C. B. Morse,

Planing and Matching Machine.

No. 12,211. Patented Jan. 9, 1855.

Fig: 3.

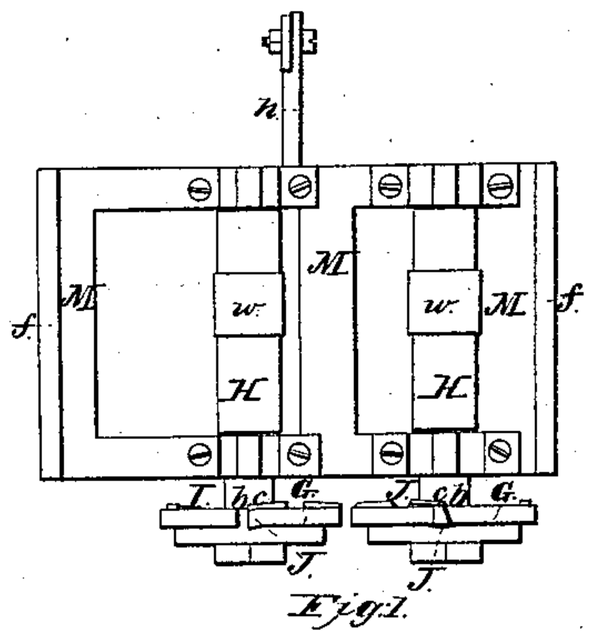


Fig: 1.

Fig: 4.

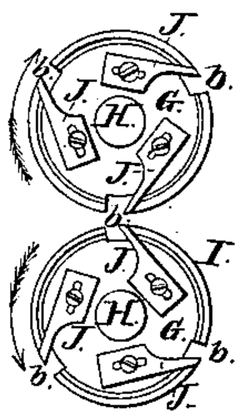


Fig: 5.

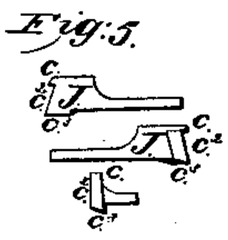
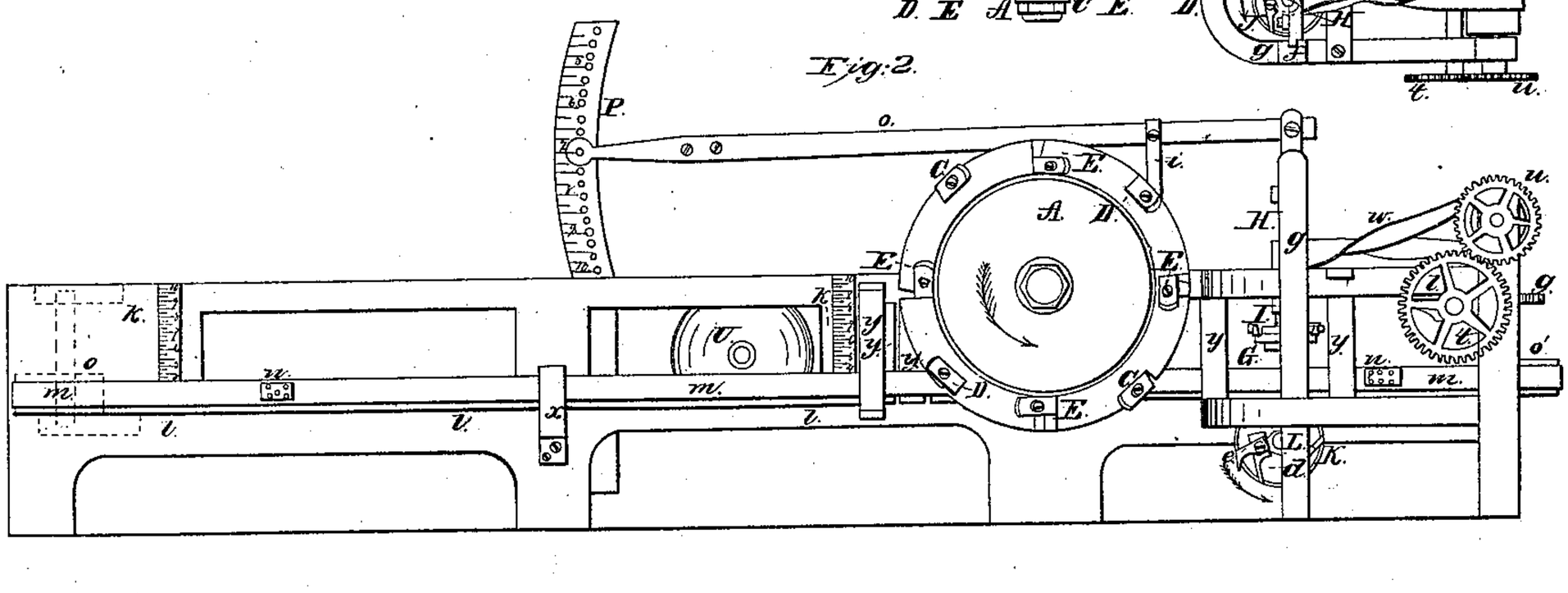


