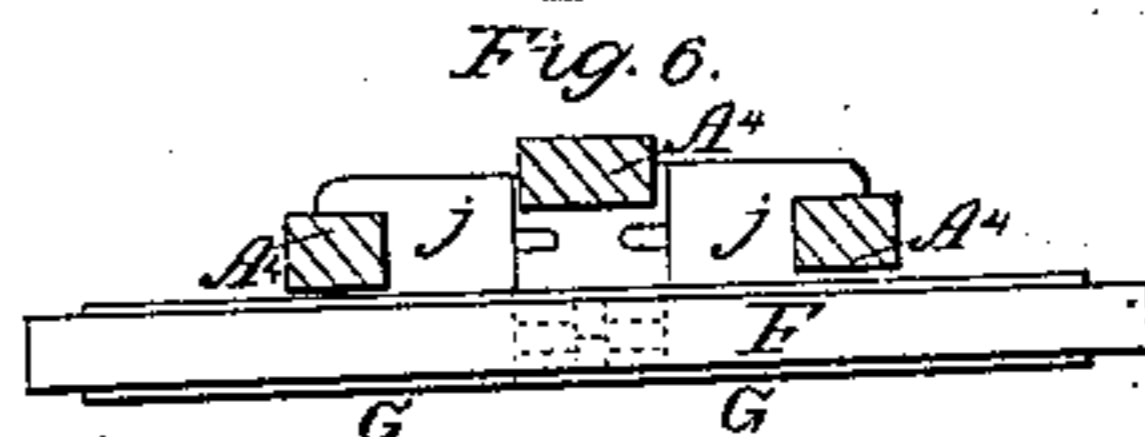
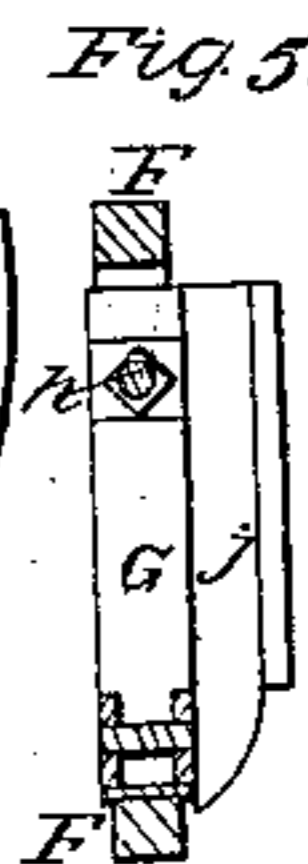
