(No Model.) 2 Sheets—Sheet 1.

T. S. CRANE.

STRAIGHTENER FOR BOARD CUTTING MACHINES.

No. 425,988. Patented Apr. 22, 1890.

Fig. 3.

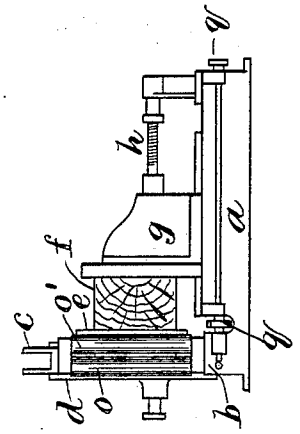


Fig. 1.

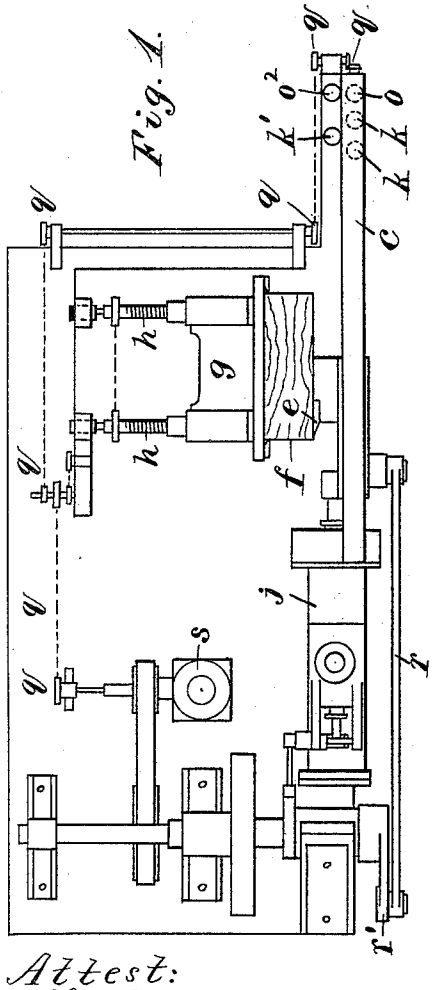
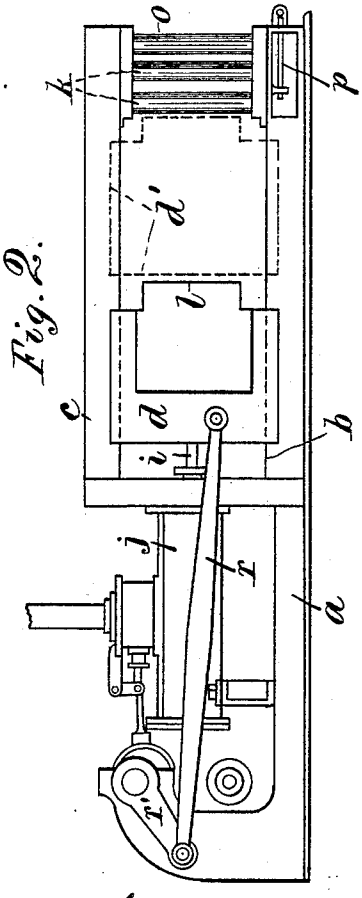


Fig. 2.



Attest:
L. Lee.
F. C. Fischer.

Inventor.
Thomas S. Crane, per
Crane & Miller, attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

T. S. CRANE.

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Fig. 5.

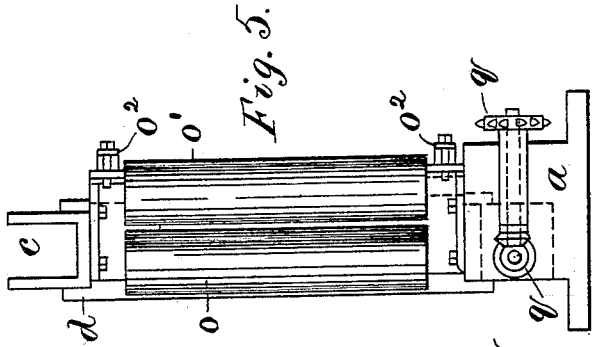


Fig. 6.

