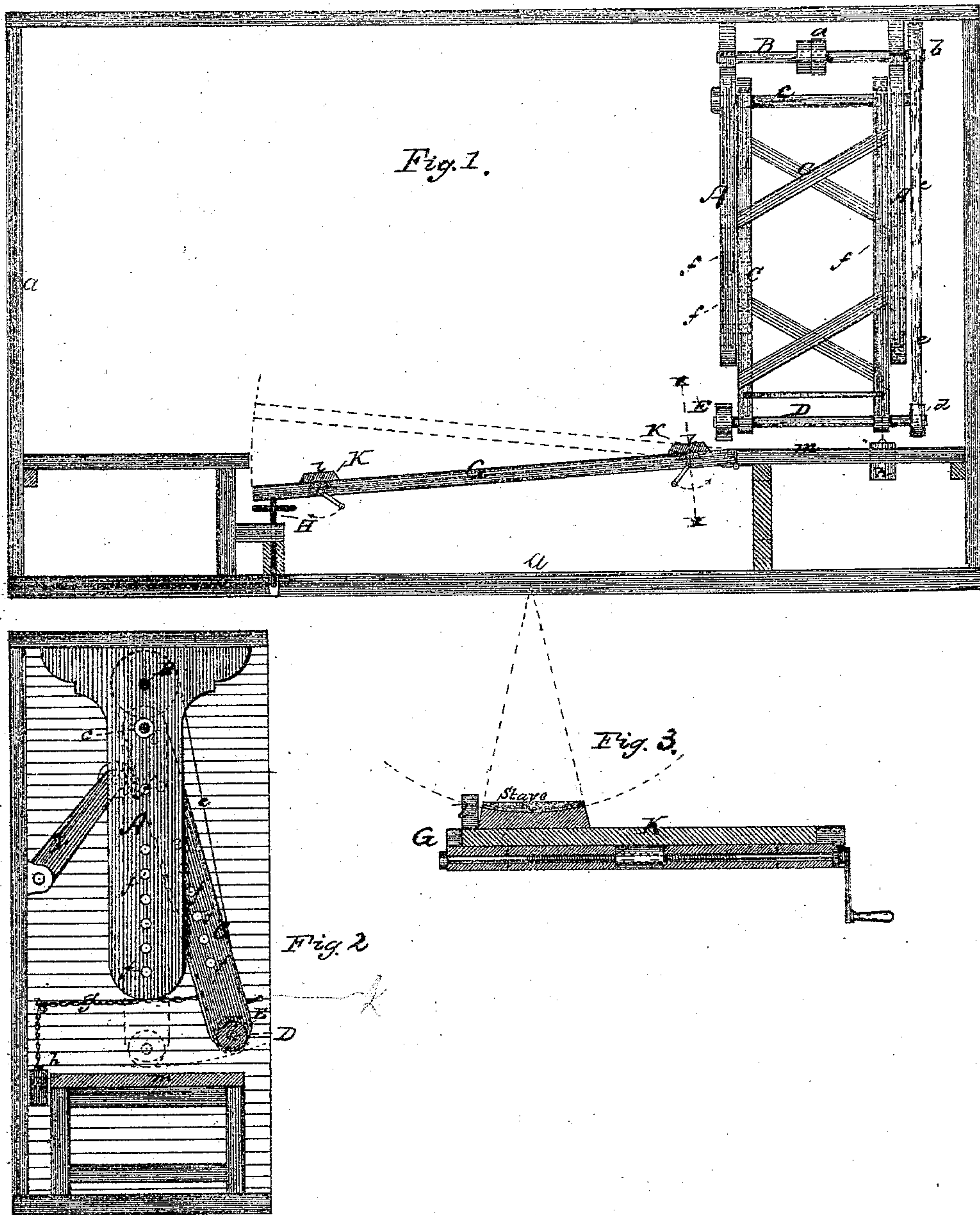


H. BRADSHAW.

Improvement in Machines for Crozing Staves.

No. 115,690.

Patented June 6, 1871.



