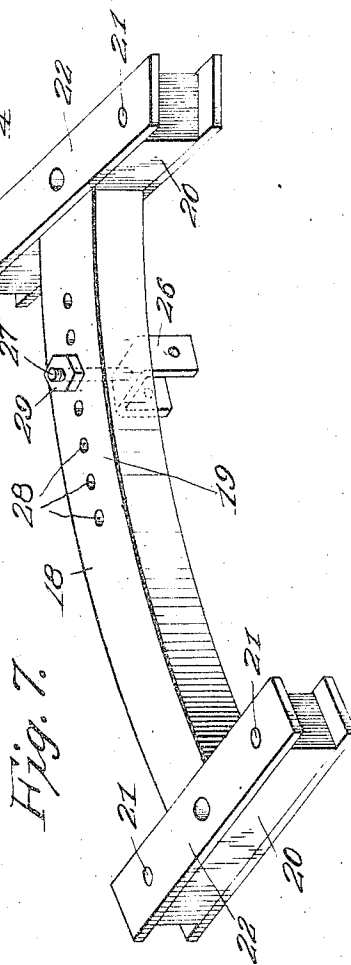
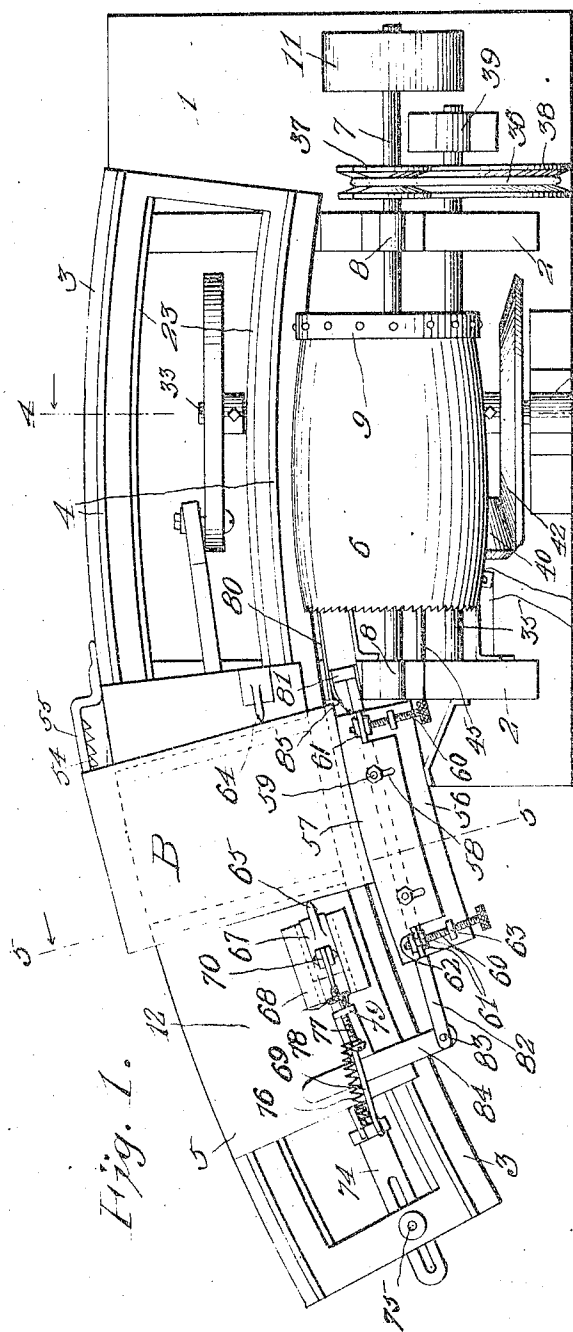


J. B. LUTTRELL.
STAVE SAWING MACHINE.
APPLICATION FILED DEC. 31, 1908.

951,784.

Patented Mar. 8, 1910.