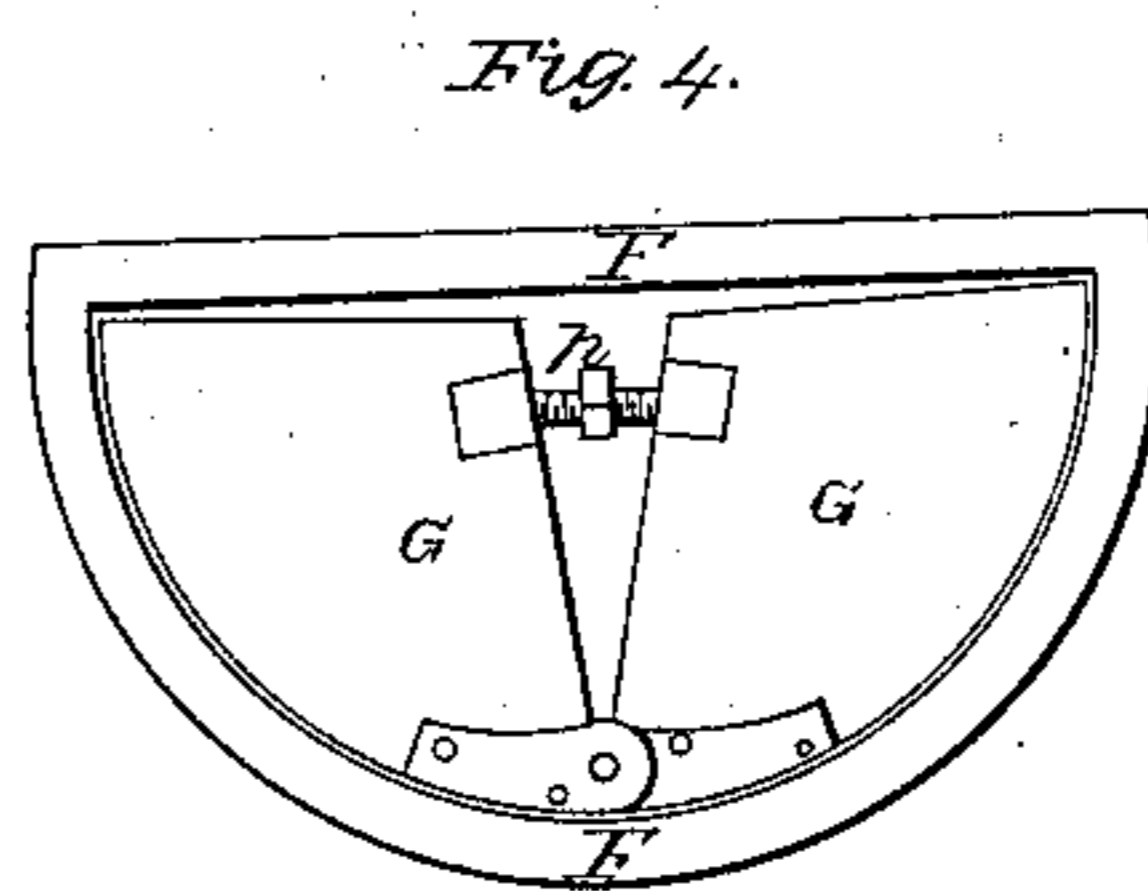
