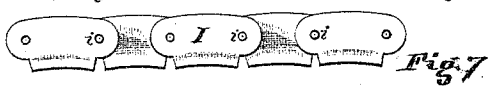
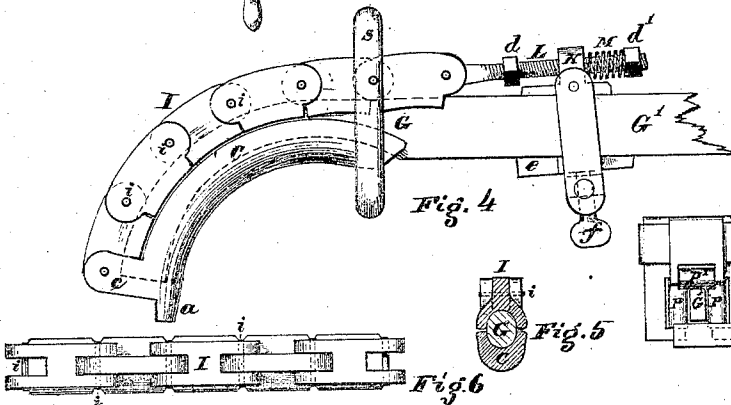
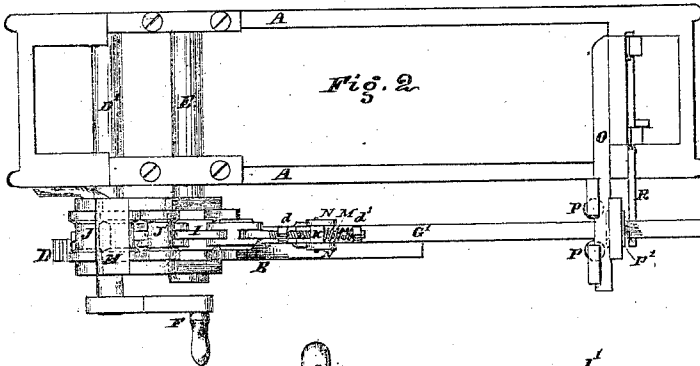
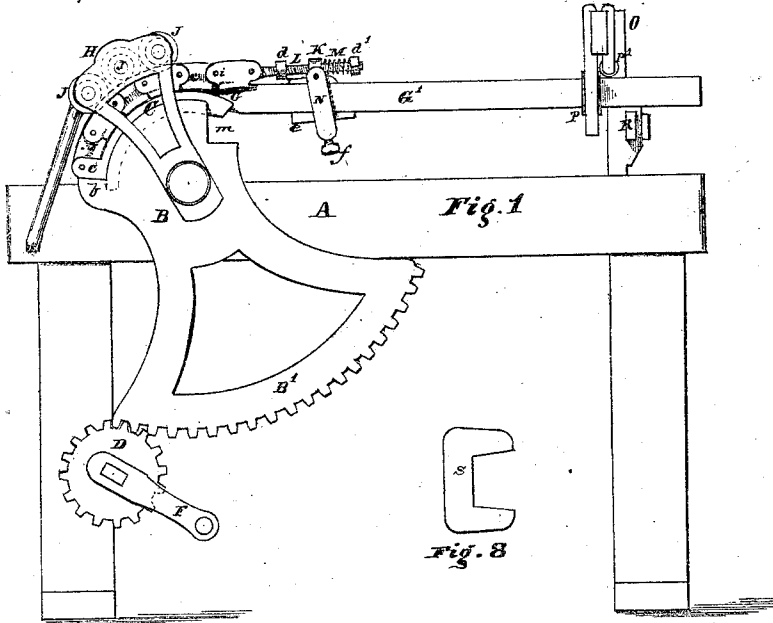


E. G. MATTHEWS.

Improvement in Wood-Bending Machines.

No. 114,171.

Patented April 25, 1871.



Witnesses
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Letters Patent No. 114,171, dated April 25, 1871.

IMPROVEMENT IN WOOD-BENDING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ELBRIDGE G. MATHEWS, of Oakham, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machine for Bending Handles for Plows and other Implements; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, in which—

Figure 1 represents a side view of my improved bending-machine;

Figure 2 represents a plan view of the same;

Figure 3 represents an end view, showing the guiding devices;

Figure 4 represents a side view of the bending-form and chain, and also shows the manner of securing the parts while the handle is drying;

Figure 5 represents a transverse section of the bending-form, chain, and handle;

Figure 6 represents a plan view of the chain when straightened; and

Figure 7 represents a side view of the chain when straightened.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists in certain improvements in machines for bending handles for plows and for other purposes, as will be hereafter explained.

The parts marked A in the drawing indicate the frame.

B is the bending-lever, provided at its upper part with a segmental groove to receive the bending-form C, and at its lower part with a toothed segment, B', which meshes with a pinion, D, by which lever B is operated.