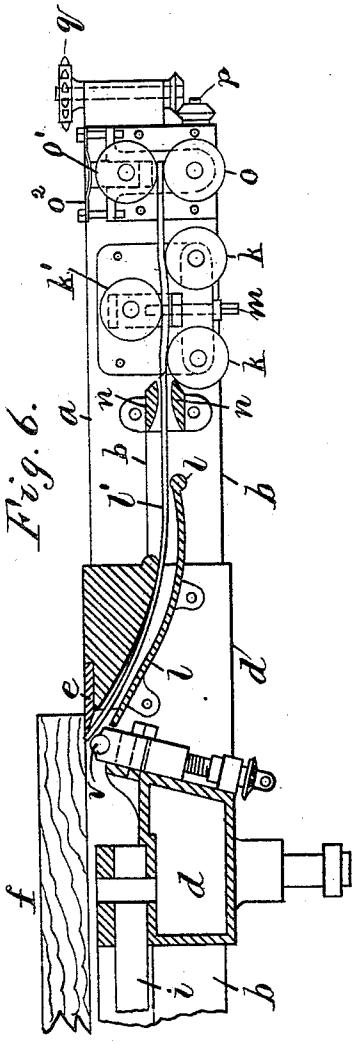
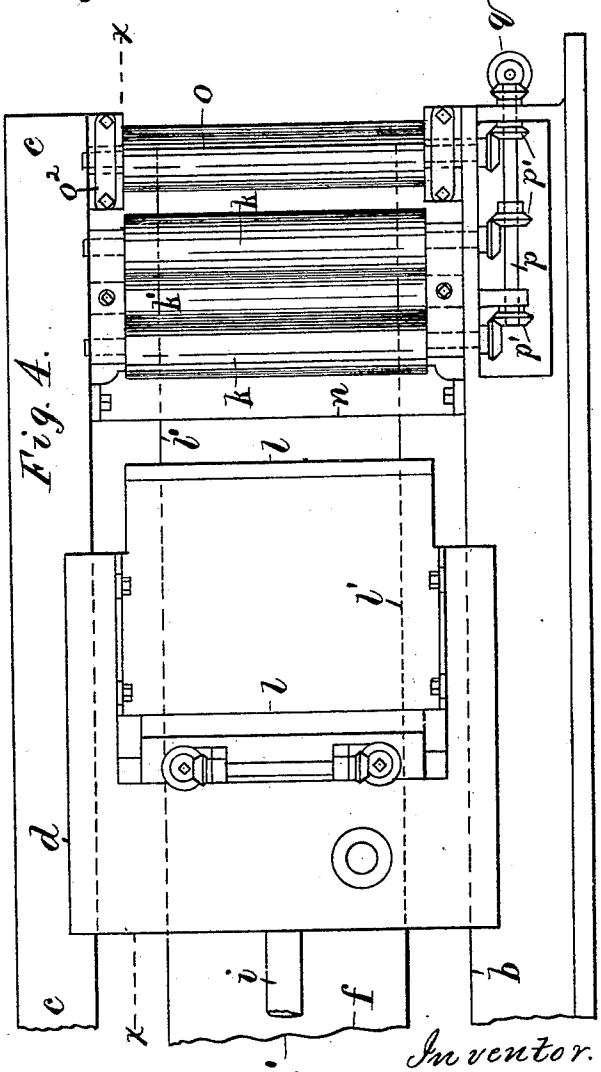


Fig. 4.



Attest:
L. Lose.
F. C. Fischer.

Inventor.
Thomas S. Crane per
Crane & Miller, Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS S. CRANE, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO EDWARD BRADLEY, OF NEW YORK, N. Y.

STRAIGHTENER FOR BOARD-CUTTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 425,988, dated April 22, 1890.

Application filed September 5, 1889. Serial No. 323,083. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. CRANE, a citizen of the United States, residing in the township of East Orange, in Essex county, New Jersey, have invented certain new and useful Improvements in Straighteners for Board-Cutting Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in the combination, with a reciprocating carriage operated to move a knife back and forth over the surface of a log, of a chute attached to such carriage to deliver the boards therefrom in a given path, and straightening-rolls mounted upon the frame of the machine adjacent to such chute, at the extreme end of its stroke, to reverse the curvature given to the boards by the knife.

The invention is shown herein applied to a machine having the knife-carriage reciprocated by direct connection with a steam-piston rod, as in my patent, No. 379,451, dated March 13, 1889.

In the drawings, Figure 1 is a plan of the machine with many of the smaller details of construction omitted. Fig. 2 is a front elevation of the same, and Fig. 3 an end elevation of the same adjacent to the straightening-rolls. Fig. 4 is a front view of the knife-carriage and the ways and straightening-rolls adjacent thereto. Fig. 5 is an end view of the same parts, and Fig. 6 is a plan in section on line x x in Fig. 4. Figs. 4, 5, and 6 are upon a larger scale than the other figures to show the details of the invention more perfectly.

As the class of machine to which my invention is applicable is already well known, it is only requisite that I should describe the same briefly to show the function of the straightening-rolls, which, mounted upon the ways independently of the reciprocating knife-carriage, constitute the novelty in my present construction.

