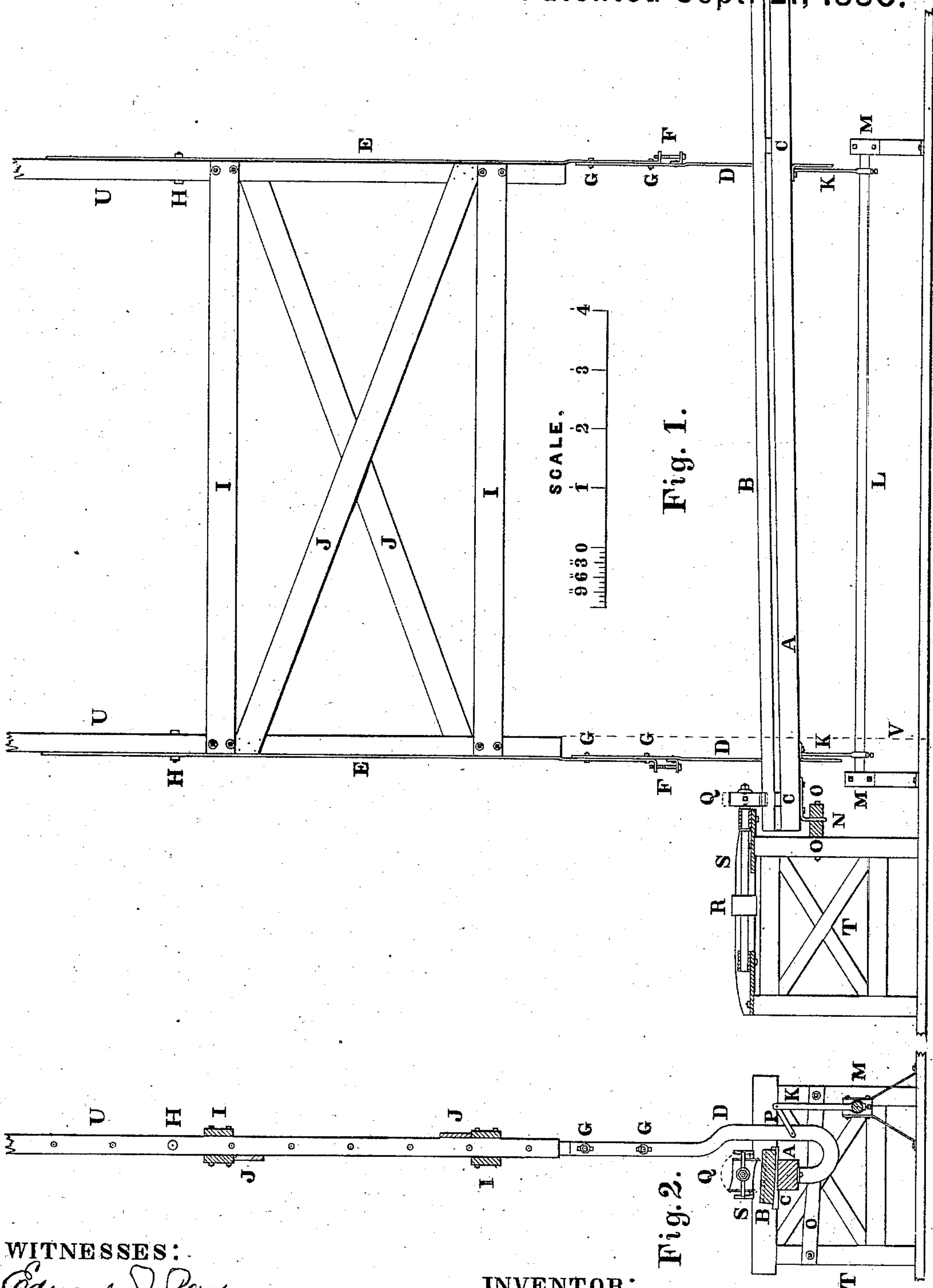


(No Model.)

D. HALLADAY.
Stave Crozing Machine.

No. 232,489.

Patented Sept. 21, 1880.



WITNESSES:

Edward J. Parker,
George O. Spomer

INVENTOR:

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UNITED STATES PATENT OFFICE.

DANIEL HALLADAY, OF BATAVIA, ILLINOIS.

STAVE-CROZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,489, dated September 21, 1880.

Application filed April 6, 1880. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HALLADAY, of Batavia, Illinois, have invented a new and useful Machine for Crozing Tank-Staves, of which the following is a specification.