4 SHEETS—SHEET 1.



Witnesses

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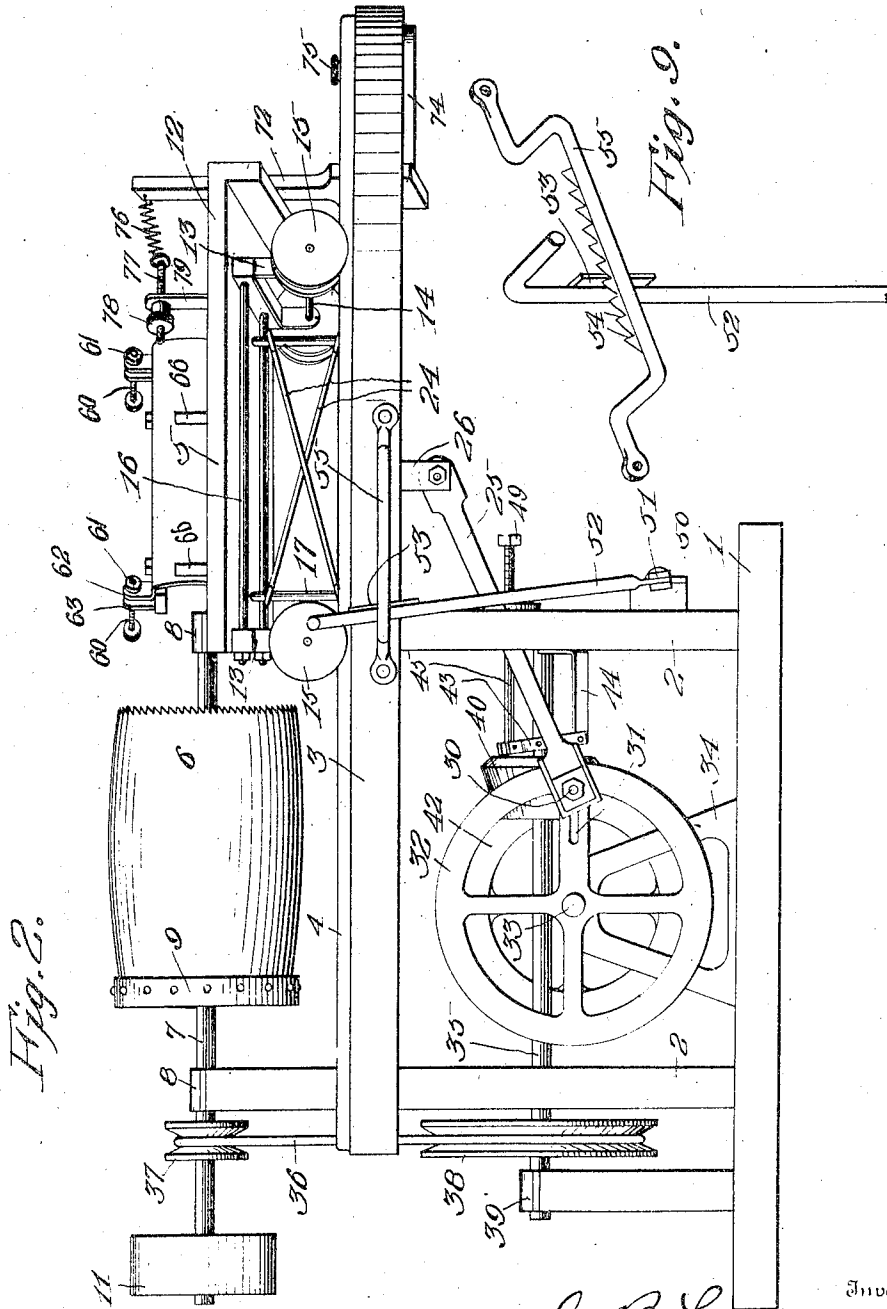
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 3.

