

Dressing Staves.

N^o 59,821.

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Witnesses:
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IMPROVEMENT IN STAVE MACHINES.

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SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, J. C. Cook, of the city of Buffalo, in the county of Erie, and State of New York, have invented certain new and useful improvements in Machines for Dressing Staves; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a plan of my improved machine.

Figure 2 is an elevation of the front end of the same.

Figure 3, a detached side view of the spring guide.

Figure 4, a diagram showing one of the lower adjustable bearings of the shafts of the cutter heads.

Like letters of reference indicate corresponding parts in all the figures.

The object of my improvements is to obviate certain difficulties which have heretofore existed in dressing staves, especially those possessing great irregularities as to straightness and other irregularities of form; and the invention consists in the pivoted steps in which the shafts of the feed rollers revolve, in combination with said convex feed rollers, and the pivoted spring forming their upper bearings, in the arrangement of stops or fender rollers on the shafts of the cutter heads with other parts, and in constructing the two perpendicularly revolving cutter heads—one small, with two knives, for dressing the outer side of the stave, and the other much larger, with four or more knives, for dressing the inner side of the same, when the several parts are arranged to operate in relation to one another, substantially as set forth.

In the drawings, A represents the floor or platform to which my machine is fastened; B, (Fig. 1,) the lower horizontal portion of the frame which connects the standard bearings C of the driving shaft D with the rest of the machine; E, the upright portions of the frame; F, is an upper platform or bed-plate to which the self-adjusting spring guide *a*, broad plane guide *b*, and adjustable guides *c c*, are attached, and above which are mounted, on their respective shafts, the large cutter head H, and smaller one I, and the convex feed rollers G G; J, the upper cross-bar of the frame, provided with a slot, in which adjust, by means of set screws *d d*, the upper square bearings *e e* of the shafts of the cutter heads H I. These shafts extend downward through slots in the bed-plate F, and rest and revolve in the adjustable step *f f*, (fig. 2,) which may be secured to the horizontal plates K K of the frame and adjust thereon by means of a bolt *g* and a slot *h*, as shown in fig. 4. Similar adjusting bearings *f' f'* for the same shafts are also employed, fastened to the under side of the bed-plate F, so as to render the former more firm and steady. Between the bearings *f* and *f'* are mounted the pulleys *i i*, (fig. 2,) by which motion is imparted to the cutter heads by means of belts connecting with band wheels, L L, on driving shaft, D. M M (fig. 2) are two steps pivoted in any suitable manner to a base or support, N, and having sockets in which revolve the shafts *j j* of the feed rollers. These shafts extend upward through slots in the bed-plate and have for bearings at their top the ends of the curved spring *k*, loosely pivoted to the upper cross-bar, J, of the frame as shown at *l*, so as to allow both feed rollers, G G, a lateral movement, to conform to any crooks or bends in the undressed stave. The spring *k* also allows the feed rollers to adjust to or from each other according to the varying thickness of different staves or of the several parts of the same one. O O are guards, or fender rollers, to prevent the feed rollers from coming in contact or too nearly approaching each other.

P is a transverse horizontal shaft provided at one end with a band wheel Q, connecting with the pulley *m* on shaft D. The shaft P has a bevel pinion gearing with a similar one on a short horizontal axis, placed at right angles with P, and having at its front end the bevel pinion *n*, gearing with pinion *p*, on feed roller shaft *j*, by which means the roller receives the necessary motion, which is imparted to the other one *j* by the spur gear *q q*. *b* is an ordinary broad plane faced guide bolted to the bed-plate; *a* is an oval or convex guide roller, having its bearings in arms *r r*, extending from a plate R, (fig. 3,) which fits in a mortise or socket, *s*, in the frame S, and which, by means of the coiled springs *t t*, is made capable of yielding, so that the roller *a* can adapt itself to the inequalities of the stave, the upper or lower spring yielding most as the upper or lower edge of the stave is thicker than the other, so as to keep the outer side of the stave constantly pressed flatly against the plane guide *b*; *c c* are guides for the finished end of the stave provided with slotted bases and set screws, by which they are adjusted and secured to the bed-plate.

