

F. J. FISHER.
BENDING MACHINE.
APPLICATION FILED JAN. 10, 1910.

966,678.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 1.

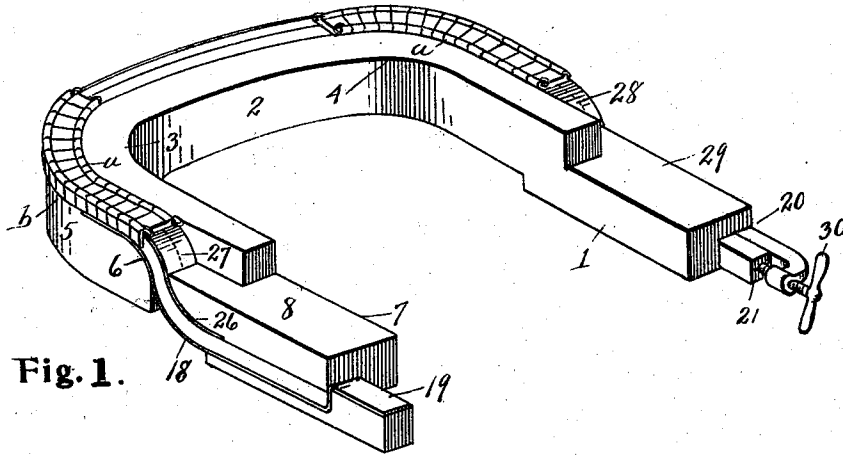


Fig. 1.

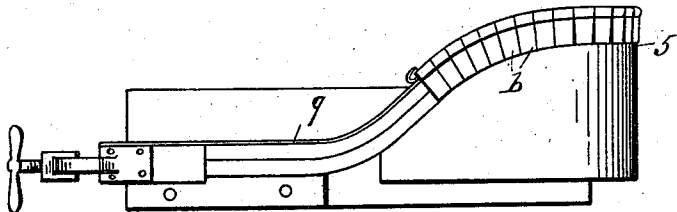


Fig. 2.

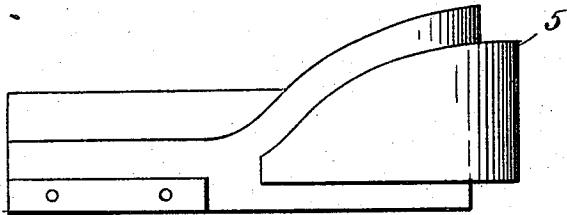


Fig. 3.

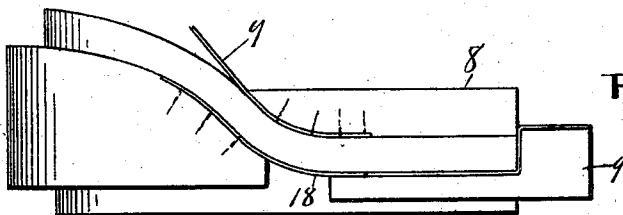


Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

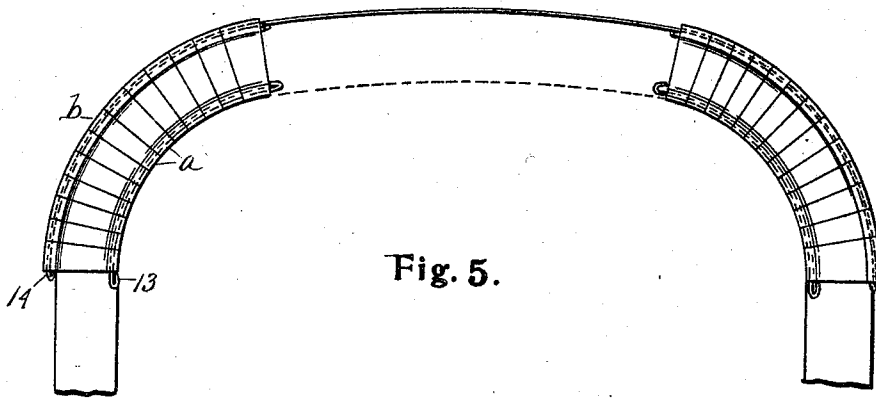


Fig. 5.

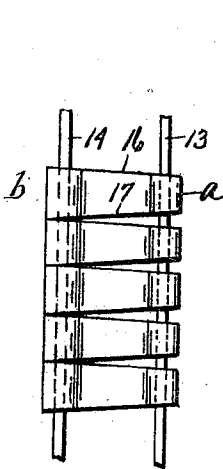


Fig. 6.

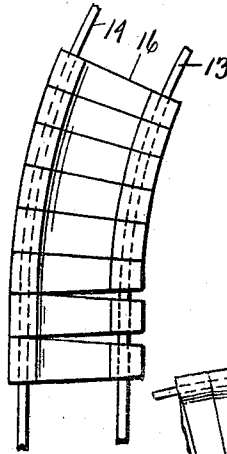


Fig. 7.

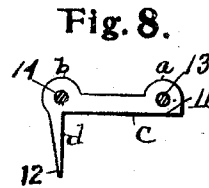


Fig. 8.

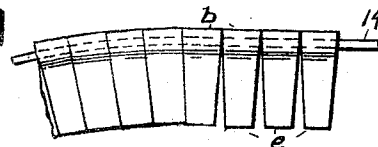


Fig. 9.

