

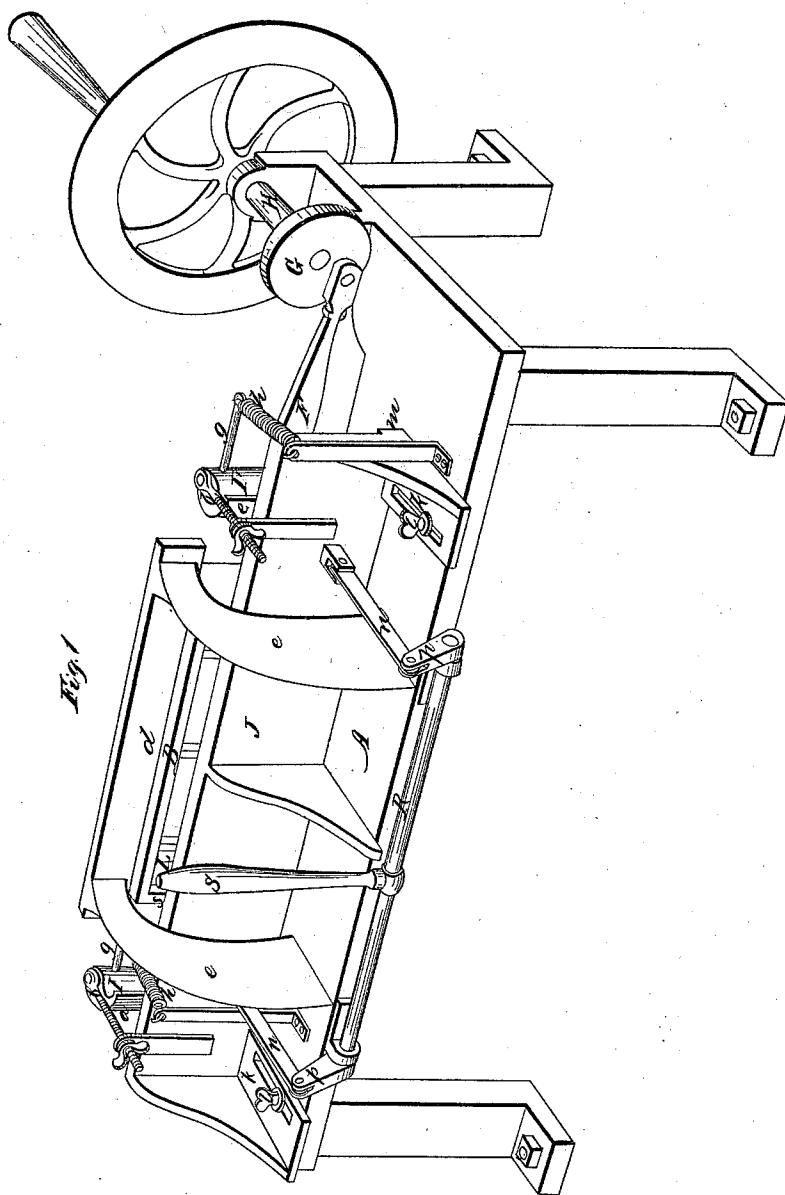
2 Sheets - Sheet 1.

