

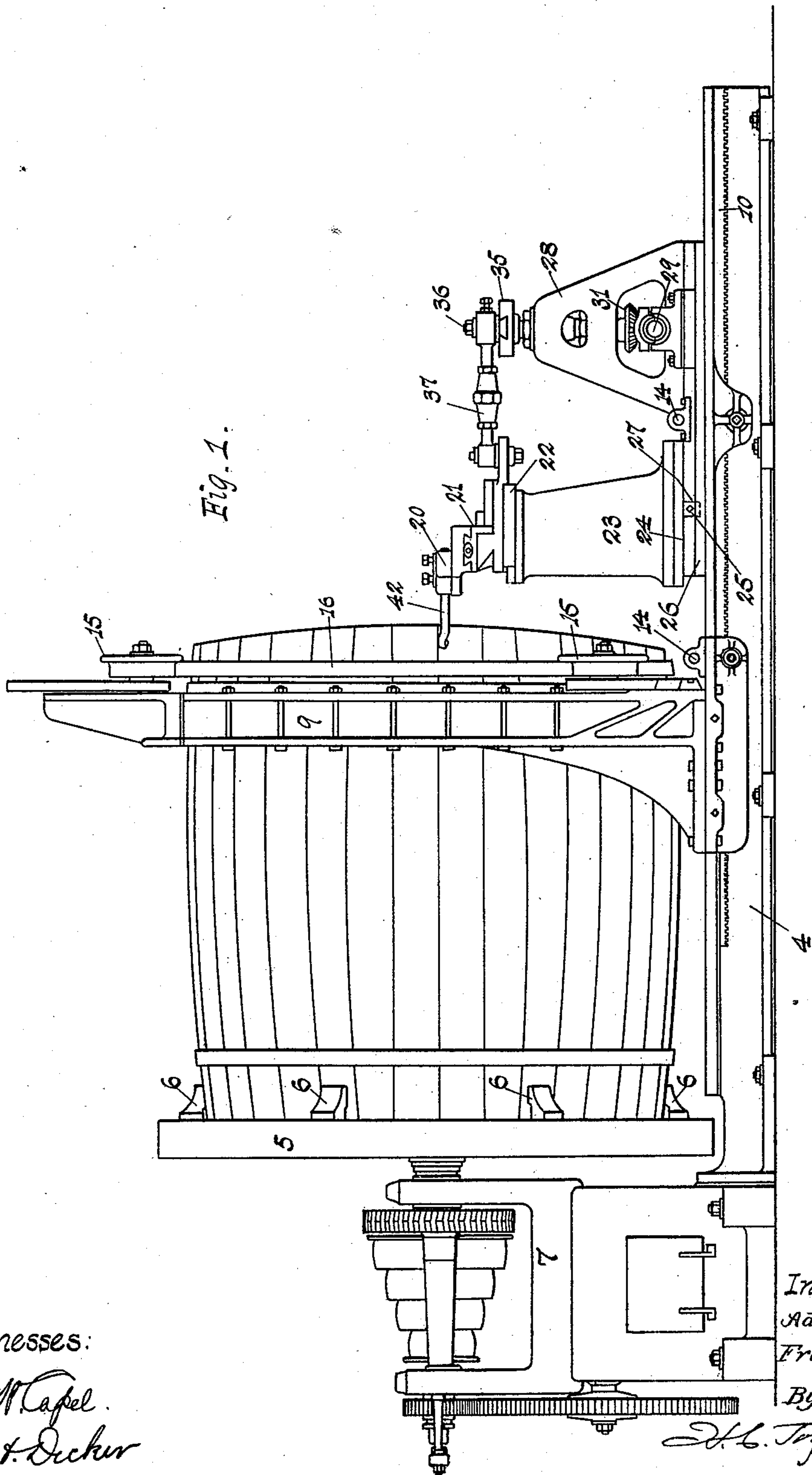
(No Model.)

3 Sheets—Sheet 1.

A. FRUHINSHOLZ.
BARREL MAKING.

No. 578,448.

Patented Mar. 9, 1897.



