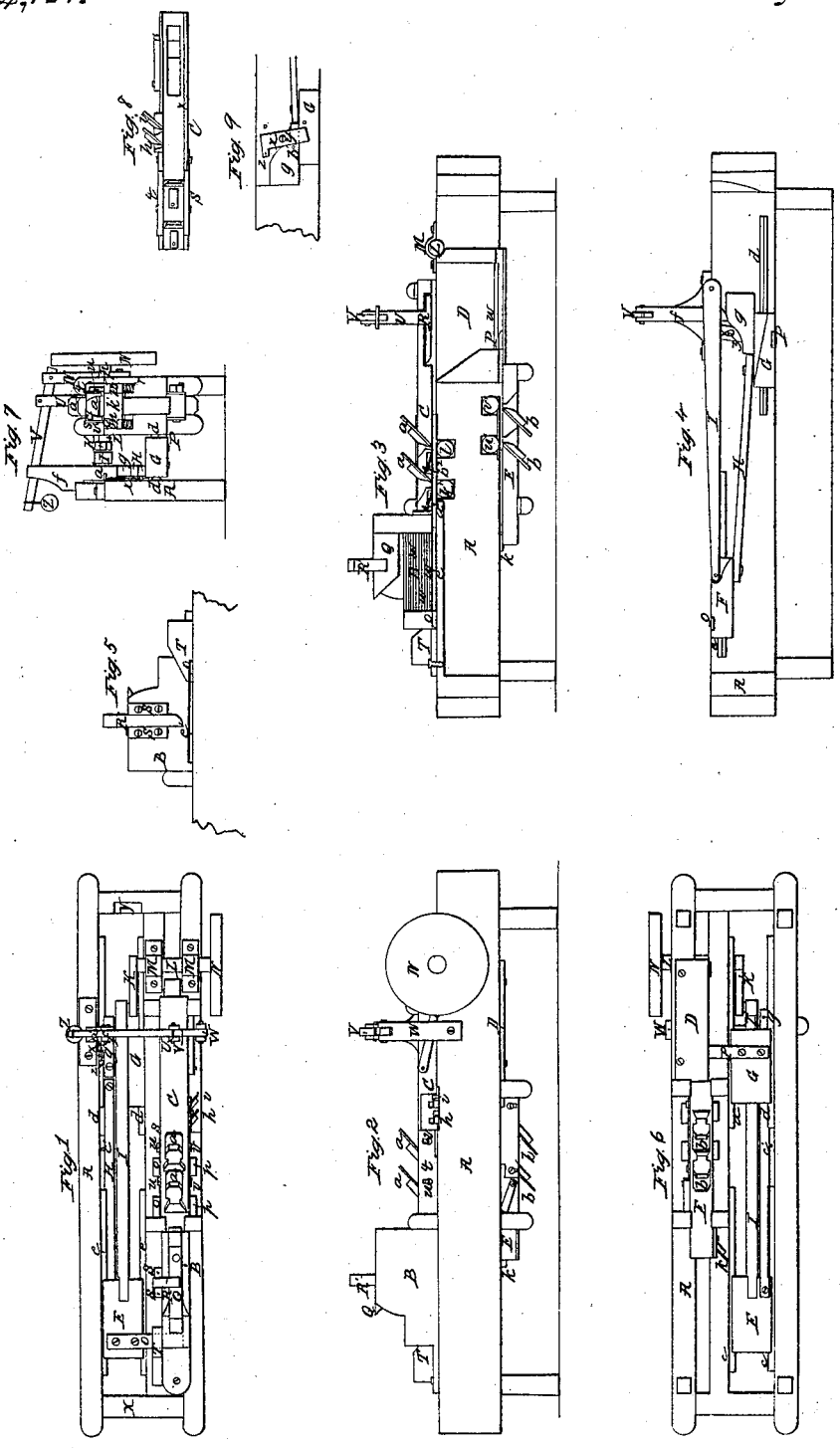
A. Woodworth, 3d.

Making Blind Slats.

No 4,721. Patented Aug. 26, 1846.



UNITED STATES PATENT OFFICE.

ARAD WOODWORTH, 3D, OF WORCESTER, MASSACHUSETTS.

MACHINERY FOR PLANING BLIND-SLATS.

Specification of Letters Patent No. 4,721, dated August 26, 1846.

To all whom it may concern:

Be it known that I, ARAD WOODWORTH, 3d, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Mechanism for Planing Blind-Slats or Other Articles of Like Character; and I do hereby declare that the nature of the same is fully set forth and described in the following specification, accompanying drawings, letters, figures, and references thereof.

Figure 1 of the said drawings denotes a top view of my improved machine. Fig. 2 is a front elevation. Fig. 3 is a vertical and longitudinal section of it, taken through the two series of main plane irons. Fig. 4 is another longitudinal and vertical section taken on the line X Y, Fig. 1.

