

B. Langdon.
Planing Mach.

No 555.

Patented Jan. 9, 1838.

Fig. 3.

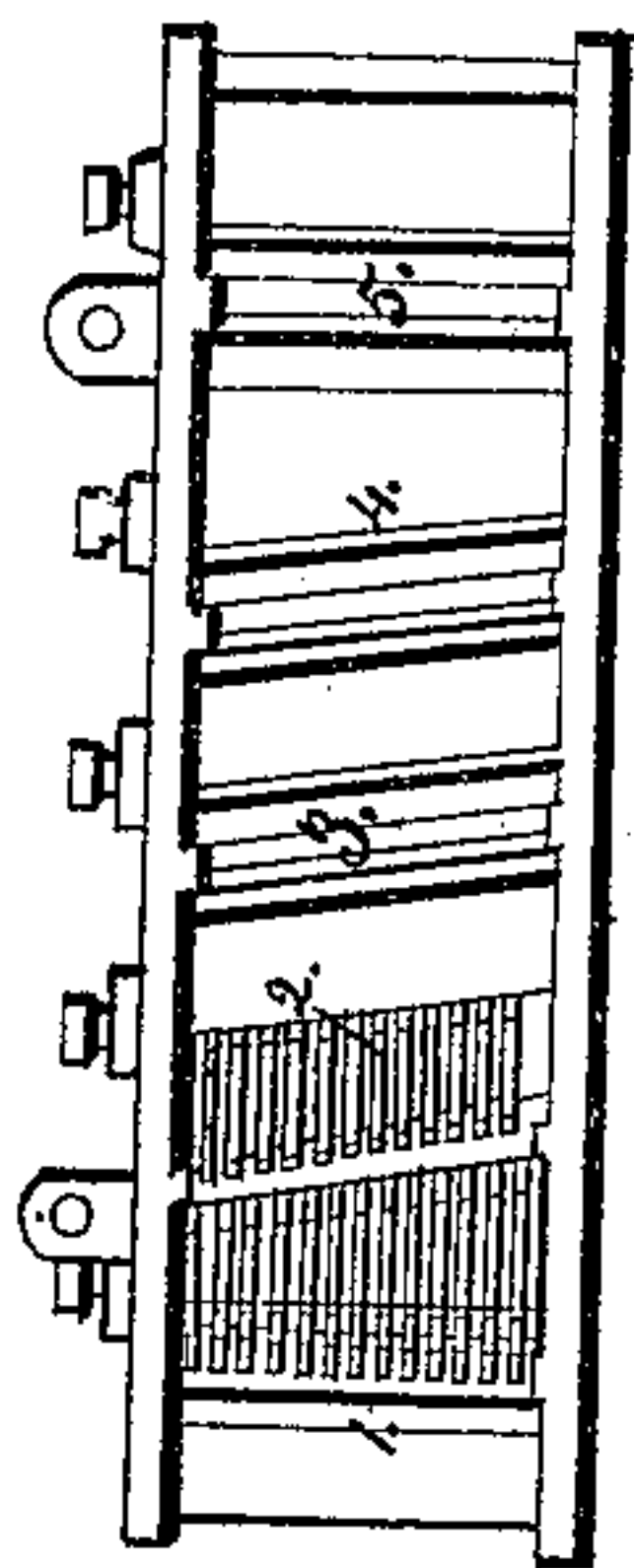


Fig. 2.