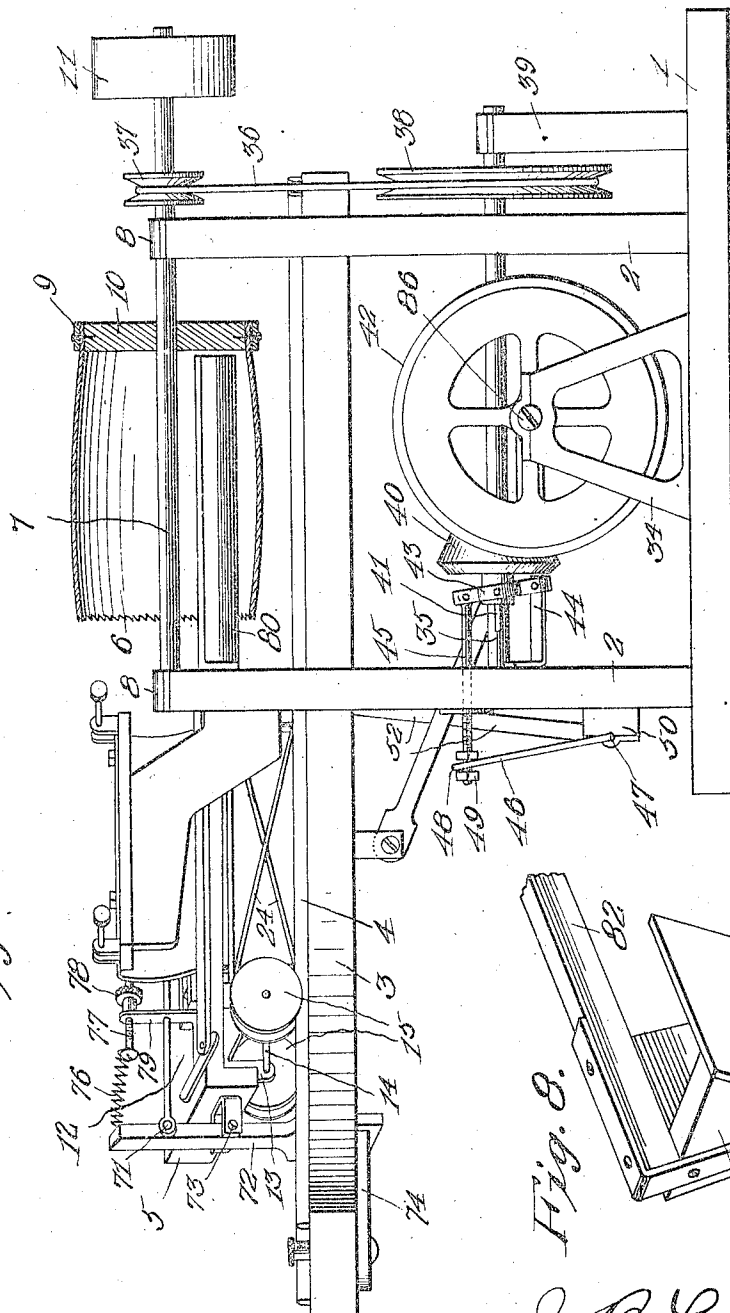
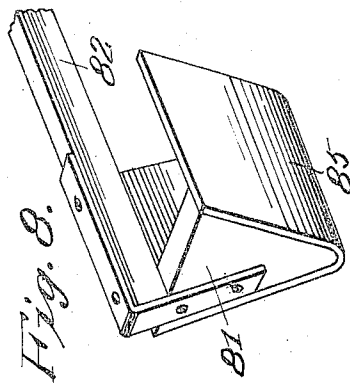


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH BENJAMEN LUTTRELL, OF LITTLE ROCK, ARKANSAS.

STAVE-SAWING MACHINE.

951,784.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed December 31, 1908. Serial No. 470,178.

To all whom it may concern:

Be it known that I, JOSEPH B. LUTTRELL, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Stave-Sawing Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in machines for sawing barrel staves and the like.

The objects of the invention are to provide a simple and practical machine of this character which will quickly and automatically cut a block or bolt of wood up into staves and eject them from the machine, to provide an improved means for automatically feeding the bolt to the saw and to provide an improved ejecting mechanism.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a stave cutting or sawing machine constructed in accordance with the invention; Fig. 2 is a front elevation of the machine; Fig. 3 is a rear elevation; Fig. 4 is a vertical cross section taken on the plane indicated by the line 4—4 in Fig. 1; Fig. 5 is a detail cross section, the plane of which is indicated by the line 5—5 in Fig. 1; Fig. 6 is a detail section showing a means for adjusting one of the shafts of the friction gearing; Fig. 7 is a detail perspective of the I-shaped cross head or slide to which the work carriage is connected; Fig. 8 is a detail perspective of the ejector slide; and Fig. 9 is a similar view of the controlling lever and its pawl and ratchet locking means.

The invention comprises a suitable supporting frame or body here shown as consisting of a base 1 from which rises uprights 2 united by longitudinally curved or arc-shaped beams 3 which serve as supports for similar-shaped track rails 4. The beams 3 or equivalent support for the track rails project beyond one end of the frame to allow for the reciprocation of a work supporting carriage 5 past a saw 6 upon a longitudinal shaft 7 journaled in suitable bearings 8 on the uprights 2. The saw 6 is in the form of an ordinary tubular saw secured by means

of a ring 9 on a circular head 10 fixed to said shaft, as shown more clearly in Fig. 3 of the drawings. A belt wheel or pulley 11 is fixed upon the projecting end of the shaft 7 for a suitable driving belt.

