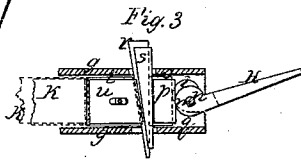
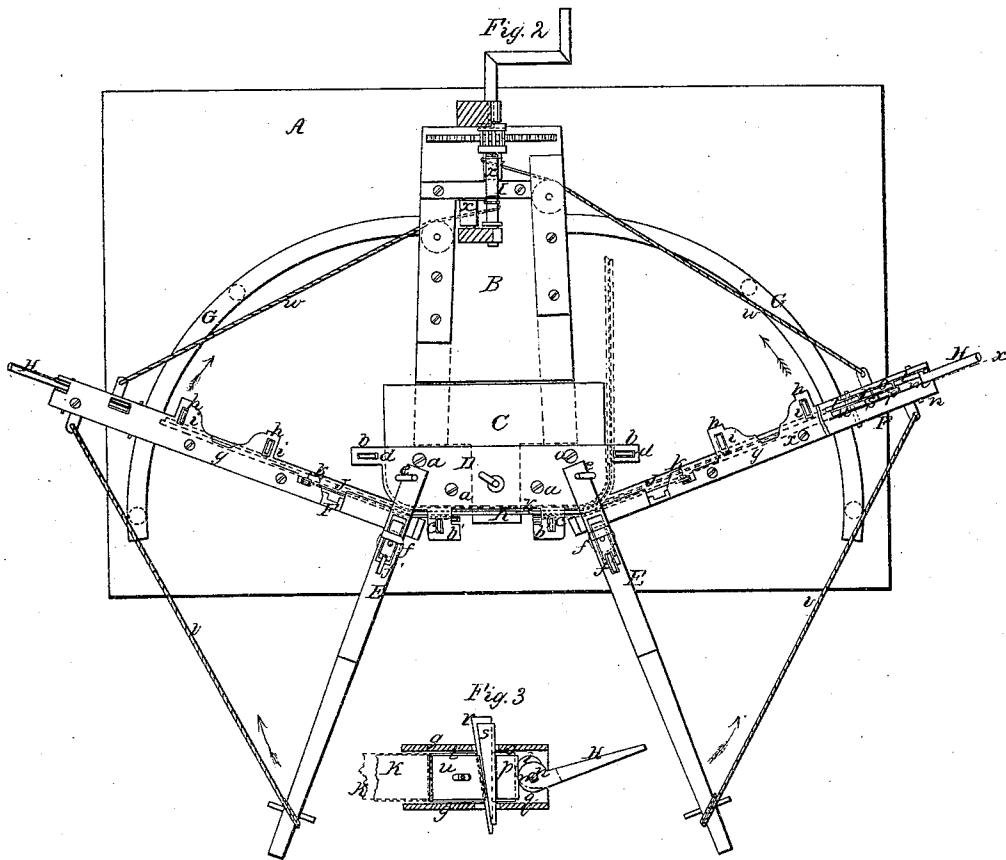
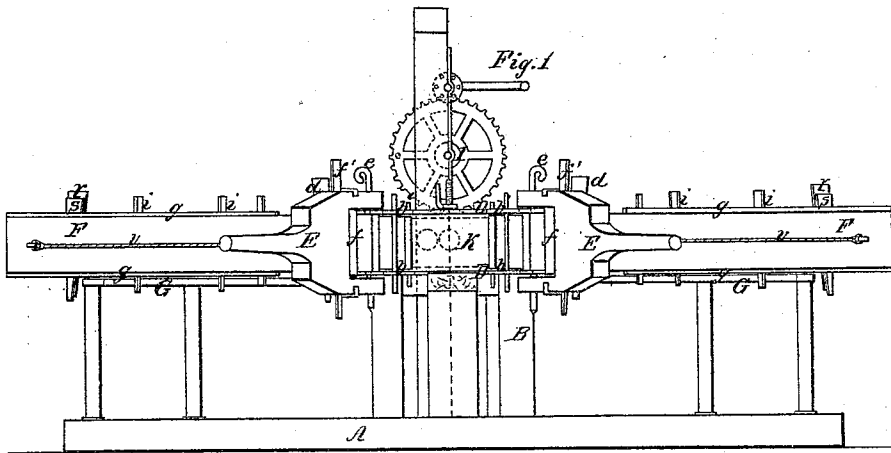


H. M^cDonald,
Wood-Bending Machine,
No. 178, *Patented Jan. 22, 1861.*
31, 182,



Witnesses
J. B. Wood
C. M. ...

Inventor
Hiram M^cDonald

UNITED STATES PATENT OFFICE.

HIRAM McDONALD, OF UNION SPRINGS, NEW YORK.

WOOD-BENDING MACHINE.

Specification of Letters Patent No. 31,182, dated January 22, 1861.

