2 Sheets—Sheet 1.

H. WINTER.

WOOD-BENDING MACHINE.

No. 186,779. Patented Jan. 30, 1877.

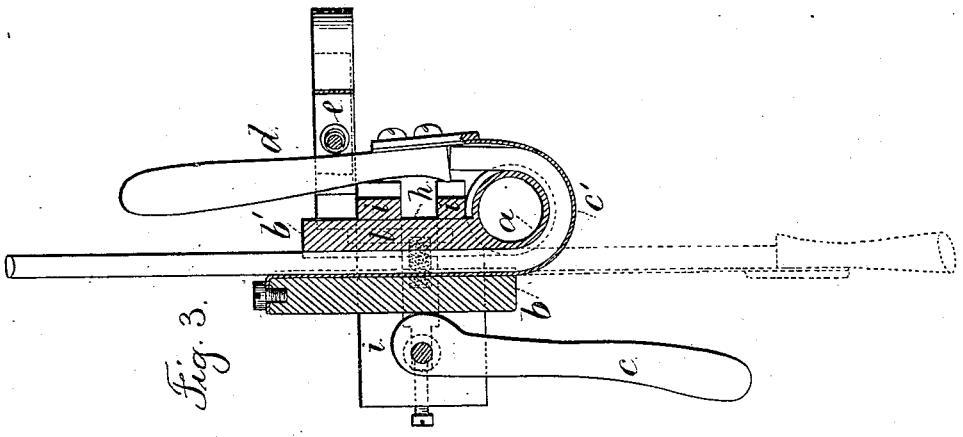


Fig. 3.

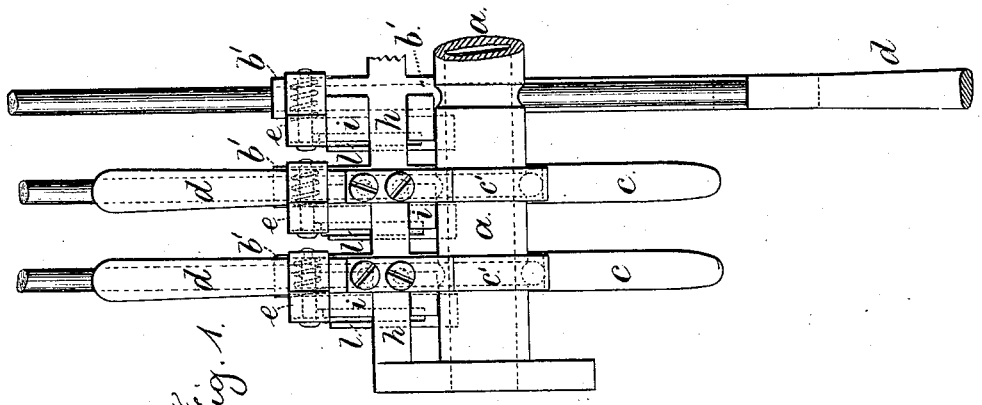


Fig. 1.

Witnesses,

Chas. H. Smith

Harold Serrell

Inventor

Henry Winter.

per Lemuel W. Serrell

Atty

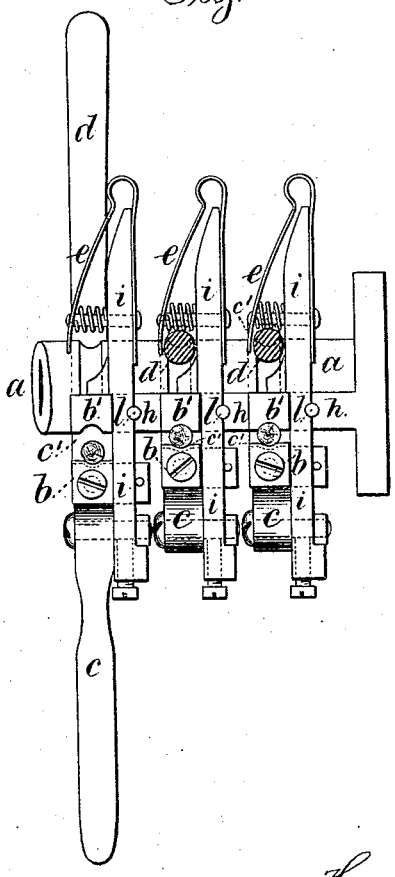
2 Sheets—Sheet 2.

