2 Sheets. Sheet 1.

E. Greenlee,

Jointing Staves.

No. 29,965. Patented Sep. 11, 1860.

Fig 1.

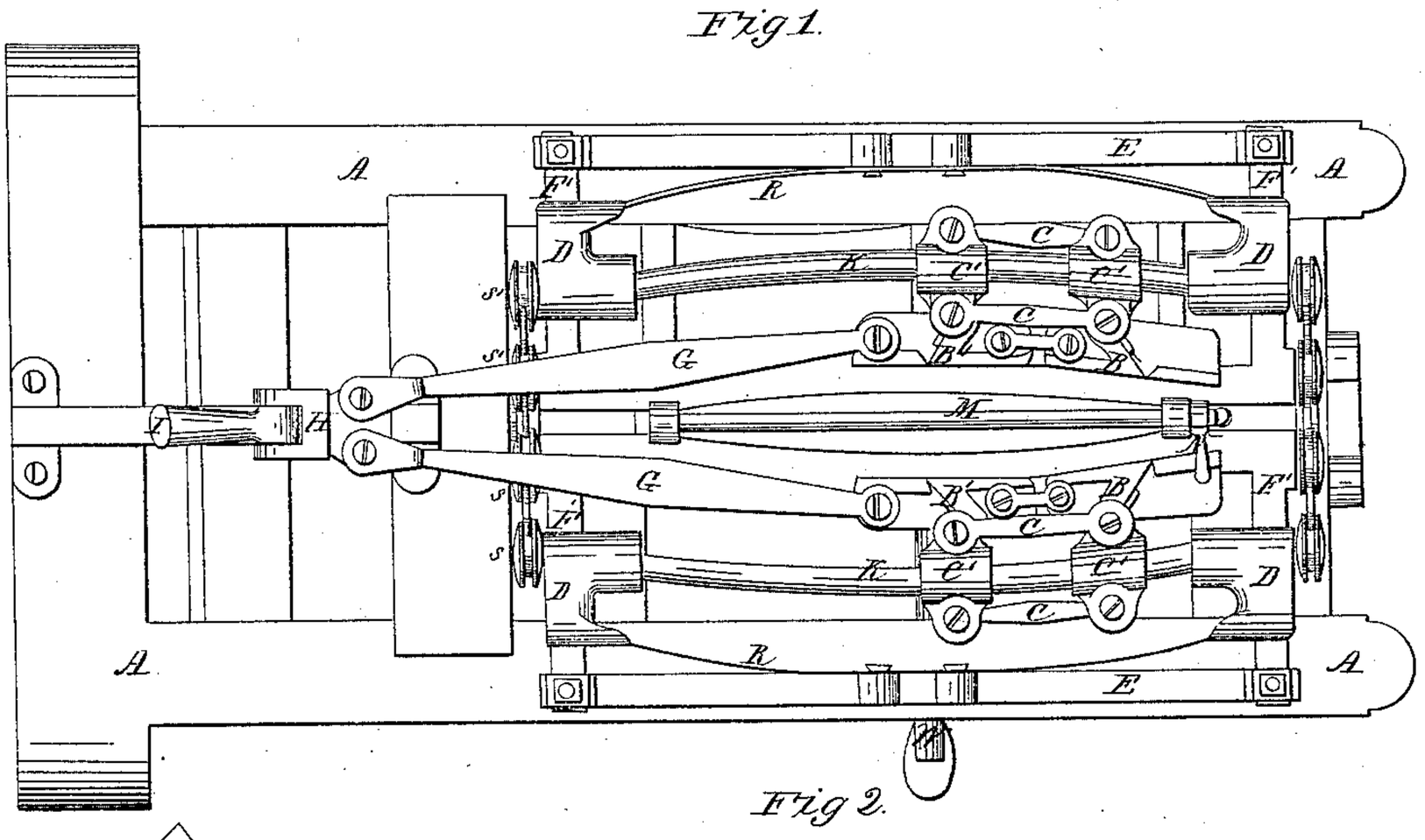
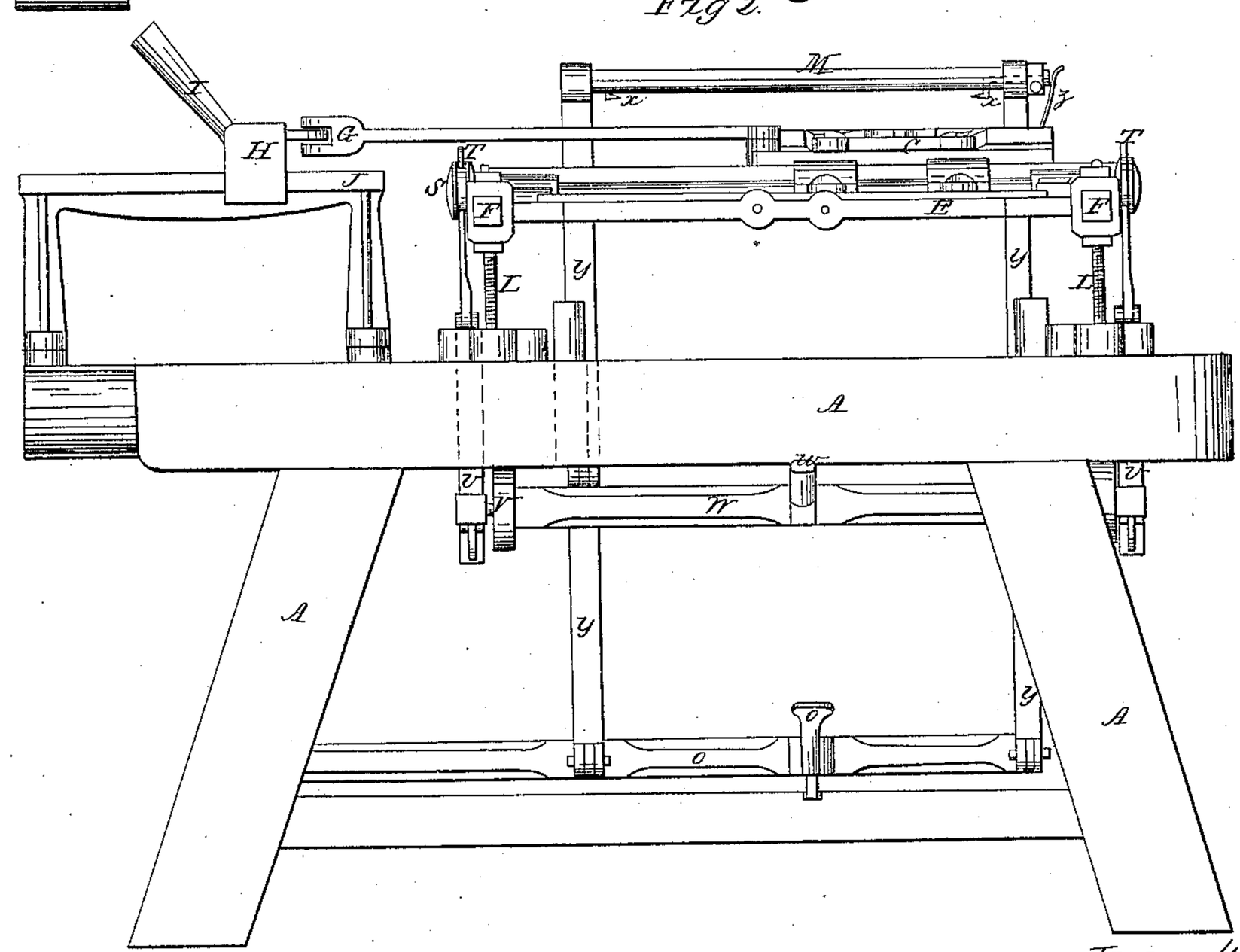