The reciprocatory or oscillatory carriage 5 which carries the block or bolt of wood B past the saw 6 may be of any suitable form and construction, but, as illustrated, it comprises a platform 12 provided upon its bottom with hangers 13 for the axles 14 of track wheels 15. The peripheries of the wheels 15 are grooved to engage the track-rails 4, which latter are preferably V-shaped in cross-section, as shown. The hangers 13 are united by longitudinal tie rods 16 disposed beneath the platform and the latter is connected by vertical bolts or tie rods 17 to an I-shaped slide or cross head 18, shown more clearly in Fig. 7 of the drawings. Said cross head or slide 18 consists of a longitudinally curved connecting portion 19 with cross bars 20 at its ends and upon the top and bottom faces of the latter are bolted or otherwise secured, as at 21, plates 22, the ends of which latter project beyond the ends of the cross bars 20. The opposing inner faces of the beams 3 are grooved to form guide ribs 23 which enter the spaces between the projecting ends of the plates 22 and thereby slidably support the cross head or slide 18. The tie rods or standards 17 which unite the carriage and said cross head are reinforced by crossed diagonal brace rods 24 shown more clearly in Fig. 2 of the drawings.

The cross head or slide 18 is reciprocated by a pitman 25, one end of which is pivoted to a bearing bracket 26 adjustably connected to said cross head and depending therefrom. The adjustable connection between the bracket 26 and the cross head 18 is preferably effected by forming said bracket with a screw threaded stem 27 adapted to be inserted in any one of a longitudinal series of vertical holes 28 formed in the connecting portion 19 of the cross head and to receive a retaining nut 29, as clearly shown in Fig. 7 of the drawings. The other end of the pitman 25 is connected to a wrist pin or pivot bolt 30 radially adjustable in a slot 31 formed in a crank wheel 32 fixed to a transverse shaft 33 journaled in suitable bearings 34 on the base 1. The shaft 33 is driven by variable speed gearing from a longitudinal countershaft 35 which is in turn

driven from the saw shaft 7 by means of a belt 36 passed around pulleys 37, 38 on the shafts 7, 35, respectively. The shaft 35 is journaled in suitable bearings 39 upon the base 1 and carries a beveled friction wheel 40 which is slidably but nonrotatably mounted on said shaft by means of a longitudinal key 41. The longitudinal sliding movement of the wheel 40 permits it to be shifted toward and from a beveled friction wheel 42 which is fixed to the shaft 33 in any suitable manner. By varying the contact between the beveled wheels the speed of the shaft 33 with respect to the shaft 35 may be varied and by moving the wheel out of contact with the gear the work carriage may be thrown out of operation. The wheel 40 is operated by means of a shipper lever 43 pivoted at one end to a bracket 44 and having its intermediate portion loosely engaged with the hub of the wheel 40. The other end of the lever 43 is connected by a link 45 to an arm 46 of a rock shaft 47, the connection between said link and arm being adjustable by forming the arm with an eye 48 and the link with a threaded end to enter said eye and providing clamping nuts on said threaded end upon opposite sides of the eye, as shown in Fig. 3. The rock shaft 47 is disposed transversely and journaled in bearings 50 upon one end of the uprights 2 and to its front end is pivoted, as shown at 51, a locking arm or lever 52. The upper end of the latter is bent to provide a handle and carries an integral pawl 53 which engages ratchet teeth 54 formed on the inner face of a U-shaped guide bracket 55 which is secured to one of the beams 3 and surrounds the lever 52, as clearly illustrated in the drawings. It will be seen that when said lever 52 is swung inwardly to disengage the pawl 53 from the ratchet teeth 54 the handle end of the lever may be swung longitudinally to rock the shaft 47 and thereby operate the link 45 to shift the wheel 40 toward or from the gear 42.

Mounted on a support 56 projecting from one of the uprights 2 is an adjustable gage plate 57. The latter is slidably mounted on said support by forming it with slots 58 to receive clamping bolts 59. Said gage plate 57 is adjusted toward and from the work carriage by means of screws 60 which are swiveled, as shown at 61, in ears 62 struck up from the gage plate. The intermediate portions of said screws work through stationary nuts 63 on the support 56 and their inner extremities have milled heads by means of which they may be rotated to adjust the gage plate when its fastening bolts 59 are loosened.

