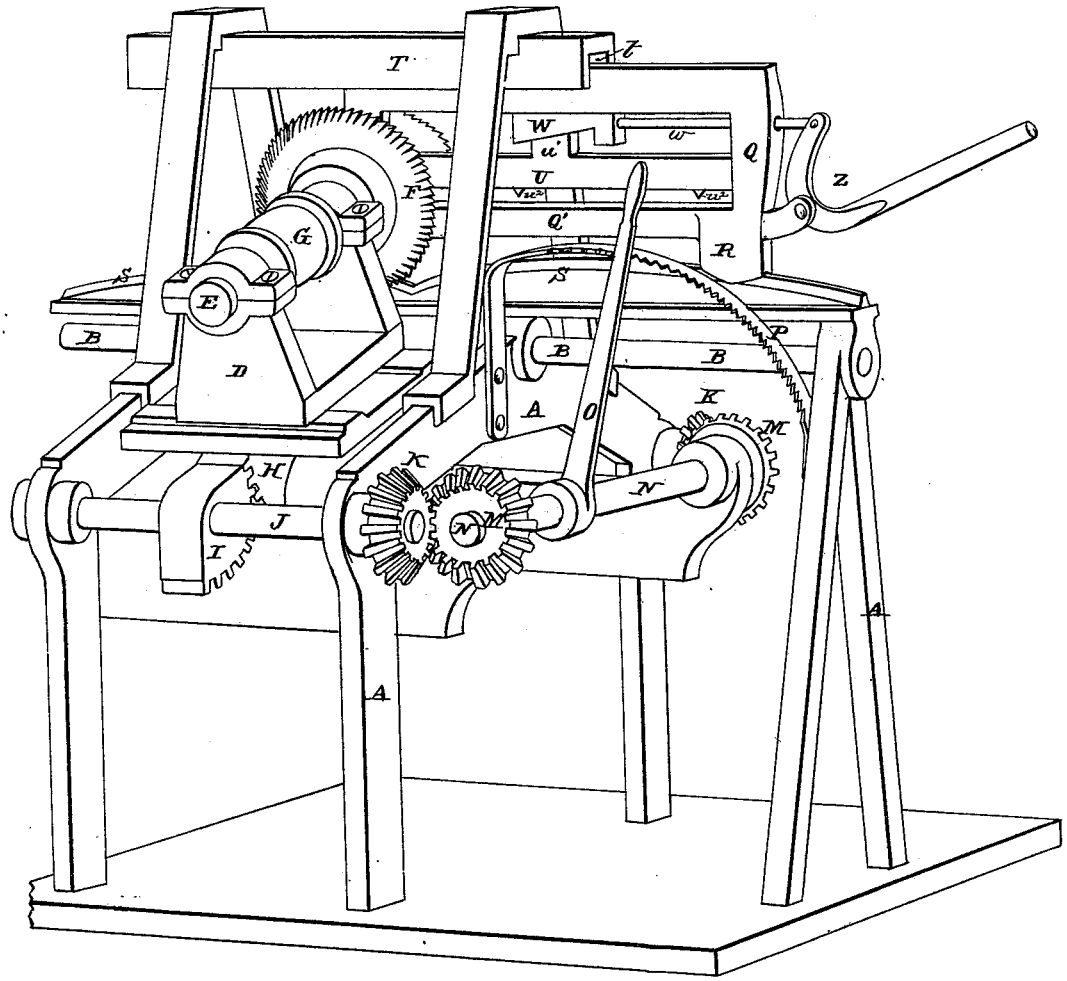
2 Sheets—Sheet 1.

W. BROWN.

Stave-Jointing Machine.

No. 204,529. **Patented June 4, 1878.**

FIG. 1.



ATTEST:
Geo. H. Knight.
Walter Allen

INVENTOR:
William Brown
By Knight Bros.
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2 Sheets—Sheet 2.

