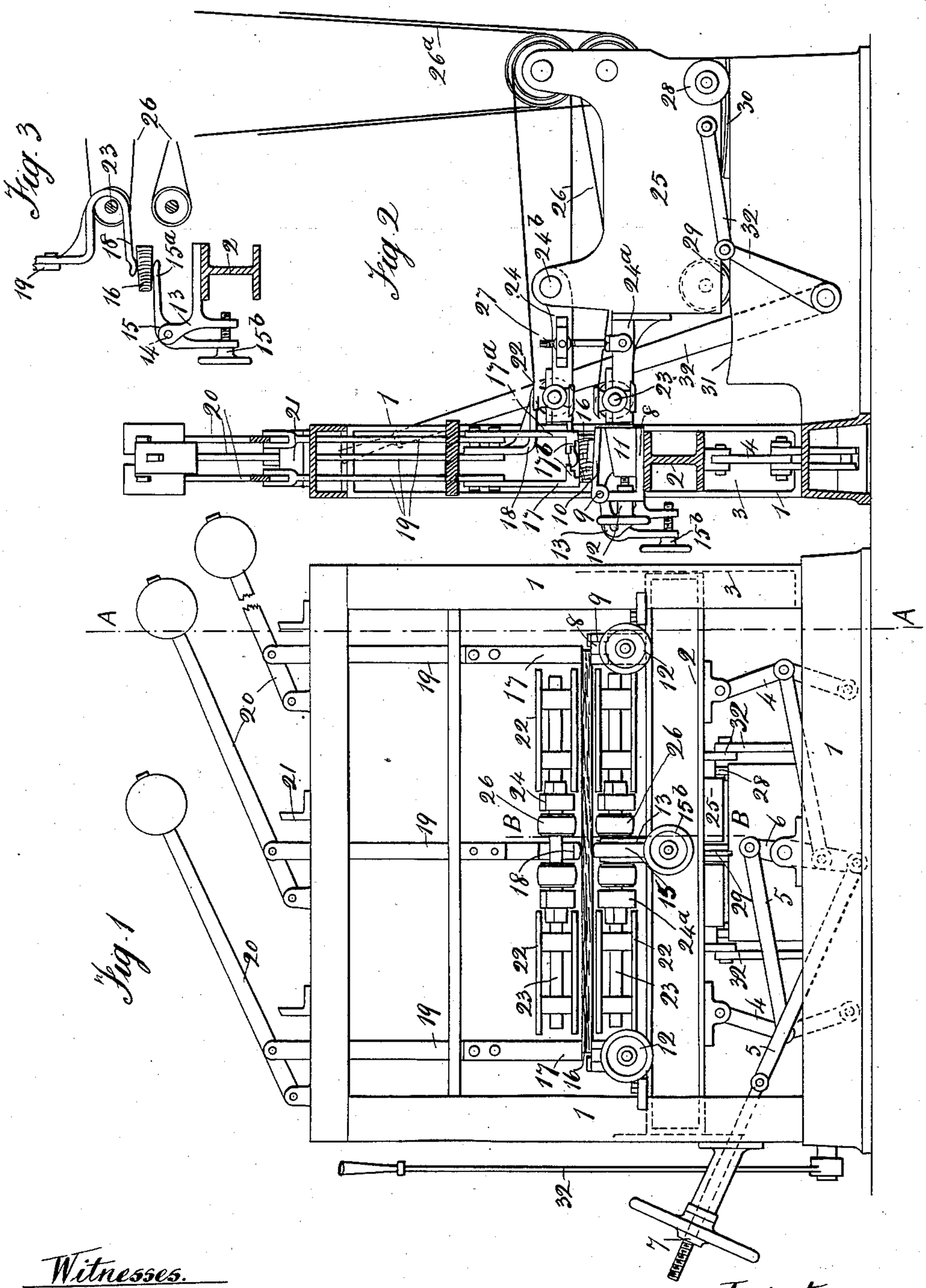
No. 657,312. Patented Sept. 4, 1900.

A. DUNBAR.

MACHINERY FOR TRIMMING, DRESSING, AND PLANING STAVES.

(Application filed May 24, 1898.)

(No Model.)