Fig: 2.



UNITED STATES PATENT OFFICE.

C. B. MORSE, OF RHINEBECK, NEW YORK.

ROTARY PLANING AND MATCHING MACHINE.

Specification of Letters Patent No. 12,211, dated January 9, 1855.

To all whom it may concern:

Be it known that I, CYRUS B. MORSE, of Rhinebeck, in the county of Dutchess and State of New York, have invented a new and useful Improvement in Machines for Planing, Tonguing, and Grooving Lumber; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, forming part of this specification, in which—

Figure 1 is a top view of a planing machine, embracing my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is an elevation of the carriage to which the shafts of the reducing and tonguing cutters are secured. Fig. 4 is a top view, in their relative positions of the stocks and cutters for reducing and tonguing the board. Fig. 5 represents one of the reducing and tonguing cutters, in several positions, detached from the stock.

Similar characters of reference in the several figures denote the same part of the machine.

The object of my invention is to obviate the necessity which exists in all planing, tonguing and grooving machines, now in use, for reducing the lumber to a given width preparatory to planing, tonguing and grooving; which operation necessarily involves a considerable expenditure of manual labor, in handling, selecting and preparing, as well as loss of material in bringing the boards to a given width. All of which my improvement renders unnecessary, as by its planing machines are adapted to the reception of boards of any width, or of unequal width at opposite ends, in fact in the condition in which they come from the saw mill, are made to reduce, dress, tongue, groove and deliver the boards with the greatest width it will admit of when its edges are parallel.

The nature of the invention consists in the combination and arrangement of certain mechanical devices hereafter to be described, which shall cause longitudinal grooves to be cut in the sides of the board, of sufficient depth to form the tongue, which is separated from the waste or taper at the same time and by the same cutters; said waste passing off with the board, and leaving the corners of the tongue smoothly rounded; the combination rendering the machine capable of preparing or reducing, planing, tonguing and grooving boards of different widths in successive order without the necessity which exists in other machines for changing the adjustment of the machine for every width of board to be operated upon, and that after the lumber has been reduced by a separate machine.

To fully illustrate my invention, I will describe its construction and operation by reference to the drawings; in which—

A is the rotary cutter wheel for facing, and K the stock of the jointing and matching cutters, which as they form no part of the claim and can readily be understood from the drawing, will not require particular description. To the right of the wheel A, are two uprights *g*, in grooves of which works a vertical carriage M, by the action of a lever *o*, whose fulcrum is at *i*, and whose short arm is connected by a pin or belt with the upright *h* of said carriage. In this carriage is secured two vertical shafts H, which carry on their lower extremities, the stocks G of the reducing and tonguing cutters J. These cutters have the form of edge shown in Fig. 5, and have the relative positions shown in Fig. 4, while their stocks are revolved as indicated by the arrows, through the belts to form the drum V. By this arrangement the lever *o* will so govern the cutters J, that they can be made to operate at any required vertical position.

