

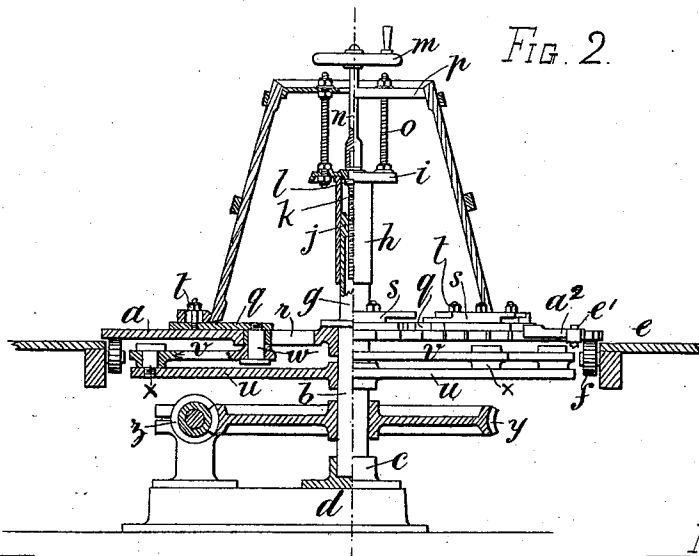
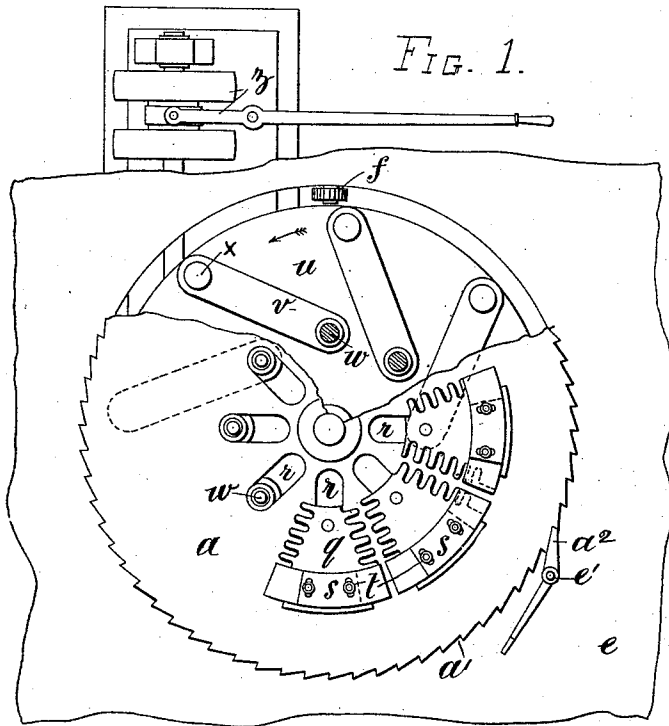
(No Model.)

A. DUNBAR.

APPARATUS FOR GATHERING OR SETTING UP STAVES FOR CASKS.

No. 578,601.

Patented Mar. 9, 1897.



WITNESSES

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APPARATUS FOR GATHERING OR SETTING UP STAVES FOR CASKS.

SPECIFICATION forming part of Letters Patent No. 578,601, dated March 9, 1897.

Application filed May 5, 1896. Serial No. 590,320. (No model.) Patented in England March 8, 1893, No. 4,999; in Spain February 5, 1894, No. 15,487; in France February 8, 1894, No. 236,129; in Belgium February 10, 1894, No. 108,661; in Italy February 19, 1894, No. 35,785; in Germany March 2, 1894, No. 79,057; in Austria July 13, 1894, No. 3,198; in Hungary November 7, 1895, No. 4,517, and in Portugal January 20, 1896, No. 2,067.

To all whom it may concern:

Be it known that I, ALEXANDER DUNBAR, a subject of the Queen of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented a new and useful Improvement in Apparatus for Gathering or Setting up Staves for Casks, (for which I have obtained patents in Great Britain, No. 4,999, bearing date March 8, 1893; in France, No. 236,129, bearing date February 8, 1894; in Belgium, No. 108,661, bearing date February 10, 1894; in Austria, No. 3,198, bearing date July 13, 1894; in Hungary, No. 4,517, bearing date November 7, 1895; in Spain, No. 15,487, bearing date February 5, 1894; in Portugal, No. 2,067, bearing date January 20, 1896; in Italy, No. 35,785, bearing date February 19, 1894, and in Germany, No. 79,057, bearing date March 2, 1894,) of which the following is a specification.

Figure 1 is a plan, part being broken away, and Fig. 2 is a view, one half being in vertical elevation and the other half in vertical section, of apparatus for setting up or gathering staves constructed in accordance with my invention.

