S. SWARTZ & J. R. CROSS.
Wood-Bending Machine.

No. 198,780. Patented Jan. 1, 1878.

Fig. 1.

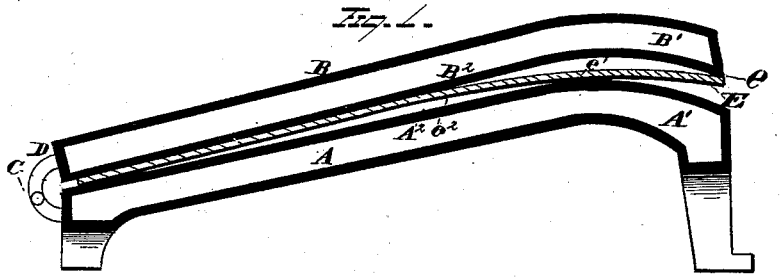


Fig. 2.

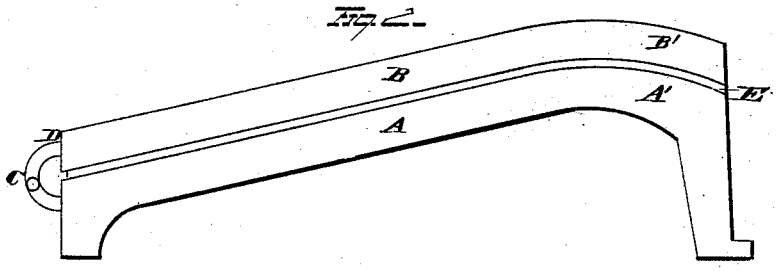


Fig. 3.

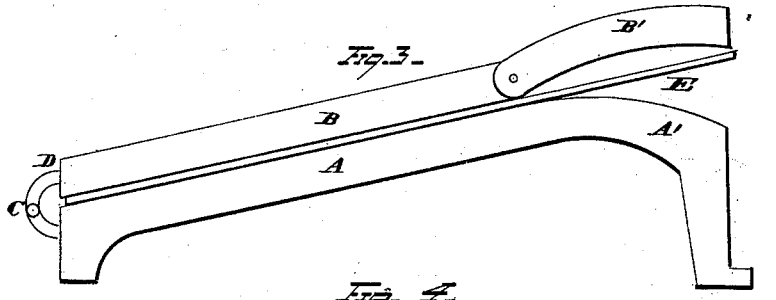
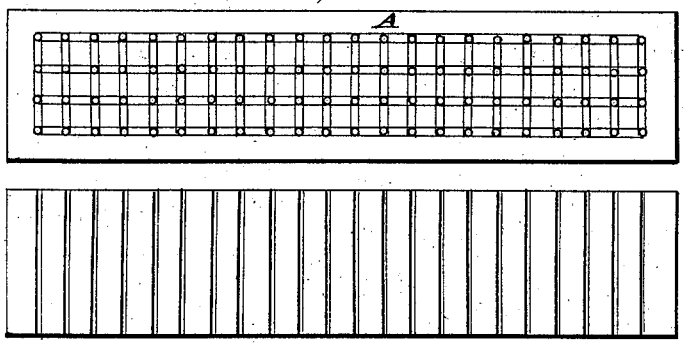


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL SWARTZ, OF BUFFALO, NEW YORK, AND JOHN R. CROSS, OF CLEVELAND, OHIO.

IMPROVEMENT IN WOOD-BENDING MACHINES.

Specification forming part of Letters Patent No. **198,780**, dated January 1, 1878; application filed July 16, 1877.

To all whom it may concern:

Be it known that we, SAMUEL SWARTZ, of Buffalo, Erie county, New York, and JOHN R. CROSS, of Cleveland, Cuyahoga county, Ohio, have invented certain new and useful Improvements in Bending-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to a new and improved bending-machine for bending coffin sides and other like pieces.

It consists in new machinery for bending such pieces of wood.

In the drawings, Figure 1 is a longitudinal central section of a machine embodying our invention as the same appears when partially closed upon the wood. Fig. 2 represents the same in side elevation when completely closed upon the wood. Fig. 3 represents a variation of our invention, wherein one leaf or die is made in two sections. Fig. 4 represents a plan view of one of the plates or dies.