On the extremity of the lever *o* is an index pointer, which traverses an arc P, so graduated from the top, that when the pointer rests on any division, the cutters J will be in the exact position to operate on boards whose width measured on the scale *k*, will be indicated by the number pointed out on the arc P. That is, if the board measure six inches on the scales *k*, the placing of the pointer O on the division of arc P marked six, will move the carriage M to such a position as will permit the cutters J to operate on the said six inch board.

The board is moved forward by means of the endless belt *m*, one of the cleats *n* pressing against the end of the board and carrying it through the machine; there are two of these cleats on the belt so as to admit of the successive operation of the machine.

The operation of my improvement is as follows: The board to be planed, tongued and grooved, is taken without preparation; that is, in the condition in which it leaves the saw mill, and placed on its edge by the

side of the belt *m*, and with its end inserted behind the roller *y*. The divisions on the scales *k* to which the upper edge of the board reaches is then noted. Should the ends be unequal in width, as is most generally the case, the lever *o* is moved until its pointer indicates the division of the arc P, shown by the narrowest end of the board on one of the scales *k*, and secured thereby permitting a pin in the lever to drop into one of the perforations of the arc, the spring of the lever preventing the removal of the pin.

The machine being in motion the cleat *n* will carry the board forward in the usual manner, beyond the facing wheel A, and between the two sets of cutters J whose stocks G rotate as shown by arrows in Fig. 4, causing said cutters to form a groove on each side of the board to a depth depending on the protrusion of the cutters, which is regulated to the thickness of tongue required. The parts *c* of the cutters, at the same time make deeper incisions in the board and separate all above the grooves from the tongue, which receives from the cutters a smooth rounded edge. The waste or taper passes from the cutters with the board, which having been grooved and jointed, simultaneously with the above operation, by means of the cutters *e* and *d*, is thus perfectly faced, reduced, tongued, grooved and jointed during its passage through the machine.

As the board leaves the reducing and tonguing cutters, the cleat *n* on the opposite portion of the belt *m*, comes in contact with the small stud m^2, on the rock shaft T, slightly turning said shaft in the direction of the motion of the cleat, and thereby expanding the spring o^2 which connects the shaft with the frame of the machine. This spring by its contraction when the stud slips from the cleat, causes the hammer n^2 on an arm of the shaft T, to strike the ball U and thus announce the finish of the board.

A second board without reference to width having been placed as before described in front of the scales *k*, as soon as the first board has passed behind the roller *y;* its width is noted, and the instant the finish of the preceding board is announced as above described, the lever *o* is adjusted to the width of the second board, while the cleat which caused the announcement that the reducing cutters were disengaged reaches the end of the board and carries it forward with the results before set forth. And thus the operation continues, boards of any width following each other in quick succession, and by the before specified combination of devices being reduced, tongued and grooved, without the necessity for previous selection and reduction, or the adjustment of the machine to any particular width of lumber, the machine being capable of successful operation on boards of any width that may be submitted to it.

My improvement has been described as applied to machines with rotary cutters, but it is equally applicable to those constructed with stationary cutters with suitable modifications to adapt it to the change in the structure of the machine and the difference in the modes of operation.

The improvement may also be adapted to horizontal machines as well as the one above described.

Having thus fully described the objects of my improvement, and set forth the means I employ, and the difference between the operation of my machine and those now in use, I wish to be understood that I do not claim any particular form, size, or number of the mechanical devices; neither do I limit myself to any exact combination or arrangement of the same, so long as the objects are obtained without changing the principle of operation.

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

The combination and arrangement of the following mechanical elements for the purpose of preparing or reducing and tonguing plank or boards, whether in combination with planing or grooving the same or not;—that is, the adjustable cutter carriage H, carrying the reducing and tonguing cutters J, graduating lever *o*, segmental scale P, and scales *k k*, with the indicating apparatus T, U, n^2, or their equivalents, when arranged and combined for the objects herein set forth.

In testimony whereof, I have hereunto signed my name before two subscribing witnesses.

CYRUS B. MORSE.

Witnesses:

GEO. PATTEN,

A. WAGER.