Witnesses:

H. M. Capel.
D. H. Decker

Inventor
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By

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Attorney

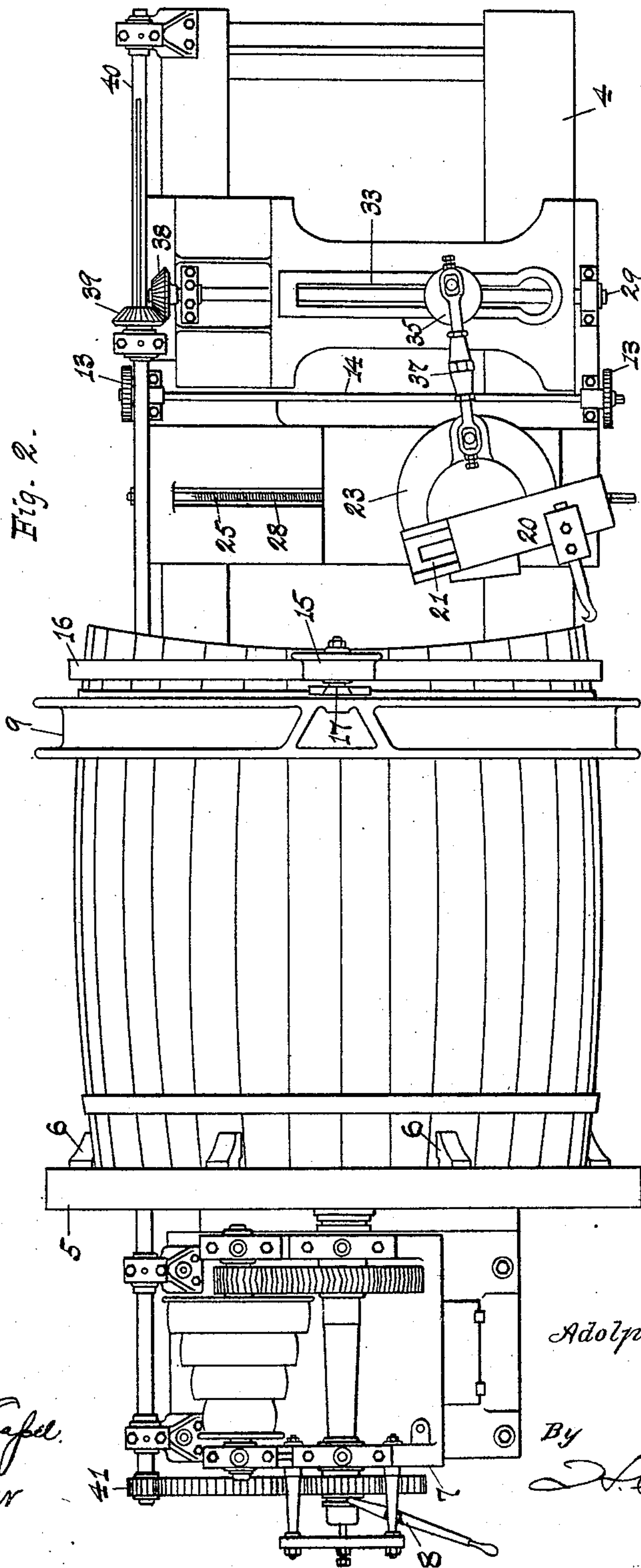