Witnesses:
Cyrus J. Conner
J. W. Wolf.

Inventor.
Hugh Bradshaw

UNITED STATES PATENT OFFICE.

HUGH BRADSHAW, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MACHINES FOR CROZING STAVES.

Specification forming part of Letters Patent No. 115,690, dated June 6, 1871.

To all whom it may concern:

Be it known that I, HUGH BRADSHAW, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Crozing-Machines, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to a machine for cutting the croze in staves for barrels, tanks, &c.; and consists in a novel combination of a rotary swinging cutter with an adjustable table for supporting the stave, as hereinafter described.

Figure 1 is a front elevation of my machine. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-section of the table taken on the line *x x*.

In the drawing, A A represent two vertical hangers or arms, secured to the ceiling, and B represents a horizontal counter-shaft, mounted between the upper ends of the arms, and provided with pulleys *a* and *b*, the latter outside of the arm. Between the two arms, on a rod, *c*, is suspended a frame, C, having at its lower end a shaft, D, provided on one end with a cutter-head, E, and on the other end with a pulley, *d*, which is driven by a belt, *e*, from pulley *b* overhead. In order that the belt *e* may be adjusted to suit the varying distances between the shafts B and D in the operation of the machine, a belt-tightener, L, constructed and arranged as shown in Fig. 2, or of any other suitable construction and arrangement, may be used. The lower end of frame C may be swung forward and backward so as to move the cutter-head in the arc of a circle, while at the same time its rotary motion is continued. The arms A and the frames C are provided with a series of transverse holes, *f*, into either of which the fulcrum-rod *c* may be inserted. By thus shifting the rod *c* the distance between the cutter-head and the fulcrum of the frame may be varied as desired, so that when the frame is vibrated the cutter will be moved in an arc of corresponding radius. A chain, *g*, provided with a weight, *h*, is passed over a pulley, *i*, and attached to the back side of frame C so as to keep the same drawn back,

and a handle, *k*, is secured to the frame in such position that it may be readily grasped by the operator to draw the frame forward. Below the frame C is a rigid table, *m*, to one end of which is hinged a table, G, having its outer end supported on a screw, H, so that by adjusting the screw the inclination of the table may be varied, as necessary. Crosswise of table G, near each end, is mounted a slide, K, provided with an arm, *l*, at the back end, and operated by a screw and crank, as shown in Figs. 1 and 3.

In operating the machine, motion is communicated to the cutter-head through pulley *b*, and then the stave laid lengthwise on the bed, against the blocks of slides K, as shown in Fig. 3, and then the frame C drawn forward so as to move the rotating cutter across the end of the stave, the cutter in its passage forming the croze or groove in the stave.

When crozing the large ends of staves for tanks largest at the bottom, the table is adjusted so as to incline upward from the cutter; but when crozing the small ends of staves for vessels largest at the top or middle, the table is inclined downward from the cutter, as shown.

The blocks *l* on the slides *k* serve as rests for the staves and as gages to keep the staves in the proper position, the blocks being so adjusted as to bring the central line of the stave at right angles to the line of movement of the cutter across the same.

In using the machine on any one lot of staves, the fulcrum-rod should be so adjusted that the radius of the arc described by the cutter in its swinging movement is the same as the radius of the vessel in which the staves are to be used. When this is done the croze will have its face so curved as to fit exactly the top or bottom to be inserted therein.

My machine is cheap and simple, easily operated, and works with speed and accuracy.

Having thus described my invention, what I claim is—

1. A crozing-machine, consisting of the vertical hangers A, frame C suspended from bolt *c*, and provided with cutter-head E, in combi-

nation with the table G provided with the sliding heads K, the whole constructed and arranged to operate substantially as and for the purpose set forth.

2. The combination of the rod *c* with the vertical hangers A and frame C, both being provided with transverse holes, substantial-

ly as described, for the purpose of changing the line of movement of the cutter-head as desired.

HUGH BRADSHAW.

Witnesses:

CYRUS J. CORSE,
FR. W. WOLF.