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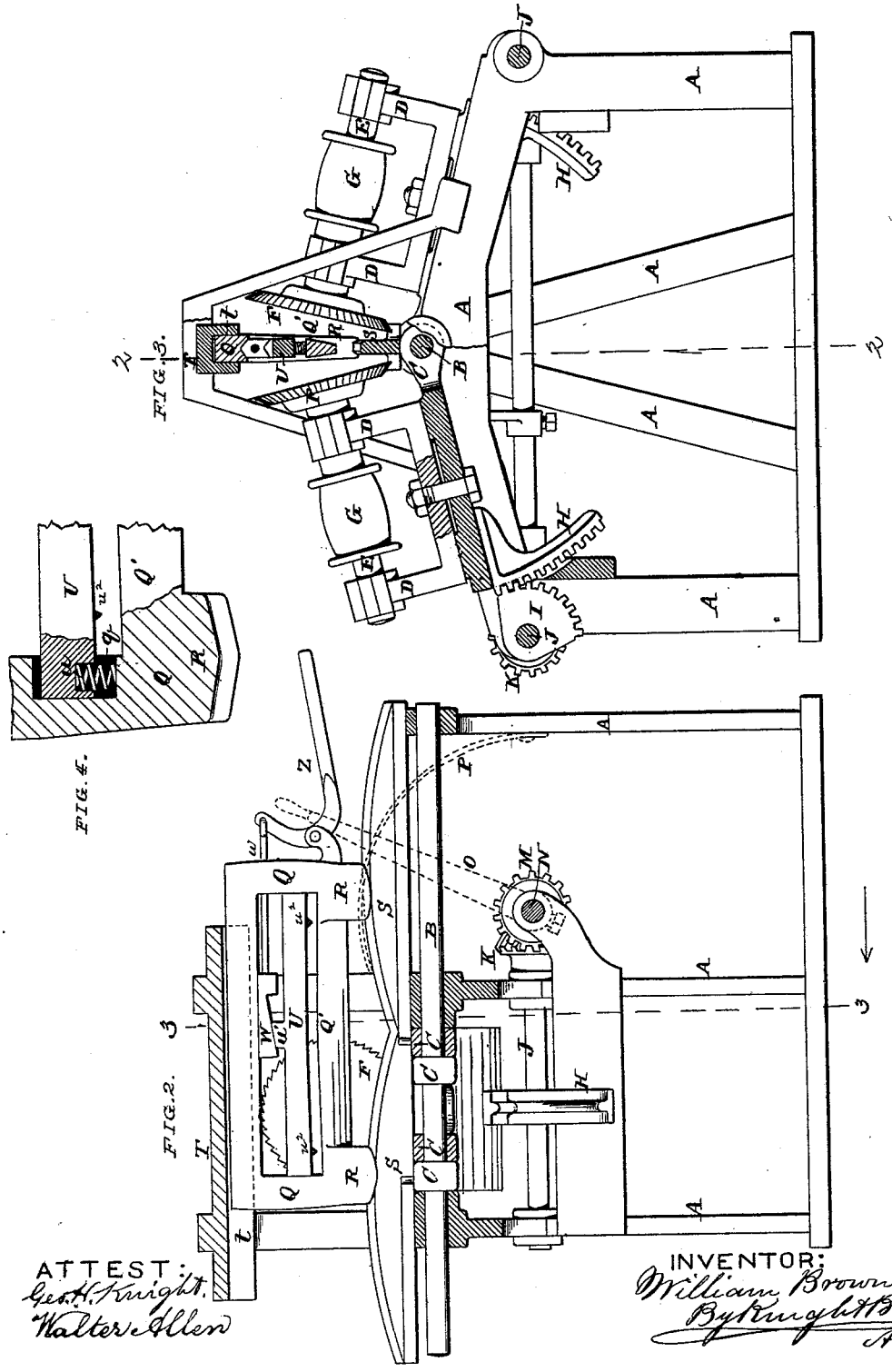

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UNITED STATES PATENT OFFICE

WILLIAM BROWN, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN STAVE-JOINTING MACHINES.

Specification forming part of Letters Patent No. **204,529**, dated June 4, 1878; application filed March 27, 1878.

To all whom it may concern:

Be it known that I, WILLIAM BROWN, of the city of St. Louis and State of Missouri, have invented a certain new and useful Improvement in Stave-Jointing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This is a machine for jointing the edges of staves, and giving to them their taper toward the ends, to form the bilge of the barrel.

The first part of my improvement consists in the construction of the carriage in which the staves are clamped.

The second part of my improvement consists in providing the carriage with two feet, which are constructed to slide over a guide so curved as to give to the carriage the required variable vertical movement as it passes through between the cutters by which the edges are dressed off.

The third part of my improvement consists in the machinery for giving simultaneous adjustment to the head-stocks. In this each of the head-stocks has a cog-sector, that engages a similar sector on a shaft carrying a bevel cog-wheel, engaging a similar wheel on a shaft that is common to both of the head-stocks, and which is turned by a hand-lever working against a ratchet that holds it in any position in which it may be placed.

