

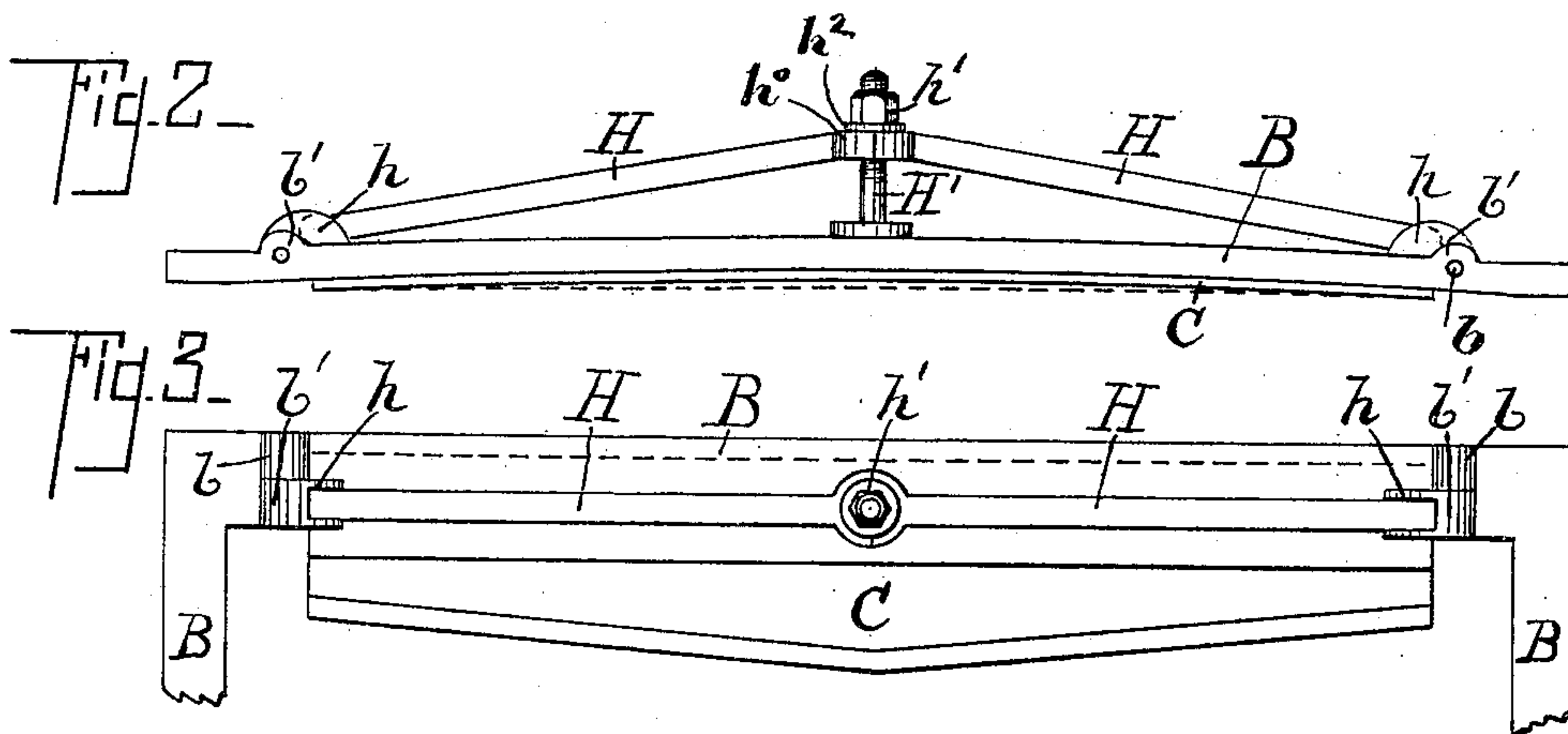