In the drawings, a is the bed of the machine, sustaining the lower way b and upper way c, to which the knife-carriage d is fitted.

e is the knife; f, the log to be cut thereby; g, the stay-log, and h the feed-screws for operating the same.

j is a steam-cylinder, and i its piston-rod attached to the knife-carriage to reciprocate the same in the ways b and c. The carriage is shown in full lines near one end of its stroke at the close of a cut, in Figs. 1 and 2, and in dotted lines d' at the extreme opposite end of its stroke adjacent to the straightening-rolls k'. The carriage is connected by a rod r with a crank r', adapted to regulate its stroke, and the crank is shown connected by suitable gearing with an auxiliary engine s, to prevent its sticking upon the centers, as claimed in my above-mentioned patent.

l is a chute upon the knife-carriage, adapted to divert the boards backward in a line with the ways b and c when cut by the knife e, as shown in Fig. 6.

To prevent the splintering of the wood, a pressure-roll v is shown in Fig. 6, sustained adjacent to the edge of the knife, which roll is liable to hold the end of the board when finally cut from the log, as shown in Fig. 6, so that the board will not fall from the knife-carriage, and provision is therefore required to pull the board away from the roll v. The straightening-roll k' upon the rear side of the board is made adjustable by means of sliding boxes actuated by screws m, and flaring guides n (shown only in Figs. 4 and 6) may be provided adjacent to the straightening-rolls to direct the end of the board between the same.

Adjacent to the straightening-rolls are two auxiliary rolls o o', the latter having movable boxes pressed by spring o^2 to give it an elastic grip upon the board. The shafts of all these rolls are extended adjacent to a shaft p, which is connected to them all by bevel-gears p', and the shaft p is connected by suitable chain and cogged gearing q with the auxiliary engine s, so as to rotate the rolls at a suitable uniform surface-speed.

It will be understood that the knife, being of wedge shape, operates in planing a board from the log to curve the same outwardly from the log, and that such curve in the board may be corrected by bending the board in an opposite direction before its fibers have "set" in a bent position. The portion of the board between the rolls k is shown thus curved in a reverse direction by the adjustable roll k', the

effect of such curvature being to straighten the board, as desired.

The operation of the apparatus is as follows: The knife-carriage when moved to the position shown in Figs. 1 and 2 cuts a board l' from the log f and holds the same in the chute until the motion of the carriage is reversed, when the chute carries the board to the straightening-rolls and delivers the same thereto. The straightening-rolls are rotated at such speed as to take the board from the knife-carriage as the latter completes its stroke, the rolls operating to pull the board from the grip of the roll and knife upon the knife-carriage as the latter comes to rest at such time. The auxiliary rolls o o' are intended to operate as feed-rolls for delivering the board to a conveyer or any other device, such rolls being desirable even if the board is merely to be thrown from the machine as they press upon the board opposite to one another, and therefore deliver the board straight, which could not be done by the roll k'.

In my patent, No. 410,403, dated September 3, 1889, I have shown delivery-rolls upon the knife-carriage, which could only be rotated by a wheel rolling upon a fixture attached to one of the ways. Such construction cannot be made of great strength, whereas the mounting of the straightening-rolls in bearings fixed upon the frame enables me to rotate them by suitable connections q to the engine s and to make them of any desired proportions.

In using the delivery-rolls o o' upon the frame I employ mechanism claimed in the last-named patent, and I therefore disclaim such patent herein.

I also disclaim any straightening-rolls mounted upon the reciprocating carriage, or any rolls to bend the wood laterally as soon as it is cut for making barrel-staves, as both such devices are old.

Having thus set forth the nature of my invention, what I claim herein is—

1. In a board-cutting machine, the combination, with the reciprocating knife-carriage, its ways, and their supporting-frame, of a chute attached to the knife-carriage to deliver the board from the same in a given path, and adjustable straightening-rolls mounted upon the frame adjacent to the chute at the extreme end of its stroke, and operating to straighten the boards by reversing their curvature given to them by the knife, substantially as herein set forth.

2. In a board-cutting machine, the combination, with the reciprocating knife-carriage, its ways, and their supporting-frame, of a chute attached to the knife-carriage to deliver the board from the same in a given path, adjustable straightening-rolls mounted upon the frame adjacent to the chute at the extreme end of its stroke, and gearing for rotating the straightening-rolls to deliver the boards from the chute and to reverse their curvature given to them by the knife, substantially as herein set forth.

3. In a board-cutting machine, the combination, with the reciprocating knife-carriage, its ways, and their supporting-frame, of a chute attached to the knife-carriage to deliver the board from the same in a given path, adjustable straightening-rolls mounted upon the frame adjacent to the chute at the extreme end of its stroke, a pair of auxiliary rolls arranged beyond the straightening-rolls, and gearing for rotating the straightening and auxiliary rolls at the same surface-speed, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS S. CRANE.

Witnesses:
L. LEE,
H. J. MILLER.