The object of my invention is to effect the expeditious and accurate crozing of tank-staves; and for this purpose the end of the stave where it is to fit onto the tank-bottom is caused to swing under a revolving cutter-head which cuts the crozing. The stave is caused to swing in the arc of a circle whose radius corresponds to the radius of the tank-bottom. Where the bottom and top of the tank have the same diameter the stave swings on a horizontal table, and where the top of the tank is smaller than the bottom the narrow or top end of the stave is elevated to correspond to the taper of the tank. In other words, the stave is placed in the same position with reference to the horizontal axis on which it swings as it is to occupy in the tank with reference to a vertical line, around which, as a center, the staves are arranged, and the plane of revolution of the cutter-head during the operation of crozing makes the same angle with the stave as the stave does with the bottom of the tank when set up for use.

In the drawings, Figure 1 is a front view of the machine in elevation, and Fig. 2 is a sectional end view of that part of the machine shown in Fig. 1 to the left of the broken line V.

A revolving cutter-head, Q, is supported on the end of a horizontal shaft running in boxes attached to a casting, S, which is secured upon a wooden frame, T, in such a manner that the cutter-head projects beyond the wooden frame six or seven inches, or as far as the distance of the crozing from the ends of the staves demands.

The cutter-head is driven by means of a pulley, R, placed upon the shaft, between the two journals.

The stave to be crozed is placed upon a swinging table, A, in such a manner that its lower end will swing beneath the cutter-head at the point where it is desired to have the crozing cut.

The table A is supported by hangers D D, made of wrought-iron, bent as shown in Fig. 2.

The hangers D D are continuations of the flat iron hangers E E, which hinge on the bolts

H H, inserted in the fixed timbers U U, supported from above, and framed together by means of the cross-pieces I I and braces J J.

The distance of the bolt H from the lower edge of the periphery of the cutter-head should be equal to the radius of the tank-bottom, and the hangers E E, as well as the timbers U U, have a number of holes at intervals, corresponding to tanks of different radii, for receiving the bolts H H.

The hangers D D are fastened to the hangers E E by bolts G G, fitting holes in E E and passing through slots in D D, so as to allow the height of the table A to be adjusted according to thickness of staves, depth of crozing required, and taper of tank, for the position of the stave with reference to the axis H H and plane of cutter-head Q must be the same as it is to be with reference to the axis and bottom of tank.

The adjusting-screws F F are convenient for adjusting the height of the table previous to turning up the nuts of the bolts G G.

In order that staves of different widths may always have their proper position with reference to the axis H H, they are not laid directly upon the flat surface of the table A, but upon circular segments C C, attached to the table, the curvature of whose upper faces corresponds to that of the circles in which they swing. Otherwise the depth of the crozing would not always be the same on both edges of the staves. The edge of the stave is made to rest against fixed stops, whose faces are in a plane including the axis H H. If the staves to a tank were all of the same width, plane surfaces properly inclined would answer in place of the circular segments C C, and staves of various widths could be so placed upon the plane surface of the table that the crozing would be of the same depth on both edges of the same stave; but this would require adjustments for each stave according to its width, and would not secure the same depth of crozing at the edges of staves of different widths. Hence the importance of the circular segments C for securing a uniform depth of crozing at the edges of the staves, whatever their width. Of course there must be a separate set of circular segments for each size of tank, or at least for each position of the bolts H H.

The table A is kept parallel with the plane

of the axis H H while swinging by means of a stout shaft, L, turning at its ends in supports fastened to the floor, and having rigidly attached near each end two equal parallel
5 arms, K K, whose outer ends are connected with the hangers D D by means of links P P. Any longitudinal movement of the table A is prevented by a bent piece of flat iron, N, at-
10 tached to the under side of the table and sliding between two guides, O O, fastened to the frame T.

The table A may be moved by means of a lever or handle attached to the shaft L, or in any convenient way.

15 What I claim as my invention is—

1. In a crozing-machine, the circular segments C C, attached to a swinging table, A, supported by hangers E E, hinged on movable bolts H H, inserted in fixed timbers U U, in

combination with the overhanging cutter-head 20 Q, supported upon a frame, T, as and for the purpose herein shown and specified.

2. In a crozing-machine, the adjusting-screws F F, in combination with the hangers E E, slotted pieces D D, and revolving cutter Q, for 25 the purpose of adjusting the height and inclination of the swinging table A, as specified.

3. In a crozing-machine, the shaft L, having arms K K, connecting, by links P, with the pieces D D, in combination with the revolving 30 cutter Q, for the purpose of securing parallel motion to the swinging table A, as shown and described.

DANIEL HALLADAY.

Witnesses:

GEO. O. SPOONER,

EDWARD J. PARKER.