In the said drawings A exhibits a strong wooden frame made of proper size and shape to sustain the mechanical parts applied to it. A long, narrow, and deep, chamber or hopper B, is arranged upon the top of the said frame, and near one end of it, as seen in the drawings, and directly in front, or to the right of the said chamber, a series of plane irons *a*, *a*, is disposed in a plane stock or beam C, resting and secured upon the top of the frame. Another hopper or receiving chamber D, is placed in advance of and below the said series of plane irons, as seen in Fig. 3, and directly underneath the said plane iron, and in range or about in range, and in rear of the last named hopper, is another series of plane irons (*b b*) fixed in a plane stock E, as seen in the drawings. Two carriages F, and G, are arranged within the frame A, in the positions with respect to each other, as seen in Figs. 1 and 4. They are sustained upon horizontal rails *c*, *c*, *d*, *d*, and connected together by an inclined bar H, which is jointed or attached to them. A reciprocating rectilinear motion is imparted simultaneously to both carriages, by means of a connecting rod I, and a crank K, said connecting rod being jointed to the said crank and the upper of said carriages, and the said crank being applied or affixed upon the end of a horizontal driving shaft L, which is sustained and revolves in bearings M, M, fixed upon the top of the frame A, as seen in Fig. 1. The said shaft has a pulley N, upon its other end over or around which the band from the driving power is made to pass and give motion to the machine.

The carriage F has a long, thin, and narrow, arm or plate O, extending from it horizontally and at right angles, and passing into the hopper B, and so as to rest upon the bottom thereof. When the carriage F is moved either in one direction or the opposite and to the extent of its motion, the said arm is carried by it, and that part of it which projects into the hopper is moved from one end of the hopper toward the other. A slot or way *i* is cut or made through the side of the hopper B, in order to admit of the passage or aforedescribed movements of the arm or plate O.

The other carriage G, is supplied with an arm or plate P, (see Fig. 3), which is made to extend into and operate in the hopper D, in the same manner as does the arm O, with respect to the hopper B. Each of the hoppers has a piston or board Q, or R, arranged within its upper part as seen in the drawings. The board Q is affixed to a guide R′, which moves vertically between and is sustained in position by two parallel and vertical cleats S, S, secured to the hopper B as seen in Figs. 1 and 5, the latter figure being an elevation of the inner side of the hopper B, together with the inclined plane T, to be next described. The said inclined plane is fastened upon the arm or plate O, and moves with the said plate. When the carriage F, is advanced it causes the inclined plane T to come in contact with the foot of the guide R′, and to elevate the said guide and the board Q, in the hopper; the object of the said elevation of the said board being, to allow the slats to be planed, to be readily introduced into the hopper as will be hereinafter more particularly understood. The other board R, situated within the hopper D, is appended by means of a vertical bar or piece of wood U, to transverse lever V, of the second order, whose fulcrum is at the top of a standard W, projecting upward from the frame A. The rear end of the said lever rests upon the top of a vertical slide *f*, and has a weight Z hung upon it. The slide *f* is suitably sustained so as to be readily moved up or down as occasion may require. It is raised up, and consequently elevates the board R in the hopper, by an inclined plane or cam *g*, fixed upon the carriage G, as seen in Figs. 1 and 4. The said inclined plane or cam moves with the carriage.

Each plane stock has one or more lateral plane irons *h*, *i*, as seen in Figs. 1 and 2, or *k*, as seen in Fig. 6, which represents a bot-

tom view of the whole mechanism, or in other words, exhibits the same as it appears when turned upside down. Below the upper series of main plane irons, two bearing rollers *k*, *l*, are arranged as seen in Fig. 3. The two journals, *m*, *n*, of each of the said rollers rest and revolve in metallic bearings or blocks *o*, *p*, (see Fig. 7, which represents a cross section of the machine, taken through one of the said rollers), and are forced toward the plane stock by means of springs *q*, *r*, or other mechanical equivalents. The said blocks or bearings of both rollers, rest in contact with the lower edges of two adjustable plates *s*, *t*, affixed to the side of the plane stock, as seen in the drawings, and by set screws *u*, *v* or such contrivances as will admit of their being elevated or depressed and fixed in any desirable position, in order that the upper surfaces of the rollers may be adjusted to such a distance or such distances from the cutting edges of the plane irons of the upper plane stock as will insure a reduction of the blind slats made to pass between said rollers and plane irons to the required thickness.

The lower plane stock E, is provided with a series of rollers *u'*, *v'*, which are arranged with regard to it, as seen in Fig. 3, and pressed down toward it by springs, and operate with respect to it, in all respects substantially as the rollers *k'*, *l*, do, with regard to the upper plane stock.

a^2, b^2, Fig. 3, are small springs fixed in the plane stock C, their object being to press the board (to be planed) down upon the rollers *k'*, *l*.

The aforedescribed machinery is intended to be used to plane or reduce thin boards on their upper and under surfaces and side edges to the requisite degree to convert them into slats for window blinds. It operates upon them in such manner as to cause the planes to always act in the direction in which the grain of the wood runs, and never against it.