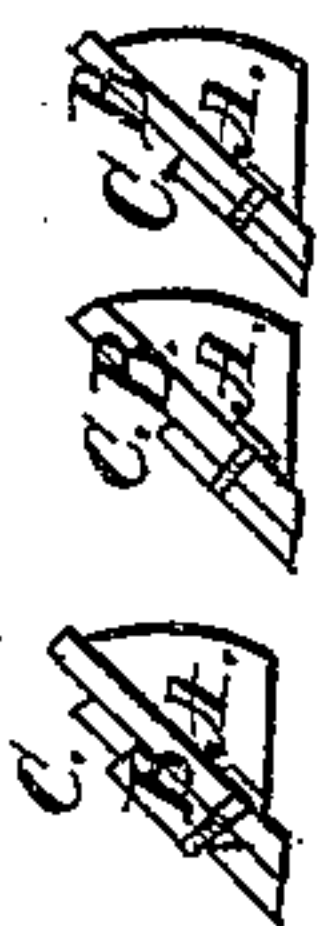
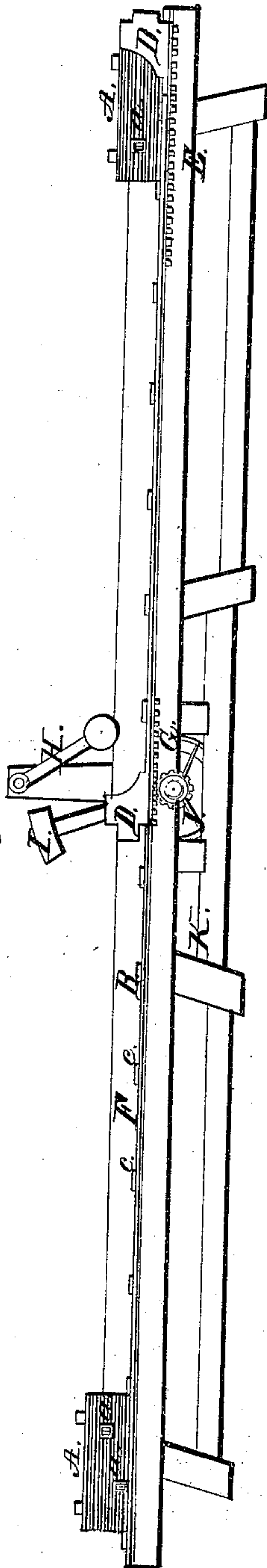


Fig. 1.



Fig. 4.



Witnesses.

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Henry O. Langdon.

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Fig. 5.

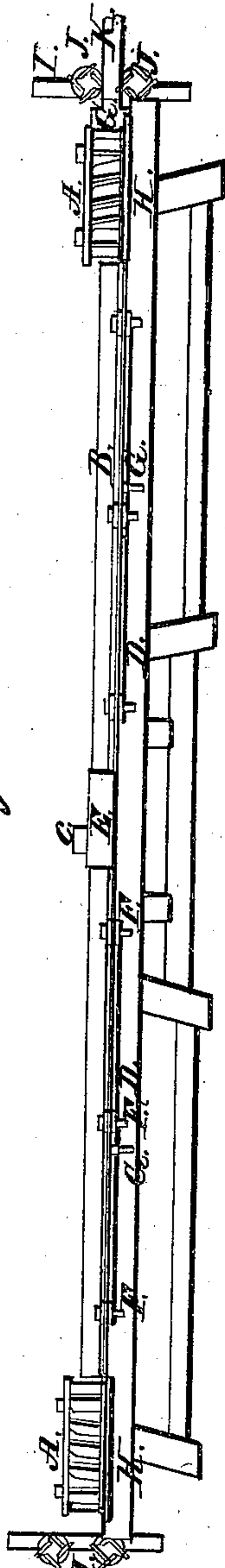
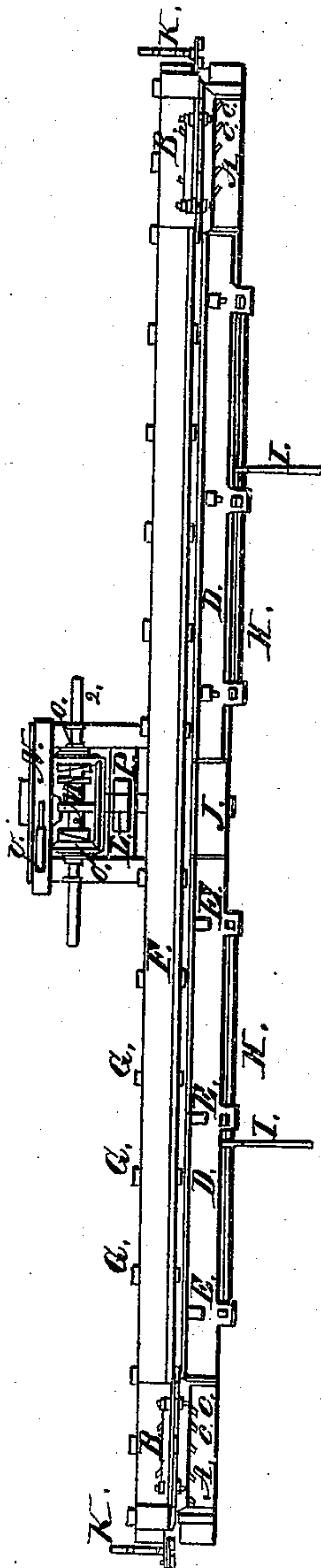