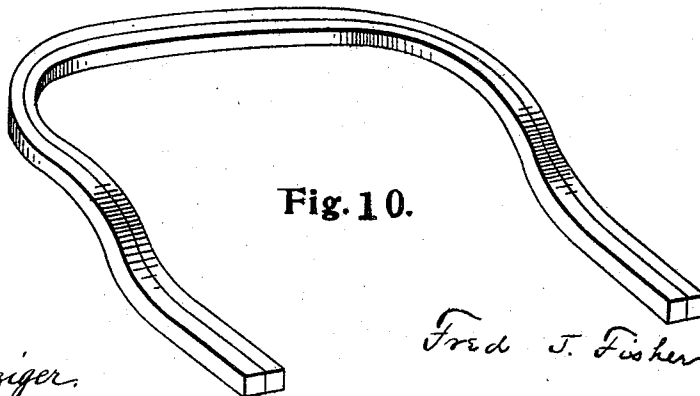


Fig. 10.

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UNITED STATES PATENT OFFICE.

FRED J. FISHER, OF DETROIT, MICHIGAN.

BENDING-MACHINE.

966,678.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed January 10, 1910. Serial No. 537,122.

To all whom it may concern:

Be it known that I, FRED J. FISHER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Bending-Machines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to wood bending.

It has for its object an improved form and follower strap adapted to bend strips of wood with curvatures extending in three planes.

In the drawings:—Figure 1, is a perspective of the device. Fig. 2, is a side elevation. Fig. 3, is a side elevation of the form with the strap removed. Fig. 4, is a side elevation of the form showing the side opposite that shown in Fig. 3. Fig. 5, is a plan view of the flexible strap engaged over a curved strip of wood. Fig. 6, is a detail of the portion of the strap shown in plan view. Fig. 7, is a detail of the portion of the strap shown curved. Fig. 8, is a cross section of the center member of the curve forming strap. Fig. 9, is a side elevation showing the face of the hanging end of the parts shown in Fig. 8. Fig. 10, is a perspective of the completely bent product.

The instrument or tool shown is employed to bend the rim of a carriage seat which presents as uneven or difficult a curvature as is apt to be found in wood bending, and is selected for that reason.

The important part of the bending apparatus and the part which forms the subject of the present invention is the strap flexible in two directions and presenting two flat surfaces to a piece of wood which lies in an angular opening between the two surfaces of the follower strap.

The form 1 is made having a seat or seats against which the wooden bar or rod is placed. In the selected form this consists of a curved part 2 having a double curvature 3 and 4 against which one side of the piece of wood to be bent is placed, and having a supporting surface part 5 that extends around the curved support 2; against this tabular part the lower or bottom face of the wood seats. At proper places for an offset curve or a curve extending into an-

other plane the supporting face 5 is curved downward around the bend 6; on the forward extension 7 of the form is a flange 8 under which the upper surface of the wood is forced. Where a simple curve is to be made in the wood the ordinary strap 9 may be used, but where a second curve in a direction inclining to a position of substantial parallelism with the plane in which the first curve lies is to be made, the wood must not only be held down over the face of the bend 6, but must be forced to assume the second curvature, and for this purpose I employ a peculiar strap which is capable of curvature in both directions. This consists of a number of branched pieces of metal which may be best understood from an examination of Figs. 6, 7, 8 and 9. Each piece is provided with a branch 11 and a branch 12. The branch 11 is narrow at the end *a* and widens toward the end *b*. At each of the ends *a* and *b* it is provided with an eye or hole both of which extend parallel with the bearing face *c* and parallel with the face *d*, the holes extending in a direction which will be longitudinal with respect to the assembled pieces. These separate pieces are strung on flexible wire, and the wire 13 at least is so small with respect to the hole that it traverses, that the piece will easily slide thereon. The pieces are intended to slide easily also on the wire 14, but the same ease of movement is not necessary on wire 14 that is required with respect to wire 13. These pieces strung on wires form a bearing member or a compression member that bends readily around an arc having its center in the continuation of the upper surface and its center approximately at the converging points of the lines 16 and 17 of the individual pieces. It is not necessary that the curvature be bent around a center so related to the individual pieces, as any curvature may be given to the strap within the limits of a curve that is so sharp that the edges are brought together and the curvature approaches very nearly to a straight line. The two faces of the individual pieces form in effect a continuous flexible strap having two bearing faces, one of which presses over and one of which presses at the side of the strip of wood under treatment and almost any form of curvature may be given; in fact, the strap thus described will conform itself quite successfully to a seat form which may be twisted or warped to a considerable degree. In

order to pull the strap tight the ends of the double flexible part are preferably secured to simple straps 9 and 18, and these straps in turn are secured to holding members 19 and 20, some of which are provided with screw members 21 which makes the complete structure a clamp with a strap flexible in any direction connecting the two end members thereof, and by means of this clamp the entire strap is drawn tightly against the wood in certain places, as for example, over the bend 6 and under the bend 26.

It may be necessary to place straps on both sides of the strip of wood, one of which 27 forming a part of the clamp is secured to the end 8 of the form and the corresponding one 28 on the opposite side extends under the part 29 and is made fast to the block 30 to which the screw 21 is secured.

20 What I claim is:—

1. In a bending device for wood, in combination a form and a strap, composed of short pieces strung on flexible rods, each piece having two branches and having a stringing eye at the junction of said branches and a stringing eye at the terminal of one of said branches, and narrowing from the

junction of said branches to the terminal, substantially as described.

2. In a bending device for wood, a strap 30 having in combination a plurality of short members, each of which is provided with two branches, and each of which is provided with a stringing eye at the junction of said two branches and with a stringing eye at 35 the terminal of one of said branches, and narrows from the junction to the terminal of said branch, and flexible rods or wires on which said pieces are strung, substantially as described.

3. In a bending device for wood, a strap 40 member comprising a plurality of flexible rods, and a plurality of short pieces having perforated end portions through which said rods extend and integral branch portions 45 depending from one end of said pieces, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

FRED J. FISHER.

Witnesses:

CHARLES F. BURTON,
VIRGINIA C. SPRATT.