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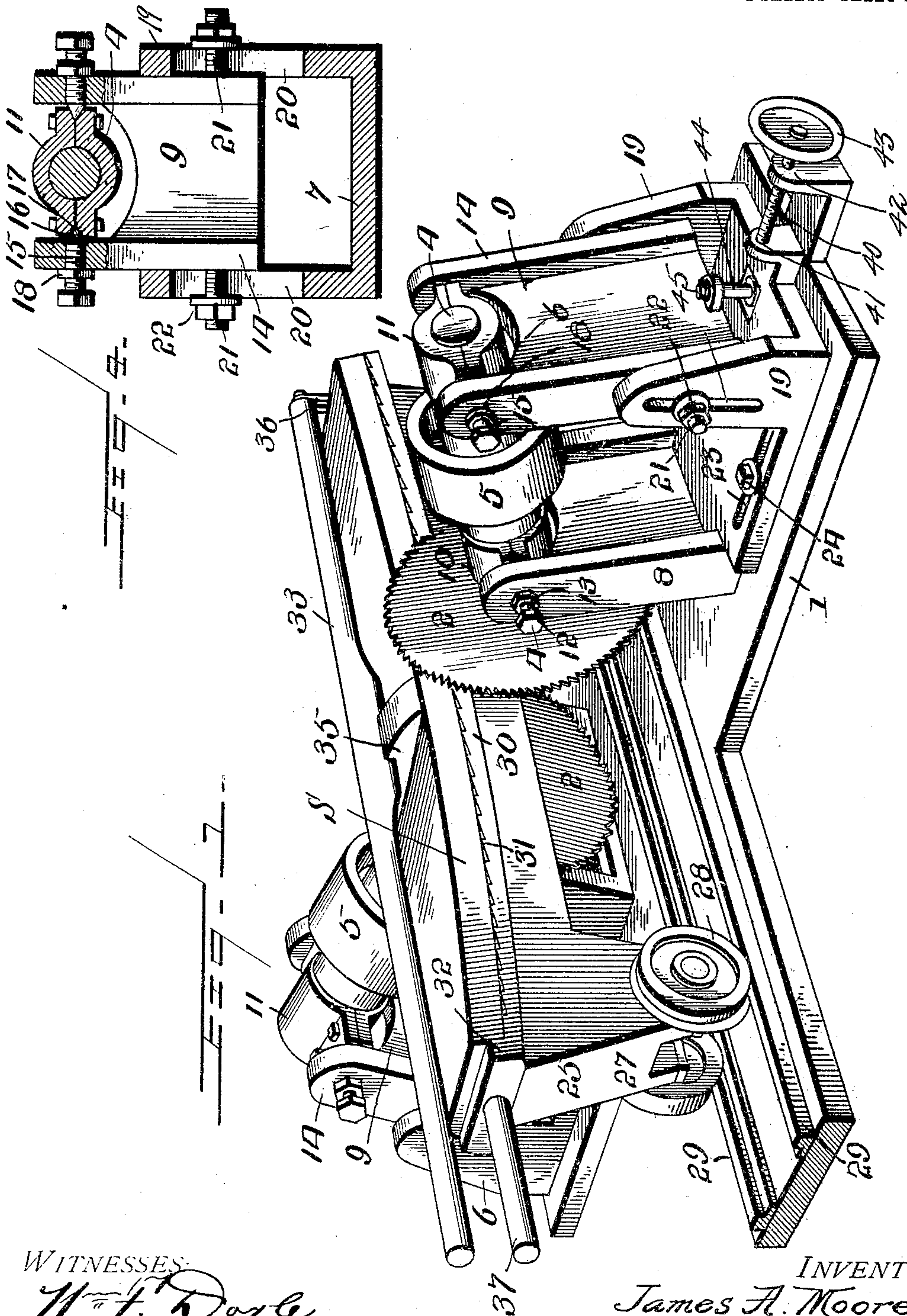
PATENTED JULY 12, 1904.