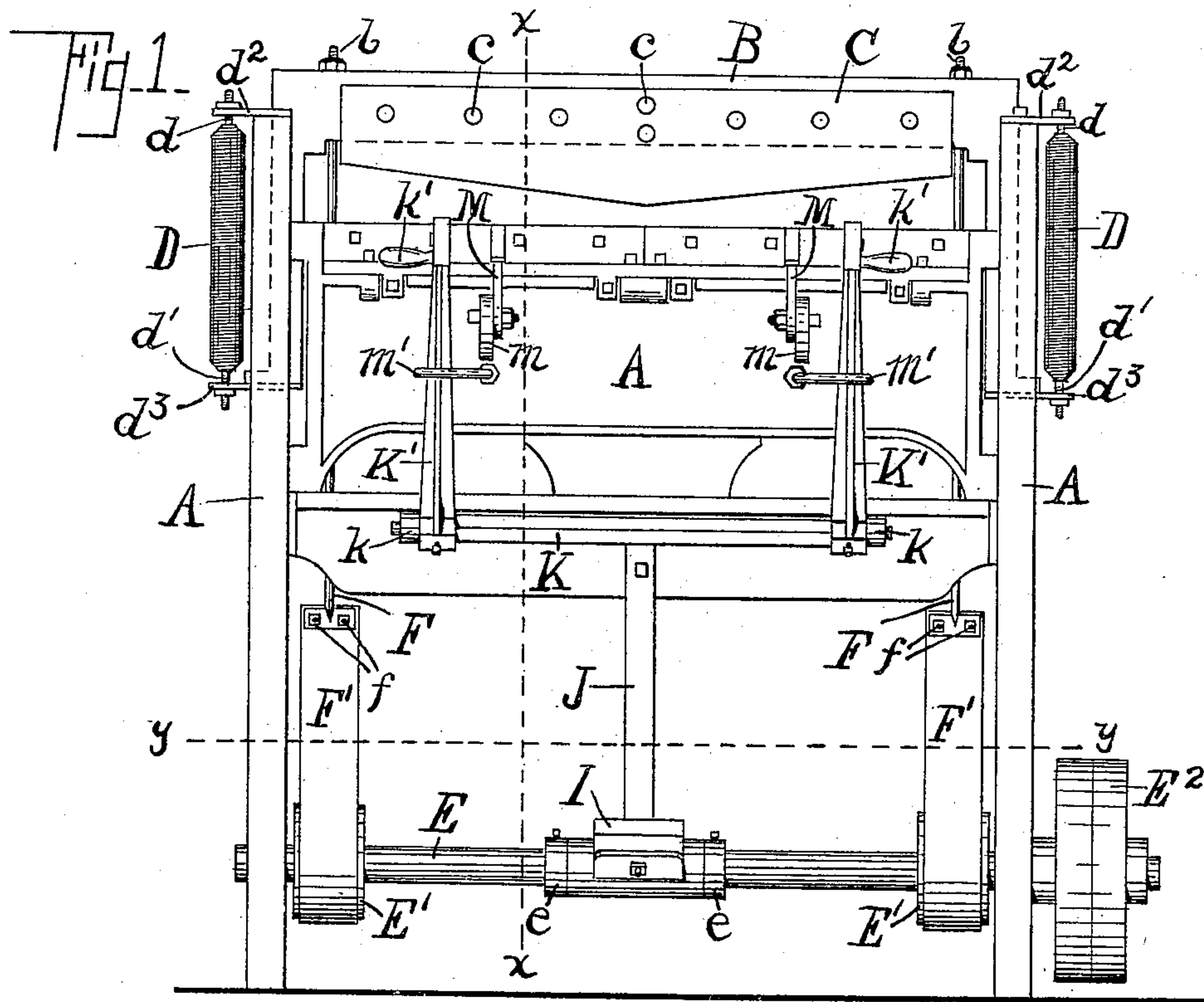
(No Model.)