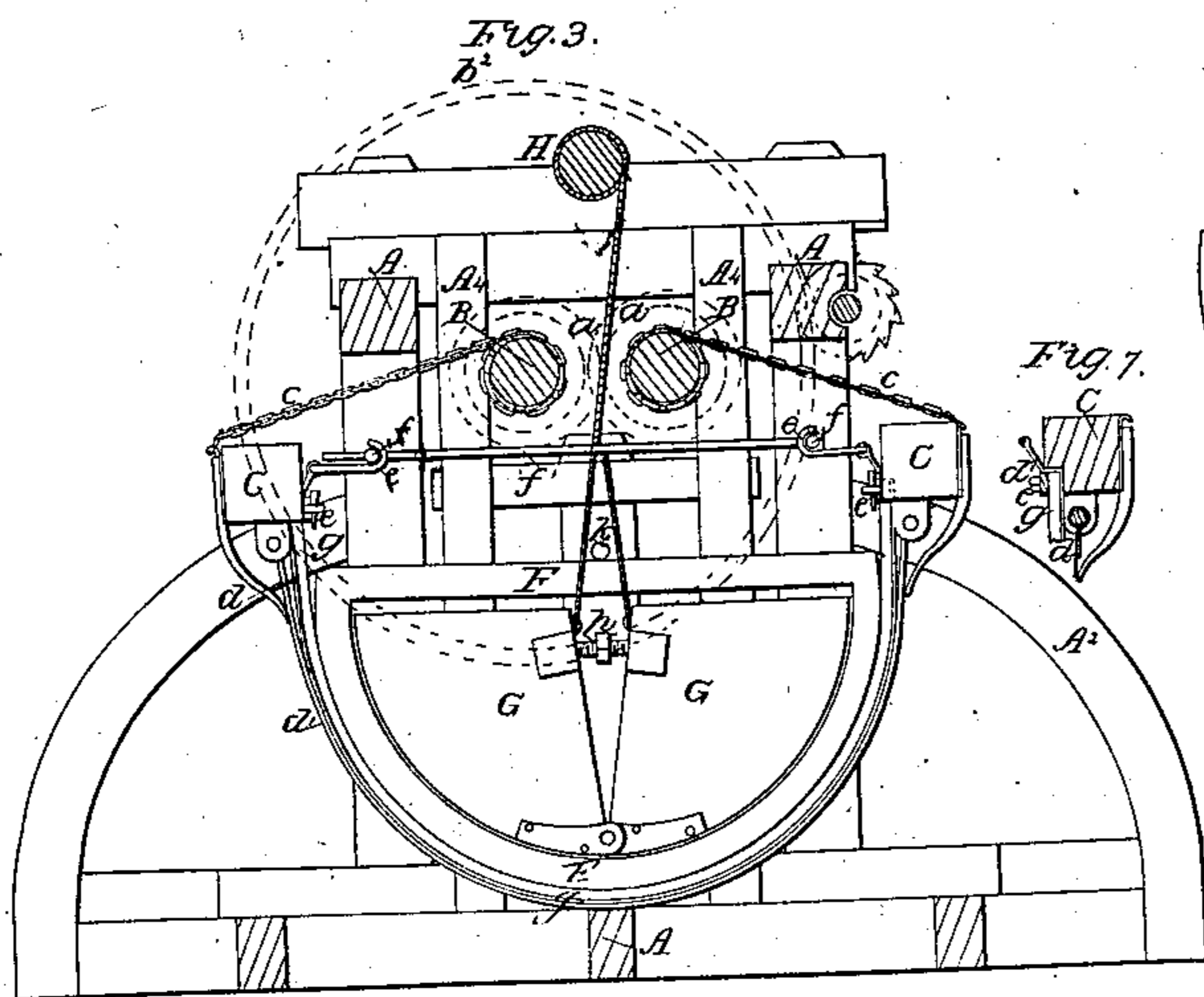
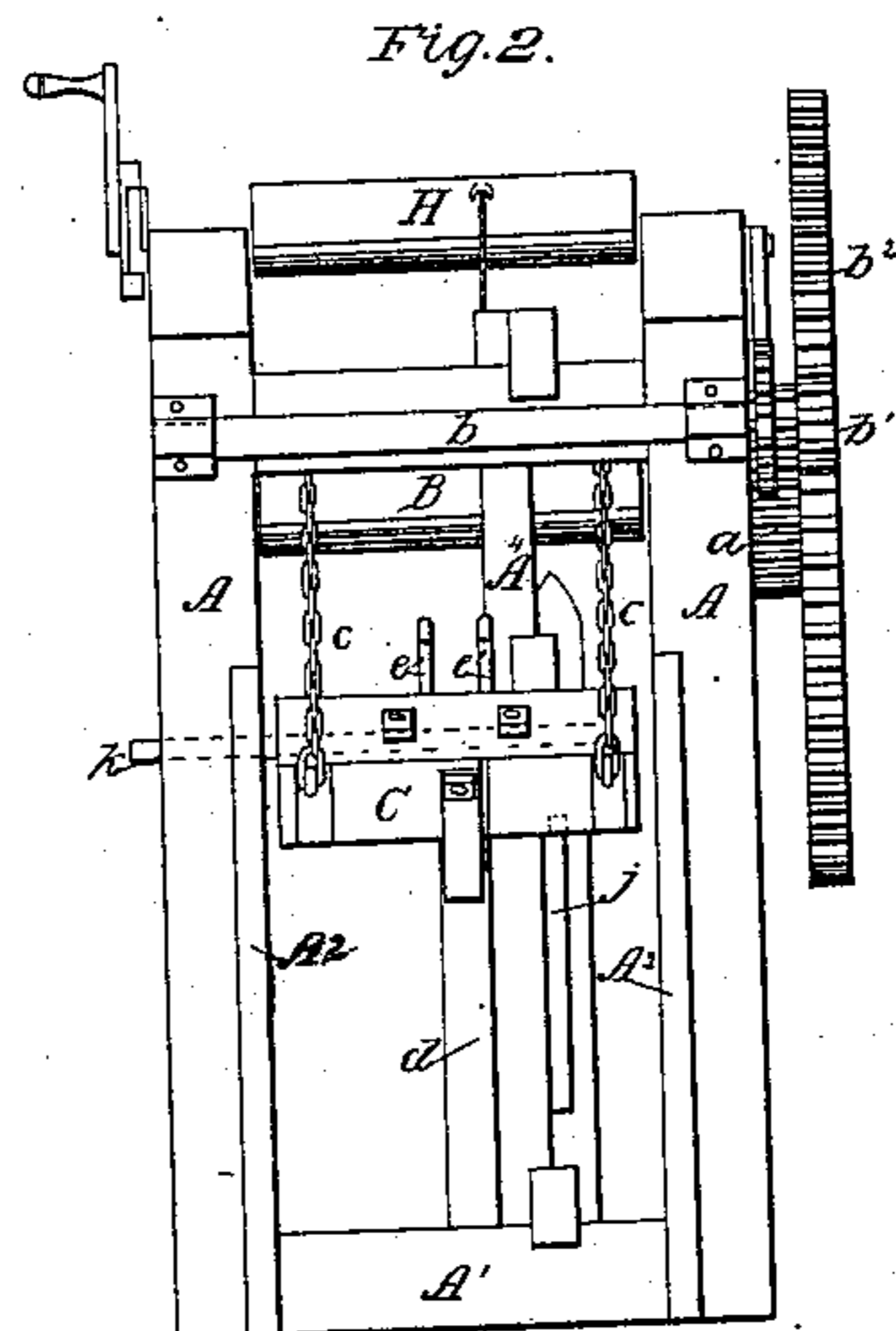