Fig. 6.



Witnesses,

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UNITED STATES PATENT OFFICE.

BARNABAS LANGDON, OF TROY, NEW YORK.

MACHINE FOR PLANING PLANK BOARDS AND CLAPBOARDS.

Specification of Letters Patent No. 555, dated January 9, 1838.

To all whom it may concern:

Be it known that I, BARNABAS LANGDON, of the city of Troy, in the county of Rensselaer and State of New York, have invented a new and Improved Mode of Planing Plank Boards and Clapboards; and I do hereby declare that the following is a full and exact description.

The nature of my improvement consists in providing machinery that in its operation will produce an horizontal reverbratory movement by which the plank or board is driven in a lengthwise direction before a stationary plane stock set with cutters so as to plane and smooth the plank, reducing it at the same time to a required uniform thickness and also by providing an additional apparatus for the purpose, groove and tongue and straighten its edges, all at one operation. For these purposes the face of the plane which presents the edges of the cutting tools is in its crosswise direction to be fixed vertically and by means of a vertical plate fixed at such distance from it as shall be equal to the required thickness of the plank. One side of the plank is borne and kept against the face of the plane while it is shaved through by a steady progressive movement from end to end between them, the reverbratory movement which is to effect this operation being at least equal in extent to the length of a plank provision made for a like operation upon separate plank each way. This for plank or boards of ordinary length will require a frame about forty feet long and three feet high which may consist principally of two timbers of that length and about ten inches square with legs or other support. These timbers should be fixed about six inches apart their whole length.

The reverbratory movement for driving the plank may be produced by means of a rack and pinion at the center of the frame with such provisions by gears or otherwise in connection with the operating power for propelling the rack and giving it its back and forward movement as are commonly made and applied for like purposes. The rack E, (Figure 4) is to be about twenty feet long of cast iron and placed horizontally between the top timbers of the frame with its edges extended into grooves provided for them in their inner surface about two inches from the top and extending their whole length. The dimensions of the

grooves F, F, (Fig. 4) are to be such and the rack so fitted to them as to be well supported thereby and at the same time slide freely one way or the other in the direction of its length. The bottom surface of each groove may be lined with iron or other metallic plates to allow the rack to slide therein with greater ease or it may move upon friction rollers attached to the inside surface of the timbers.