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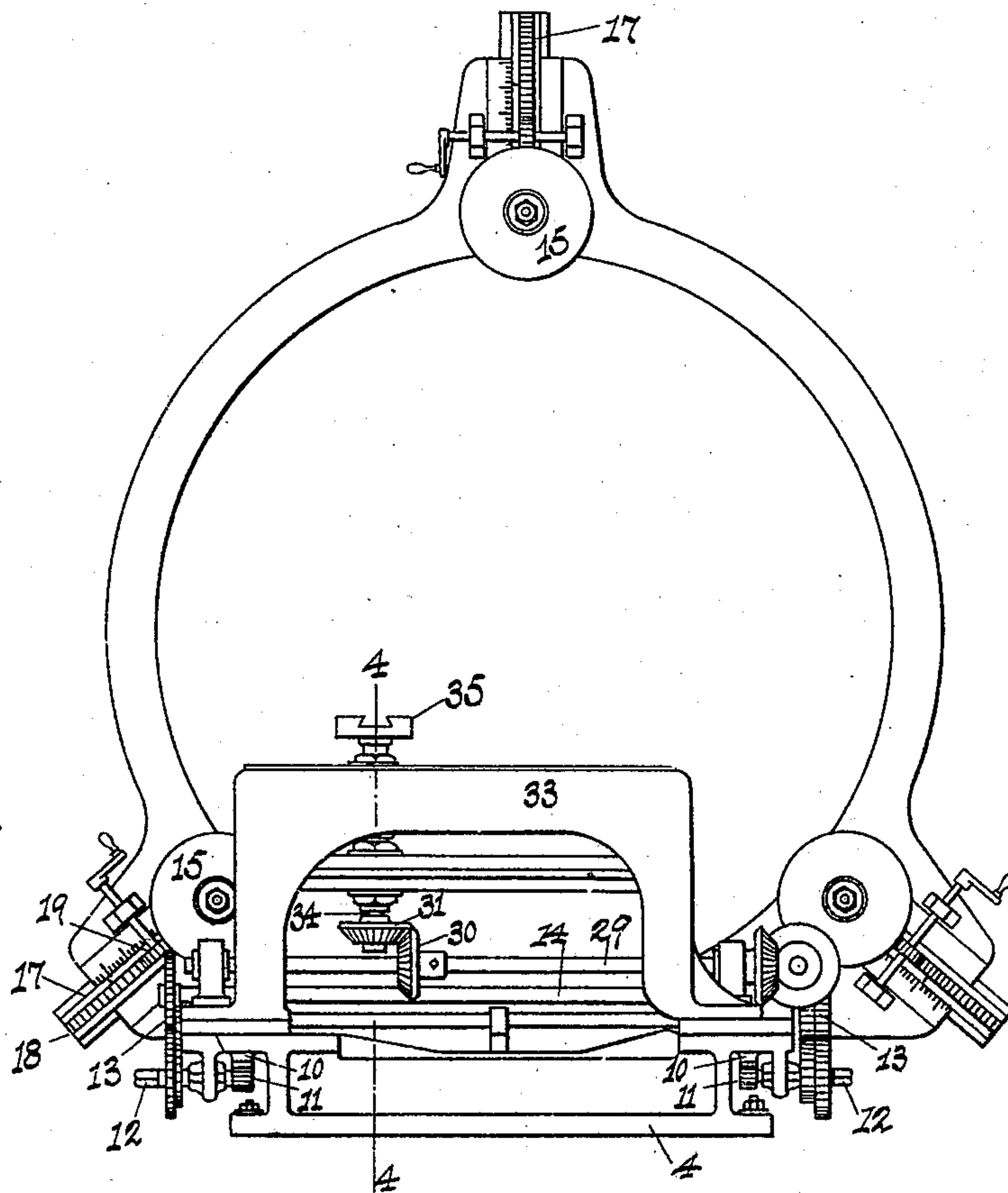
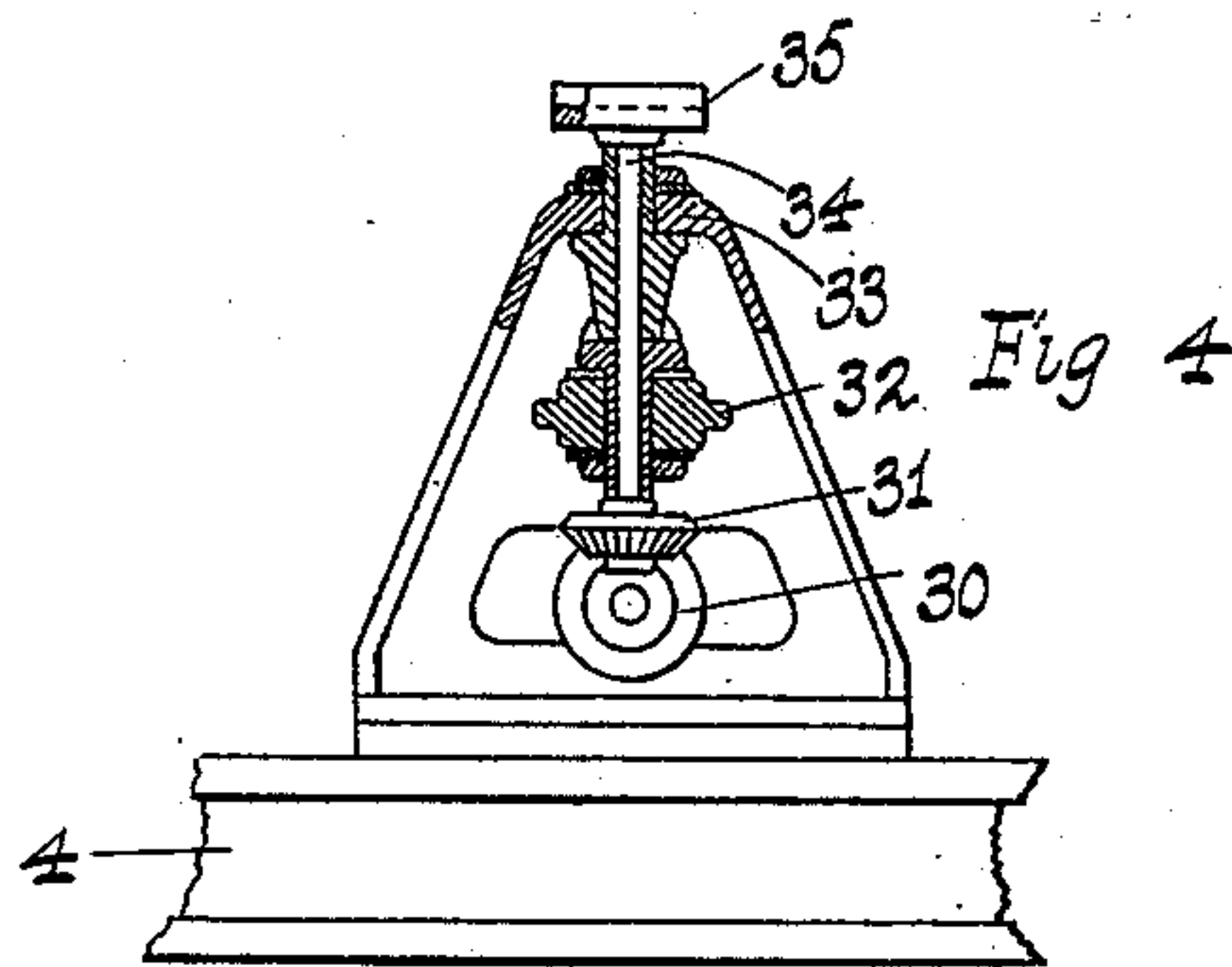
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3 Sheets—Sheet 3.