*D. Stearns,*

## Wood Planing Machine.

*Π<sup>o</sup> 8,808.*

*Patented Mar. 16, 1852.*



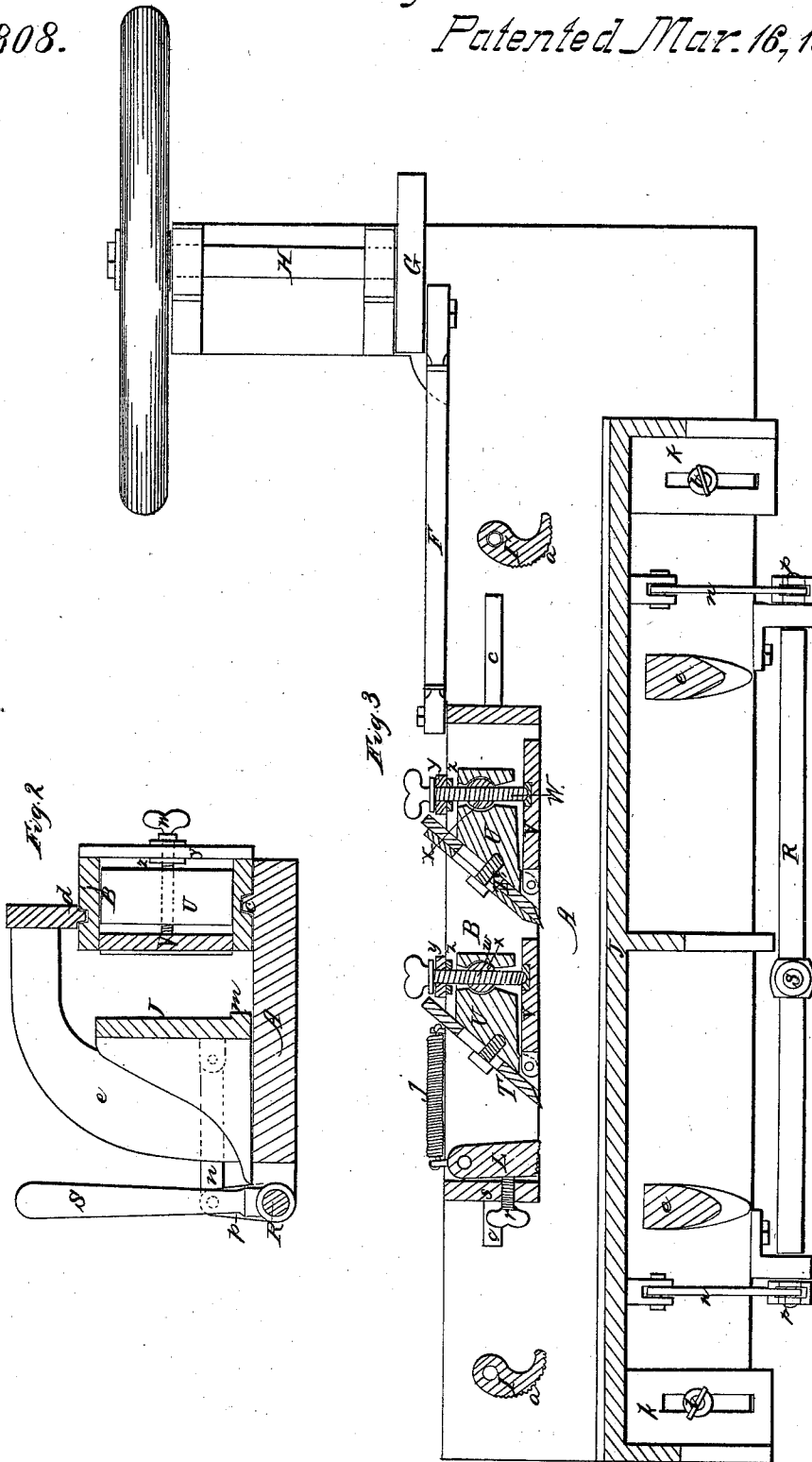
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25 Sheets. Sheet 2.

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# UNITED STATES PATENT OFFICE.

DANIEL STEARNS, OF ROME, NEW YORK.

## PLANING-MACHINE.

Specification of Letters Patent No. 8,808, dated March 16, 1852.

*To all whom it may concern:*

Be it known that I, DANIEL STEARNS, of Rome, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Machines for Planing Lumber, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a view in perspective of my planing machine; Fig. 2 is a vertical transverse section of the same; and Fig. 3 is a horizontal section of the same at the centers of the plane stocks.

My machine is constructed to plane boards and other lumber by means of a reciprocating series of plane irons and the latter are secured to a carriage which in its retrograde movement draws the board into the machine and in its direct movement effects the planing of the portion of the board drawn in.

