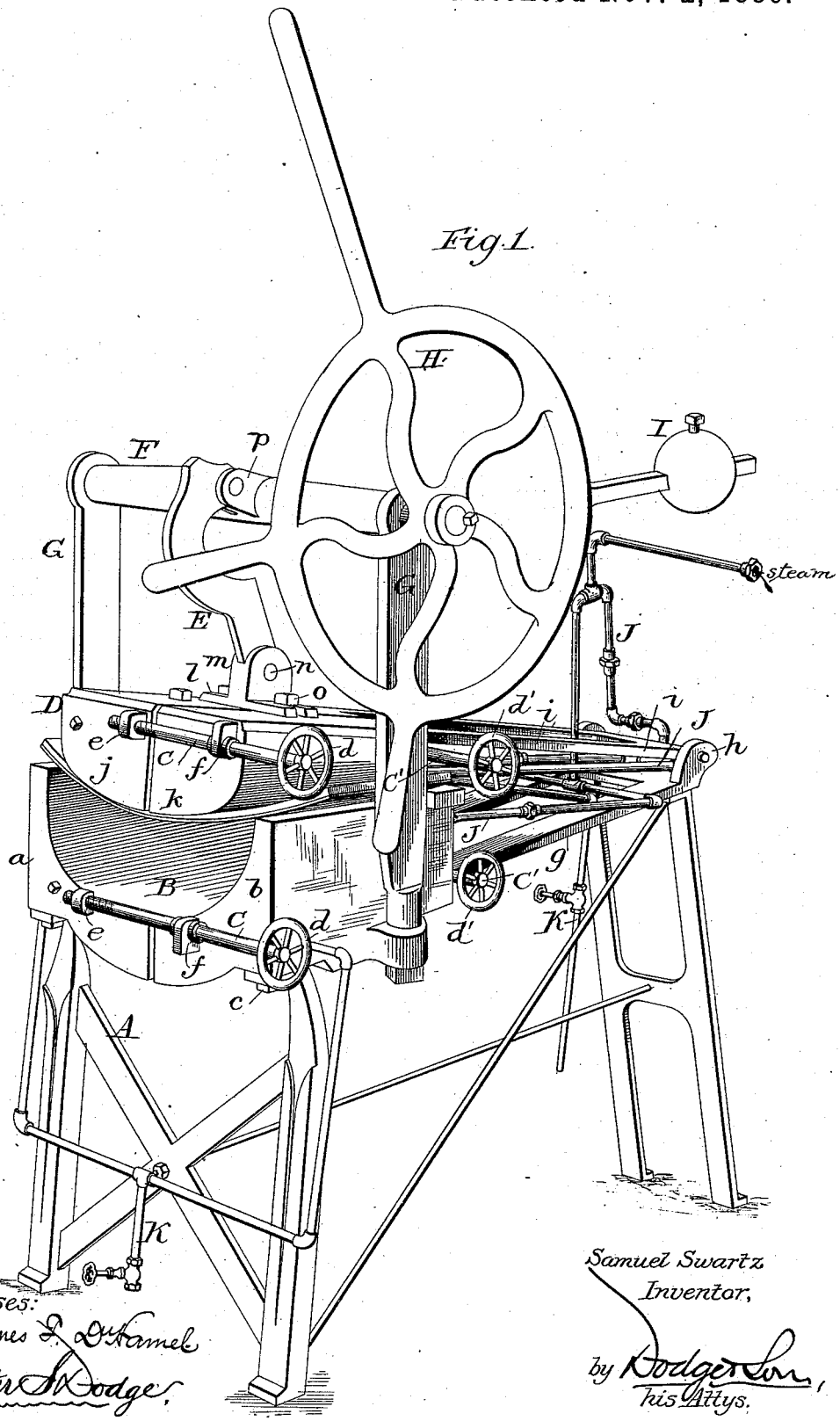
(No Model.) 2 Sheets—Sheet 1.

S. SWARTZ.

WOOD BENDING AND DRYING MACHINE.

No. 351,815. Patented Nov. 2, 1886.

Fig. 1.



Witnesses:
James L. Dyrenforth
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Samuel Swartz
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his Attys.

(No Model.)

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2 Sheets—Sheet 2.

WOOD BENDING AND DRYING MACHINE.

No. 351,815. Patented Nov. 2, 1886.

Fig. 2.

