

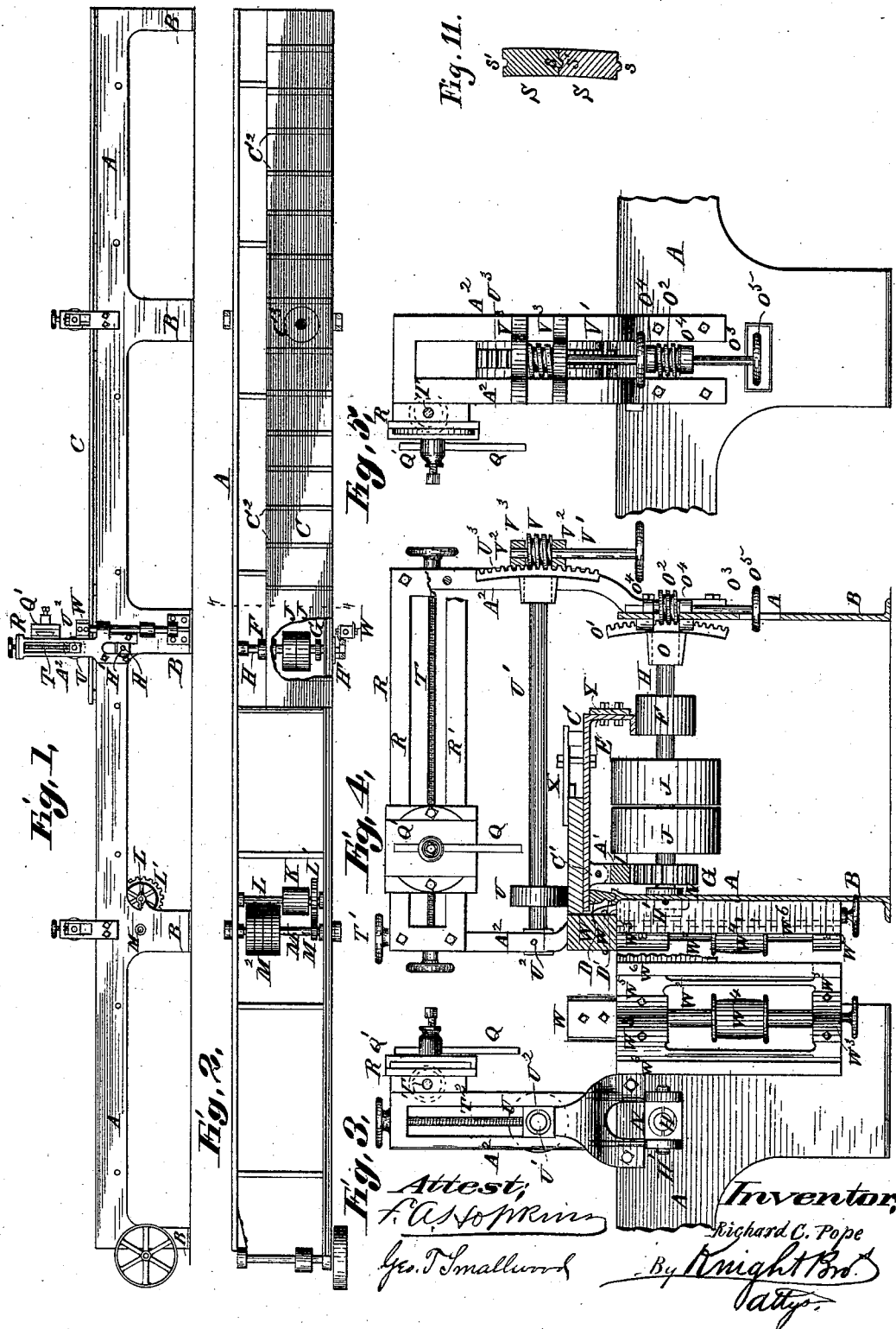
(No Model.)

2 Sheets—Sheet 1.

R. C. POPE.
MACHINE FOR JOINTING STAVES.

No. 347,059.

Patented Aug. 10, 1886.



