



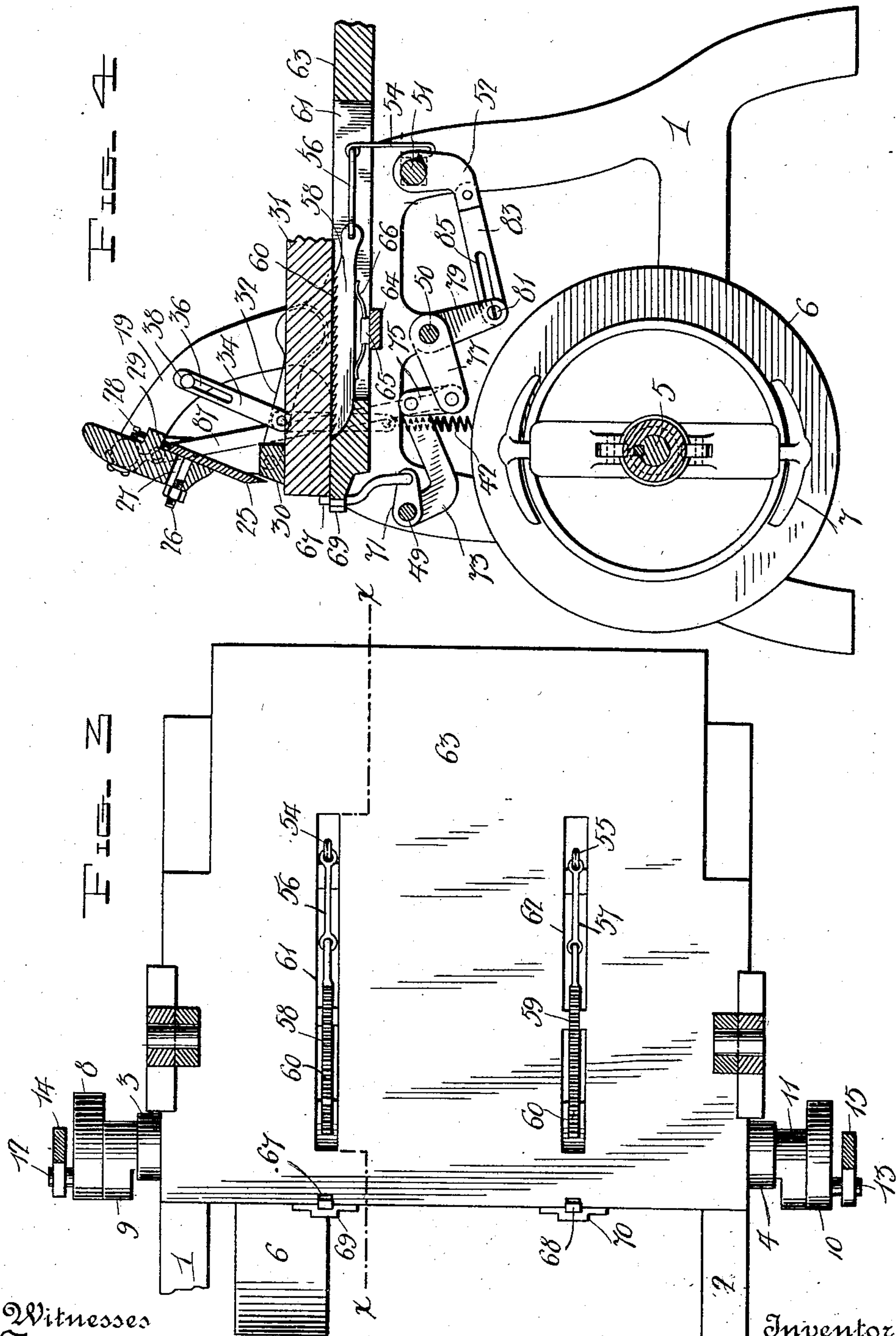
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B. G. JAYNE.  
BARREL STAVE SLICER.  
APPLICATION FILED OCT. 18, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses  
Frank H. Harrison.  
[Signature]

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# UNITED STATES PATENT OFFICE.

