No. 620,000.

Patented Feb. 21, 1899.

C. W. SMITH.

STAVE JOINTING MACHINE.

(Application filed Feb. 1, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 4.

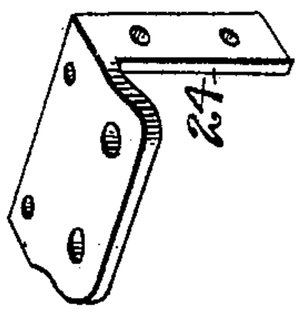

Fig. 1.

Witnesses.
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Philip Amasi.

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his Attorney.

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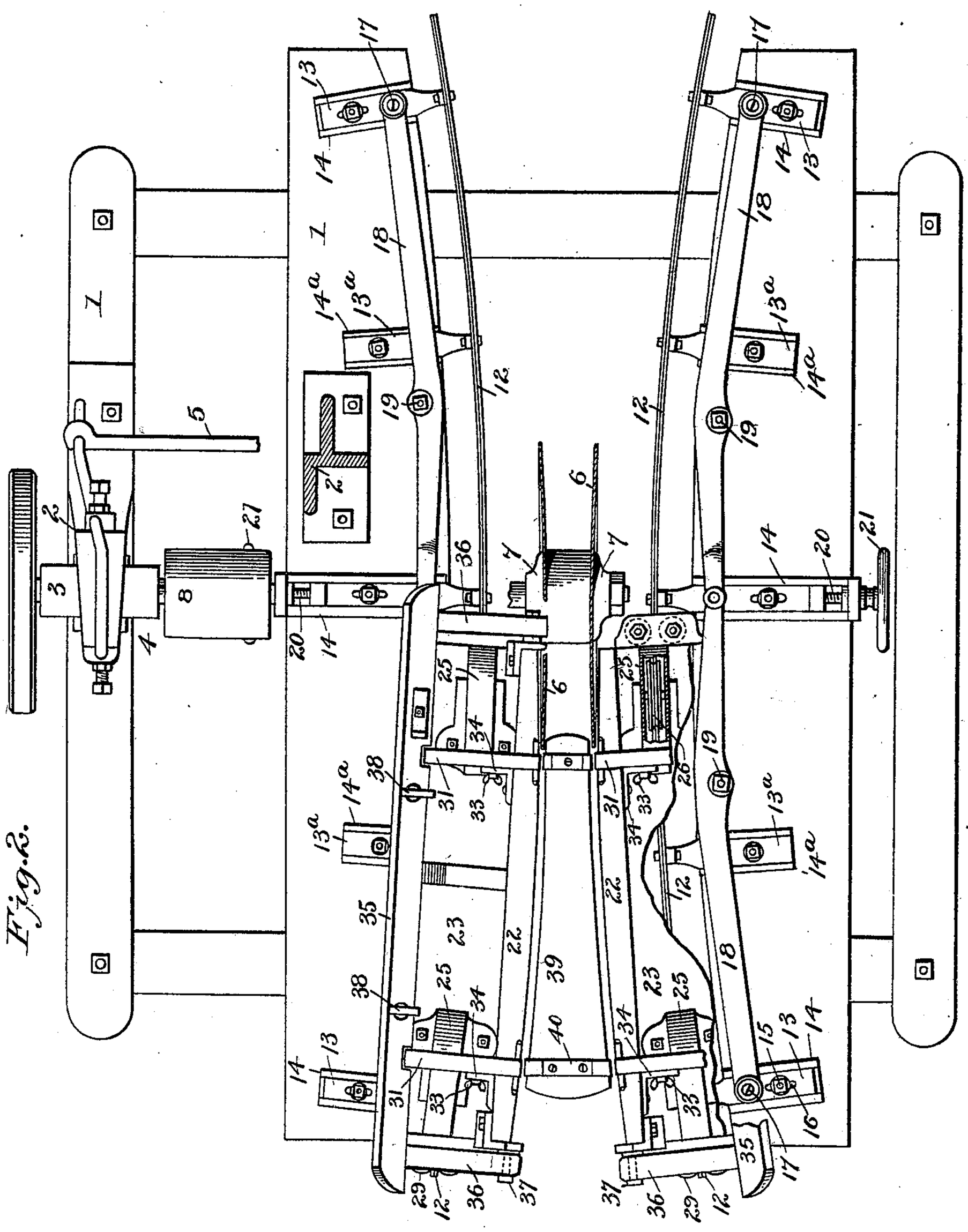

Fig. 2.