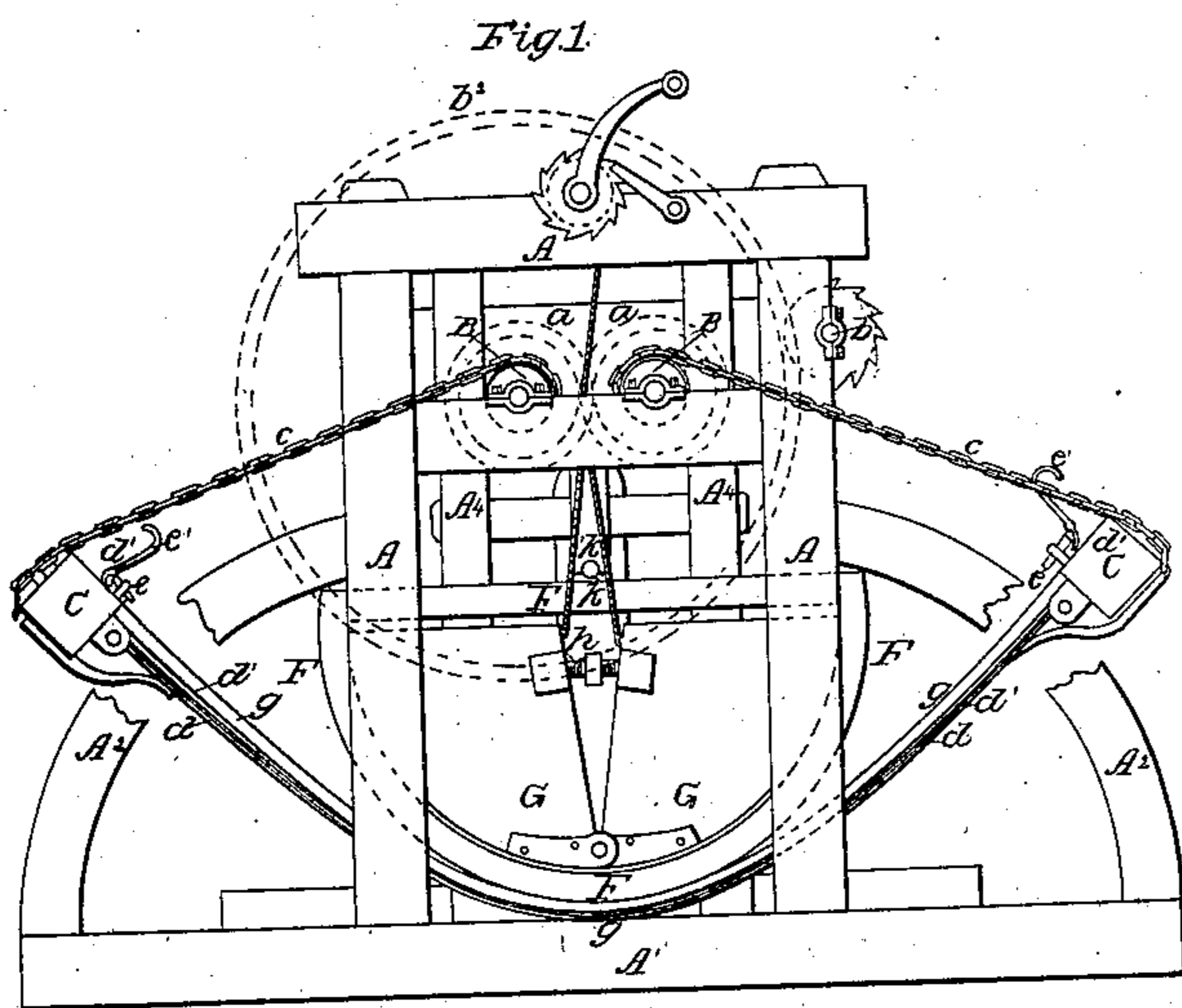