Upon the top of the rack at each end there is to be an upright standard of iron for driving the plank or board. This should be about eighteen inches long horizontally and twelve inches high more or less and thinner than the end of the plank against which it is to be borne in the process. Each driver D, D (Fig. 4) is fitted into a dovetail and may be exchanged for one of a different size when required. Upon the top of the front top timber of the frame at each end a plane stock A, A, Fig. 5, is to be fixed, these are to be of cast iron about four feet long and fourteen inches high more or less. Opposite the each stock on the other top timber is to be fixed a cast iron plate A, A, Fig. 4, of the same length and about the same height. These plates in their crosswise direction are to be of a rectangular form, the angle running the entire length of the plate, one wing or side of which being in nature of a flange to the other is to be placed horizontally upon the timber extended so as to cover it in width and firmly secured to the timber. The other wing constituting the front and upright part of the plate for keeping the plank against the face of the plane should be brought forward to a center line of the frame. The face or front surface of this plate which is next to the face of the plane stock is to be grooved or fluted horizontally the grooves to be about an inch wide and an inch apart. This is for the purpose of reducing the surface of the plate and thereby lessening the friction. Two or more cutting tools a, a Fig. 4, should be fixed in the face of each of these plates for beveling one edge of clapboards on boards for siding as they pass through the machine and the other for trimming and straightening its opposite edge at the same time so as to fit them for being snugly and closely laid upon buildings &c without further preparation.

The plane stocks A, A, Fig. 5, are also to be secured in their place by means of a

plate extending out from the bottom of each and at right angles with the face of the plane, but as the plane stock is to be movable out and in, so as to be adjusted to the thickness of the plank or board to be planed slots extending in a crosswise direction should be provided in the bottom plate, through which it is to be fastened to the frame. There should also be a bed plate H, H, Fig. 5, of cast iron fixed upon the top timber of the frame with ribs or other provisions for the stocks to rest and slide upon. Each plane stock A, A, Fig. 5 and back plate B, B, Fig. 6, are to be secured together by two or more bolts passing through their top.

Each plane stock may contain five cutters or more *c c, c c*, Fig. 6. Four of the forward ones are to have the line of their cutting edges vertical. The others may be so inclined as to bring the top of the edges two inches more or less forward of a perpendicular line from the bottom of the same. This inclination is for the purpose of preventing the plank from raising up, at the same time giving a beveling cut to the plank in its operation. Each cutter may be fastened to a cast iron plate, B, B, Fig. 3, about an inch thick fitted to a seat provided for it in the throat of the plane stock in which it is to be fastened by means of a screw at the top. Or they may be placed and secured therein without the plates. The cutters are to be fixed in the stock at an angle of about forty five degrees with its face or according to the slant usually given to the irons of the common joiner's plane. Upon like common principals also the size and shape of the throat or opening for each cutter is to be formed. Immediately forward of each throat, a cross section of the face of the stock about half an inch wide is to be left as a permanent bearing against the plank, to prevent the cutters from running into the grain of the plank or the plank from riding on to the cutter. And from the back side of each cutter or of the plate to which it is attached to the bearing forward of the next cutter in rear of the face of the stock is left concave or retreating by an inward inflection extending across the face of the stock and is to be deepest behind the cutter and terminating on the face line at the forward edge of the next bearing, for the purpose of allowing the plank to pass along with the greater ease from one bearing to the other cutter.

The edges of the first and second cutters are to be divided into narrow and separate sections or teeth each retaining its chisel or cutting edge about one fourth of an inch wide—leaving each when taken separately in nature of a joiner's plow plane. The space between the cutters is to be of the same width. This is to lessen the resistance

and also to prevent it from running into the grain of the plank or splitting it up. The face of the plane stock between these two lines of cutters is to be grooved or fluted horizontally so as to correspond with the surface of the plank as thus kept by the operation of the first cutter. The ridges in the plank passing in the grooves of the stock until they reach the next divided cutters which are to be so arranged as to take off the projections left by the first—and a trifle below—they being set so as to cut a little deeper for that purpose. This arrangement may be so extended upon the face of the stock it being lengthened for that purpose as to admit two or more sets of fluted cutters. The third or the fifth cutter being straight edged will take off the projections left and bevel the surface and those remaining to be passed will smooth it and a finishing polish will be given to it by the face of the stock at the end.