The first part of my invention consists in a method of setting the plane iron to cut shavings of greater or less thickness by securing the plane iron to a stock, which can be turned upon a pivot, to raise or depress that portion of it to which the plane iron is secured.

The second part of my invention consists of a combination of self acting spring clamps, which effect the clamping of the board to the plane carriage when the latter is retrograding but when the plane carriage is advancing to plane the board clamp the latter to the bed of the machine and hold it stationary while the plane irons are acting upon it.

The several acting members of the planing machine represented in the accompanying drawings are all secured to a bed frame or bench A. The planing carriage B is situated at one side of this bed frame, its face or that side at which the plane irons protrude being perpendicular thereto. The lower side of this carriage is grooved longitudinally to fit a way *c* which is secured to the bed frame and guides the carriage in moving to and fro. The upper side of the carriage is also grooved to fit an upper way *d* which is secured to the extremities of two brackets *e e* that project upward from the bed frame A, and which maintains the carriage in its proper position while moving. One extremity of the carriage is

linked by a connecting rod F to the wrist of a disk crank G which is secured to the extremity of a horizontal shaft H, to which the power is applied. Immediately opposite and facing the plane carriage B is an adjustable plate J, to support the back of the board while the plane irons are acting upon it. This back plate has feet *k k*, which project at its lower edge to slide upon the bed frame as the back plate is moved toward or from the adjacent face of the plane carriage, and these feet are slotted at right angles with the face of the plate to admit clamp screws *l, l*, by means of which the back plate can be clamped firmly in whatever position it may be set with reference to the plane carriage. The lower side of this back plate projects beyond its face to form a ledge or way *m*, on which the lower edge of the board presented to the machine is supported. This back plate is connected by link rods *n, n*, with toes *p p* that project upward from a horizontal shaft R whose journals are fitted in boxes *q q* secured to the bed frame, and this shaft has a hand lever S secured to it, by turning which the shaft is rotated to draw the back plate from the face of the plane carriage or to move it toward the latter as may be desired to adapt the machine to plane boards or planks of different thickness.

The plane carriage in the present example is fitted with only two plane irons T and T', the first of which reduces the lumber while the second (T') smooths the surface. Each of these plane irons is secured to a stock U, whose front face is inclined to form a seat of the proper inclination for the plane iron. Each plane stock is hinged to a cross bar V of the plane carriage at a point intermediate between the edge of the plane iron and the hinder extremity of the stock. This hinder extremity is raised or depressed by means of a screw *w*, which is passed through a loose nut *x* in the plane stock, and bears at its lower end upon the cross bar V of the plane carriage. The neck of the screw is passed through a crossbar *y*, on the outer side or back of the plane carriage and has a collar *z* secured to it which prevents the screw from working outward when turned to depress the hinder extremity of the plane stock.

From the above arrangement it is evident that when the set screw *w* is turned in one direction the plane stock will be rocked upon

its pivot to protrude the edge of the plane iron secured to it from the face of the plane carriage, thus giving the plane iron a ranker set, while by turning the set screw in the opposite direction the edge of the plane iron will be drawn inward, or will have a finer set imparted to it.

The clamps by means of which the board is alternately secured to the plane carriage and made fast upon the bed frame are three in number, two I, I', being stationary upon the bed frame and the third L, being secured to and moved with the plane carriage. The stationary clamps I I' are pivoted upon upright shafts secured to the bed frame, the one I at the front extremity and the other I' at the back extremity of the track described by the plane carriage B. Their faces *a* which are opposite to the face of the back plate J are curved eccentrically to their shafts and are toothed or fluted to enable them to bite into and grip the board. The upper extremities of the shafts are connected with the back plate J by adjustable screw bolts *b b* which prevent them from yielding to the strain incident to the gripping of the board, and each clamp is fitted with an arm *g* which is drawn toward the back plate by a spring *h* to turn the more protuberant portions of the fluted face of the clamp toward the back plate.

