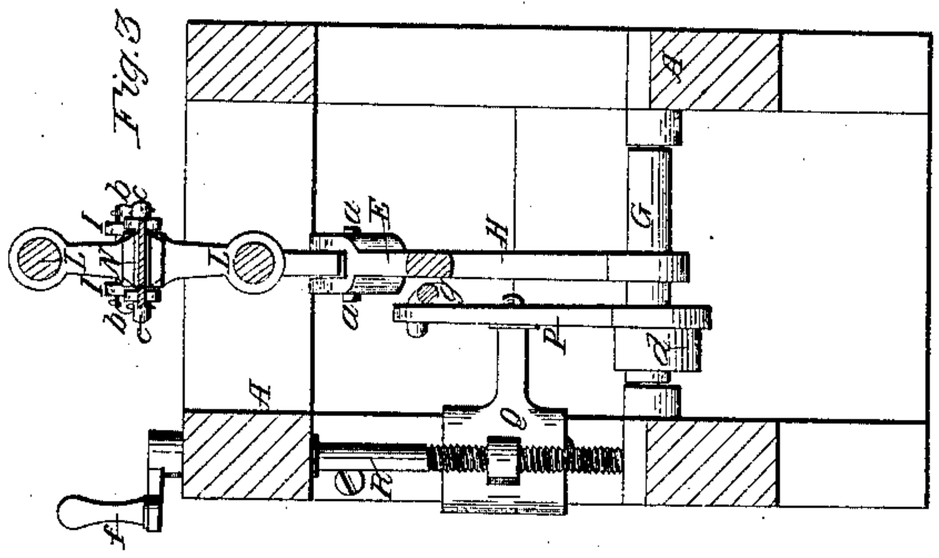


Fig. 3



UNITED STATES PATENT OFFICE.

J. T. FOSTER, OF JERSEY CITY, NEW JERSEY.

SAWING-MACHINE.

Specification of Letters Patent No. 18,443, dated October 20, 1857.

To all whom it may concern:

Be it known that I, J. T. FOSTER, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Machine for Resawing Boards and for other Similar Uses; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, Figure 1 being a plan of the machine; Fig. 2, a side elevation thereof; Fig. 3, a transverse vertical section of the same in the plane *x*, *x*, of Figs. 1 and 2 looking toward the left; Fig. 4, a similar section in the same plane looking toward the right; Fig. 5, view of a part detached.

Like letters designate corresponding parts in all the figures.

A suitable frame A, having been constructed, the driving wheel B, and driving shaft C, are located in a convenient position therein. The driving shaft is provided with a crank D, from which a pitman E, passes to a vertically situated lever H, and is pivoted thereto near the middle, as seen at *a*, Figs. 2 and 3. The lower end of said lever is attached to a roller, or rock-shaft G, on which it is caused to vibrate by the pitman E, when the machine is in motion. The upper end of the lever is connected with the saw-gate L, by a link, or short pitman, I, which is jointed to said lever at *b*, and to the saw-gate at *c*. This mode of giving motion to the saw, by means of a long lever vibrating at right angles to the direction of the saw's motion, and giving the immediate motion of the crank and pitman thereto, accomplishes a useful purpose in that respect, inasmuch as the variation of the upper, or vibratory, end of the lever from the center line of the saw's motion, is but slight, and therefore it draws with a much more even force upon the saw-gate than can be effected by connecting the crank pitman immediately with the saw-gate. By means of this vibratory lever, also, the feed-motion of the boards, and the cutting throw of the saw, are very conveniently produced. For this purpose, its rock-shaft G, is provided with a small crank *d*, to which the lower end of the lever P, is pivoted. The latter lever has a longitudinal slot *e*, in which its pivot Q, is caused to slide, by an adjusting screw R; so that by moving the pivot to different positions in said slot, the extent of motion communicated to the upper end of the lever, through the constant motion given to its lower end by the rock-shaft, may be varied at pleasure; and thereby the feed motion and saw throw are correspondently varied. A connecting rod *g*, extends from the upper end of the vibratory lever P, to an arm *h*, projecting from one of the vertical rock-shafts S, S. The other rock-shaft has a similar projecting arm *h;* and a rod *i*, connects the two arms *h*, *h*, at points equidistant from the centers of their respective rock-shafts, whereby simultaneous and exactly equal, vibratory motions are communicated to both rock-shafts. Short cranks *k*, *k*, of equal length, extend from the upper ends of the rock-shafts S, S, and enter slots or holes *l*, *l*, in the guides M, M, of the saw-gate. These guides are situated in bearings *m*, *m*, in which they are allowed to slide freely across the machine at right angles to the motion of the saw-gate. Thus the vibratory motion given to the rockshaft S, S, by the vibratory lever P, is communicated through the cranks *k*, *k*, to the guides M, M, and thereby the required cutting throw is given to the saw in both directions. This throw being produced by the vibration of the same lever H, which drives the saw-gate, the two motions proceed constantly with corresponding rates of speed, so that they harmonize perfectly. It only remains to cause the feed motion of the boards to agree in like manner with the motion and throw of the saw, in order that all parts of the machine may work together in the most exact correspondence. This is accomplished by jointing to the guide M, a pawl *o*, which moves a ratchet wheel *n*, on the lower feed roller V. Thus whenever the rate of feed is varied the throw of the saw is varied in precisely the same ratio, so that all the teeth of the saw which pass through the board cut the same amount.