2 Sheets—Sheet 1.

J. GREENWOOD.
STAVE JOINTER.

No. 600,146.

Patented Mar. 8, 1898.



WITNESSES

A. R. Selden
C. R. Orwood.

INVENTOR

John Greenwood

BY

Howard L. Orwood
his ATTORNEY

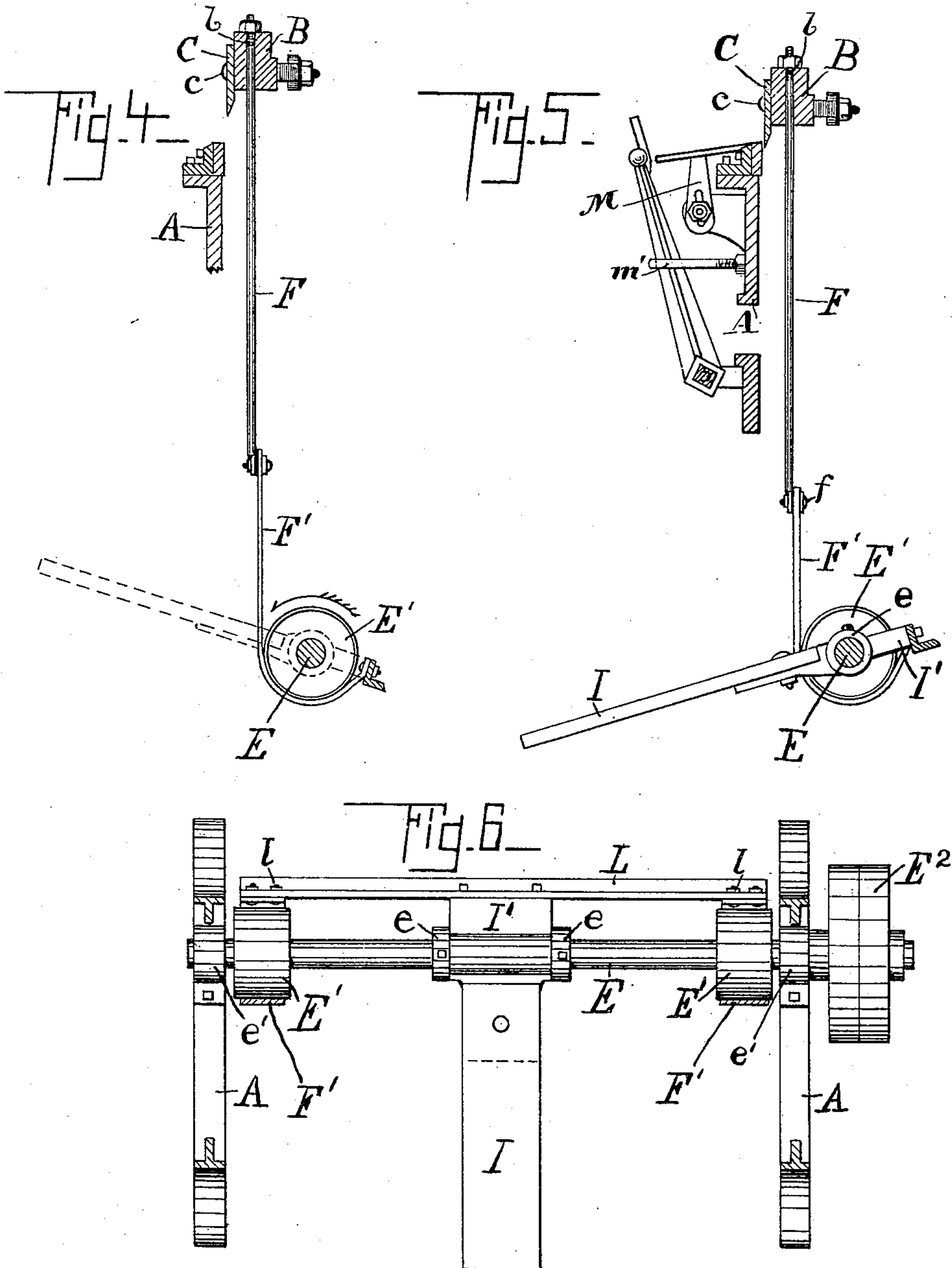
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UNITED STATES PATENT OFFICE.

JOHN GREENWOOD, OF ROCHESTER, NEW YORK.

STAVE-JOINTER.

SPECIFICATION forming part of Letters Patent No. 600,146, dated March 8, 1898.

Application filed July 12, 1897. Serial No. 644,355. (No model.)

To all whom it may concern:

Be it known that I, JOHN GREENWOOD, a citizen of the United States, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Stave-Jointers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my machine. Fig. 2 is a top view of the knife, knife-support, and knife adjustment. Fig. 3 is a rear view of the same parts. Fig. 4 is a diagrammatic view, in vertical section, of the knife-operating mechanism and some of its related parts. Fig. 5 is the same section as that shown in Fig. 4; but in this figure the parts are shown in their operating positions.

In the drawings the frame of the machine is represented by A. The knife C is secured by bolts *c* to the sliding frame B, having the dependent arms B' B'. The arms B' B' are set in ways in the frame A, as shown by the dotted lines in Fig. 1, so that the frame B slides up and down therein. A stop *a* is fixed to the frame A, adapted to limit the downward movement of the sliding frame.

Behind the upper bar of the sliding frame B, which supports the knife, are two toggle-arms H H of equal length, whose ends *h h* lie within sockets *b' b'* in the frame B, as shown by dotted lines in Fig. 2. The other ends of the toggle-arms H H are recessed to form arms *h⁰ h⁰*, which together encircle the bolt H'. This bolt is secured to the back of the frame or knife-support B and has its end threaded. Above the arms *h⁰ h⁰* is the threaded nut *h'* and washer *h²*. (See Fig. 2.) The whole forms a toggle mechanism for bending the knife C.

I am able to adjust the knife not only very quickly, but to a curvature that is uniform and unbroken. This I accomplish by means of the device shown in Fig. 2 and described above in the following manner: The nut *h*, screwed down upon the bolt H', forces the toggle-arms H H into the sockets *b' b'* and, being rigid and resisting compression, bend inwardly the knife-support B and with it the knife C, which is secured to it, as before described. The knife being of tempered steel and its support B of cast-iron are both elas-

tic, so that the knife and support, after having been bent to a desired curvature, spring back to a curvature of larger radius when the nut is unscrewed.