BENAI AH GUSTIN JAYNE, OF NEW YORK, N. Y.

## BARREL-STAVE SLICER.

SPECIFICATION forming part of Letters Patent No. 735,669, dated August 4, 1903.

Application filed October 18, 1902. Serial No. 127,868. (No model.)

*To all whom it may concern:*

Be it known that I, BENAI AH GUSTIN JAYNE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Arc-Cut Barrel-Stave Slicers, of which the following is a specification.

My invention relates to arc-cut barrel-stave slicers, and has for its object the production of specially fashioned and arranged mechanism for the purpose of cutting from a suitable bolt or billet of wood pieces adapted in contour and size to form barrel-staves with a minimum of subsequent shaping and treatment.

I accomplish the object stated by means of the parts and their association, illustrated in the accompanying drawings, of which—

Figure 1 is a front view of the machine, partly in vertical section. Fig. 2 represents a side view. Fig. 3 is a top plan view of the table having the knife and other operating elements above the table removed to clear the view of the toothed feeding-bars acting through slots in the table; and Fig. 4 is a vertical lengthwise sectional view on line *x x* of Fig. 3, introduced to exhibit the knife, the presser or clamping bar, also the stave-bolt from which the individual staves are sliced, and feeding devices.

Like numerals are used to designate like parts throughout the several views.

Considering the drawings, end frames 1 and 2 of any chosen pattern are provided with bearings 3 and 4 for the transverse shaft 5, driven by the pulley 6 through the agency of the clutch mechanism 7, whereby power may be applied or removed.

At opposite extremities of the shaft 5 are secured cranks and crank-disks 8 9 and 10 11, possessing crank-pins 12 and 13, shown in engagement with connecting-rods 14 and 15, extending upwardly and pivotally joined to the horns or lateral extensions 16 and 17 of the knife-head 18. Rearwardly and downwardly projecting curved arms 19 and 20 will be noted on each side of the head, and at their lower ends the arms 19 and 20 are pivoted upon the gudgeons or pintles 21 and 22, which are introduced through and secured in the

standards 23 and 24, formed integrally with or secured to the end frames and rising therefrom, as indicated. I do not confine myself to this single mode of pivotally supporting the head of the knife, but may modify the shape and particular arrangement of the parts concerned. It is believed to be now clear that rotation of shaft 5 reciprocates the connecting-rods and impresses an up-and-down movement upon the knife-head in the path of an arc of a circle.

The knife is marked 25, and one means of attaching it to the head by bolts 26 through slots 27 in the head and for adjusting it by set-screws 28 through lugs 29 jutting from the back of the head most clearly appear in Fig. 4.

Number 30 designates a presser or clamping bar, the office of which is to hold the stave-bolt 31 in place as the knife comes down upon it. At its ends the bar 30 is secured to the rearwardly-projecting arms 32 and 33, the rear ends of the arms being pivotally supported by the pintles 21 and 22, before referred to. Rising from the arms 32 33 just back of bar 30 are links 34 and 35, provided, respectively, with lengthwise slots 36 and 37 near their upper extremities. These links are kept in position against the inner surfaces of the curved arms of the knife-head by headed screws or pins 38 and 39, passing through the slots 36 and 37 and entering the metal of the curved arms, as drawn. At the points where links 34 and 35 join the presser-bar arms 32 and 33 there are also pivotally attached to those arms the depending links 40 and 41, and these depending links have spiral springs 42 and 43 connected with their lower ends, the lower ends of the springs being secured to turnbuckles 44 and 45, which are themselves connected at their lower ends with the vertical rods 46 and 47, and the lower ends of these rods are finally attached to the frame by means of pins, such as that indicated by broken lines in Fig. 2 and marked 48. Any effective means for securing the lower ends of the vertical rods 46 and 47 might be introduced. It will now be understood that when the knife-head lifts it slightly elevates also the presser-bar 30 against the force of the spiral springs 42 and 43, and when the knife-head descends the bar halts



as the stave-bolt is reached, but the head continues its descent, the headed pins 38 and 39 at the same time downwardly traveling the slots 36 and 37 in the links 34 and 35. It will be further seen that the tension of the spiral springs and therefore the clamping pressure of bar 30 upon the stave-bolt is variable by means of the adjustable turnbuckles 44 and 45.

