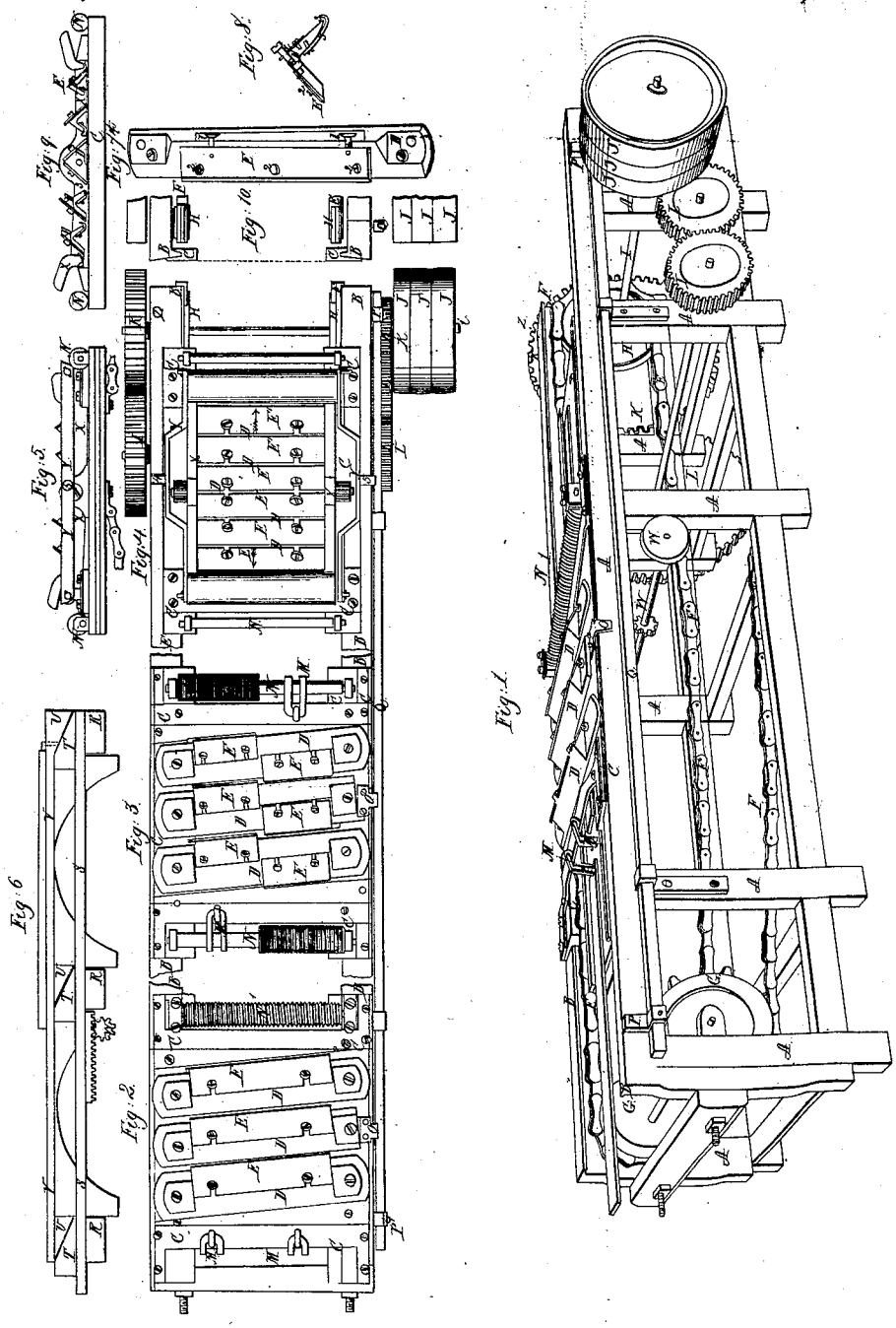
D. H. Southworth,

Wood Planing Machine.

No. 7,913. Patented Feb. 18, 1851.



UNITED STATES PATENT OFFICE.