The clamp L upon the plane carriage is pivoted to a shaft that precedes the first plane iron. Its face is also eccentric to its shaft and is toothed or fluted to enable it to grip the board. This clamp is fitted with an arm *i* and spring *j*, to turn the more protuberant portion of its face toward the back plate, and the amount of this turning is limited by a set screw *r* that is passed through the front cross bar *s* of the plane carriage.

When this machine is to be used the back plate is set by turning the rock shaft at a distance from the edge of the hindmost plane iron in the series equal to the thickness required in the planed board, and is secured in its position by the clamp screws *l l*. The bolts which connect the upper extremities of the clamp shafts with the back plate are screwed up to prevent the clamps from yielding to the strain, and power is applied to turn the crank shaft H by whose rotation the plane carriage B is caused to move to and fro upon its ways. A board to be planed is inserted endwise between the forward clamp I and the back plate, and is shoved forward within the range of the clamp L on the plane carriage. As this carriage advances the spring of this clamp yields to permit it to pass over the extremity of the board, but as the plane carriage retrogrades the flutes of the clamp, being borne by the pressure of the spring upon the rough face of the unplanned board, bite into it until

the further turning of the clamp upon its shaft is stopped by the set screw *r*, after which the continued retrograde movement of the plane carriage draws the board along with it into the machine. This forward movement of the board is not opposed by the forward clamp, whose spring yields to permit the clamp to turn by the rubbing of the board upon its face and to present less protuberant portions to the board, thus increasing the space between its face and that of the back plate. As the plane carriage reaches the extremity of its back stroke the board becomes stationary, but as the carriage begins to advance the forward clamp, whose face is continually borne upon the board by its spring, turns by the rubbing of the board as the carriage tends to shove it forward. As the clamp turns the more protuberant portions of its fluted face are brought into contact with the board whose lateral movement is prevented by the back plate, and the further backward movement of the board by the carriage is prevented by the jamming of the clamp, whose flutes bite into its rough surface. As the board is thus prevented from moving with the carriage the latter passes over its face, and the plane irons reduce and smooth it. This movement of the plane carriage is not opposed by the carriage clamp L, for the spring of the latter yields to permit it to turn and glide over the face of the board. When the carriage again commences to retrograde, its clamp taking a fresh hold upon the board draws it farther into the machine, while the stationary clamp yields and allows the board to glide past it. The board is thus alternately drawn into the machine by the retrograde movement of the plane carriage and planed by the direct movement thereof, the reciprocating plane carriage acting in connection with the clamps as a feed motion. As the planed extremity of the board is forced out of the machine it passes between the back plate and the face of the hinder clamp I', which acts simultaneously with the forward one to hold the board firmly upon the back plate while the plane irons are acting upon it and to yield as the board is drawn farther into the machine. As this hinder clamp bears upon the finished face of the board it is advisable in most cases to make its eccentric face perfectly smooth in order that it may not mar the finished surface.

A planing machine constructed as above set forth not only possesses the advantage of efficiency but is superior in point of low cost and simplicity to those in general use. It is specially adapted for shop work as it takes up but little room and may be worked by hand.

The method of setting plane irons will be found extremely convenient for it not only

insures the setting of the edge of the plane iron in positions always parallel to each other, but permits this to be done by the turning of a single screw.

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

Constructing, arranging, and operating a reciprocating plane which cuts off the shaving by its forward stroke and feeds the board by its backward stroke, and the clamps and grips or stops with which such a plane is connected as herein described, so that the board is fed at the back stroke of the plane and planed at its forward stroke a distance equal, or thereabout to the throw

or stroke of the plane, whereby a greater length is planed by a given number of strokes of the plane than in reciprocating planes that feed themselves by their own motion, as heretofore constructed; and also the injurious shocks and strains are avoided which in those planes are caused by the necessity of making the cut considerably shorter than the stroke.

In testimony whereof I have hereunto subscribed my name.

DANIEL STEARNS.

Witnesses:

E. S. RENNICK,  
P. H. WATSON.