Partly shown in Fig. 1 and in cross-section in Fig. 4 are minor transverse shafts, (marked from front to rear 49, 50, and 51.) These I term "rocking" shafts, for the reason that each turns but partially around and then returns during the operation of the machine. Fixed on rear shaft 51 are elbows 52 and 53, and secured to these elbows are vertical elastic rods 54 and 55, (see particularly Fig. 4,) and these rods are coupled by links 56 and 57 with sliding feeder-bars 58 and 59, furnished upon their upper surfaces with ratchet-teeth 60 and located in slots 61 and 62 through the table 63. In Fig. 4 a portion of the table has been cut away to clear the view of the cross-piece 64 and its rider-block 65 as well as the bow-spring 66, upon the points of which the feeder-bar 58 is seen to rest and upon which it slides. The offices of the bow-spring 66 and of its fellow (not shown, but employed beneath feeder-bar 59) are to exert upward pressures upon those bars and hold them normally in contact with the stave-bolt 31. It will be also clear that if the feeder-bars be drawn rearwardly the inclined sides of the ratchet-teeth 60 permit the bars to move backwardly without disturbing the stave-bolt, but when forced forward the points of the teeth pierce the under surface slightly by the pressure of the bow-springs and the bolt is thus moved to the front a predetermined degree. The forward movement or feed of the stave-bolt is definitely governed by certain vertically-sliding stops 67 and 68, directed by retaining guide-clips 69 and 70, fixed upon the front edge of the table. The lower ends of the stops pivotally connect with cranks 71 and 72, secured on the first minor cross-shaft 49, and as the shaft rocks the stops rise and fall in their guides. The intermediate shaft 50 of the three minor transverse shafts is journaled usually in slightly-dropped portions of the frames, as shown in Figs. 2 and 4. The three shafts are pivotally coupled by a series of twin connections. Two L-shaped arms 73 and 74 have the ends of their shorter legs secured to the front shaft 49 and the end of their longer legs to short links 75 and 76, vertically disposed between the front and intermediate transverse shafts. The lower ends of these links are coupled to crank-arms 77 and 78, secured to the intermediate shaft 50, and yet other crank-arms 79 and 80 are also attached to this shaft 50 and point downwardly, as usually arranged. The lower ends of the crank-arms 79 and 80 are provided with headed screws 81 and 82, the heads lying upon the outer sur-

faces of horizontal extension-bars 83 and 84 and the shanks of the said headed screws 81 and 82 passing through longitudinal slots 85 and 86 in the horizontal bars 83 and 84. The office of these twin horizontal slotted extension-bars is to couple crank-arms 79 and 80 with the elbows 52 and 53, mentioned previously in this description as fixed upon the rear shaft 51 and rocking with it, and of which these slotted bars are rigid extensions.

All the minor transverse shafts and their several connections are actuated by the pitman-rod 87, (see Fig. 1,) pivotally joined to the knife-head by any suitable coupling 88 and having its lower end holding the pin of a crank 89, secured on the intermediate shaft 50.

In operation as the knife descends the limiting-stops 67 and 68 at the front of the table also retire slowly downwardly, the slotted extensions 83 and 84 are raised and the elbows are turned also, with the result that the elastic rods 54 and 55 have their topmost ends moved to the rear and the feeder-bars 58 and 59 are drawn in the same direction. The slots 85 and 86 in the horizontal extensions in engagement with the screws 81 and 82, as explained, permit the necessary movement of cranks 79 and 80 without subjecting the elbows 52 and 53 to excessive rocking. As previously set forth, the presser-bar has held the stave-bolt in place during the approach and cleavage of the knife. Now as the head and knife rise the stops 67 and 68 rise also, the presser-bar is lifted slightly, and the elastic rods 54 and 55 have their topmost ends brought forward, actuating the feeder-bars, the teeth of which catch in the stave-bolt and advance it positively until the stops are encountered, and even then there is a forward pressure of the feeder-bars which reacts upon the elastic rods. The stave-bolt is thus firmly held against the stops until again clamped by the presser-bar. It will be noted here that all clamping and feeding actions are yieldingly limited by suitably-placed springs and no jarring or racking of the machine follows such steps of the operation. The staves as they are sliced either fall into a convenient receptacle or are removed by an attendant when the machine is driven at a moderate rate.