In the drawings, Figure 1 is a perspective view of the machine. Fig. 2 is an end view, partly in transverse section, at 2 2, Fig. 3. Fig. 3 is a longitudinal section at 3 3, Fig. 2, looking in the direction of the arrow. Fig. 4 is a detail section through one end of the carriage.

The machine has any suitable supporting-frame, A. B is a bar, extending from end to end of the machine. The inner ends of the head-stocks D are pivoted at C to this bar. The head-stocks give bearing to the cutter-spindles E.

The circular cutters are shown at F, and the pulleys for the belts by which they are turned are shown at G. H is a cog-rack at the outer end of each head-stock, curved concentrically with the pivot-bar B. Each cog sector or rack H engages with a similar sector, I, on a shaft, J, which carries a bevel cog-wheel, K, engaging with a similar wheel, M, on the shaft N. The shaft N has secured to it an arm or lever, O, which works against the side of a ratchet-bar, P, the ratchet holding the lever to any adjustment. The purpose of the lever is to enable the operator to move the two head-stocks simultaneously either inward or outward, according to the width of the stuff which is about to be jointed. The carriage in which the stave is clamped has a rectangular frame, Q, resting on legs R at each end. These legs have a curved V-formed groove, which embraces the angular curved edge of the guide S, upon which the carriage is supported.

The upper bar of the frame Q works in grooves *t* of the head-frame T, having free endwise and vertical play in said groove, but restrained from any side shake. The lower bar of the frame Q is slightly curved upon its upper side Q′, and upon this the stave is laid, and is clamped down and slightly bent by a vertically-moving bar, U, which has a slight concave curve upon its lower side. The ends of the bar U work in vertical slots *q* of the frame Q, and beneath these ends are springs *u*, which lift the bar from the stave when it is not forced down upon it.

The purpose of forming the clamping-edges of the bars or jaws Q′ and U with a slight curve is to enable the stave to be held tightly, to prevent any jar or shake in it when operated upon by the cutters. The endwise taper is imparted to the stave by the vertical movement of the carriage, as governed by the form of the guides S. I provide the bottom of the bar U with pointed studs u^2, to assist in holding the stave.

At the top of the bar U is a projection, u^1, which is inclined upon its top, and upon this inclined side works a sliding wedge, W, to force the bar U down upon the stave. The wedge W is connected by a rod, *w*, to a bell-crank lever, Z. The downward movement of the lever draws the wedge toward it, and forces down the clamping-bar U upon the stave; and the upward movement of the lever allows the bar U to rise by the force of the spring *u*, and the stave is released.

The operation of the machine is as follows: The frame Q is drawn toward the operator to

allow the introduction of the stave at one side, and its edges are allowed to project an equal distance to each side. Then the lever Z is forced down to clamp the stave, and, the cutters F being adjusted a sufficient distance apart to make a stave of the greatest width that the stuff admits of, the frame Q is passed between the cutters. The frame gradually rises to the center of the stroke, and then descends to the end, so as to give the required curvature to the edges of the stave. The lever Z may be raised and the stave removed at either side of the machine.

The proper curvature for the edge of the stave is neither in the arc of a circle nor in an elliptical arc; but just at the bilge the curve is of a smaller radius, so that there is a strong pressure upon the joint at that point, to prevent leakage where the outward pressure of the contents is somewhat the greatest, and where there are no hoops to resist it.

I claim as my invention—

1. The carriage Q, working on curved guide S at bottom and in channel-bar T at top, and provided with clamping device to hold the stave, for the purpose set forth.

2. The combination, in the carriage Q, of the clamping bar or jaw U, operated by wedge W and lever Z, substantially as and for the purpose set forth.

3. The combination, in the carriage Q, of the movable clamping-bar U, concavely curved on its lower side, its ends working in vertical slots *q*, and supported by springs *u*, fixed clamping-bar Q′, curved at its upper side, and the wedge W, for exerting downward pressure on the bar U, substantially as set forth.

4. The combination of head-stocks D, pivoted at their inner ends to bar B, and capable of simultaneous adjustment on the shaft as an axis by mechanism consisting of the cog-racks H, shafts J and N, bevel cog-wheels K and M, and lever O, as set forth.

WM. BROWN.

In presence of—
SAML. KNIGHT,
GEO. H. KNIGHT.