



# UNITED STATES PATENT OFFICE.

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## IMPROVED MACHINE FOR BENDING WOOD.

Specification forming part of Letters Patent No. 33,467, dated October 8, 1861.

*To all whom it may concern:*

Be it known that I, ENOCH ROBINSON, of Raynham, in the county of Bristol and State of Massachusetts, have invented an Improved Machine for Bending Wood; and I do hereby declare the same to be fully described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 denotes a front elevation, Figs. 2 and 3 vertical and central sections, and Fig. 4 a top view, of my said machine. Fig. 5 denotes a side view of the mold or former as removed from the bed-plate and with a shovel-handle molded into its required form. Fig. 6 is a longitudinal section of the same.

The nature of my invention consists in the combining with the former or mold for forming the article two spring supporters or compressors, the latter being arranged with respect to the bed-plate, the sliding carriage, and the former in manner as will be hereinafter described, and so as to prevent the separation of the fibers of the stick while being bent into the form described.

In the drawings, A denotes the table of the machine as supported upon two abutments B B'. From the said table there project upward two standards C C', which serve to support most of the operative parts of the machine.

D is a shaft which has its journals supported on bearings in the top parts of the standards C C'. The said shaft carries on one of its ends a pinion E, which engages with a gear F, disposed on the cranked driving-shaft G, as seen in Fig. 2, the said shaft G being supported in bearings formed in ears or projections *a a* extending up from the standards C C'. Furthermore, the said shaft G carries a bell-crank H, which is jointed to a pitman or connecting-rod I, the lower end of the said pitman being jointed or pivoted to the sliding carriage K, as seen in Fig. 1. The said carriage is formed with two grooves extending vertically through its two ends, which operate in conjunction with two ways or guides *b b* to guide the carriage K in its movements.

M is a stationary supporter or compressor, which not only extends vertically through a slot *f*, formed through the middle of the car-

riage K, but through another slot *g*, made through the upper part of the former, and leans against the top surface of the stick to be molded. The said supporter has its head supported or guided by a bridge or loop *o*, and such supporter is prevented from a too great downward movement by means of a pin *c* extending transversely through it, as seen in Figs. 1 and 2, while a spring *d*, coiled around the said supporter and having one end bearing against the shoulder *q* and the other end against the upper end of the loop *o*, serves not only to retain the said supporter in its proper place when the machine is not in use, but it serves to support the stick and the fibers of the wood to be molded from being ruptured during the process of being bent into shape.

M' is the lower supporter, the same being disposed so as to play vertically through a slot formed in the bed-plate A, and also through a corresponding slot formed through the lower half of the mold P, the said supporter bearing against the under side of the stick to be shaped. This supporter also, being formed in a similar manner to that just mentioned, serves to prevent the breaking of the fibers on the lower side of the stick while it is being bent in the machine. The lower part of the supporter M' extends down through a loop or projection *h*, arranged beneath the bed-plate, as seen in Fig. 1, a pin *i* serving to prevent a too great upward movement of the said supporter.

P P' are the two halves or parts of the mold or former, P being the upper and P' the lower part. The inner horizontal surfaces of each part are arranged on a line having the same curvatures that the piece to be molded is to have—that is, a line taken through the axis of the handle will coincide with the line formed by the joining of the two parts, and, moreover, each of the said parts has a semicircular groove *k k'* made longitudinally through it, such groove, when the two parts are brought together, being intended to embrace the piece of wood to be molded on all sides, as seen in Figs. 5 and 6. From each side of the lower part of the mold I extend upward two bars or standards *m m*, the same so embracing the mold on its opposite sides as to guide it in its

vertical movements. Through the top part of each I make two slots  $n n'$  for the reception of a bar  $o'$ , which is for the purpose of confining the two parts of the mold together when the article is first molded, in order that it may retain its desired form.

$R R'$  are two projections which extend vertically downward from the sliding carriage K or from arms SS, extending therefrom, as seen in Fig. 3, the same having their lower surfaces disposed in the same horizontal plane, so as to bear with equal force upon the upper part of the mold when forced down upon it.

Having described the construction of my invention, I will now describe its operation. If we suppose any article—a shovel-handle, for instance—to have been steamed and reduced to its proper size, it is then to be placed in between the two parts of the mold, the said piece to be molded resting on the lower supporter and in the groove formed in the lower half of such mold. Next the sliding carriage K is to be caused to descend and not only force the upper supporter M down, so as to act in holding the handle in position and prevent the fibers of the wood from being rup-

tured or displaced, but so as to bring the two projections  $R R'$  to bear with sufficient force upon the top surface of the mold or former to bring the piece to be molded into its desired form. The two supporters  $M M'$  are so constructed as to play freely in vertical directions, and while they press with sufficient force upon the wood near the parts which are to be bent to prevent breakage or displacement of the fibers while such stick is undergoing the process of being molded into shape they will yield so as to allow the two parts of the mold to be brought together as the article to be formed is brought into its desired form.

I claim—

The combination of the mold or former P P', the spring supporters or compressors M M', with the bed-plate and the sliding frame K, the whole being constructed, arranged, and made to operate together in manner and by means substantially as set forth.

ENOCH ROBINSON.

Witnesses:

CHAS. ROBINSON,  
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