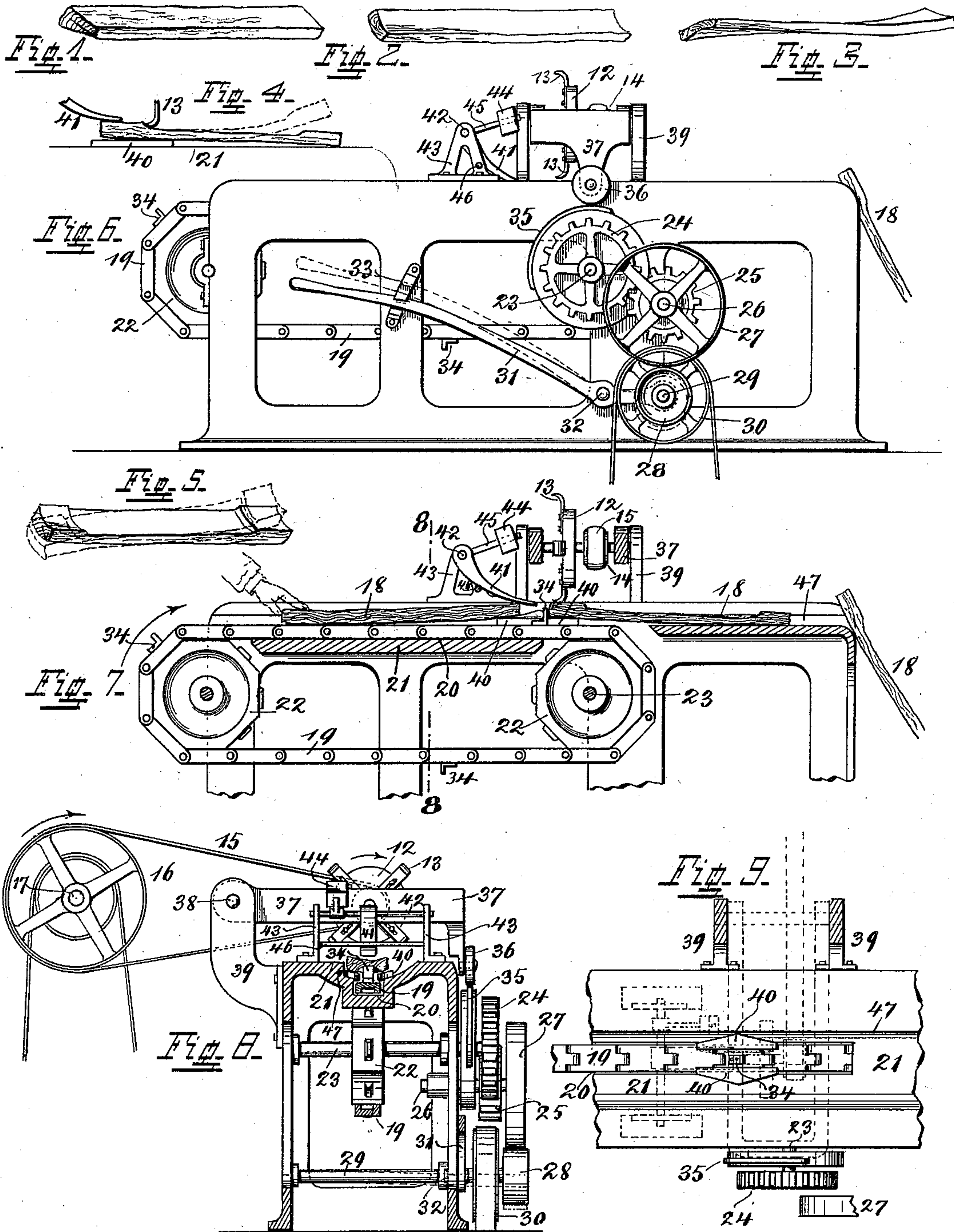


(No Model.)

C. SOMMER.
MACHINE FOR DRESSING BUCKED STAVES.

No. 504,461.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR DRESSING BUCKED STAVES.

SPECIFICATION forming part of Letters Patent No. 504,461, dated September 5, 1893.