The two feed rollers V, W, are mounted in a frame T, which is adjustable vertically by a screw O, so that any required thickness of board may be obtained. The upper feed roller W, is pressed down upon the boards by springs *q*, *q*. A stationary pawl *r*, is pressed down upon the boards by a spring *t*, or its equivalent, to prevent the boards from being pushed back.

I form saw teeth *s*, *s*, on both edges of the saw N, one set cutting in one direction, and the other set cutting in the opposite direction. A feeding device, as above described, is situated on each side of the machine, so that

the boards of the one will not interfere with those passing through the other. The pawl *o*, of one is actuated by one of the guides M, M, and the other pawl by the other guide, substantially as represented in the drawings. The teeth on one edge of the saw are at one end, and those on the other edge at the other end thereof (as shown in Fig. 1,) to correspond with the positions of the feeding devices. The saw is consequently somewhat longer than usual for the same length of stroke. Thus the saw is continually cutting, while in motion, and the power required to drive it is equal in both directions; whereby double work is done with the same motion of the saw, and with very little power additional to that which, in the ordinary arrangements, saws only half as much. The throw of the saw, as above described, also alternates properly with the alternate feed motions. The arrangement is convenient for the attendants; for by having an attendant on each side of the machine, each one feeds the boards to one edge of the saw and takes the sawed boards for the other from the machine. Different thicknesses of stuff can be sawed at one time by this use of two sets of teeth. Thus, for instance, one feeder can be set to divide two-inch planks into inch boards, which may immediately be returned through the other feeder, and be divided into half-inch boards. Instead of one saw, with teeth on both edges, two saws might be employed, each having teeth on one edge only but opposite to each other.

I do not claim the arrangement of teeth on both edges of a reciprocating saw so as to cut in both directions of its motion; but

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

1. Imparting to the saw, provided with teeth on its opposite edges which cut alternately in opposite directions, a reciprocating lateral motion, in the plane of its longitudinal motion, equal to, and corresponding with, the feeding of the articles to it from opposite sides, as herein specified.

2. I also claim giving to the way guides in which the saw-gate runs, an alternate motion at right angles to the motion of the saw and equal to the feed motion on each side, substantially as herein described.

3. I also claim the combined arrangement of parts by which the cutting throw of the saw and the feed-motion, are produced by the same vibratory lever H, which drives the saw, and are consequently always precisely equal, invariably correspond with the motion of the saw, and are varied simultaneously to any extent without disarranging this harmonious agreement of all the motions, substantially as herein set forth.

J. T. FOSTER.

Witnesses:

WM. H. DURYEA,

JOHN A. COLE.