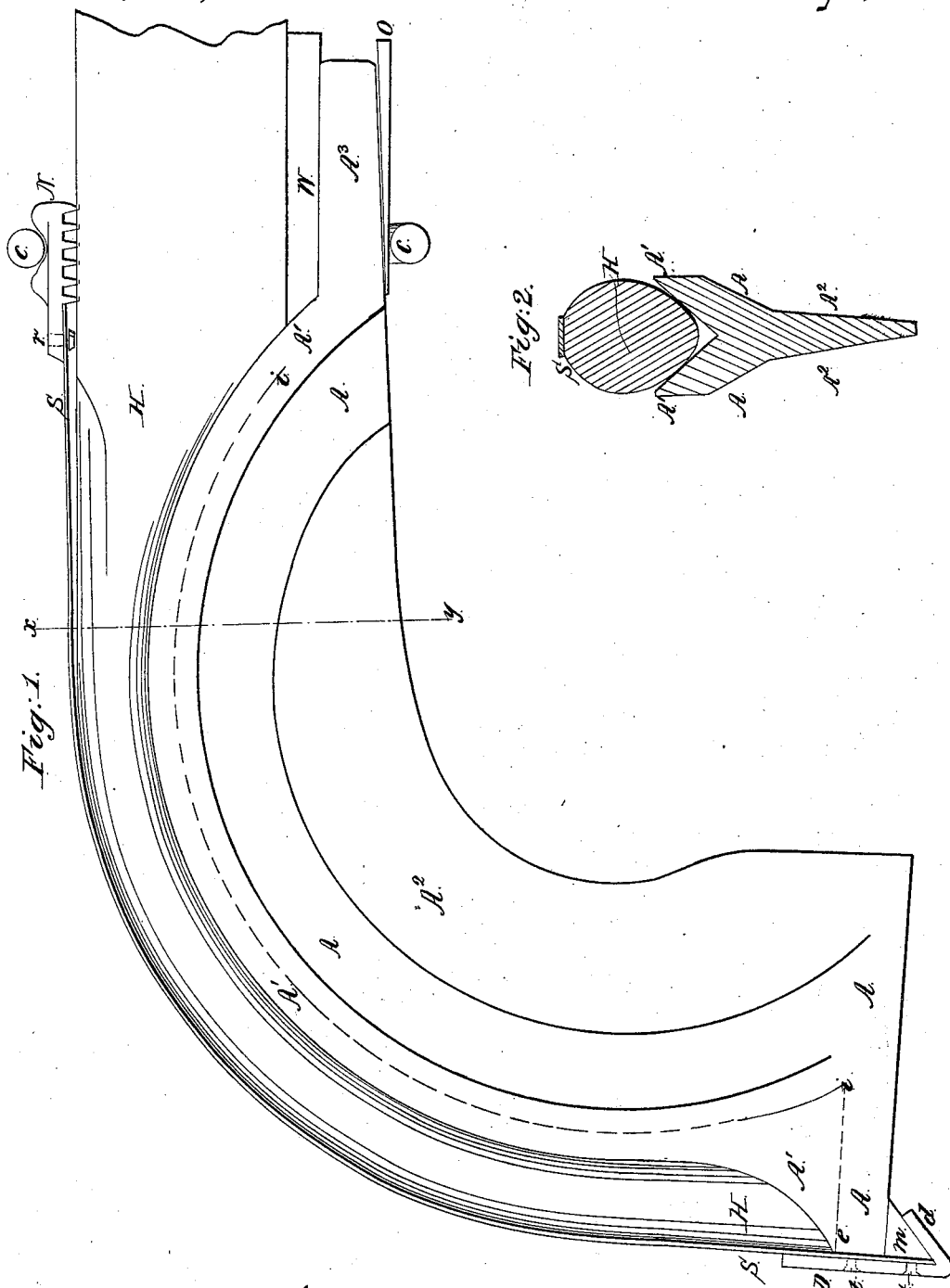


J. N. Ray,
Bending Wood,
No 54,405, *Patented May 1, 1866.*



Witnesses:
John D. Bloor

Inventor:
James N. Ray

UNITED STATES PATENT OFFICE.