Witnesses.

W. B. Johnson
Robert Brail.

Inventor.

Alexander Dunbar

UNITED STATES PATENT OFFICE

ALEXANDER DUNBAR, OF LIVERPOOL, ENGLAND.

MACHINERY FOR TRIMMING, DRESSING, AND PLANING STAVES.

SPECIFICATION forming part of Letters Patent No. 657,312, dated September 4, 1900.

Application filed May 24, 1898. Serial No. 681,545. (No model.)

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 new and useful Improvements in Machinery for Planing, Trimming, and Dressing Staves, (for which I have made application in Great Britain for a patent, No. 25,486, bearing date November 3, 1897,) of which the following is a specification.

Figure 1 is a front elevation of one part of the machinery. Fig. 2 is a section on the line A A on Fig. 1. Fig. 3 is a detail view at the line B B on Fig. 1.

This invention relates more particularly to dressing what are known as "split" or "riven" staves, a large proportion of which are naturally crooked or twisted, but it is also applicable to straight or sawed staves.

Heretofore it has been the practice in dressing twisted staves to cause the cutters to follow closely the natural twist or curve of the stave, with the result that in many instances staves so dressed have been wasted owing to the impossibility of straightening the curve or twist sufficiently to allow of the stave being worked into a cask.

The main object of my invention is to provide means whereby crooked or twisted staves may be so operated on that the above-mentioned waste of staves will be avoided and for these purposes.

In order to plane or dress, or what is known as "back and hollow," the sides or flats of a stave, I provide clamps, grippers, or jaws for securely holding the stave at two or more points, preferably three—that is, at each end and at or near the center. The clamps, grippers, or jaws are carried on a frame free to move in guides on a main frame and are adjustable, so that a twisted stave may be constrained to assume a straight, or nearly straight, position, while rotating cutters carried on a sliding framework are caused to pass over the sides of the stave, except where held by the clamps or grippers, and plane or dress such sides to the desired form. If desired, portions of the clamps, grippers, or jaws may be carried on weighted levers attached to the main frame. Templet-guides connected with the sliding framework carrying the cutters are provided, so that such cutters receive the necessary motion for backing and hollowing the stave. Instead of being backed and hollowed the sides of the stave may be left straight, if desired.

Any twist or bend remaining in a stave after planing or dressing as above set forth will not be sufficient to prevent such stave being worked into a cask almost as easily as a straight stave.

In Figs. 1 and 2, 1 is the main frame of the machine. 2 is a bar or frame vertically movable in guides 3 in the main frame by means of toggle-links 4, operated by links 5, lever 6, and screw and hand-wheel 7. Any other convenient means of raising and lowering the bar 2 may be used, if desired. 8 are brackets secured to the bar 2 and having pivoted thereto at 9 plates or pieces 10. The plates 10 are formed wedge-shaped on the under sides. 11 are wedge-pieces bearing against the under sides of the plates 10 and movable to and fro by means of the screws and hand-wheels 12, so that such plates 10 can be raised or lowered, as desired. 13 is another bracket secured to the bar 2 (see Fig. 3) and having pivoted thereto at 14 a lever 15, one arm of which, 15^a, projects under the stave 16 at about the center, and the other arm is provided with a hand-wheel and screw 15^b, so that the arm 15^a can be raised or lowered, as desired. The stave 16 rests on the plates 10 and arm 15^a, as shown. 17 17^a are pressers which bear against the top of the stave at the ends. The pressers are formed with steps 17^b, so that whatever width a stave may be such pressers always bear against the edges, as shown. 18 is a presser which bears against the top of the stave at about the center. The plates 10, arm 15^a, and pressers 17, 17^a, and 18 act as grippers or jaws, whereby the stave is securely gripped at the ends and center and held straight. The presser 18 is bent, so as to allow free travel of the cutter-spindle 23. All the pressers 17, 17^a, and 18 are secured to vertically-movable rods 19, which are attached at their upper ends to weighted levers 20, whereby sufficient pressure is put on the top of the stave to insure that the bottom of the stave at the ends is held flat against the plates 10 notwithstanding any axial twist there may be naturally in the stave. 21 are stops to prevent the levers 20, and therewith the pressers 17