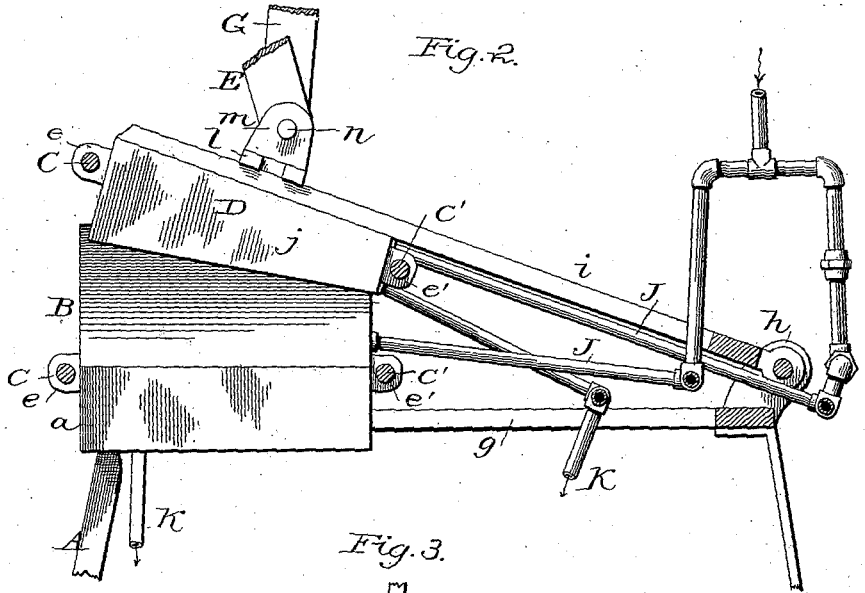
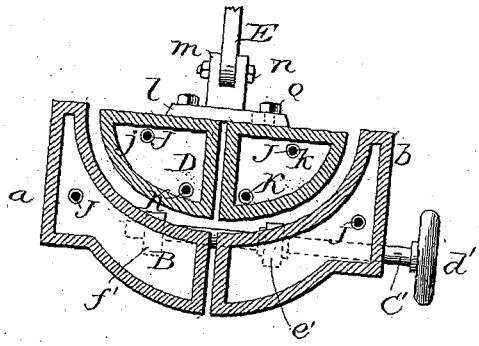


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL SWARTZ, OF BUFFALO, NEW YORK.

WOOD BENDING AND DRYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 351,815, dated November 2, 1886.

Application filed April 27, 1886. Serial No. 200,320. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SWARTZ, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Wood Bending and Drying Machines, of which the following is a specification.

My invention relates to machines for bending wood, and is more particularly designed for bending or forming the ends of burial-caskets which are semi-elliptical in form.

The invention consists in a press composed of a suitable frame, expansible and contractible male and female dies, each provided with steam inlet and outlet pipes, and means for bringing and locking the dies together or releasing them at will.

Other features and details of construction will also be pointed out and claimed.

Figure 1 is a perspective view of my improved machine; Fig. 2, a longitudinal section on the parting-line of the die-sections; Fig. 3, a transverse vertical section through the dies.

It has heretofore been customary to construct the ends of burial-caskets of three staves or pieces, the curved or rounded corners being cut from a conical block turned up in a lathe. Such construction is not only expensive, but it is difficult to produce thereby a neat or strong job, and it is to overcome these objections and difficulties that my invention is designed.

A indicates a frame composed of two pairs of legs suitably braced and stiffened by the rods, as indicated in Fig. 1.

B indicates a stationary die having its upper side made concave and of a curvature to produce the desired form of the casket end. This die is longitudinally divided through its middle, forming two parts, *a* and *b*, the first of which is bolted or otherwise rigidly secured to frame A, and the section *b* is also held in the frame by bolts *c*, passing through holes in the frame; but said holes are elongated to permit adjustment of section *b* to and from section *a*.

C indicates a cylindrical rod or stem, provided at one end with a hand-wheel, *d*, threaded at its opposite end to screw into a correspondingly-threaded hole in a lug, *e*, projecting from the end of section *a*, and swiveled in a lug, *f*, projecting from the end of section *b*. The rod or screw-stem being swiveled in lug *f* and prevented from moving longitudinally through the same, it follows that if the hand-wheel be turned the die-sections *a b* will be separated or brought together, according to the direction of turning. Similar lugs, *e' f'*, and screw-stem C' are provided at the rear ends of the sections *a b*, so that one end may be moved independently of the other within reasonable limits, suitable play being provided in the guiding-slots and in the swivels of the screw-stems to permit such independent adjustment. The rear ends of sections *a b* are supported by bars *g*, extending back to the rear end of frame A. These bars *g* are formed with ears *h*, to which two other bars, *i*, are hinged or pivoted, as shown in Figs. 1 and 2, these latter bars serving to carry the upper die or head, D. The male or upper die, D, is made in two sections, *j k*, essentially the same as the female die B, and is furnished with lugs *e e' f f'* and rods C C', by which to draw the sections together or move them apart.

Firmly bolted to the upper face of section *j* is a plate, *l*, having a slotted lug, *m*, projecting upward from its face to receive the lower end of a curved bar, E, which is connected thereto by a pin or bolt, *n*. Section *k* is furnished with a bolt or bolts, *o*, which pass through a slot or slots in the plate *l*, and serve to keep the section *k* in proper relation to section *j* as to height, yet allowing it to be moved horizontally to or from part *j* by the adjusting-screws. The upper end of bar E is connected by a pin or bolt with an arm, *p*, projecting radially from a rock-shaft, F, journaled in vertical supports or standards G, firmly secured to frame A.