The cutter heads, H and I, are each mounted on an upright shaft (as before described) between the bed-plate F and the upper cross plate J. The head I, which is designed for dressing the outer side of the stave, is made comparatively small, and as much less material is required to be cut off from that side (as is well known

to coopers) than from the inner side only two knives are employed of the proper convex-formed edge. The stave being so placed in the machine that the smoother and broader side shall form the outer side of the dressed stave, it is evident that the greater inequalities and the excessive thickness of some portions and of the whole stave when it is unusually thick, have all to be cut off from the inner side, so that the stave may be dressed of the greatest width that the piece is capable of making. In order to adequately provide for this extra work, I construct the head, H, proportionally larger so as to give it the required strength and provide it with four or more knives (preferably four) of suitable concave-formed edge, which renders it capable of performing the required work in a successful manner. In other respects the heads may be constructed in any ordinary and suitable manner; *v* is a pulley by which the shaft, D, receives its motion.

The operation of my improvements, constructed as before described, is as follows:

The cutter head I is first adjusted by means of the bearings *e f f'*, with reference to the guides *b* and *c*, so that it will only dress off what may be necessary to smooth and give the required convexity to the outer side of the stave. The cutter head H is then adjusted with respect to I, according to the required thickness of the stave when dressed. The machine is now set in motion by connecting the pulley *v* by a band with the motive power, when the band wheels L L communicate motion to the pulleys *i i* on the shafts of the cutter heads, and the pulley *m*, being connected with the wheel Q, imparts the necessary motion to the feed rollers by means of the gearing before described. A stave is now introduced between the feed rollers so that the wider and smoother side will be next to the guide *b*, as it is drawn in by the rollers, the convex spring guide *a*, keeping the stave pressed firmly against the broad surface of *b*, whatever the inequalities of the former may be, and the feed rollers, by means of the spring *k*, adapting themselves to the crooks and varying thickness of the stave as it passes between them. The end of the rough stave having now reached the cutter heads, the dressing process begins, the knives attached to I only cutting off what may be necessary to properly form and smooth the outer side of the stave, while the four knives of the large cutter H cut away all the surplus material, however thick the stuff may be, dressing it to the required thinness as it passes through them and thence through the guides *c c*. The machine is readily stopped by running the band on pulley *v* to the loose pulley *w*.

The advantages of my improvements may be briefly enumerated, as follows:

The pivoted steps M M allow the feed rollers the necessary free lateral movement to adapt themselves to any irregularities of form in the stave, while the sockets may be made of sufficient depth to properly steady the shafts revolving in them, and thereby also diminish, in a measure, the great wear by friction which occurs when the steps are rigidly fastened. Secondly, the use of the pivoted step with its socket prevents the bottom of the shafts (which are necessarily loose at their top) from getting displaced, as would frequently be the case were a stationary step employed with the shallow socket, which then becomes a necessity.

The self-adjusting convex spring guide, constructed as described, will at all times keep the outer side of the stave, whatever the inequalities of the latter may be, pressed against the plane guide *b*, the convexity of the roller and the springs *t*, both adapting themselves to the varying thickness of the different parts of the stave.

The spring *k*, in combination with the convex feed rollers, allows the latter to adapt themselves to the curvatures of the stave so as not to disturb the latter from its necessary and steady contact with the broad plane guide *b*.

The employment of a small cutter head with two knives and a large cutter head with four knives, so as to correspond with the labor they are required to perform, enables them to dress a stave with a facility and a degree of perfection never before attained.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination and arrangement of the self-adjusting feed rollers G G, spring roller guide *a*, fixed guides *b* and *c c*, and the two cutter heads H I, having a different number of cutters, substantially as and for the purpose herein specified.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

J. C. COOK.

Witnesses:

JAY HYATT,
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