The bolt B is supported on the carriage in a downwardly and inwardly inclined position so that it will feed by gravity toward the gage 57 when it is released by the clamp-

ing device which holds it on the carriage during the sawing operation. While any suitable work holding or clamping means may be provided, the one illustrated consists of a stationary clamp member or jaw 64 and an oppositely disposed slidably mounted clamp member or jaw 65. Said clamp members are disposed on opposite sides of supporting ribs or strips 66 fixed to the platform of the carriage and having their upper edges on which the bolt B rests, inclined downwardly and inwardly. While this is the preferred manner of slidably supporting the bolt, it will be understood that any other suitable means may be employed. The movable jaw or clamp 65 has a beveled base portion or slide 67 arranged for sliding movement in undercut guide strips 68 arranged longitudinally on the platform of the carriage. Said slide 67 is operated by a link 69 one end of which is pivoted to said slide, as shown at 70, and the other end of which is pivoted, as at 71, to the upper portion of a vertically disposed trip lever 72. The latter is pivoted intermediate its ends in a U-shaped bracket 73 on one end of the platform and has its lower end projecting into the path of an adjustable stop 74 carried by the beams or supports 3. Said stop 74, as more clearly shown in Fig. 1 of the drawings, is in the form of a longitudinally slotted plate made longitudinally adjustable with respect to the track by means of a clamping bolt 75 arranged in its slot and in a cross bar uniting the two spaced beams 3. The movable or sliding clamp 65 is spring actuated to its operative position against the bolt B, preferably, by means of a coil spring 76, one end of which is connected to the upper extremity of the trip lever 72 and the other end of which is connected to a screw 77 which is adjustable, by means of a nut 78, in a bracket 79 fixed to the platform of the carriage. By varying the tension of the spring 76 the clamping action of the work clamp may be controlled so that the bolt will be properly held between the two members of the clamp. It will be seen that when the trip lever 72 is out of contact with the stop 74 the spring 76 will actuate the movable clamp 65 so that the bolt will be held between the latter and the stationary clamp 64 and that when the carriage moves to the limit of its return movement or its movement away from the saw, the engagement of the lower end of the trip lever with the stop 74 will swing said trip lever to retract the movable clamp 65 and thereby release the bolt B so that it can slide downwardly on its inclined support and engage the gage plate 57, the adjustment of which latter determines the thickness or size of the stave cut by the machine.

The staves as they are cut by the saw drop into a receiving trough 80 arranged

upon one of the standards 2 adjacent to and beneath the saw. Said trough 80 is curved longitudinally and of substantially V-shape in cross section. The staves are automatically thrown out of said trough as fast as they drop into the same by an ejecting device consisting of a scoop-like head 81 which slides back and forth in a longitudinal direction in said trough and which is connected to one end of a rod 82, the other end of which is pivoted at 83 to a bracket 84 projecting from the platform of the carriage. Said ejector scoop head or slide 81 consists of a vertical portion to which the rod 82 is attached and an angular bottom portion 85 which conforms to the shape of the bottom of the trough 80 and slidably engages the same. This part 85 is of such length that one end of the stave rests upon it when the stave drops into the trough, thereby effectively preventing the stave from being caught under the ejector head or slide.

To insure proper frictional contact between the beveled friction wheel 40 and the beveled wheel 42 and to permit the wear of these parts to be compensated for, a set screw 86 is provided in a threaded end or cap 87 of one of the bearings 34 for the shaft 33. The inner end of said screw 86 impinges against the end of said shaft 33 and is adapted to force said shaft longitudinally to cause the gear 42 to have a proper frictional contact with the wheel 40.

The operation of the invention is as follows. The carriage 5 is shifted to the outer end of the track, as shown in Fig. 1, and the movable clamp 65 is retracted so that the bolt B may be placed upon its inclined supporting strips 66 on the carriage and may slide down the same into contact with the gage 57. The movable clamp 65 is then released so that the spring 76 will actuate it against the bolt and securely hold the same on the carriage. Power is then applied to the saw shaft 7 by means of a belt and the pulley 11 or any other suitable means so that the saw 6 will be rotated. The movement of the shaft 7 is imparted through the driving belt 36 to the shaft 35 and from the latter through the friction gearing to the crank shaft 33. As the latter rotates, the wrist pin 30 of the crank disk or wheel 32 will operate the pitman 25 and the latter will cause the reciprocation of the carriage. As the carriage moves the bolt past the saw a stave will be cut from the bolt and will drop into the trough 80 and its ejector slide 81, which latter will throw the stave out of the trough when the carriage returns to its position shown in Fig. 1. As the carriage moves to the limit of its outward movement, at which point the bolt will be opposite the gage 57, the stop 74 engages the trip lever 72, which latter retracts the clamp 65 so that the bolt slides downwardly by gravity into con-