Fig 2.



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2 Sheets. Sheet 2.

E. Greenlee,

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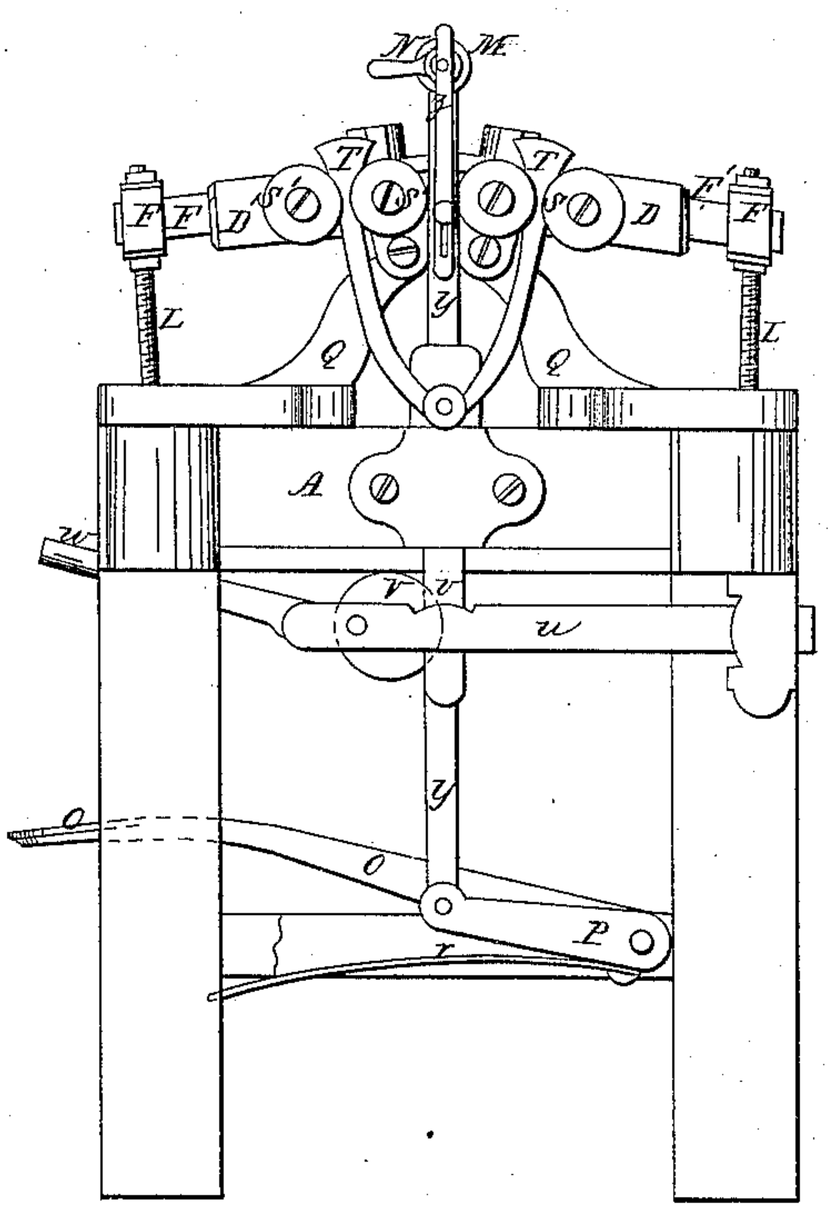
Fig 3.



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UNITED STATES PATENT OFFICE.

EDMUND GREENLEE, OF RUNDELS, SUMMERHILL TOWNSHIP, PENNSYLVANIA.

STAVE-JOINTER.

Specification of Letters Patent No. 29,965, dated September 11, 1860.

To all whom it may concern:

Be it known that I, EDMUND GREENLEE, of Summerhill township, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Machinery for Jointing Staves, of which the following is a full, clear, and exact description; reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a plan or top view of a machine for jointing staves embracing my improvements. Fig. 2, represents a view of the same, as seen from one side thereof, and Fig. 3, represents a view of the same, as seen from one end thereof.

My improvements relate to that class of stave-jointing machinery in which the stave is dressed and beveled by means of reciprocating planes moving and being held in a fixed path by means of suitably curved guides; and my invention consists, first, in arranging and operating a series of four or more planes in such relation to the clamping devices which hold the stave while being dressed, that each side of one end of the stave shall be jointed simultaneously on the forward stroke of the planes, and each side of the other end shall be similarly acted upon on their return stroke, whereby I am enabled to turn out a completely finished stave; secondly, in hinging the inner end of the guides and bed on which the planes slide back and forth, to the framework of the machine, and in supporting their outer ends by means of set-screws or adjusting-rods, whereby I am enabled to adjust the bevel of the stave-joint with accuracy without detriment to the proper working of the planes, and, thirdly, in holding the stave by means of a reversible spring-clamp, whereby its handling is facilitated.

In the accompanying drawings the mechanism is represented as resting upon, and being firmly secured to, a strong rigid frame (A). The operating parts of the mechanism are duplicated in order to dress both edges of the stave at once. The planes (B) are secured in the usual manner in suitable stocks, and stand at an angle of about 45° to their line of motion. In this instance two planes are represented as secured upon each side of the clamp which holds the stave, and are inclined in opposite directions in order that one may be acting upon the stave in whichever direction the planes may be moving. Each plane is mounted in its own independent stock and each stock is attached to a sliding-sleeve (C′). The stocks and sliding-sleeves are united in pairs by means of link-rods (C), which, while firmly uniting the parts, permit them to move freely to accommodate themselves to the curvature of the pattern-rods (K) on which the sliding-sleeves (C′), and, consequently, the planes traverse back and forth. The pattern or guide rods (K) are curved in a shape which forms a counterpart to that to be given to one side of a stave, and their ends are supported in movable guides (D) which slide back and forth upon the end-bars (F′) of the adjustable frame (F); which arrangement permits the planes to approach or recede freely from the stave. The ends of the curved or bow-springs (R) which springs are fastened near their middle to the outer side-pieces (E) of the adjustable frame (F) press against the guides (D) and serve to hold the planes firmly up against the stave, except when released by the attendant. The planes are retracted from their work in the following manner. A friction-roller (S′) is secured upon each end of the adjustable frame (F), and a corresponding one (S) upon each of the guides (D). Wedges (T) are inserted between these rollers with their smaller ends downward, and their lower ends are attached to connecting-rods (U) united to horizontal bars (*u*) pivoted at one end to the framework, and at the other to a cam-wheel (V) on a rock-shaft (W) underneath the frame. This rock-shaft is rotated by means of a lever (*w*) extending therefrom at a right angle and operated by the attendant.