To all whom it may concern:

Be it known that I, HIRAM McDONALD, of Union Springs, in the county of Cayuga and State of New York, have invented a new and Improved Machine for Bending Wagon-Bows and other Articles of Wood; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an elevation of my invention. Fig. 2 a plan or top view of my invention. Fig. 3 a section of a portion of the same, taken in the line *x, x*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention has for its object the bending of steamed wood such as wagon bows, fellies, etc., into proper shape, by a very expeditious and simple means and in a perfect manner.

The invention consists in the employment or use of swinging or movable beds, in connection with pressure rollers, upsetting device, and straps, arranged essentially as hereinafter described, whereby the desired end is attained.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents the bed-piece or base of the machine, and B, is a block secured thereto in any proper manner. To this block B, there is attached at one end a mold C, around which the "stuff" is bent.

The drawings represent a machine for bending wagon bows and the mold C, corresponds in form to the bent portion of said bows.

To the upper and under sides of the mold C, there are secured by screws *a*, metallic plates D, D, and these plates have projecting lugs or ears *b, b'*, through which keys *c, c, d, d*, pass, and to the mold C, there are attached by pins or bolts *e*, levers E, E, each lever having a roller *f*, fitted in it near its inner end.

F, F, are beds the inner ends of which are fitted to the mold C, and within the levers E, E, at the inner sides of the rollers *f*. The outer parts of the beds F, rest on curved guides or supports G, G. The beds F, have metal plates *g*, attached to their upper and lower surfaces, and these plates have lugs or projections *h*, through which keys *i, i*, pass,

and said plates *g*, also have hook-shaped projections *h*, shown in Fig. 2.

In the outer part of each bed F, there are placed two eccentrics *l, m*, which are placed on a common axis *n*, each pair of eccentrics have a lever H, attached to them. The eccentrics of each pair have a slightly different position or form, *l*, being more prominent than *m*, as shown clearly in Fig. 3.

The eccentrics *l, m*, bear against sliding plates *o, p*, which are fitted in boxes *q*, at the outer ends of the beds F, F, and *r, s*, are keys which are interposed between the plates *o, p*, and slides *t, u*, which latter are also fitted in the boxes *q*, see Fig. 3.

The outer ends of the levers E, E, are connected by cords or chains *v*, with the outer ends of the beds F, F, and the outer ends of said beds have cords or chains *w*, attached which pass around rollers *x, x*, at the front part of the block B, and are attached to a windlass I, see Fig. 2.

J, J, are metal straps one end of which is fastened in the hook-shaped projections *h*, of the plates *g*, and the opposite ends fastened in the projections *b'*, of the plates D, D, see Fig. 2.

The operation is as follows: The wood K, to be bent, after being steamed, is fitted to the beds F, F, and secured thereto by the keys *i*. There are two strips K, K, of wood secured to the beds at the same time, the strips being placed side by side, or one within the other as shown in red in Fig. 2, and the ends of said strips bear against the slides *t, u*, in the boxes, the slides being brought up snugly against the ends of the strips K, by means of the keys *r, s*, the straps J, J, are then placed in proper position, one end being attached to the plates D, of the mold, and the other end to the beds F, F, and the straps J, J, are strained or drawn taut by driving up the keys *r, s*. When the strips K, K, are secured in proper position to the beds F, F, the windlass I, is turned and the beds F, F, with the levers E, E, are turned in the direction indicated by the arrows in Fig. 2, and the strips K, K, are bent around the mold C, the rollers *f*, bearing against the outer sides of the beds F, and keeping the strips snugly to the mold. The straps J, J, bear against the outermost strip K, at its curvatures. As the strips K, K, are bent, the eccentrics *l, m*, which serve as stops for "upsetting" the

wood are very gradually relaxed and as the outermost strip K, is necessarily longer than the innermost one it will be seen that the difference in the form of the eccentrics *l*, *m*, is important in order that the relaxing of the upsetting device will be the same for both strips, and both strips bent and "upset" in a uniform manner. The strips K, K, are shown bent at one side of the mold C, in blue. The rollers *f*, may be adjusted in the levers E, by means of keys *f'*. The arrangement of the eccentrics *l*, *m*, therefore greatly expedites the work or bending process, in fact just doubles the speed as two strips may be bent simultaneously, and the arrangement of the levers E, E, with their rollers *f*, and the beds F, F, insure the snug fitting of the strips to the mold.

When two strips K, K, are bent around one mold C, the former are secured to the latter by the keys *c*, *c*, *d*, *d*, and the mold C,

is removed, another secured to the block B, and the process repeated.

I do not claim broadly the "upsetting" of wood during the bending operation, that is to say, the preventing of a longitudinal separation of the wood at its outer or greater part of the curve, by compressing the fibers at the inner or shorter part of the curve, for such has been previously done. But,

I do claim as new and desire to secure by Letters Patent—

The eccentrics *l*, *m*, sliding plates *v*, *p*, slides *t*, *u*, and the keys *r*, *s*, placed at the outer parts of the beds F, F, and arranged substantially as and for the purpose herein set forth.

HIRAM McDONALD.

Witnesses:

LEW BENDRÉ,
M. M. LIVINGSTON.