Witnesses.

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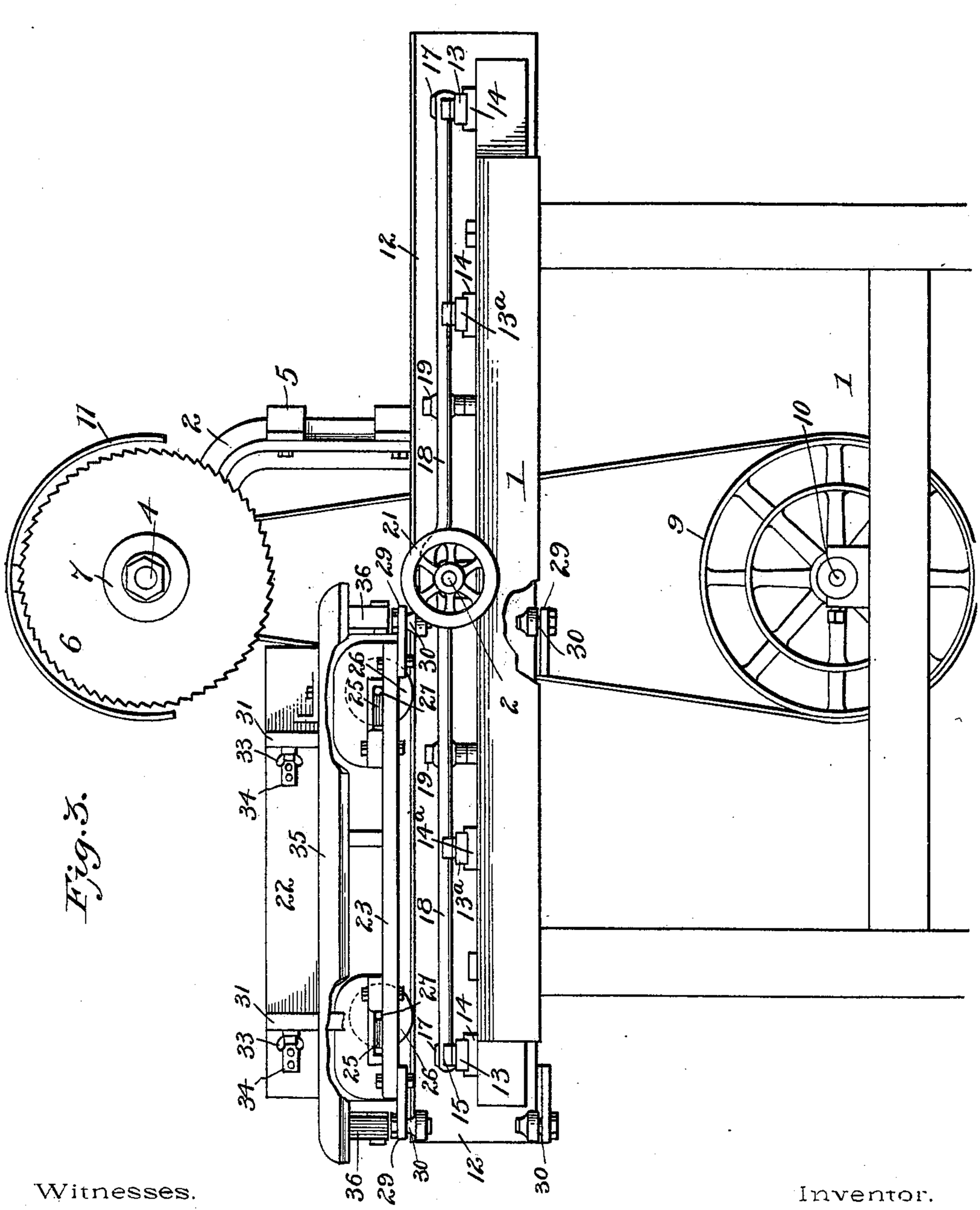

Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES WILLIAM SMITH, OF BROOKLINE, NEW HAMPSHIRE.

STAVE-JOINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 620,000, dated February 21, 1899.

Application filed February 1, 1898. Serial No. 668,761. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILLIAM SMITH, a citizen of the United States, and a resident of Brookline, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Stave-Jointing Machines; 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.