# Smith & Sprope, Bending Wood.

Patented Feb. 28, 1865.

No 46,591.



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# UNITED STATES PATENT OFFICE.

FRIDOLIN SMITH AND PETER SWOPE, OF TIFFIN, OHIO.

## IMPROVEMENT IN WOOD-BENDING MACHINES.

Specification forming part of Letters Patent No. 46,591, dated February 28, 1865.

*To all whom it may concern:*

Be it known that we, FRIDOLIN SMITH and PETER SWOPE, of Tiffin, Seneca county, State of Ohio, have invented a Machine for Bending Wood; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of our machine bending a strip of wood. Fig. 2 is an elevation of one end of our machine. Fig. 3 is a vertical longitudinal section through the machine, showing the position of the bending contrivances when a strip of wood is bent to its fullest extent. Figs. 4, 5, and 6 show the construction of the device about which the wood is bent. Fig. 7 is a section through one of the bending or holding heads, showing the manner of attaching the strip of wood to be bent to it.

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

This invention relates to machinery for bending wood for fellies and other purposes.

It consists in a contrivance for holding the wood, and supporting it throughout its entire length during the bending operation, in conjunction with expansible blocks for securing the patterns within the machine and admitting of their ready removal therefrom, as will be hereinafter described.

It also consists in sustaining the ends of the wood during the act of bending it by means of clamps applied to movable heads, as will be described.

It also consists in so applying the pattern about which the wood is bent to the framework of the machine that it can be elevated or depressed or removed from the machine at pleasure, and when in immediate use confined in place to receive the strip of wood which is bent about it, as will be hereinafter described.

To enable others skilled in the art to make and use our invention, we will describe its construction and operation.

In the accompanying drawings, A represents the upright portion of the frame of our machine. A' are the sills which constitute the foundation of the frame, and A<sup>2</sup> A<sup>2</sup> are curved braces, which also serve as lateral guides for the horizontal bending-heads, to which the

ends of the strip of wood to be bent are secured. B B are two horizontal transverse drums, which are supported upon longitudinal braces of frame A, as shown in Figs. 1 and 3. These drums are arranged side by side, and are geared together by means of spur-wheels *a a*, so as to rotate in opposite directions, when actuated by the main shaft *b*, through the medium of pinion-wheel *b'* and large wheel *b<sup>2</sup>*. Chains *c c c c* pass around said drums B B, and connect with the bending heads C C, to which the ends of the wood to be bent are secured, as will be hereinafter described. These heads C C are connected together by means of two sheet-metal straps, *d d'*, the lower one of which is securely pivoted at its ends to the lower sides of the heads C C, as shown in Figs. 1 and 3, while the upper strip, *d*, which lies on the lower one, *d'*, is connected at its ends to the heads C C, by means of clamps *e e*, as follows: A recess is made in each head C to receive the end of the strip of wood to be bent, and the ends of strip *d'* are bent so as to fit into said recess and pass out over the ends of the strip *g*, as shown in Fig. 7. Those ends of the strip *d'* projecting out from the heads C C have hooks *e' e'* pivoted to them, which receive cross-bars *f f* of a clamp-screw, *f'*, for confining the parts in the position shown in Fig. 3.