Heretofore in bending coffin sides and other similar pieces it has been customary to employ the bending-machine only upon that portion which is to be bent, leaving that portion which is to remain straight outside of the machine; but this process frequently causes the straight portion outside of the machine to become warped or bent out of shape; moreover, the strain coming entirely and at once upon the bent portion, frequently causes it to sliver and break; but by our machine and process the coffin side or other similar piece is taken in its separate form, and the whole piece, including that which is to remain straight, is placed between the bending-plates, so that when the material emerges from the machine it has the proper bend, and at the same time the straight portion has been rendered perfectly straight and smooth, and has been set in that position.

A is the lower bed or platen of a bending-machine; B, the upper bed or platen. C is a joint. D is a steam-pipe. These platens are preferably made hollow, so that steam may enter and heat the same. A^1 B^1 form the bent portions of the machine, and give form to the corresponding bent portions of the coffin side.

E is a coffin side being subjected to the operation of bending in our machine.

The operation of the machine is substantially as follows: The whole length of the material to be bent is introduced between the platens; the straight portion rests between the straight portions A^2 and B^2 of the platens, while that portion which is to be curved rests between the curved portions A^1 and B^1 of the platens if the board has been previously steamed, and the machine is designed simply to set the whole board into shape; then the platens are simply brought together, and the board held until it is set to its new shape. Or the board may be placed between the platens in a steamed or soft condition, and the platens being of that character known as "hollow" or "hot" platens, provided with grooves and orifices on the face for the escape of steam generated and set free from the wood, the platens are brought together and held until the moisture has been practically expelled and the wood set to its new shape. Or the platens may be of that character known simply as "hot" platens, having smooth surfaces, and designed to operate upon wood in its ordinary condition, In this event the platens are brought together and held in contact with the wood for a short time, when the wood will set permanently to its new shape.

In each of these cases the straight portion has been subjected to pressure, and has been made perfectly straight and true, while the bent portion has also simultaneously been formed. Boards which, on account of bad knots or blemishes, may have warped out of shape or have assumed such a condition as to be workable only into a cheap and rough article, may be, by this process, worked directly into jobs that require true or smooth material. By thus introducing the whole length of the board into the machine, both the straight portion and the curved portion, the bending is not so liable to injure or sliver the material along the bent portions, because, as the platens begin to operate upon the board, the pressure at *e* brings the part e^1 in contact with the lower platen, and at the same time causes the part

e^2 to lift from the platen, thus first distributing the strain from the point e to the point e^2. Then as the platens further approach each other this long bend and the strains created thereby are gradually accumulated along the bent portion, so that the strain has been gradually and in part sustained by the whole length of the board.

It is not absolutely essential, however, that the platens should be so arranged as to thus gradually distribute the strains, for the upper platen may, as shown in Fig. 3, be formed in two parts, hinged, as shown. In this way the straight portion may be first clamped and pressed between the platens, and then afterward the curved portions be brought together, the result being substantially the same, except that in the latter case the strain would have to be borne solely by the curved portion, and not by the whole length of the board, as above described.

It will be understood from the foregoing that we do not limit ourselves to any particular kind of press. We may have simply press-plates, or the press-plates may be adapted to be heated either by hot air or by steam. So, also, they may have smooth pressing-surfaces, or those surfaces may be grooved or channeled for the escape of moisture from the wood that is being operated upon.

Ordinarily a coffin side is subjected to pressure, during bending, only at the bent portions, and the resulting coffin side is rough and uneven along the straight portions, and unless the board is of remarkably clear and good quality, the straight portions appear warped and require considerable manipulation to render them fit for use; but when a coffin side has been bent and pressed throughout its whole length, as by our process, the resulting board is not only true and uniform along the bent portion, but is perfectly flat, even, and true along the straight portions, and is thus readily distinguished at a glance by these features from coffin sides as heretofore made. Moreover, the effect of the pressure of wood between hot plates or platens is to give it a smooth and hard appearance, not possessed by portions that have not been thus subjected to pressure; as, also, it possesses the marks of the press, by any of which several distinctive features it is readily distinguished in the market.

What we claim is—

1. A steam or hot press for shaping coffin sides consisting of platens A B, provided with curved portions A^1 B^1 and straight portions A^2 B^2, for receiving and simultaneously operating upon the whole length of the coffin side, substantially as described.

2. In machinery for bending wood, the combination, with the hollow platens, of the jointed steam-pipe connecting them, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL SWARTZ.
JOHN R. CROSS.

Witnesses:
FRANCIS TOUMEY,
WELLS W. LEGGETT.