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To all whom it may concern:

Be it known that I, CHARLES SOMMER, a citizen of the United States, residing at Sloan's Valley, in the county of Pulaski and State of Kentucky, have invented certain new and useful Improvements in Machines for Dressing Bucked Staves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to machines whereby staves used for the manufacture of kegs, barrels, and other cooperage are dressed and given their required shape and thickness, and also cut out between the ends to facilitate bending, leaving the ends thick enough to allow for the croze to be cut in. The rough staves which are supplied to these machines are prepared in two forms. In the first form the logs are sawed in blocks of the requisite length and then split in parts or rails, which are usually greatly in excess of the thickness required for the finished staves, and which surplus has to be removed. In the other form the staves are reduced to conform more to the final dimensions, by passing them through a so-called "stave-bucking" machine, or as it is more commonly known, a "stave-bucker." In these machines the staves are forced endwise through between two knives, set so that the staves are at once reduced to their proper thickness and all that remains to be done is their further reduction between the ends. Stave-dressing machines which work up rough staves of the form first described cut away this surplus wood in addition to doing the shaping, dressing and reducing between the ends. Machines which work up staves of the second form reduce them only between their ends, the removal of the surplus and the shaping being done by the "stave-bucker." In either class of these stave-dressing machines, the staves are generally held firmly and immovably by a feed-mechanism which carries them through the knives in a straight line. Many of the staves are bent, crooked, twisted, or otherwise irregular and therefore have to be

of sufficient thickness so that at all points all the wood which the staves require, travels within the straight feed-line and within the reach of the knives. Where this irregularity is so large that parts of the stave travel very much out of the straight feed-line, too much wood will be cut away on one side, while on the other the knives will not be able to reach the same, and such staves are either useless, or have to be thrown aside before going through the machine and be worked up by hand. In machines which work up staves of the first form, this irregularity does not constitute such an aggravating objection, because the manner in which these staves are prepared (generally with an ax) leaves them necessarily of liberal thickness. The only objection is however that for this very reason the machines which work them up have to do a great deal of unnecessary cutting in removing such surplus thickness, which removal entails further a considerable waste of wood. Where they have to be transported some distance before reaching the machines, almost double the weight has to be handled by reason of this useless wood, which fact forms an additional objectionable feature. These objections are not present in machines which work up staves of the second form because in this case all the surplus wood has been removed previously by the so-called "stave-bucker," which at once reduces the staves to their proper greatest thickness. These machines permit a more complete and economical use of the rough timber, obviating the losses caused when this latter is reduced by axes, and they are therefore greatly preferred. The unfinished staves also become from thirty to fifty per cent. lighter and are therefore much more readily stored or handled while transported and supplied to these machines. There is one objection however to these so-called "bucked" staves. As already casually remarked they are prepared by being forced endwise through between two knives set so as to produce the proper thickness. The surplus wood is cut off on the outside, and the reduced staves pass out from between the knives. During such passage the wood follows its grain and if the rough block was bent, twisted, or otherwise irregu-

lar before passing the knives, the reduced stave will have the same irregular shape. If such a stave now reaches a stave-dressing machine with a feed-mechanism which carries it through in a straight line, and holds it immovable while doing so, it follows that the irregular part of the stave which travels outside of the proper feed-line may be cut down on one side so much as to reduce the stave to a degree to make it useless, while on the opposite side of the same part the knives may not be able to reach into the wood. For this reason no attempt is made to pass such staves through a stave-dresser and they are at once thrown aside, either as waste or to be worked up by hand. Either disposal is of course objectionable. The one is a total loss, while the other adds to the expenses the difference between hand-labor and machine-work.

To overcome these objections special dressing-machines have been devised and my invention relates to improvements in this class of machines and especially in such which are adapted for dressing "bucked" staves.

For a clearer understanding it may not be amiss to mention here that such crooked, or twisted staves may be equally as well used for cooperage as the straight ones, because all staves before set up are put through a bending process which generally corrects all such irregularities.

In the following specification and particularly pointed out in the claim is found a full description of my invention, its operation, parts and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows a rough stave prepared for dressing after the first form. Fig. 2 shows an unfinished stave prepared for dressing after the second form, or by a stave "bucking-machine." Fig. 3 shows a stave of the kind described in the preceding figure being twisted however because having been made out of a block the fibers of which were running twisted. Fig. 4 shows two more irregular shapes of the same class of staves one being shown in dotted lines. Fig. 5 shows the shape of finished staves obtained from either kind of the rough, respectively unfinished staves described before. Fig. 6 is a side-elevation and Fig. 7 a central, longitudinal section of my improved stave-dressing machine. Fig. 8 is a vertical cross-section on line 8—8, of Fig. 7. Fig. 9 is a top-view of the middle-portion of the bed-plate.