Figure 1 of the drawings is an end elevation of a machine embodying the invention. Fig. 2 is a top view of the same. Fig. 3 is a side elevation, slightly broken away. Fig. 4 is a detail perspective view of one of the end plates or brackets.

This invention has relation to that class of machines commonly known as "stave-jointing machines," and it is designed to provide a machine of this character possessing certain new and useful features of construction, arrangement, and combination and advantages of operation, all as hereinafter set forth.

The invention consists, first, in a novel arrangement of the jointing-saws; second, in the novel construction and arrangement of the carriages which carry the work to the saws; third, in the construction and arrangement of the tracks upon which the carriages travel and the means employed for adjusting and changing the curvature of the same; fourth, in the construction and arrangement of the stave-rests with which the carriages are provided, and, finally, in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the numeral 1 designates the main frame of the machine, which may be, in general, of any suitable construction and design for the support of the operative parts.

2 2 designate two upwardly-extending arms which rise from one side portion of the frame 1 and which are provided at their upper portions with bearings 3 for a saw-mandrel 4.

5 is a tie-brace which connects the two arms 2 2. 6 6 are two concave saws which are secured upon the said mandrel at a distance of a few inches from each other. 7 are the collars which secure the said saws.

8 is a driving-pulley for the mandrel. This pulley is in the present instance belted to a pulley 9 of a driving-shaft 10, journaled in the base of the frame 1.

11 is a guard for the saws.

12 12 designate the tracks for the two independent carriages which carry the work to the respective saws. These tracks consist each of an edgewise-disposed plate sufficiently flexible in its character to permit it to be sprung into curved form. These plates are securely bolted to angular arms or braces 13 and 13ª, two of which are provided at each end portion of each plate and one at the central portion thereof. The horizontal laterally-extending portions of these arms or plates lie in guide plates or shoes 14 or 14ª, which are securely fastened to the frame 1 by means of bolts 15. The arms or braces designated by 13ª and which rest in the shoes 14ª are permanently and fixedly secured thereto by means of the said bolts, while the braces 13, which rest in the shoes 14, are provided with slotted bolt-holes 16 to permit their adjustment. Said braces 13 are also each provided with a vertical stud 17, and these studs are connected by levers 18. One of the levers 18 connects the stud of one of the end braces with the stud of the central brace and another of said levers connects the stud of the brace at the opposite end also with the stud of the central brace.

The arrangements of levers for the two tracks are duplicates of each other. Each of said levers is intermediately pivoted to a stud 19, which is fastened to the frame 1.

Engaging a bearing in the central shoe 14, at each side, and also the adjacent arm or brace 13, is an adjusting-screw 20, provided with a hand-wheel 21. By turning this hand-wheel in one direction the central portion of the corresponding track 12 is drawn back or straightened, the levers 18 at the same time acting to carry the end portions of said track forward or inward, thereby making the curvature of said track of greater radius, and by a reverse movement of the said hand-wheel and screw the track may be adjusted

to a curve of less radius, as will be obvious. In this manner the operator may obtain any desired degree of curvature for the edges of the staves as they are jointed, the movements of the carriages conforming to the curvature of the tracks, as will be seen hereinafter.

The carriages are constructed in the following manner: The frame of each carriage consists of an edgewise-disposed longitudinal plate 22 and a horizontal plate or bar 23, the latter being connected to the former by upper and lower end plates or brackets 24, of angular form. (See Fig. 4.) Supported upon this frame, near each end portion thereof, is a covered or housed slot-bearing 25 for a truck-roller 26, whose axle 27 projects laterally thereof in both directions and rests upon the level surfaces provided by the said bearing. The peripheral edges of these trucks and rollers are grooved to adapt them to the beveled upper edge portions of the tracks. When these trucks or rollers move on the tracks, the axles 27 thereof move on the plane surfaces provided by the bearings 25, thereby reducing the friction to a minimum, while at the same time said axles are free in these bearings to assume positions at all times at right angles to the tracks when passing around the curvature thereof. These trucks carry all the weight of the carriages and material in process of operation, thus enabling the workman to handle the carriages with ease and rapidity.

Guide-trucks 29 are also provided for the carriages. These trucks consist of small horizontal rollers which are journaled upon studs 30 of the upper and lower end plates or brackets 24 and bear upon opposite sides of the track-plates 12. These trucks are adjustable toward and away from the said track-plates.