D D represent springs, each end of which is fastened, respectively, to the stems *d d' d d'*, which in turn are secured, respectively, to the lugs *d² d³ d² d³*. The upper lugs *d² d²* are fast to the frame A and the lower lugs *d³ d³* to the depending arms B' B' of the frame B. The stress of the springs resists the downward movement of the frame B and tends to restore it to its normal position. (Shown in Fig. 1.)

On the frame A are formed the journals *e' e'*, in which the shaft E has its bearings. The shaft has a driving-pulley E². Fixed on the shaft within the frame A on each side are pulley-wheels E' E'. At the center of the shaft, inclosing it within the journal I² and confined within the collars *e e*, which are secured to the shaft, is a foot-lever I, which is freely revoluble thereon. The lever I has a rear arm I', which is extended backward, so that the bar or support L, attached at right angles to its end, passes behind the pulleys E' E'. The rods F F pass through bores *b b* in the frame B and are secured by nuts. To the lower end of each rod is fastened a belt F' F' by bolts *f f* or other suitable means. These belts are in front of and beneath the pulley-wheels E' E' and are attached to the bar L by bolts *l l* or by other similar means. Above the foot-lever is a stop J.

When the foot-lever is in the position shown in Fig. 1 and the knife is in its normal or non-cutting position, (see Figs. 1 and 4,) the belts are not in operative contact with the pulleys E' E'; but when pressure is brought to bear upon the forward arm of the lever it turns upon the shaft as a fulcrum, lifting the rear arm I', to which the bar N is attached, and thereby tightens the belts about the pulleys. It is obvious that when the belts are tightened the frame B, carrying the knife, will be drawn down by the revolution of the pulleys E' E'. In all other jointers in which a foot-lever is employed to operate the knife great strength must be used to force it through the stave; but with my device only sufficient pressure upon the foot-lever is required to tighten the belts around the pulleys E' E', and thus make available for the operation of

the knife the full power of the driving-pulley E².

To hold the staves in position for the knife, I employ a guide having the arms K' K', which are rigidly attached to a bar K, and which latter is journaled horizontally below the knife to the front of the frame A in lugs k k. The arms K K are provided with handles k k, by which they may be pushed toward the frame.

To the front of the frame A, below the knife in its normal position, are brackets M M, upon which the stave is laid when to be operated upon by the knife, and from the frame are two arms m m, with ends m' m', bent outwardly and at right angles, so that they support the arms K' K' when not in use.

The operation of my improved machine is as follows: The knife having first been bent to the required arc by adjustment of the nut h' upon the bolt H' in the manner hereinbefore described, the board from which the stave is to be formed or the partially-formed board is laid upon the brackets M M. The board is then moved forward by the arms K' K' until it comes beneath the knife and is there held by them to receive it. Pressure upon the foot-lever I tightens the belts F' F' around the pulleys E' E' and the knife is drawn down with great force upon the board. As soon as the pressure upon the foot-lever is removed the action of the springs D D causes the frame B and with it the knife to assume its normal position.

Both the mechanism for bending the knife and that for operating it are capable of many modifications which may be substituted for those that are herein described and which are within the scope of my invention.

What I claim is—

1. In a stave-jointer, an elastic knife-support, a knife thereon, a mechanism for actuating said knife-support, and toggle mechanism independent of said actuating mechanism for bending the knife-support whereby the knife is bent to cut a curved edge.

2. In a stave-jointer, an elastic knife, an elastic knife-support, toggle-arms engaging the knife-support and adjustable pressure mechanism acting on the toggle-arms and the support, whereby the knife is bent to cut edges of different curvature.

3. In a stave-jointer, the knife-support B having a socket b' b' on each side of the middle, the threaded bolt H' fixed to the support between its ends, toggle-arms H H having ends h h resting in the sockets and other ends provided with arms h^o h^o encircling the bolt and the threaded nut h' for drawing the bolt through the arms h^o h^o.

4. In a stave-jointer, a knife normally in a non-cutting position, a driving-pulley, a movable belt-support, a belt running around said pulley and normally loose thereon, said belt having one end connected with the knife and the other end to said support, and means for moving said support at will whereby the knife is drawn into cutting position and whereby also the belt is drawn against the pulley and the cutting power is increased by the power of the driving-pulley.

5. In a stave-jointer, a knife normally in a non-cutting position, a revoluble shaft, pulleys fixed on the shaft, a lever journaled on said shaft, and belts passing around the pulleys and each having one of its ends connected with the knife and their other ends connected with the same arm of the lever.

6. In a jointer, the knife C held normally in one position, the revoluble shaft E, carrying the pulleys E' E' fixed on the shaft, the lever I having the lever-arms I I', journaled on said shaft, the support L secured to the lever-arm I', the belts F' F' fastened to the support, passed around the pulleys and connected with the knife, substantially as shown and described.

JOHN GREENWOOD.

Witnesses:

C. SCHUYLER DAVIS,
E. H. MARSELLUS.