J. A. MOORE.
STAVE JOINTING MACHINE.

APPLICATION FILED APR. 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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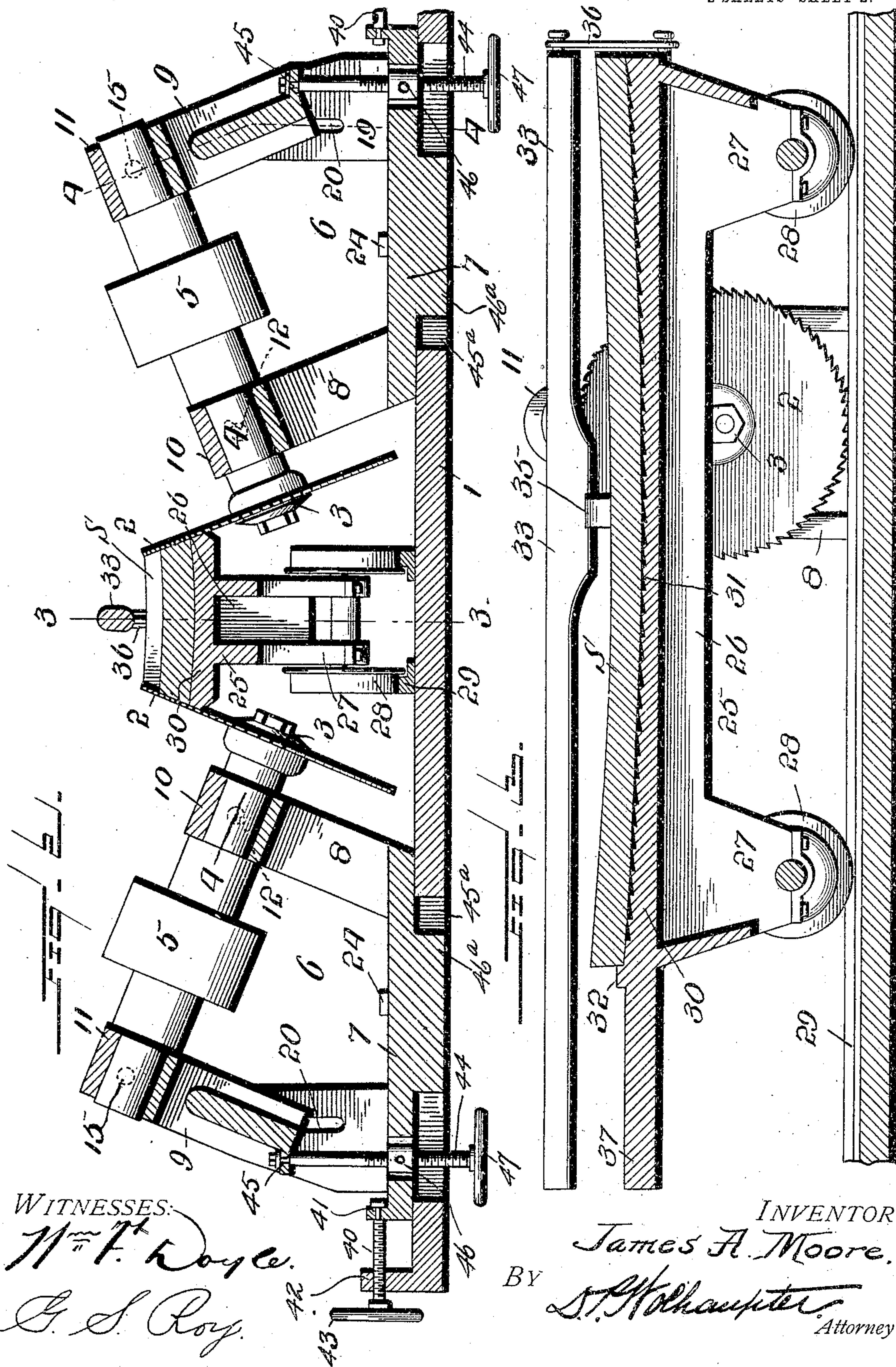
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

JAMES A. MOORE, OF PEACHLAND, NORTH CAROLINA.

STAVE-JOINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 764,612, dated July 12, 1904.

Application filed April 17, 1903. Serial No. 153,133. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. MOORE, a citizen of the United States, residing at Peachland, in the county of Anson and State of North Carolina, have invented certain new and useful Improvements in Stave-Jointing Machines, of which the following is a specification.

This invention relates to coopering, and particularly to an improved stave-jointing machine comprising simple and practical means for jointing both edges of a stave simultaneously.