The frame which supports the planes (B) and guide-rods (K) is pivoted at its inner end to curved brackets or standards (Q) arising from the main frame, while its outer end rests upon screwed spindles (L) provided with nuts above and below the frame to hold it in any required position. By screwing these nuts up or down upon the spindles the frame (F) will be inclined at a greater or less angle to the horizon, as the case may be; and, as the planes always preserve the same position relatively to the frame, they will also be correspondingly inclined, and the stave will be jointed with a corresponding bevel.

The planes are reciprocated by means of connecting-rods (G) pivoted at one end to

the plane-stocks and at the other to a cross-head (H) sliding upon a bed (J) and actuated by a pitman (I) deriving its motion from any suitable prime-mover.

The stave to be jointed is held in a follower (M) by means of two dogs (X, X′) one of which (X′) plays back and forth in a slot in the follower and is provided with a spindle which projects beyond the follower and is acted upon by a spring (Z) secured upon one of the uprights (Y) upon which the follower rests. This spring constantly tends to force the dogs together and thus to hold the stave firmly.

The follower (M) turns freely in bearings in two upright standards (Y) and is provided at one end with a handle (N) by which to reverse it at will. The uprights (Y) are capable of sliding freely perpendicularly in their guides, and their lower ends are pivoted to arms (P) projecting from a rock-shaft (O) underneath the frame. This rock-shaft is operated by a treadle (*o*) projecting therefrom. The follower (M) has a range of motion sufficient to carry it from the bed on which it rests while the stave is being jointed to a height above the mechanism sufficient to admit of its ready reversal and of the removal of the stave; and it is thus thrown up, whenever the operator releases the treadle (*o*), by means of springs (*p*) acting upon the under side of the arms (P).

The operation of the machine is as follows: Reciprocating motion is communicated to the planes in any suitable manner. The follower (M) is allowed to rise above the level of the planes, and is turned bottom upwards by reversing the handle (N) so that the dogs (*x*, *x′*) are above instead of below the follower. The dog *x′* is then pushed back and a stave placed upon the follower; the dog when released, is forced back to its place by the spring (Z) and each end of the stave is firmly clamped by the dogs. The follower is then revolved so as to bring the stave underneath. The operator then depresses the treadle (*o*) by placing his foot upon it; this rotates the rock-shaft (O) and depresses the arms (P) on each end thereof, which draw down the follower until it rests upon a suitable bed-plate or pattern on the frame on the same level as the planes. As the planes move forward the curved guide-rods (K) cause them to describe the proper curve to be given to the stave and the two front planes (B) dress the two opposite edges of one half of the stave; while the other half is in like manner dressed by the other two planes (B′) on the return stroke. When the stave is reduced to the desired form the operator, with his hand, bears upon the lever (*w*) and, through the cam wheels (V) and connecting-rods (U) draws down the wedges (T), which movement forces the planes away from the stave. The treadle (*o*) being then released the follower is immediately thrown up by the action of the springs (*p*) upon the arms (P) the follower can then be reversed and the stave removed. The planes are thrown forward again into position as soon as the hand lever (*w*) is released, by the bow-springs (R). The bevel of the stave can be varied at pleasure by raising or lowering the outer ends of the frame F, by means of the nuts on the screwed standards (L).

I do not claim broadly dressing a stave by means of reciprocating planes, whether arranged to work from the center or not, but

Having thus fully described the construction and mode of operation of my improved machine for jointing staves what I do claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the planes (B, B′) stocks (C′) united by the links (C), guide-rods (K), guides (D) and bow-springs (R), when arranged together for joint operation substantially in the manner, and for the purpose described.

2. The combination of the adjustable frame (F) with the guides (D) which carry the reciprocating planes, when arranged relatively to the bed upon which the stave rests while being jointed, as herein described.

3. The combination of the reversible follower (M) with the spring (Z) and dogs (*x*, *x′*) when arranged and operated as herein described for the purpose set forth.

EDMUND GREENLEE.

Witnesses:

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JNO. B. MCINTOSH.