The patterns F, about which the wood is bent, are semicircular, as shown in Figs. 1, 3, and 4, and have a brace-bar extending across and secured to their ends, so as to leave a space within them to receive solid blocks G G. These blocks are adapted to fit snugly within the pattern F, and they are pivoted together at their lower ends, as shown in Figs. 4 and 5, so that by means of a right-and-left screw, *h*, or other equivalent contrivance, their upper ends can be forced apart, and thus prevent the curved, or semicircular pattern F from yielding during the act of bending a strip of wood upon it. Both blocks G G are attached to an inner frame-work, A<sup>4</sup>, by means of vertically-grooved portions, *j j*, which are held in place and guided by the upright posts A<sup>4</sup>.

The pattern F can be removed at any time by detaching the holding-down bar *k*, and loosening or contracting the blocks G, when a pattern of a different or of the same size can

be applied to said blocks and clamped rigidly thereon by spreading out these blocks, as before described.

On top of the frame A and in the center thereof is a drum or windlass, H, provided with a crank, and also a ratchet and pawl, as shown in Figs. 1 and 2. This drum H is connected by means of a cord and chain, or either one or the other, to the slotter-ports of the expansible blocks G, and when the holding-down bar k is removed the block G, together with the pattern F, can be elevated and sustained in an elevated position by the drum H and its pawl. The bar k is inserted into the frame A<sup>4</sup> at one end, and, passing over the horizontal portion of the pattern F, its opposite end is forced down by means of the vertical piece K'. (Shown in Fig. 1.)

The operation of our machine is as follows: The strips of wood to be bent are previously steamed and secured at their ends to the heads c c, as above described. The pattern F, of the required size, is confined in place around the expansible blocks G G, and the whole are confined in place by means of the rod k and brace k'. The strip of wood g which is to be bent should be confined centrally under the pattern, so that both heads c c will rise to the same height above the pattern when confined, as shown in Fig. 3.

The wood to be bent being applied to the machine, as above described, the operator turns the drums B B and winds up the chains c c, thus drawing up the heads C C and bending the wood about the pattern, after which the clamping-rod f' is used to retain the parts in the position shown in Fig. 3. The clamping-screw f' being connected to the hooks e' e' of the strip d', between which latter and the pattern F is the bent strip g, it will be seen that by loosening the clamps e e the heads C C can be detached from the strips d' and g, leaving the latter confined to the pattern F, which is now removed from the ma-

chine by loosening the heads G G and removing the holding-down bar k. Another pattern is now applied to blocks or heads G G, and another piece of wood to be bent is confined to the heads C C by means of the clamps e e, as before described, when the operation of bending is again gone through with.

When the strips of wood which were bent about the patterns F, as above described, are dry, they are removed by simply loosening the clamps f f'. If desirable, the expansible blocks G G may be applied to their grooved guide and holding portions j j, so that they can be removed and blocks of different sizes applied in their places. This is done when the patterns F materially differ in size.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. Securing the patterns F in position to receive the strips g of wood as they are bent by means of expansible blocks G G, substantially as described.
2. So applying the pattern-holders G G to the frame or the machine that they can be elevated or depressed, and held down firmly in place to receive the strip of wood as it is bent, substantially as described.
3. The bending heads C C, in combination with the strip d and detachable strip d', when used in conjunction with a pattern, F, and expansible holders G G, substantially as described.
4. The arrangement of the hooks e e', strip d', and adjustable clamp f f', in combination with the bending devices described, and the removable pattern, substantially in the manner and for the purpose described.

FRIDOLIN SMITH.  
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Witnesses:

GEO. C. SMALL,  
H. NOBLE.