To this end the invention contemplates a jointing-machine embodying a novel arrangement and adjustment of elements whereby staves of various kinds and sizes can be accurately beveled or jointed and placed in a condition ready for assembling to form a barrel, bucket, tank, or other object for which the staves may be designed.

The invention also has in view a construction of stave-jointing machine readily adapted for operating upon staves of the bilged or bellied form and straight or tapered, although the construction is of such a nature as to possess special utility in the beveling or jointing of previously sprung or bilged staves by reason of the employment of convergently-arranged cutters or saws, the varying distance between which is necessarily adapted to the bilge of the stave.

Another object is to provide a machine which leaves the beveled or mitered edges of the staves in a better condition for matching than the dressed joints provided by many types of stave-jointing machines.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts which will hereinafter be more fully described, illustrated, and claimed.

The essential feature of the invention, involved in the novel manner of mounting the saw-arbors for adjustment purposes in connection with the reciprocatory stave-carriage, is necessarily susceptible to structural modification without departing from the scope of

the invention, but a preferred embodiment of the machine is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a stave-jointing machine constructed in accordance with this invention and showing a previously sprung or bilged stave in the position it occupies while being beveled or jointed by the saws. Fig. 2 is a vertical sectional view of the machine longitudinally of the saw-arbors. Fig. 3 is a sectional view longitudinally of the stave-carriage on the line 3 3 of Fig. 2. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 2, showing more plainly the construction and mounting of the adjustable swing bearing-frame associated with the outer end of each saw-arbor.

Like reference characters designate corresponding parts throughout the several figures of the drawings.

In carrying out the invention the working parts of the machine are mounted upon a suitable bed frame or plate designated in the drawings by the numeral 1, and over this bed-frame is designed to be sustained in coöperative relation a pair of oppositely-located and convergently-disposed rotary cutters 2, which preferably consist of circular saws. The convergence of the rotary cutters or saws 2 may be in either direction, but preferably in an upward direction, as shown in the drawings, in order to better adapt the same to the adjustments contemplated by the present machine. The mounting and adjustment of each of the oppositely-located cutters or saws 2 is the same, so a description of one will suffice for the other.

Referring particularly to the mounting of the individual cutters or saws 2, it will be observed by reference to the drawings that each of the same is detachably fastened, preferably by a bolt connection 3, to the inner end of a rotatable saw-arbor 4, having mounted thereon at a point intermediate its ends a driving-pulley 5, adapted to receive a suitably-arranged belt for communicating a constant rotary motion thereto for maintaining the cutter or saw at a high speed. The said rotatable saw-arbor 4 for each cutter or saw is supported for adjustment by an adjustable arbor-carrying

bracket 6, which is mounted for adjustment on the bed-frame 1, and includes in its general organization a base member 7, slidably mounted on the bed or bed-frame 1, and the
 5 oppositely-located bearing-supports 8 and 9, which respectively sustain the bearing-boxes 10 and 11 for the inner and outer end portions of the saw-arbor. The bearing-supports 8 provide supporting means for the inner bearing-box 10, which receives the inner end portion of the saw-carrying arbor 4, and said supports 8 are rigid with the base member 7 and project upwardly therefrom in an oblique direction, whereby the same at all times will
 10 stand obliquely in the same general direction as the adjacent obliquely-disposed rotary cutter or saw 2.

The inner bearing-box 10 is pivotally mounted between its supports 8 upon the pivot-screws 12, passing through the upper end portions of the supports 8, and whose inner ends pivotally engage, respectively, with opposite sides of the bearing-box 10. The said pivot-screws 12 also preferably have fitted on the
 25 outer portions thereof the jam-nuts 13, which bind against the outer sides of the supports 8 and serve to lock the screws 12 against displacement, and also permitting of the ready adjustment thereof to take up looseness in the
 30 support of the inner bearing-box.