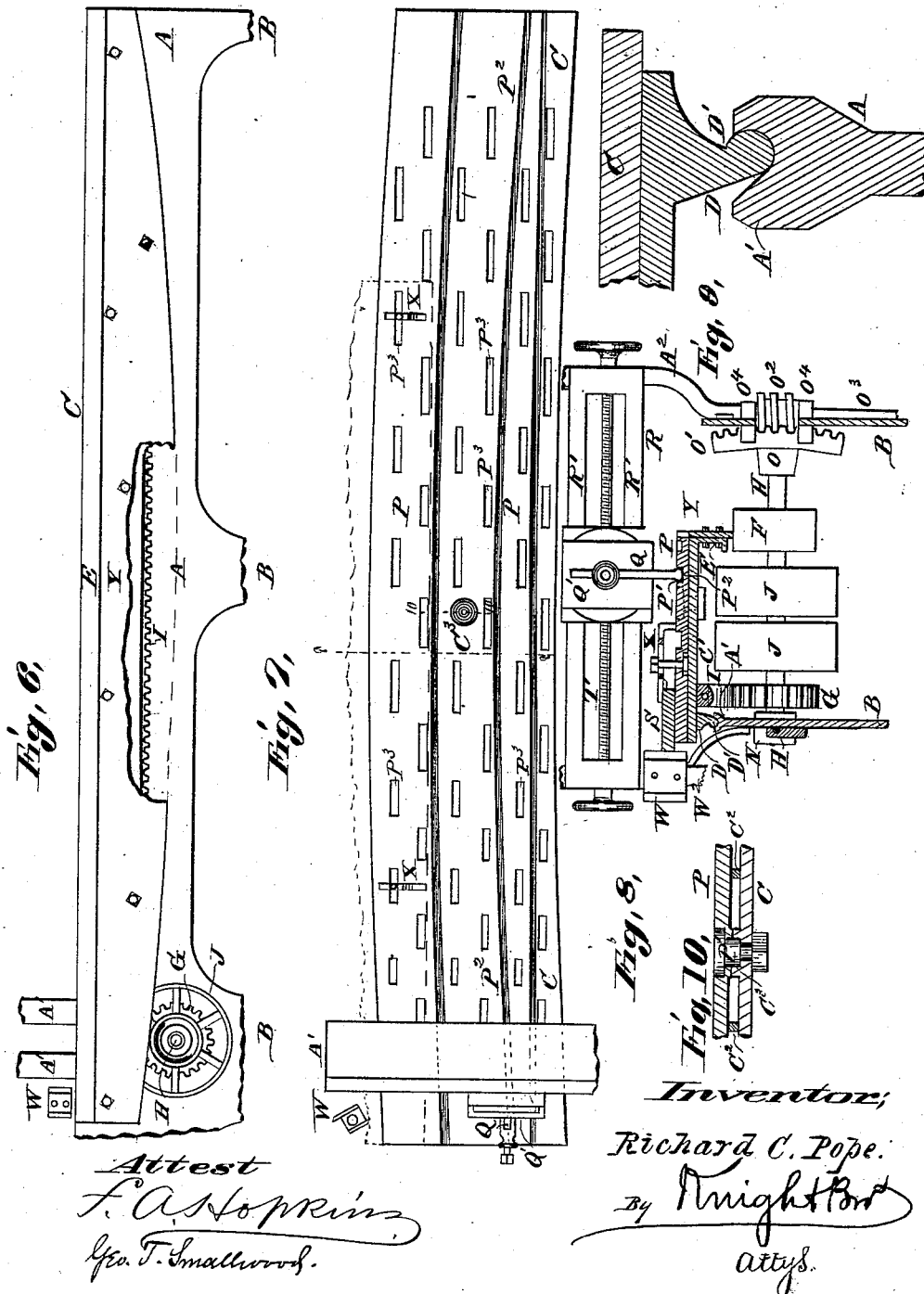
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UNITED STATES PATENT OFFICE.

RICHARD C. POPE, OF ST. LOUIS, MISSOURI.

MACHINE FOR JOINTING STAVES.

SPECIFICATION forming part of Letters Patent No. 347,059, dated August 10, 1886.

Application filed January 26, 1886. Serial No. 189,830. (No model.)

To all whom it may concern:

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

10 This is a machine having a reciprocating carriage, to which the stave is clamped, so arranged as to carry one edge of the stave in contact with a rotary cutter-head, by which the edge is jointed. The carriage is supported by
15 a rounded rib working in a groove of the table on one side, and the other side is supported by means of a flange bearing on a wheel carried upon a shaft, which is adjustable in such a manner that the carriage can be worked at an inclination to give the required bevel to the
20 edge of the stave. A form-bar may be attached to the face of the carriage-flange to bear upon the wheel, in place of the flange having bearing on the wheel, said bar being
25 curved or inclined at its bearing-edge to give a variable bearing to the edge of the stave.