In order to guide the plank or board and keep it in a straight direction as it is shoved forward by the driver, two clamps for that purpose are to be provided and placed one between each plane stock and the center of the frame. These are to consist of a back board to be fixed upon the back timber of the frame with a smooth and perpendicular surface in front about ten inches high. This in order to answer as a back board B, Fig. 4, for each clamp may be extended from one back plate to the other upon the same line.

A clamp or slide as its counter part is also to be provided and placed on the front side of the frame of the same height as the back board and extending from each plane stock toward the center about sixteen feet or the length of a plank. The inner surface of each slide is to be like the back board with their faces smooth and perpendicular. Each slide D, D, Fig. 6, are to be movable out and in or to and from the back board. This motion may be effected by means of two small shafts H, H, Fig. 6, of nearly the same length of the slide, supported in fixtures attached to the frame below the slides, having two or more short arms attached to the shaft at different points, so that by turning the shaft one way or the other by means of the handles I, I, Fig. 6, attached to the shaft will enable the tender of the machine to press the plank or board against the back board and keep it in a perfect straight direction while entering and passing through between the plane stock and back plate.

In order to support the plank or board upon one edge when placed in the clamp, and allow it to be driven forward across slides G, G, G, Fig. 6, about six inches wide are to be provided and placed in grooves in the top of the back top timber in a crosswise direction the top of the slide raised about an

inch above it. These should be placed about two feet apart along its whole length, and extending through the back board and back plates at their lower edges so as to project forward of their front surface from one to two inches. Each slide is made movable lengthwise in its bed or groove and by means of a spring fastened to the back side of the frame so as to bear against the slide and is pressed forward to its projecting point, the plank or board being placed upon these projections is supported and carried forward upon them, the ends of each being so formed as to give back upon its spring as the driver comes against it either way and immediately returns to its station after it has passed.

The wheels or side cutters J, J, Fig. 5, for grooving, tonguing and straightening the edges of the plank or boards are secured upon each end of the machine in cast iron frames. Each wheel is attached to a horizontal shaft, one placed below and the other above the plank. The top wheel is so arranged as to be moved up or down according to the width of the plank to be planed. The position of the wheels are vertical secured upon the front ends of the shafts and operate upon each edge of the plank while passing through the stocks. A pulley is placed upon the back end of each shaft and the wheels are driven by means of leather belts from the operating power of the machine. The wheels are made of cast iron or other metal, with seats or projections cast upon the front or face side containing five or more sets of cutters, the edges of which are parallel with the shafts or at right angles with the face of the wheels. Each of these seats is provided with a slot or mortise to admit of three cast steel cutters set in such a manner in the top wheel as to form the tongue upon the edge of the plank and in the lower

wheel to form the groove. Upon the top of each set of cutters is placed a cap or double iron which prevents the edges of the plank or board from breaking or splitting up, they being set in the face of each wheel so as to strike the edge of the plank at an angle of about forty five degrees or that of a joiner's plane thereby making a straight, smooth and finished groove and tongue. The caps and the cutters are secured in their place by means of a set screw upon each cap and upon the front side against the cutters.

What I claim of the above described improvements and desire to secure by Letters Patent are—

1. The grooves or channels in the face of the plane stocks with the arrangement of the cutters corresponding with the grooves whereby the extra thickness of a plank or board is taken off or reduced with greater ease and effect, the particular arrangement and construction of the plates or slides to which the cutters are fastened, the clamps with the back plates for guiding the plank or boards and keeping them in a straight direction, the cross slides with their springs for supporting the plank in the operation of planing.

2. And I also claim the general combination of the parts of the machine taken as a whole, for although many of the parts taken individually are not new, yet the machine as above described is sufficiently characterized by the arrangements of its respective parts, whether old or new, to distinguish it from others previously constructed for the same purpose.

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Witnesses:

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HENRY D. LANGDON.