The mode of operation is as follows: The hopper B is filled up with boards *w*, *w*, &c., as represented in Fig. 3 by red lines, the said boards having been sawed out to uniform length, width and thickness. When the boards are so piled or placed in the hopper they should be so arranged that the grain upon the upper surface of each may run backward while that upon the lower surface of each of them runs forward or toward the plane irons of the upper plane stock. The weighted board or piston Q is made to rest upon the upper board, and the lower board to rest upon the bottom of the hopper and directly in advance of the arm O of the carriage F. The machinery is next to be put in motion—in such manner as to cause the carriage F to advance, and by contact of its arm O with the lowest board *w* carry said board with it or cause it to pass between the rollers *k l* and the plane irons *a*, *a*, and thence between the lateral or edge plane irons *h i* and a ledge or projecting guide *x* secured to the under side of the upper plane stock as seen in Fig. 8 which represents a view of the underside of the plane stock. From thence the said board is forced by the arm O into the hopper or chamber D and drops down and rests upon the bottom thereof as denoted by red lines in Fig. 3. When the carriage F returns back it draws the carriage G after it and thereby causes the arm P thereof to act against that end of the board *w* nearest to it and expel or force said board out of the hopper and between the plane irons *b b* and their rollers *u' v'* and in such manner as to cause said plane irons to reduce the underside of the board, and to act upon it in the direction in which its grain runs. As the board is passed by the plane irons *b b* the lateral plane iron *k* reduces that edge of it which previously came in contact with the guide *x* hereinbefore described. This being effected the board is forced so far rearward by the arm P as to pass entirely beyond the lower plane stock and to drop out of the machine perfectly finished or planed on both of its opposite sides and edges. The respective arms O P of the carriages F and G should be so disposed thereon as to pass entirely beyond or out of their respective hoppers before commencing to expel a board therefrom. This admits the lower board of the pile to lay firmly upon the bottom of the hopper. The said arms or plates should each be of such width that after it has completely performed the operation of expelling a board from a hopper a part of it (the arm) should still remain within the hopper, and receive upon its upper surface one end of the next board to be expelled. By this means it will be enabled to pass underneath the said board at its return movement.

The object of the piston Q R is to keep the boards down or from rising upward while being successively expelled from the hoppers. Each presses or rests upon the pile of boards beneath it during a portion of the time of its being expelled from the hopper and is made to rise upward above the surface of the upper board of the pile, when a board is received into its hopper. The raising and lowering of the first piston Q is effected by the cam or inclined plane T as herein before described. The elevation of the latter piston R is produced by the inclined plane *g* and during the retrocession of the carriage G.

As it is desirable to keep the piston up or in its highest position for some time after it has been raised or during a portion of the time the carriages F and G are performing the advance movement (the same being

for the purpose of admitting a board expelled from the hopper B to pass into the hopper D without obstruction) this is effected by the following means.

In Figs. 1 and 4 x' denotes a vertical lever moving on a fulcrum y and arranged with respect to the slide f as seen in the drawings. The said lever has a small projection z extending from its upper end toward the slide f and a small stud or pin a' inserted in and projecting from the slide as seen in Figs. 1 and 7. The lower leg of the said lever operates in connection with two studs b' c' one of which projects from the side of the carriage G or that of the lifting cam affixed to it (as seen in Fig. 9 which denotes a view of lever x' and the said side and the side of the connecting bar H before described) while the other extends from the side of the bar H as seen in Fig. 1. When the slide f has attained its highest elevation upon the inclined plane or cam g the stud b' projecting from the carriage G is made by the movement of the carriage to meet the lower end of the lever x' and throw it rearward in such manner as to throw the projection z of its upper end under the stud a' where it remains and thus prevents the slide f and its lever V from falling down, until the motion of the carriage is reversed and the pin or stud c' is carried by the carriage into contact with the lower end of the lever x' and moves it on its fulcrum y so far as to throw the projection z out from underneath the stud a'.

By inspection of the drawings it will be seen that the several planes attached to one plane stock are set or arranged in opposite directions to those of the other stock and also in such manner as to operate on opposite surfaces or edges of the boards to be planed, that is to say, while the plane irons of one stock, plane or reduce, one side and one edge of a board, those of the other stock are disposed so as to plane or reduce the other side, and other edge of it, and the said plane irons are so adjusted as to cut "with the grain" of the wood and not "against it."

Having thus described an organized machine for planing blind slats in the directions of the grain of the wood and upon both sides and both edges before they are discharged from it, that which I claim as my invention is—

1. The combination of the two hoppers or receiving chambers, the planing or reducing irons to operate on two opposite sides or edges, or two opposite sides and two opposite edges of a board, and the carriages with their appendages or arms by which the boards are moved from one hopper into the other, and out of the latter and in contact with the plane irons, as arranged and operating together substantially in manner as hereinbefore specified.

2. I also claim, the pistons or boards Q R as combined with their respective hoppers and operating thereon in manner and for the purpose as described.

In testimony whereof I have hereto set my signature this tenth day of April, A. D. 1846.

ARAD WOODWORTH, 3D.

Witnesses:
R. H. EDDY,
GEO. H. BAILEY.