Figure 1 is a side elevation of the machine. Fig. 2 is a top view with part broken away. Fig. 3 is an enlarged detail side view. Fig. 4
30 is an enlarged transverse section at 4 4, Fig. 2. Fig. 5 is a detail side view. Fig. 6 is a detail side view of the carriage with the curved form bolted on face of carriage and resting on wheel. Fig. 7 is a top view of the horizontally-
35 oscillating plate. Fig. 8 is an enlarged transverse section at 8 8, Fig. 7. Fig. 9 is an enlarged detail transverse section of the hinge-joint of the carriage. Fig. 10 is an enlarged detail transverse section at 10 10, Fig. 7. Fig.
40 11 is a transverse section of two staves with half-round tongue and groove.

A is the table or frame of the machine, standing on legs B.

45 C is a carriage having longitudinal reciprocation in the same manner as the carriage of a metal-planing machine. The carriage has, however, capacity for inclination, as before mentioned.

50 D is a flange or rail at the under side of the carriage, which has a rounded edge, D', trav-

eling in a groove, A', of the table A. At the other edge of the carriage is a flange, E, whose inturned lower edge bears upon a wheel or wheels, F, so as to support that side of the carriage. Thus one side of the carriage is supported by the table by means D A', that will allow the tilting of the carriage on that bearing, and the other side is supported on the wheel or pulley F by means of the flange E. The carriage is actuated by means of a spur-wheel, G, on the same shaft, H, that carries the supporting wheel or pulley F. This wheel G engages a cog-rack, I, running the length of the carriage, or a sufficient distance to give the required movement to the carriage.

65 Upon the shaft H are tight and loose pulleys J J, to receive a drive-belt from the pulley K upon the shaft L. The shaft L carries a spur-wheel, L', which engages with a pinion, M', on the shaft M, which carries the reversing-pulleys M'.
70

The shaft H has bearing at one end in a box, N, which is pivoted to the table at H'. The other end of the shaft H has bearing in a box, O, which is carried by a screw-gear segment, O', engaged by the gear-screw O² upon the vertical shaft O³. This shaft turns in bearings O⁴, fixed to the table, and is turned by a hand-wheel, O⁵, to raise or lower that end of the shaft H.
80

The rack I may be rigidly attached to the carriage; but I prefer to connect it therewith by hinging it to lugs C', so that the rack may be capable of some side movement on the hinges. The purpose of this is to allow it to hang vertically when the carriage is inclined, and to accommodate itself to the wheel G, for it will be observed that the shaft H and the carriage turn on different points of bearing, and at times the carriage has independent tilting movement relatively to the shaft H.
90

The carriage C is made with transverse bearing-ribs C', upon which the stave S is laid when a straight-edged stave is being jointed. These ribs act as points of bearing for the plate P, upon which a curved edged stave, S, is clamped when such is being operated upon.

C² is a boss upon the carriage C, which is bored to receive the pivot-bolt P', upon which the plate P oscillates.
100

P² is a curved groove made in the top of the plate P, which receives the lower end of a bar, Q, depending from a head, Q', supported by guides R' of the cross-beam R.

5 T is a screw-shaft having bearings at the ends in the cross-beam, and passing through a screw-socket of the head, so that by turning the screw-shaft the head may have transverse adjustment.

10 T' are vertical screws screwing through the cross-beam R, and having bearing in the up-rights A. By turning these screws the cross-beam may be vertically adjusted.

There is nothing new in the devices for supporting the head Q', or for its adjustment, as they are found in metal-planing machines, and no further description of them is needed.

It will be understood that when a stave, S, is clamped to the plate P any required curve 20 may be given to the edge by making the groove P² of the proper form.