The staves which are received by this machine to be worked up are the ones illustrated in Figs. 2, and 3. The surplus wood has been removed by the stave-bucker which also gives them the required shape or curve crosswise, which curve corresponds with the curve of the vessel and is dependent on its diameter. All that remains to be done by this machine is to reduce the staves between the ends to produce a stave as illustrated in Fig. 5. This is substantially accomplished by a cutter-head

12, provided with knives 13, and preferably driven by a pulley 14, and belt 15, from a pulley 16, on a counter-shaft 17. These knives 13, are set so as to cut in a circular line which corresponds with the curve which the diameter of the particular vessel for which the stave is intended, requires. The staves 18, are fed past this cutter-head by a feed-mechanism consisting substantially of an endless chain 19, which travels in a groove 20, of the bed-plate 21, and which is guided and driven by sprocket-wheels 22. The sprocket-wheels may be actuated in any suitable way. In this case I extend one of the shafts 23, out on one side and provide it with a cog-wheel 24, which is driven by a pinion 25, on a shaft 26. This latter is driven by frictional gear-wheels 27, 28, the latter on shaft 29, driven by a belt-pulley 30. One end of the shaft 29, nearest to friction-wheel 28, is preferably supported in a sliding box whereby the contact between the friction-wheels may be broken for the purpose of stopping the feed-mechanism. This is done by a lever 31, which connects to this loose end of shaft 29, and is pivoted at 32. It is held in either one of its positions by a rack 33. The links of chain 19, are provided with lugs 34, which engage with the rear-ends of the staves and push them through under the cutter-head.

For the purpose of reducing the thickness of the staves between their ends, the position of the cutter-head is made adjustable with reference to the feed mechanism, which adjustment occurs automatically in this manner, that the cutter-head is raised when the end-ports of the staves pass, while between the ends the cutter-head is lowered and permitted to cut out the wood. Such adjustment is accomplished by a cam 35, revolving with shaft 23, and acting upon a roller 36, secured to a frame 37, which supports the cutter head. This frame is pivoted or hinged at 38, to brackets 39, extending out from the main-frame of the machine and by reason of such connection readily responds to the action of cam 35. The position of this latter on shaft 23, is so arranged with reference to lugs 34, that it lifts the frame with the cutter-head at the proper time, which is when the ends of the staves pass. The staves best follow closely each other and therefore the cam should be of sufficient extent to hold the cutter-head in its raised position long enough to permit the ends of two adjacent staves to pass.

To permit staves of irregular shapes as illustrated in Figs. 3, and 4, to be cut out evenly and to an equal depth at all points, I provide a raised platform 40, on top of the bed-plate, immediately below the cutter-head and somewhat in advance of it. Figs. 7, 8, and 9, show it most plainly. The diamond-shaped platform shown in Fig. 9, is found to be the most satisfactory. The platform must be open mid-wise to permit lugs 34, to pass. The staves are held to this platform by presser-foot 41, secured to a rock-shaft 42, which is supported

in bearings 43, on each side of the frame. A weight 44, carried by an arm 45, and extending out from shaft 42, provides the necessary pressure. This presser-foot holds the stave 5 to the platform immediately in front of the knives, but permits it to change its position and follow its shape by reason of the limited support which platform 40, furnishes and by reason of lugs 34, which merely push the 10 staves, but do not interfere with their individual movements. The distance between platform 40, and knives 13, being fixed and the stave being enabled to pass through this space fully and in proper position no matter 15 in what position, by reason of irregular shape, its other parts may be, the objections offered by other machines where the feed-mechanism holds the staves immovably, are at once overcome. The effect of this construction may be 20 best perceived by observing Fig. 4. The staves are held straight and prevented from being pushed out sidewise by the shape of the bed-plate, which is deeper in its middle-portion where the staves travel, and also provided with a shoulder 47. A rod 46, passing 25 across below the presser-foot forms a stop

which prevents the same from dropping down so far as to interfere with the convenient feeding.

The machine may be made adjustable for 30 staves of different sizes and shapes by making the position of lugs 34, cam 35, and roller 36, adjustable.

Having described my invention, I claim as new—

In a stave-dressing machine designed for 35 the special work described, the combination of a feed-mechanism, a cutter-head means for reciprocating the cutter-head to and from the feed-mechanism which cuts in a line at right 40 angles to the feed-line, a bed-plate provided with a shoulder 47, to hold the staves in the feed-line against the opposite tendency of the cutter-head, a platform 40, below the latter and projecting from the bed-plate and a press- 45 er-foot to hold the staves to the platform.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES SOMMER.

Witnesses:

C. SPENGEL,

ALFRED M. DAVIES.