The bending-lever B is supported upon the shaft E, arranged across the frame A, as indicated, and the pinion D is supported upon a shaft, D', and is provided with a crank, F, by turning which the bending-lever B can be swung back and forth to the extent of its segment B'.

The bending-form C is constructed of the proper shape and curvature which it is desired to give to the handle G, and its outer side is made to fit the groove at the upper end of the bending-lever B. It is provided with a projection, a, at its extremity, which fits into an opening in the lug b upon the lever B, and thereby retains the form in position.

The form C is also provided with ear-pieces c, between which the end of the peculiar compression-chain I is secured.

H is a head-frame, in which a series of flanged rolls, J, is arranged. These rolls J run upon the tops of

the chain-links to keep them in proper position and to press them firmly down upon the handle G during the operation of bending.

The head-frame H is secured to the shaft E, and also braced from the frame A, as shown.

A draft device is attached to the end of the chain I, for obtaining the proper amount of tension upon said chain. It consists of a shoe, K, which rests upon the handle-bar G', and through which passes a bolt, L, provided with nuts d d', one at each side of the shoe K, as indicated.

The bolt L passes loosely through the projection upon the top of the shoe K, and at one end it is pivoted to the end of the chain I, while upon its other end, between the nut d' and the shoe K, is arranged a strong coiled-wire spring, M, which spring receives the strain of the chain I, when it is drawn over the handle G, as the latter is being bent, and by being gradually contracted causes the chain to hug closely down upon the handle G, while at the same time it permits the necessary extension required by the outward curve of the chain.

The amount of tension upon the chain I can be regulated by changing the position of the nuts d d' upon the bolt L.

The shoe K is secured in position upon the handle-bar G' by means of links N, pivoted to the sides of the shoe K, and joined to each other by a cross-piece at their lower ends; the bar being passed between the shoe and cross-piece, the device is clamped thereon by a wedge, e, and set-screw f, in the manner indicated in the drawing.

O indicates a guiding-frame, provided with guiding-rolls P P' for guiding the rear end of the handle-bar G' during the process of bending; and

R indicates a slide-bar, which can be run out under the end of the handle-bar G' to support it between the rolls P P', all of which parts are constructed and arranged as shown in figs. 1, 2, and 3 of the drawing.

The links of the chain I are provided with flanges at their lower edges, and their under surfaces are hollowed out so that they will embrace the handle G in a perfect manner. It will also be noticed that the pins i, by which the links are pivoted together, are arranged in the upper part of the links, so that when the chain is curved in bending over the handles the under side of the chain is contracted or shortened, as may readily be seen by comparing the straightened with the curved chain, illustrated in figs. 4 and 6.

The result consequent upon the contraction of the chain is that the fibers of the wood upon the upper side of the handle G are pressed together and supported against the stretching forces, and are thereby prevented from slivering up, or from being strained asunder.

This peculiar construction of the chain is of great practical benefit, as it produces a saving of about one-third in the number of perfect handles produced over and above the number produced by the ordinary bending apparatus.

The operation of my improved bending-machine is as follows:

The bending-lever is swung back, so that the opposite end of the segment B' from that shown in the drawing will be at the pinion D.

The bending-form C, chain I, and draft device are arranged and secured upon the handle-bar in the proper position; the form C is then adjusted in the groove at the upper end of the bending-lever, the projection *a* being set into its opening, and the end of the former against the lug *b*.

The end of the handle-bar is placed between the guide-rolls P P', and supported upon the slide bar R.

The operator then, by turning the crank F, swings the bending-lever to the position indicated in the drawing, and thereby bends the handle to the proper form.

A clamp or key, S, (see Figure 8,) is then set onto the former and chain, a notch, *m*, being formed on the bending-lever B for its reception; the clamp S embraces the ends of the former and chain in the manner shown in fig. 4, and thereby holds them closely compressed upon the handle G, which latter is then

removed from the bending-machine and set away to dry, after which the former and chain are removed.

It will be understood that a series of chain-formers and draft devices is to be used when a large number of handles is to be bent, so that the handles will have sufficient time to dry before removing said devices from the handle-bars.

Having described my improved machine for bending plow and other handles,

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

1. The combination, with the grooved bending-lever B, segment B', and pinion D, of the head-frame H, provided with guiding and pressing-rolls J, former C, and chain I, substantially as and for the purposes set forth.

2. The combination, with the compressing-chain I, of the draft device, consisting of the bolt L, shoe K, nuts *d d*, spring M, links N, and set-screw *f*, substantially as and for the purposes set forth.

3. The combination, with the frame O, of the guiding-rolls P P' and supporting-bar R, substantially as and for the purposes set forth.

ELBRIDGE G. MATTHEWS.

Witnesses:

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