DANL. H. SOUTHWORTH, OF NEW YORK, N. Y.

PLANING-MACHINE.

Specification of Letters Patent No. 7,942, dated February 18, 1851.

To all whom it may concern:

Be it known that I, DANIEL H. SOUTHWORTH, of the city, county, and State of New York, have invented a certain new and useful Machine for Planing Boards, Plank, and Various other Shapes of Wood; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, forming a part of this specification, in which—

Figure 1, is a perspective view. Figs. 2, 3, and 4, are top views of the stock frames, including the stocks and knives. Fig. 5, is a side view of Fig. 4. Fig. 6, is a transverse, longitudinal section of the bed. Fig. 7, is a perspective view of a stock and knife. Fig. 8, is a transverse sectional view of Fig. 7, with the spring and knife attached. Fig. 9, is a transverse section of Fig. 5, with the springs and knives attached. Fig. 10, is a section of an elevated end view, showing the connection of the carrying frame, and the slides on which it runs.

The same letters refer to like parts in all the figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In construction I deem the following most simple and substantial.

The frame A, I have cast of iron and connected together by means of wood girts or cross pieces of sufficient size and numbers to form when together a firm and substantial frame.

The tops of the sides of frame A, are formed into parallel and nicely fitted tongues B, which extend from end to end of the frame A; these tongues form slides upon which are moved the side pieces of the stock frame C, which have in them a groove to correspond exactly with said tongues.

The side pieces C, being connected together by means of cross bars bolted at the corners so as to form a substantial frame, which is the stock frame. On this frame the stocks D, are fastened at proper distances to form a series, set or gang of planes.

Upon these stocks are fastened by means of set screws 1, the knives E, in such manner as to allow of their being graduated, that is, raised or lowered to fit the work by means of slots to allow of their being so raised or lowered, and held at any point by set screws.

On the under side of the frame C, and to the grooved side piece, the chains F, are attached by a sufficient bolt somewhere about midway of the stock frame C, and from thence the chains extend back over the tightening pulleys G, then passing forward nearly the whole length of the machine, turn over the carrying pulleys H, and from these back to the point where they are fastened to the frame C.

The carrying pulleys H are on the main shaft I. J, J, J, are driving pulleys, and K, K, are toothed wheels attached to the same main shaft, and the toothed wheels K, K, connect with the wheels L, all being necessary to effect the reciprocating motion of the stock frame, while the driving belt continues to move in the same direction.

The small pawls M, are attached to the cross bars of the stock frame with a link joint so fitted that they will draw over the surface of the wood while being planed, and drop down, and take hold of the end of it on the back motion, carrying the board with it when planed and thus remove it from the bed. The iron rollers N, are placed in the front of the knives in such a position as to bear upon the surface of the material to be planed. The roller N′, has its surface cut in V shaped grooves at right angles with its axis, or they may be cut a little spiral.

The stop piece O, is fastened on to the stock frame about midway and projects over the sides of the frame A far enough to take hold of two similar pieces P, on the shifting rod Q. The pieces P, are made so as to be placed on any part of the rod Q, and fastened with set screws. The shifting rod Q is supported in its position by brackets screwed to the frame so as to admit of an easy horizontal motion, and is as long as the machine. Fig. 6, being a transverse section shows the bed and the manner in which it is raised and lowered.

R, R, R, are the ends of the cross girts upon which the piece S, is supported, and allowed to move horizontally, and the piece S, is so moved by the pinion W. To this

piece are fastened the inclined planes T, the inclined planes U, are fastened to the bed-piece V. This bed piece is kept from moving horizontally by the sides extending downward by the sides of the girts R.

The material to be planed is fastened to the bed V, by means of hooks of any ordinary kind let into the bed. Figs. 2, and 3, are plan or top views of the stock frames, showing the different ways in which the stocks and knives may be set and used.