At P³ are shown slots in the plate and carriage to receive clamping-bolts. The stave is held down upon the plate or the carriage, as the case may be, by a bearing-wheel, U, upon a shaft, U', which is supported by a swinging box in a bearing at U², and whose other end carries a screw-gear segment, U³, engaged by a gear-screw, V, on a shaft, V', having bearing at V² on a housing, V³. The position of the wheel, it will be seen, is near to the cutter-head, so that the stave is held firmly at that point by the bearing-wheel, in addition to the clamps X, by which it is attached throughout its length. The cutters of head W, I prefer to make with recessed parts, or grooves, or beaks W', (see Fig. 4,) to form matching-tongues s and grooves s' in the edges of the staves. (See Fig. 11.) The cutter-shaft W² 40 has bearing in boxes W³, attached to the vertically-adjusted frame W⁴, supported in guides W⁵ of the table A. The cutter-shaft is driven by a belt-pulley, W⁶, upon the shaft. It will be understood that the bevel of the edge of the stave is given by the inclination of the carriage, and where the edges of the staves are straight the stave may be simply clamped to the carriage in a straight condition and the carriage run at one inclination; but in the 50 jointing of a stave with a curved edge (as used in making brewery-casks) either the stave must be clamped to the carriage in a bent condition, similar to that occupied in the vessel, or else the plate or carriage to which the stave is clamped must have a somewhat complicated movement.

The movement for giving the curve to the edge has already been described, and I will now describe the means employed to give the 60 curved edge of the stave the varying bevel required when such stave is clamped in a straight position.

Y is a bar or rail, which may suitably be made of wood, and which is bolted to the side 65 of the flange E in such a position that the lower edge bears upon the wheels F.

It will be seen that the inclination of the carriage will be governed by the contour of the bearing-edge of the bar Y, and thus the ends of the stave are given a somewhat less 70 acute bevel than the central part.

I claim as my invention—

1. The combination, with a rotary cutter, of a reciprocating carriage hinged at one side, a roller upon which the other side of said carriage bears, and a vertically-adjustable shaft supporting said roller, substantially as set forth. 75

2. The combination, with the cutter, of a reciprocating carriage, a plate pivoted thereon so as to be capable of oscillating toward and from the cutter-head, a guide-groove in said plate, and a bar projecting from the frame entering said groove, substantially as and for the purposes set forth. 80 85

3. The combination, with the cutter, of a reciprocating carriage hinged at one side, and having at the other a curved bar or rail, Y, and a wheel or pulley, upon which said bar bears, as and for the purpose set forth. 90

4. The combination, with the cutter, of the reciprocating carriage C, hinged at one side, a pulley or wheel, F, upon which its other side bears, a shaft, H, by which said pulley is supported, said shaft having one extremity 95 hinged at H', and a screw-gear, substantially as described, for elevating the free end of said shaft, for the purpose set forth.

5. The combination, with the cutter, of the reciprocating carriage C, hinged at one side, plate P, pivoted to said carriage and having groove P², bar Q, engaging in said groove, curved bearing-bar Y, secured to said carriage, and pulley F, upon which said bar Y bears, substantially as set forth. 100 105

6. The combination, with the frame of the machine and the cutter, of the reciprocating carriage C, the rocking bearing A' D', supporting one side of said table, and the pulley F, upon which its other side bears, and the vertically-adjustable shaft supporting said pulley, substantially as set forth. 110

7. The combination, with the cutter and the reciprocating carriage hinged at one side, of the shaft U', having one extremity hinged above 115 the table at U², the roller U upon said shaft, and the screw-gearing for adjusting the free extremity of said shaft, as set forth.

8. The combination, with the cutter and a reciprocating carriage hinged at one side, of 120 a rack-bar hinged to the under side of said carriage, a shaft hinged at one end beneath said carriage, a pinion secured to said shaft and gearing with said rack, and means for adjusting the free extremity of said shaft, as 125 set forth.

9. The combination, with a cutter and a reciprocating carriage, of a plate pivoted to said carriage and a clamp carried by said pivoted plate for securing the stave thereto, as and for 130 the purpose set forth.

10. The combination, with a cutter, of a re-

reciprocating carriage, C, having the slots P³, and the clamps X, having bolts passing through said slots, substantially as set forth.

11. The combination, with the cutter, of the
5 reciprocating carriage C, hinged at one side, the rack-bar I, hinged to the under side of said carriage, the shaft H, hinged at H' and having the pinion G, the shaft U', hinged at U²

and having the roller U, and screw-gearing for raising and lowering the free extremities of 10 said shafts, substantially as and for the purpose set forth.

RICHARD C. POPE.

In presence of—

JOS. WAHLE,
EDW. S. KNIGHT.