JAMES N. RAY, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN MACHINES FOR BENDING WOOD.

Specification forming part of Letters Patent No. 54,405, dated May 1, 1866.

To all whom it may concern:

Be it known that I, JAMES N. RAY, of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Machines for Bending Wood; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of my improved machine, holding the bent gib of a plow-handle within it to illustrate the practical use of the machine; and Fig. 2 is a cross-section thereof, taken at *xy*, to illustrate more definitely the shapes, adaptations, and relative positions of the different parts of the machinery.

My invention is intended to cheapen and to render more perfect the process of bending short pieces of wood, such as plow-handles and buggy-shafts. It may be used in a groove or without a groove.

A, Figs. 1 and 2, represents the body of the former, which is novel only in the lug *m*. A' represents the sides of the groove of the former. A² is the internal flange of the former. A³ is the shank thereof. The dotted line *e* is the square end of the groove thereof, and sustains the end pressure of the wood. The lug *m*, upon the head of the former, is designed to afford temporary attachment of the strap S by the use of the clip-hook *d*.

The shank A³ is used to confine the heel of the former to the bent wood, by means of a clamp, until the wood has become set.

W, Fig. 1, is a common wedge, and is used to induct the nib N into the wood by drawing the clamp C upon the nib, as shown at C N, which it does by being driven under the shank of the former, as shown at H W A³, or on the shank of the former, as shown at C O A³, or by the use of two wedges, as shown at W and O. Generally the wedge will be used as shown at W; but when it is desirable to draw the strap heavily upon the wood, or when the space between the wood H and the shank exceeds the thickness of the wedge, it will be used as shown at O, and when the wood H does not sustain the shank A³ against the wedge at C O with sufficient force to indent

the nib N into the wood two wedges will be used, as shown at O and W.

H is the gib of a plow-handle, held in place to illustrate the practical use of the machine. The dotted line *i i* shows the inner edge of the plow-handle. The dotted line *e e* represents the end of the plow-handle.

S is a bending-strap or a back strap, used to bend the wood or to hold it securely after it is bent, or for both purposes. To one end of the strap is attached the nib N by means of the rivet *r*, and the other end is made temporarily fast to the former by means of the clip D *d*, or permanently attached thereto by the screws *t*, in which case the clip-hook *d* may be omitted.

C is a clamp formed of round iron, and is composed of two right angles, the two ends of which appear at *c*. Its office is to hold the shank A³ to the wood, and by means of a wedge driven between the wood H and the shank A³, as shown at W, or between the shank A³ and the clamp C, as shown at O, or by two wedges, as shown at W and O, to indent the wood with the edges of the nib N, and thus to anchor the nib end of the strap upon the wood.

To bend a plow-handle in my machine, lay the back strap in place in a bending-groove, lay the handle on the strap, place the former A upon the handle with the shank A³ elevated, push the handle up against the former at *e e* and sustain it from reacting by any means, draw down upon the shank A³ of the former until the shank rests on or near the wood, fix the clamp C C in place, and tighten with a wedge, W or O, or with both. Set the handle aside with the former until it becomes cool and set.

If the strap is made fast to the former at *t* the gib end of the handle may be put into place between the former and the strap before it is laid in place to be bent.

When the strap is used as a bending-strap the nib N is made to rest against some projection of the rigid groove or bed-plate, so that the nib end of the strap will be temporarily anchored, that the strap may sustain the end pressure of the handle at *e e*.

Having thus described my invention and

the mode of using it, I will now proceed to state what I claim as new therein and desire to secure by Letters Patent:

1. In a machine for bending wood, the former A, Figs. 1 and 2, when constructed as herein described and operated as herein set forth.

2. The combination of the former A, the

strap S, the nib N, the clamp C, and the wedge W, whether the wedge be used as shown at W or at O, substantially as and for the purposes herein set forth.

JAMES N. RAY.

Attest:

I. H. PHILLIPS,
JOHN D. BLOOR.