The inclined rigid or fixed bearing-supports 8 for the inner bearing-box 10 of each saw-arbor are preferably in the form of standards, while the bearing-support 9 for the outer end
 5 portion of the saw-arbor 4 is preferably in the form of an adjustable swing-frame having the side arm members 14 disposed, respectively, at opposite sides of the outer bearing-box 11 and receiving therein the pivot-screws 15, whose inner pointed extremities 16 engage
 40 sockets 17 in opposite sides of the bearing-box 11, and thus provide for the latter a pivotal support within the frame 9. The said pivot-screws 15 also have mounted on their outer
 45 portions the jam-nuts 18, subserving the same functions as the nuts 13, previously referred to. In addition to the pivotal mounting of the outer bearing-box 11 in the swing bearing-frame 9 the latter has a pivotal as well
 50 as a vertically-adjustable mounting between the supporting-arms 19, arising from opposite sides of the base member 7 at or contiguous to the outer end of the latter. These supporting-arms 19 are arranged in transverse alignment and are provided therein with the vertically-disposed adjustment-slots 20, receiving the combined pivot and clamping-bolts 21, projected outwardly through the slots 20 from the sides of the frame 9 and carrying upon
 60 their outer ends the binding-nuts 22, working against the outer sides of the arms 19.

The base member 7 of each arbor-carrying bracket 6 is provided therein with longitudinally-disposed adjustment-slots 23, receiving
 65 the fastening-bolts 24, carried by the bed or

bed-frame 1 and serving to rigidly lock the carrying-bracket in its adjusted position.

By reason of the construction and arrangement of parts described it is obvious that upon loosening the bolts 21 and 24 a great range of
 70 adjustment is provided for changing not only the angle of convergence of the oppositely-located cutters or saws, but also to widely vary the distance between the saws to accommodate greatly varying widths of staves. Slightly
 75 varying widths of staves may be compensated for by simply the swing adjustment of the frame 9, carrying the outer bearing 11. This is an important feature in a stave-jointing machine, by reason of the fact that with varying widths of staves (designed for use in the
 80 same barrel or the like) the same degree of convergence may be maintained, whereby the bevels or miters of all of the staves, irrespective of their width, (in the same barrel or like object,) will be struck on radii of the same circle. This is provided for through the instrumentalities described irrespective of the separation between the saws on account of the width
 90 of the stave.

To maintain the staves in proper relation to the convergently-related cutters or saws 2 and to feed the staves through the interval between the saws, there is associated with the latter a reciprocatory stave-carriage 25, having a movement in a plane at right angles to the longitudinal plane of the saw-carrying
 95 arbors.

The stave-carriage essentially consists of a truck-body 26, provided at the opposite ends
 100 thereof with the pendent wheel-brackets 27, carrying traveler wheels or rollers 28, riding upon the track-rails 29, mounted upon the bed or bed-frame at right angles to the plane of the arbor-carrying brackets and in the interval between such brackets. The said truck-body 26 for the carriage is provided at the upper side thereof with a longitudinally-curved rest-table 30 for the stave S to be operated upon. The surface of the table 30 is preferably serrated or roughened, as indicated by the reference character 31, to provide a firm gripping-surface to securely hold the stave while being carried against and between the
 105 saws, and to prevent longitudinal displacement of the stave the table 30 is preferably provided at one end with an abutment-shoulder 32, against which bears one end of the stave. The stave is firmly clamped upon the body or table of the carriage through the medium of a holding device 33, preferably in the form of a binding-lever, provided at a point intermediate its ends with a transversely-arranged clamp-block 35 and having a loose detachable hinge connection 36 at one end of
 110 the truck-body 26. The free end of the lever 33 is intended to project beyond one end of the truck-body over a rigid handle member 37, carried by said end of the truck-body and combining therewith to provide a grip for not
 120 125 130

only maintaining the lever 33 in a binding or clamping engagement with the stave, but also to provide a handle whereby the carriage may be moved over the track to carry the entire stave past the saws.

The construction of carriage described is the preferable one; but it will of course be understood that to meet different conditions, and particularly to adapt the machine for jointing different kinds of staves, slightly-modified forms of carriages may be employed without departing from the invention and also differently formed or shaped rest-tables 30 provided to suit the particular work. However, the construction described will generally meet the conditions required in ordinary stave-jointing.

Another feature of the invention resides in positive means for effecting the adjustment of the opposite saws toward and from each other to vary the interval therebetween according to the width of stave being operated upon. This is preferably accomplished through the medium of an adjusting-screw 40, associated with the slidable base member 7 of each bracket 6. The said adjusting-screw 40 for each bracket-base has a swiveled connection at its inner end, as at 41, with the outer end of the base member 7 and works through a nut or threaded post 42, provided at or fitted to the adjacent portion of the machine-bed 1, which is of course supported on legs or other elevating supports.