17ª 18, descending beyond a certain point when the stave is removed. 22 are cutters on shafts 23, carried in bearings on arms 24 24ª, attached to a framework or carriage 25. The cutters are caused to rotate by pulleys and belts 26 26ª in any usual or convenient way. The arms 24 are pivoted at 24ᵇ and are adjustable by means of the screw 27, so as to regulate the distance between the cutters according to the thickness of stave desired. The carriage 25 is mounted on wheels 28 29, which run on templets or guides 30 31, the curve of the templet 30 being struck from the shaft which carries the pulleys from which the belts 26ª are driven, thus allowing of the carriage 25 being moved to and fro without any tightening or slackening of the belts 26ª. The templet 31 is so curved that the cutters move in the necessary arc to give the desired backing and hollowing to the stave. 32 are levers and links whereby to-and-fro motion can be given to the carriage 25. The action of this part of the machinery is as follows: The toggle-links 4 are operated so as to lower the bar 2 to its lowest position. A stave is then placed upon the plates 10 and arm 15ª. If the stave is much thicker at one edge than the other, the plates 10 are lowered by means of the wedges 11. If the stave is nearly parallel, the plates 10 are raised correspondingly, so that the cutters will act on the stave so as not to take off more wood than is necessary to properly shape the stave. The arm 15ª is adjusted by means of the hand-wheel 15ᵇ to support the bottom of the stave, so that such stave shall be in a straight line longitudinally. The toggle-links 4 are now operated so as to raise the bar 2 and with it the stave 16 until the stave is brought against the pressers 17, 17ª, and 18. If the stave should be twisted axially, the pressure exerted by the pressers 17 17ª on the top of the stave as the bar 2 continues to move up is sufficient to force the stave flat against the plates 10, thereby taking out the axial twist, the presser 18 holding the stave against the arm 15ª, and thereby taking out any upward bend there may be in the stave. The stave is thus held practically straight both axially and longitudinally. The bar 2 is now further raised, forcing the pressers and their weighted levers upward until the stave is in the desired position before the cutters. The lever 32 is then operated so as to draw the carriage 25 forward, thereby causing the rotating cutters 22 to pass over the top and bottom of the stave and plane or dress the same to the desired shape. It will be observed that the central portion of the stave is not acted on by the cutters in this part of the machinery. The carriage and cutters are then moved backward, the bar 2 is lowered, and the stave is removed.

I do not confine myself to the particular details of plates and pressers forming the grippers, as many arrangements of grippers or jaws may be made for effecting the same object, nor do I limit myself to one central arm and presser for supporting the center of the stave, as in very thin staves two or more arms and pressers might be used, the cutters being correspondingly arranged.

I claim—

1. In stave-dressing machinery, the combination of stave clamps or grippers holding the work at right angles to the travel of the cutter-carriage, and arranged to twist the stave axially, comprising movable tables under the ends of the staves and adjustable angularly, and pressers resting on the top of each side edge of the stave, and cutters arranged to act upon the stave; substantially as described.

2. In stave-dressing machinery, the combination of end clamps or grippers adapted to hold the work at right angles to the travel of the cutter, compressing vertically-movable pressers arranged to flatten the stave as it is forced up, a central adjustable arm arranged to straighten the stave, and cutters arranged to pass over the top and bottom of the stave; substantially as described.

3. In stave-dressing machinery, the combination of stave clamps or grippers holding the work at right angles to the travel of the cutter-carriage, and arranged to twist the stave axially, comprising movable tables under the ends of the staves and adjustable angularly, and pressers resting on the top of each side edge of the stave, and a cutter-carriage movable on wheels running on templets and carrying cutters for the staves; substantially as described.

4. In stave-dressing machinery, the combination of stave clamps or grippers arranged to hold the work at right angles to the travel of the cutters, comprising tables under the ends of the staves, and adjustable according to their section, and weighted pressers on each edge of the stave at the ends, a central adjustable arm, an upper presser arranged to act upon the central portion of the stave, and cutters arranged to cut the top and bottom of the stave; substantially as described.

ALEXANDER DUNBAR.

Witnesses:
W. B. JOHNSON,
ROBERT CRAIL.