tact with the gage 57. The clamp 65 re-engages the bolt the instant the trip lever 72 leaves the stop 74 so that the bolt will be effectively clamped on the carriage while the next stave is being cut. By adjusting the gage 57 the thickness of the staves may be effectively regulated and by adjusting the crank or wrist pin 30 in the wheel 32 and the pivot bracket 26 of the pitman upon the cross head 18 of the carriage, the speed of the carriage and also the length of its stroke may be varied as may be found desirable or necessary. The speed of the carriage may also be controlled and the carriage may be thrown into and out of operation by manipulating and adjusting the lever 52, as above explained.

While the preferred embodiment of the invention has been shown and described in detail, it will be understood that various changes in the form, proportion, arrangement and details of construction may be resorted to without departing from the spirit of the invention.

Having thus described the invention what is claimed is:

1. In a stave sawing machine, the combination of a support comprising connected uprights, and spaced connected guide bars supported on said uprights in horizontal position and curved longitudinally, the opposing inner faces of said bars having their upper and lower edges grooved longitudinally, track rails upon the upper faces of said guide bars, a reciprocatory slide consisting of a longitudinal bar, end cross bars, and upper and lower plates secured on said cross bars, the latter being disposed between the guide bars, and the ends of said upper and lower plates projecting into, and slidably arranged in, said grooves in the guide bars, a carriage connected to said slide and having wheels to run upon said track rails, means for reciprocating said slide, a shaft mounted in suitable bearings on said support, a tubular saw on said shaft, and work supporting means on said carriage.

2. In a stave sawing machine, the combination of a support comprising connected uprights and spaced connected guide bars supported on said uprights in horizontal position and curved longitudinally, the opposing inner faces of said bars having their upper and lower edges grooved longitudinally, track rails upon the upper faces of said guide bars, a reciprocatory slide consisting of a longitudinal bar, end cross bars, and upper and lower plates secured on said cross bars and having their ends projecting into and slidably arranged in said grooves in the guide bars, said longitudinal bar being formed with a longitudinal series of vertical openings, a bracket depending from the longitudinal bar and having a stem removably mounted in one of the openings in said

longitudinal bar of the slide, a shaft carrying a crank disk, a pitman connecting said crank disk to said bracket, a carriage body, upright bars uniting said carriage body to said slide, grooved supporting wheels beneath the carriage body to run on said track rails, a saw shaft mounted in bearings on said support, a tubular saw on the last mentioned shaft, and work supporting means on said carriage.

3. In a stave sawing machine, the combination of a support comprising connected uprights and spaced connected guide bars supported on the latter in horizontal position and curved longitudinally, the opposing inner faces of said bars having their upper edges grooved longitudinally, track rails upon the upper faces of said guide bars, a reciprocatory slide consisting of a longitudinal bar, end cross bars, and upper and lower plates secured on said cross bars and having their ends projecting into and slidably arranged in said grooves on the guide bars, a carriage connected to said slide and having wheels to run upon said track rails, a horizontal shaft mounted in bearings on said

uprights, a tubular saw fixed to said shaft and having a longitudinally curved side wall, a pair of parallel work supporting blocks arranged transversely on said carriage and having their upper edges inclined downwardly toward the saw, an upright stationary jaw fixed to one end of said carriage, parallel grooved guide strips upon the carriage, a slidable jaw having a base portion engaged with said grooved guide strips, a vertically disposed lever pivoted intermediate its ends on one end of the carriage, a link connecting the upper end of said lever to said slidable jaw, an adjusting screw mounted on said carriage, a coil spring connecting said screw to the upper end of said lever, an adjustably mounted stop adapted to be engaged by the lower end of said lever, and a relatively stationary gage mounted on said support adjacent the saw.

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

JOSEPH BENJAMEN LUTTRELL.

Witnesses:

B. B. WADDLE,

W. A. BAXLEY.