Hinged or pivoted to the upper edge portion of each frame-plate 22 are curved laterally and downwardly extending stave-rest strips 31. The position and adjustment of these strips relatively to the saws is secured by means of the slotted lugs 32, carried thereby, and the bolts 33, which engage the slots of said lugs, and are provided each with a thumb-nut 34. By means of this adjustment the edges of the staves may be jointed to any desired angle.

35 35 are movable stave rests and carriers, one for each carriage. These movable rests and carriers consist each of a longitudinal bar having inwardly-extending arms 36 at its ends, said arms being pivoted to studs 37, secured to the ends of the carriage frame-plates 22. Carried by each of said bars are adjustable stops or edge-rests 38 for the staves. These stops or rests govern the relative widths of the two end portions of the staves and can be readily adjusted to make the staves either of equal or unequal width at both ends.

In operation the stave is laid upon the curved rest-strips 31 with its outer edge against the said stops. The workman then swings the movable rest into the line of the saws, operating the same in such a manner as is necessary to the proper jointing of any stave.

39 is a fixed stave-rest which is placed between the upper portions of the two carriages and is supported from the frame 1. This fixed rest has beveled stave-guides 40, whose ends nearly meet the rest-strips 31. Therefore when one edge of a stave has been jointed on one of the carriages it may be slid across these guides 40 onto the opposite carriage with ease and rapidity for the purpose of having its opposite edge jointed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stave-jointing machine, the combination of a frame having a central stave rest or table, a mandrel journaled in said frame above said rest or table and having two adjacent concaved saws thereon, the curved track upon each side of and below the said central table, means for adjusting the curvature of said track, a carriage mounted upon each of said tracks, and stave rest and supporting devices on the said carriages, and having their upper inner portions adjacent to the lateral portions of said central table, substantially as specified.

2. In a stave-jointing machine, the combination with a frame having a central elevated stave rest or table, a mandrel journaled above the said table and carrying a pair of adjacent concaved saws, the curved track below the said table, means for adjusting the curvature thereof, the carriages having their frames provided with slotted bearings, the trucks or rollers having laterally-extended axles which engage the said slotted bearings at right angles to the said track, and stave rest and supporting devices on the said carriages, substantially as specified.

3. In a stave-jointing machine, the combination with the edgewise-disposed flexible track-plate, of the laterally-extending arms or braces secured thereto, the shoes secured to the machine-frame and in which said arms rest, the arms at the end and central portions of the said plate being adjustably secured in said shoes while the others are fixed thereto, levers which connect the end and central arms and which are intermediately fulcrumed to the frame, and adjusting device connected to said central arm, substantially as specified.

4. In a stave-jointing machine, the combination with the flexible adjustable curved track, of the carriage having its frame provided with slotted bearings, and the trucks or rollers which travel upon the said track and which have laterally-extended axles which engage and roll in said bearings and which are free to assume therein positions at right angles to the said track, substantially as specified.

5. In a stave-jointing machine, the combination with the flexible adjustable curved

track, of the carriage having its frame provided with horizontal slotted bearings, and the trucks or rollers which travel upon the said track and have laterally-extended axles which engage and roll in the said bearings and which are free to assume therein positions at right angles to the track, together with the upper and lower horizontal guide-trucks which are carried by the said carriage and which bear against opposite sides of the said track-plate, substantially as specified.

6. The combination, in a stave-jointing machine, of a flexible curved track-plate, and means for adjusting the curvature thereof, of a carriage having an edgewise-disposed frame-plate 22, a horizontal frame-plate 23, upper and lower end plates or brackets 24 which connect the said plates, the trucks journaled to said brackets and bearing upon opposite sides of the track-plate, the protected slotted bearings carried by the said plates 22 and 23, the antifriction rollers or trucks which travel upon the said track-plate and have laterally-extended axles which engage the said bearings, and stave-rests carried by the said carriage, substantially as specified.

7. In a stave-jointing machine, the combination with a saw and with a carriage situated and moving to one side of the saw, of a curved laterally and downwardly extending stave-rest strips 31 having a hinged intermediate connection to the frame of the carriage, a movable stave rest and carrier consisting of a bar extending longitudinally over the stave-rest strips and having inwardly-extending arms at its end portions which are pivoted to the carriage, and individually-adjustable edge rests 35 carried by the bar and forming the support for the outer edges of the staves as they are carried to the saws, substantially as specified.

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

CHARLES WILLIAM SMITH.

Witnesses:
WALTER F. ROCKWOOD,
LIZZIE C. BRIDGES.