H. WINTER.

WOOD-BENDING MACHINE.

No. 186,779. Patented Jan. 30, 1877.

Fig. 2.



Witnesses.

Chas. H. Smith

Harold Serrell.

Inventor

Henry Winter.

per Lemuel W. Serrell

Atty.

UNITED STATES PATENT OFFICE.

HENRY WINTER, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN WOOD-BENDING MACHINES.

Specification forming part of Letters Patent No. **186,779**, dated January 30, 1877; application filed November 11, 1876.

To all whom it may concern:

Be it known that I, HENRY WINTER, of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Wood-Bending Machines, of which the following is a specification:

Various kinds of wood have been bent in clamps while in a softened condition produced by hot water or steam, and the clamps have been heated in some instances, and in other instances the wood and molds have been placed in a drying-chamber, in order that the moisture of the wood may be evaporated.

I make use of a pipe heated preferably by superheated steam, and there are peripheral grooves in this pipe, and a frame of bars projecting from the same connected by cross-bars, and the clamps that hold the wood are upon movable plates that hook into these bars, and pins retain them in place. By this means different clamps can be applied to the pipe.

In the drawing, Figure 1 is a plan of the apparatus employed. Fig. 2 is an elevation of the same, and Fig. 3 is a vertical section transversely of the hollow mold.

The tube *a* forms the hollow mold, around which the umbrella-handles are bent, such tube having peripheral grooves adapted to such handles. *b* is a clamp with a lever, *c*, to operate the moving side of the clamp, and *c'* is a strap of metal, preferably steel, attached at one end to the clamp *b*, and the other end connected to the lever *d*. There are latches *e* provided, one for each lever *d*, that holds the same after the wood has been bent. The hollow mold *a* is heated from the inside, preferably by superheated steam introduced through a pipe, and I remark that the hollow mold *a* is to be sufficiently long to receive several of the clamps, and a sufficient number of these molds and clamps are provided for the workmen to proceed regularly in clamping and bending the wood, and by the time all the clamps are filled the wood in the first will have become dried and cured ready for removal. The round umbrella-stick or other piece of wood, in a softened and moist condition, is passed in between the clamps *b* with the end against the inner end of the lever *d*. Then the lever *c* is moved to firmly hold the wood in the clamp *b*, and the lever *d* and strap *c* are operated to bend the wood around the mold *a*, and the lever *d* and strap *c'* hold the wood firmly to its place, while the heat of the mold *a* dries the wood thoroughly, and cures the same by softening the resinous materials in the wood, and allowing the compressed fibers to rearrange themselves, so that when the curing operation is completed the bent wood is firmly set in its shape and of a very strong and compact texture.

After the lever *d* and strap *c'* are released and the clamp *b* opened, the stick can be withdrawn.

The series of bars *b'* that project from the tube *a* are connected by the cross-bars *h*, and the clamps are upon movable plates *i* that hook at the ends over the bars *b'*, so that the clamps can be changed if it becomes necessary at any time. The pins *l* serve to hold the movable plates *i* after they are hooked to the bars *b'*.

I claim as my invention—

The tube *a*, bars *b'* projecting from the same, and the cross-bars *h*, in combination with the movable plates *i*, clamps *b*, levers *c*, and straps *c'*, substantially as and for the purposes set forth.

Signed by me this 8th day of November, 1876.

HENRY WINTER.

Witnesses:

GEO. T. PINCKNEY,

HAROLD SERRELL.