Fig. 2, represents the knives of a length equal to the width of the bed with the stocks set somewhat angular, or the same knives may be used at any other convenient angle. The roller N^1 being cut in V shaped grooves as described, is used to make slight indentations lengthwise in the surface of the stuff, being particularly useful in crossgrained stuff, and is intended to assist the front knife in breaking the surface, by which it is easily and more perfectly planed.

The frame in Fig. 3. is the same as in Fig. 2., but with the stocks made in such a manner as to admit of the knives being set one half of their length upon one side of the stocks, and the other half on the opposite side with their edges in different directions. The stocks and knives and rollers in this frame are intended to be set at any angle the same as those in Fig. 2, and may be used on the same frame. One set of knives are intended to cut on the forward motion, and the other set on the backward motion.

Figs. 4 and 5, are a top plan and side elevation of a rocking stock frame, with the stocks and the inner or rock frame cast in one piece and with its center or shaft hung or resting on pivots in the center of the frame C, allowing the ends to rise or fall by the motion of the gages frame Y, horizontally; in this way bringing the knives E in a line or cutting position with the surface of the plank or board to be planed as the frame moves forward and backward.

Fig. 7. is a prospective view of a stock D, showing how the knives E are raised or lowered by thumb screws 1, and held firmly to the stock with set screws 2, 2.

Fig. 8, is a transverse sectional view of the same showing also the manner of attaching a spring 3, upon the lower and back edge of the stock in a manner so as to form the mouth for the succeeding knife.

The operation is as follows: First the stock frame C, is placed at or near the extreme left of the frame A, when the board or plank is placed in the bed V, with its end against the stop hooks or dogs. The bed V, is then raised by turning the pinion W, by a suitable crank until the surface of the plank is at the right height above the first knife E. The driving belt is still supposed to be moving on the middle and loose pulley J, which is now shifted to the outside pulley J; this pulley being fixed to the shaft I, causes the carrying pulleys H, to move the Chain F., and thus takes the stock frame C, from left to right, until the stop O, strikes the cam P, on the rod Q. The rod Q, operates on the belt, and causes it to shift from the outside pulley to the extreme inner pulley J, and this in connection with the wheels K, and L, reverses the motion, and the stock frame moves back until the stop O, strikes another cam P; this moves the rod Q back and shifts the belt from the inner to the middle pulley.

In operating with the stock frame as shown at Fig. 3, the board or plank is placed on the further side of the bed V; and the frame C made to move as above described, and when the knives E, are made to plane the first board, having passed over its length, another board is placed on the near side of the bed V, when the back motion of the stock frame causes it to be planed by the other gang of knives. When the first board is planed the pawls M, drop over the end of the board, and as the frame moves back, the pawl takes against the end of the board, and removes it from the bed. The same operation is continued with the second board when the third is being planed.

In using the rocking stock as described in Figs. 4, and 5, they are so arranged that when the projecting pin 4, has arrived at the point Z, the projecting pin 5, will have struck the cam P, on the shifting rod Q; this will move the gage frame Y, back and cause one end of the frame X, to drop while the opposite end rises, this being effected after passing over the whole surface of the board, the knives are then in the proper position for cutting. On the back movement, the same change is effected at the other end of the machine by a similar arrangement. This frame I think well adapted for use, when much of the thickness has to be removed, or when the grain is averse to the first motion, or in planing hard substances.

The mouths of all or a part of the stocks and knives may be formed and regulated by the application of the spring 3, as described in Fig. 8, as being attached to the back and under side of the stock D.

I claim—

1. The use of circularly grooved rollers in front of the cutter, to divide and cut the unplaned surface of the board into narrow longitudinal strips, whereby the outer shavings are taken off in narrow strings or threads, in the manner and for the purposes herein set forth.

2. I do not claim simply the arrangement of the plane stocks with their cutters upon the traveling frame in such order that

one gang or set of cutters will plane one plank by their movement in one direction, and another gang of cutters plane another plank by their movement in the opposite direction, and remove the first plank planed from the bed, but this I claim only when these are used in connection with the circular groove, scoring roller, as within described.

D. H. SOUTHWORTH.

Witnesses:
H. L. HARVEY,
J. C. LEWIS.