Secured upon one end of the rock-shaft F is a hand-wheel, H, provided with radial arms, through which to give the necessary purchase or power in turning the rock-shaft, and also furnished with a counter-weight, I, to counterbalance the movable upper die, D.

The parts are so formed, proportioned, and adjusted that when the upper die is depressed to its lowest point the two pivots or joints connecting bar E with the radial arm of the rock-shaft and with the upper die shall come into line with the axis of the rock-shaft, thus

locking the die D firmly down within the die B. This is important, for the reason that when the wood is bent a facing of veneer or suitable material is bent with it, the opposing faces being previously coated with glue or cement, and the whole being left in the press until the wood is set and cement or glue thoroughly dried.

For the purpose of facilitating the drying operation the die-sections are made hollow, and steam is introduced into each by suitable pipes, J, from any convenient generator. Pipes K also serve to carry off the spent steam and the water due to condensation.

I am aware that wood-bending machines are common and in general use, and that steam is commonly used in drying-presses; hence I do not broadly claim these features in themselves. It will be observed, however, that by my construction I secure a constantly-increasing leverage, owing to the toggle-connection between the rock-shaft and the upper die; that I am enabled to increase or diminish the width of the dies at will, and by adjusting one end more than or differently from the other to vary the taper or inclination as well as the size; and, finally, that when the bending is completed the parts are automatically locked in position, to prevent the wood from springing back before being permanently set in shape.

By adjusting either die independently of the other compensation may be made for varying thickness of material.

The rock-shaft may be bent into crank form, if desired, instead of having a projecting arm, and in some cases it may be preferable to move the female die to and from the male die. These are of course obvious modifications, and come within the scope of my invention.

I am aware that it is not new to make cutting-dies adjustable, and I do not desire to be understood as making any claim thereto. My device is designed for an entirely different purpose, and operates in an essentially different manner, the adjustability of the two dies permitting a variation in the taper, which is a result not heretofore accomplished, so far as I am aware. This is a feature of considerable importance, and I claim such combination broadly, and regardless of the specific devices by which it is secured.

I am also aware that it has been proposed to provide a bending-machine with an adjustable former adapted for use in connection with a single continuous metallic strap, and this I disclaim.

Having thus described my invention, what I claim is—

1. In a bending-machine, a male die and a female die movable toward and from each other, the former adapted to enter bodily within the latter when the dies are brought together, and each consisting of two parts, the two parts of each die being adjustable to and from each other, and provided with devices for holding them rigidly at any adjustment, substantially as described and shown, whereby the curvature of the article bent may be varied, as desired.

2. In a bending-machine, the combination of a male die and a female die, both capable of adjustment at either end alone, whereby the sides may be made to incline more or less relatively to each other.

3. The herein-described wood-bending machine, consisting of a frame, a die composed of two parts, one rigidly and the other adjustably secured to said frame, a second die movable to and from the first and likewise made in two parts, adjustable one in relation to the other, and means, substantially such as described and shown, for moving one die to and from the other.

4. In a wood-bending machine, the combination of a female die and a male die, each composed of two parts, one part adjustable in relation to the other, means, substantially such as described and shown, for advancing and receding one die to and from the other, and steam-pipes communicating with the interior of either or both dies.

5. The combination, in a wood-bending machine, of a fixed die, B, a movable die, D, a rock-shaft, F, provided with a crank-arm, and a link, E, connecting the movable die and the crank-arm, said parts being arranged substantially as described and shown, whereby the two joints or connections of the link are caused to fall in line with the axis of the shaft when the movable die is advanced, and thereby to lock the movable die in position.

6. In a bending-machine, a die consisting of two parts placed side by side, and a screw-rod at each end connecting the two parts of the die, substantially as shown, whereby the two parts of the die may be adjusted to or from each other at either end, or at both ends, to throw their opposing faces more or less out of parallel and to give greater or less taper to the exterior of the die.

7. In combination with a frame, A, dies B D, mounted therein, rock-shaft F, journaled in the frame, link E, connecting the rock-shaft and the die D, and hand-wheel H, secured to shaft F and provided with a counter-weight, I, the counter-weight and link being upon opposite sides of the rock-shaft, as and for the purpose set forth.

8. The herein-described wood bending and drying machine, consisting of a frame, a two-part die, B, mounted thereon, a second two-part die, D, hinged to the frame, standards secured to the frame, a shaft, F, journaled in said standards and provided with a crank-arm, a pitman or link, E, connecting the movable die and the crank-arm, and steam-pipes J, communicating with the interior of the dies.

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