The screw 40 is provided at its outer end with a hand-wheel 43, whereby the same may be readily turned through the nut 42 to effect the longitudinal adjustment of the arbor-carrying bracket 6. Also each arbor-carrying bracket 6 has associated therewith an arbor-adjusting screw 44, arranged in an upright position and extending through a slot 45^a, provided in the bed 1 to receive the guiding-block 46^a, projected from the under side of each base member 7. The said arbor-adjusting screw 44 has a swiveled connection at its upper end, as at 45, with the lower end portion of the adjustable bearing-frame 9 supporting the outer end portion of the saw-arbor, and the threaded portion of the said screw 44 passes through a nut 46, pivotally or otherwise suitably carried by the slidable base member 7. The lower end of each screw 44 carries a hand-wheel 47, whereby the same may be conveniently operated from beneath the bed 1. Upon loosening of the bolts 21 for the adjustable bearing-support 9 of each bracket the inclination of the saw-arbors may be readily and accurately adjusted by manipulation of the screws 44.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described jointing-machine will be readily apparent without further description, and it will also be understood that changes in the form, proportion, and minor details of

construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a stave-jointing machine, the combination with the bed, and the stave-carriage movable thereon, of the convergently-related rotary cutters arranged respectively at opposite sides of the plane of movement of the carriage, arbor-carrying brackets having a sliding movement horizontally upon the bed in a direction toward and from the path of the carriage, an inclined rotatable arbor for each cutter, an inner bearing horizontally pivoted upon each bracket and receiving the inner end of the arbor, a vertically-adjustable swinging frame having a combined pivotal and clamping action with each bracket, a horizontally-pivoted outer bearing carried at the upper end of the said frame and receiving the outer end of the arbor, fastening means for the several pivotal mountings, adjusting devices carried by the bed and each connected with a bracket, and a separate adjusting device carried by each bracket and operatively connected with the vertically-adjustable frame for the saw-arbor.

2. In a stave-jointing machine, the combination with the bed, and the stave-carriage movable thereon, of the convergently-related rotary cutters arranged respectively at opposite sides of the plane of the movement of the carriage, arbor-carrying brackets slidably arranged on the bed and movable toward and from the path of the carriage, a rotatable arbor for each cutter mounted in the bracket therefor and having a fixed pivotal support at its inner end, a vertically-adjustable pivotal support for the outer end of each arbor, adjusting devices mounted on the bed and each having a connection with a bracket for adjusting the same toward and from the path of the carriage, and a separate adjusting device supported and carried by each bracket and having an operative connection with the vertically-adjustable pivotal support for the outer end of the arbor, substantially as set forth.

3. In a stave-jointing machine, the combination with the bed and the stave-carriage movable thereon, of the oppositely-located inclined saw-arbors carrying at their inner ends rotating saws convergently related and arranged respectively at opposite sides of the plane of movement of the carriage, an adjustable arbor-carrying bracket for each arbor comprising a base member slidably and adjustably fitted to and provided at the inner end portion thereof with upstanding rigid bearing-supports and at the outer end portion thereof with upstanding vertically-slotted supporting-arms, an inner bearing-box pivotally sustained between the inner rigid bearing-supports and receiving the inner end por-

tion of the arbor, an adjustable swing bearing-frame having a combined pivot and clamp mounting between the vertically-slotted supporting-arms, an outer bearing-box having a
5 pivotal support within the upper end of the swing bearing-frame and receiving the outer end portion of the arbor, an adjusting-screw carried by the bed and connected with the base member of each bracket, and a separate
10 adjusting-screw carried by the base member of each bracket and connected with the adjustable swing bearing-frame.

4. In a stave-jointing machine, the combination with the bed, and the stave-carriage
15 movable thereon, of convergently-related rotary cutters arranged respectively at opposite sides of the plane of the movement for

the carriage, arbor-brackets supported on the bed and adjustable toward and from the path of the carriage, a rotatable arbor for each
20 cutter mounted in the bracket therefor and having a non-adjustable pivotal bearing at its inner end, a vertically-adjustable rising and falling pivotal support for the outer end of each arbor, an adjusting device for each
25 bracket, and means for varying the elevation of said bearing for the outer end of each arbor.

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

JAMES A. MOORE.

Witnesses:

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JAS. H. BENTON.