I am aware that stave-slicing machines have been constructed and provided with arc-cut knives and stave-bolt feeding and limiting devices, and I do not claim those features broadly.

What I claim is—

1. In a barrel-stave slicer, the combination of a knife-head having pivoted arms and mechanism arranged to operate it, a presser-bar having pivoted arms, spring-connected means normally tending to lower said presser-bar, devices actuated by movement of said head whereby the presser-bar is raised, a table, front, intermediate and rear transverse rocking shafts, vertically-acting stops and reciprocating devices connecting said stops



and front shaft, stave-bolt-feeding means actuated by the said rear shaft, pivotal connection joining the three shafts, and devices capable of conveying a rocking movement to one of said shafts.

2. In a barrel-stave slicer, the combination of a knife-head having pivoted arms and mechanism arranged to operate it, a presser-bar having pivoted arms, spring-connected means normally tending to lower said presser-bar, devices actuated by movement of said head whereby the presser-bar is raised, a table, transverse rocking shafts, vertically-acting stops and reciprocating devices connecting said stops and one of said shafts, stave-bolt-feeding means actuated by another of said shafts, and devices capable of conveying a rocking movement to one of said shafts.

3. In a barrel-stave slicer, the combination of a table, reciprocating stave-bolt stops attached to the table and mechanism constructed and arranged to operate the stops, a rocking shaft and devices capable of conveying a rocking movement to the said shaft, elastic rods rigidly held upon the shaft, and reciprocating stave-bolt-feeding means pivotally connected with the said elastic rods whereby a stave-bolt is fed upon the table against the said stops, the said elastic rods relieving the concussion between the stave-bolt and stops and holding the bolt to the stops, substantially as described.

4. In a barrel-stave slicer, the combination of a slotted table, reciprocating stave-bolt stops attached to the table and mechanism constructed and arranged to operate the stops, a rocking shaft and devices capable of conveying a rocking movement to the said shaft, elastic rods held vertically in rigid connection with the said rocking shaft, toothed feeder-bars located in the table-slots, suitably-supported springs exerting an upward pressure on said feeder-bars, and links pivotally connecting the feeder-bars and elastic rods, the said elastic rods relieving the concussion be-

tween the stave-bolt and stops and holding the bolt to the stops, substantially as described.

5. In a barrel-stave slicer, the combination of a knife-head having pivoted arms and mechanism arranged to operate it, a presser-bar having pivoted arms, spring-connected means tending to lower said presser-bar, devices actuated by the movement of said head whereby the presser-bar is raised, a table, transverse rocking shafts, vertically-acting stops and reciprocating devices connecting said stops and one of said shafts, elastic rods rigidly held upon one of said shafts, reciprocating stave-bolt-feeding means pivotally connected with said elastic rods and adapted to feed a stave-bolt on the table, and devices capable of conveying a rocking movement to one of said shafts.

6. In a barrel-stave slicer, the combination of a knife-head having pivoted arms and mechanism arranged to operate it, a presser-bar having pivoted arms, spring-connected means normally tending to lower said presser-bar, devices actuated by the movement of said head whereby the presser-bar is raised, a slotted table, front, intermediate and rear transverse rocking shafts, vertically-acting stops and reciprocating devices connecting said stops and front shaft, elastic rods held vertically in rigid connection with the said rear shaft, toothed feeder-bars located in the table-slots, suitably-supported springs exerting upward pressure on the feeder-bars, and links pivotally connecting the feeder-bars and elastic rods whereby a reciprocating movement may be given said bars, pivotal connections joining the said three shafts, and devices capable of conveying a rocking movement to the said intermediate shaft.

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

BENAI AH GUSTIN JAYNE.

Witnesses:

JNO. B. KETCHUM,

JOSHUA S. SHAPIRO.