The object is to provide simple apparatus for enabling staves to be rapidly and easily gathered or set up into the usual form of a frustum of a cone and at the same time to somewhat tighten or close in the spread-out ends of the staves.

a is a table free to rotate about a spindle *b*, which is free to rotate in a footstep *c* on the foundation-plate *d*; *e*, frame or flooring carried by standards, beams, or brackets and provided with antifriction-rollers *f*, on which the table *a* rests. Bolted or otherwise firmly secured centrally to the top of the said table *a* is a hollow stem *g*, over which fits a sleeve *h*, terminating in a circular head *i*, such circular head being formed with or secured to the sleeve *h* in any convenient way. The stem *g* is made with a nut *j*, into which takes the lower screwed end of the spindle *k*. The upper end of the said spindle *k* passes freely through the head *i* and is formed with a collar *l*, which abuts against the under side of the said head.

m is a hand-wheel secured to a shaft *n*, which fits over the upper end of the spindle *k* and is secured thereto by a cotter or in other convenient manner.

o are set bolts and nuts by means of which a head *p*, of any suitable diameter, may be secured at any necessary distance above the head *i*. The head *i* is used for setting up or gathering staves for small casks, and the head *p*, according to its diameter and distance from the head *i*, is used for setting up or gathering staves for larger casks. By raising and lowering the head *i* by means of the hand-wheel *m* and connections the head *i* or any extra head *p* may be made to serve for staves of greater or less length within a certain limit. In this way one apparatus with two or three heads will serve for gathering or setting up staves for any size of casks between the two extreme limits.

q are gathering-pieces free to be moved to and fro in radial slots *r* in the table *a*.

In order to obtain sufficient bearing-surface for the gathering-pieces on the table and at the same time to allow the said gathering-pieces to nearly approach the center, the edges of the said gathering-pieces are crenelated so as to interlock when near the center. The gathering-pieces *q* are fitted with adjustable dogs *s*, held in position by bolts and nuts or locking devices *t*.

u is a disk secured to the spindle *b*; *v*, links pivoted to the gathering-pieces *q* at *w* and to the disk *u* at *x*; *a'*, ratchet-teeth on the table *a*; *a''*, detent taking into the teeth *a'* and pivoted to the frame or floor *e* at *e'*; *y*, worm-wheel secured to the spindle *b*; *z*, driving-worm and reversing-gear of any suitable construction for giving motion in either direction to the worm-wheel *y*, spindle *b*, and disk *u*.

The action of the apparatus is as follows: The disk *u* is set in motion in the direction of the arrow and by means of the links *v* carries the table *a* around with it. As the said table rotates, staves are placed with their lower ends inside the dogs *s* and resting on the gathering-pieces *q*, the upper ends of the staves resting against a head *i* or *p*, (here shown *p*,) according to the diameter of the

cask and length of the staves. When the requisite number of staves have been placed all around, a hoop of greater diameter than the bilge of the cask to be produced is dropped
 5 over the staves, while a hoop of smaller diameter is used to bind the staves together. The motion of the disk is then reversed; but as it can no longer carry the table with it on account of the detent a^2 the links v cause the
 10 gathering-pieces q to travel along the slots r , and the dogs s thus push or gather the outspread ends of the staves closer together until the said links v are in a straight line with the slots r , while at the same time the large
 15 hoop slips down and holds the stave ends in position. As the disk u continues to rotate, the outer ends of the links v pass across the longitudinal axes of the slots r , and the gathering-pieces and dogs are withdrawn. The
 20 stave form is now removed, and the detent a^2 is disengaged from table a , so as to allow the said table to rotate with the disk u , during which rotation staves are again placed in position. The motion of the disk u is reversed,
 25 and the outer ends of the links v are again carried across the longitudinal axes of the slots r , thus gathering in the ends of the staves and returning to their original position. Again the form is removed and the
 30 operations repeated.

Motion might be given to the table and the disk might be loose, in which case the detent would act on the disk.

I claim—

35 1. In apparatus for setting up and gathering staves, the combination of a table and disk, one of which is rotatable relatively to the other and is provided with a detent arranged to prevent movement in one direction,
 40 radially-movable gathering-pieces upon the table, a head secured to the table and arranged to hold the upper ends of the staves in place, and link connections between the disk and the gathering-pieces, arranged to

move said pieces inwardly and gather the 45 staves; substantially as described.

2. In apparatus for setting up and gathering staves, the combination of a rotatable table and a rotatable disk, one of which is rotatable relatively to the other and is provided 50 with a detent arranged to prevent movement in one direction, radially-movable gathering-pieces upon the table, and link connections between the gathering-pieces and the disk; substantially as described. 55

3. In apparatus for setting up and gathering staves, a table having radially-movable gathering-pieces, said pieces having at their adjacent edges interfitting projections arranged to interlock with each other when 60 near the center of the table; substantially as described.

4. In apparatus for setting up and gathering staves, the combination of a table and a disk, one of which is rotatable relatively to 65 the other and is provided with a detent arranged to prevent movement in one direction, radially-movable gathering-pieces upon the table, a support upon the table carrying an adjustable head above the same, and link 70 connections between the disk and the gathering-pieces, arranged to move said pieces inwardly and gather the staves; substantially as described.

5. Apparatus for setting up and gathering 75 staves comprising the spindle b , slotted table a , disk u , crenelated gathering-pieces q free to slide in the slots r , dogs s attached to the gathering-pieces q , links v connecting the gathering-pieces q to the disk u , the head i 80 with its support and the detent a^2 , substantially as set forth.

In testimony whereof I have hereunto set my hand this 23d day of April, 1896.

ALEXANDER DUNBAR.

Witnesses:

JAMES JOHNSON,
 W. B. JOHNSON.