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Witnesses:

Fig. 3.

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UNITED STATES PATENT OFFICE.

ADOLPHE FRUHINSHOLZ, OF NANCY, FRANCE.

BARREL-MAKING.

SPECIFICATION forming part of Letters Patent No. 578,448, dated March 9, 1897.

Application filed January 18, 1896. Serial No. 575,971. (No model.)

To all whom it may concern:

Be it known that I, ADOLPHE FRUHINSHOLZ, a citizen of the Republic of France, and a resident of Nancy, in the Republic of France, have invented a certain new and useful Improvement in Barrel-Making, of which the following is a specification.

The invention relates to the manufacture of barrels or casks, and particularly to the formation of the ends thereof in a manner such that they will take concave heads, the concavity being outward. The invention also relates to the barrel or cask so formed.

The object of the invention is the formation of a cask in which the heads shall be able to withstand greater pressure from the confined liquid than the plain heads now in use are capable of standing. This object is accomplished by so shaping and crozing the ends of the cask that a head bent or bowed inwardly in the form of a part of a hollow cylinder may be fitted thereto.

The invention therefore consists in the construction, combination, and arrangement of parts constituting the machine, substantially as hereinafter described, by which the ends of barrels or casks may be shaped or formed for the reception of concave heads.

The invention further consists in a barrel or cask having its ends longitudinally curved and crozed and cylindrically-concave heads fitted to said ends.

In the accompanying drawings, which form a part of this specification, Figure 1 represents in side elevation the barrel forming and crozing mechanism. Fig. 2 is a plan view thereof. Fig. 3 is an end elevation with some of the parts omitted. Fig. 4 is a detail in vertical section taken on line 4 4, Fig. 3.

4 indicates the base of the machine, upon which are mounted the barrel holding and rotating mechanism and likewise the tool supporting and operating mechanism.

5 indicates the universal or index plate, which carries the concentric chuck operating the jaws 6, which hold one end of the barrel rigidly to said plate.

In the frame or support 7 are mounted the necessary pulleys and gears for imparting the desired rotation to the plate 5, an ordinary form of clutch being shown at 8 in Fig. 2 for throwing said mechanism out of gear.

Upon the base 4, in advance of the plate 5, is mounted a ring-plate 9, to which is connected the means for holding the other end of the barrel or cask. This ring-plate is made to move longitudinally upon the base to allow the removal and insertion of barrels and to place it at the distance from the index-plate required by different-sized casks. The longitudinal motion is given to this ring-plate by means of the racks 10, formed upon the base 4, and the pinions 11 meshing therewith, said pinions being mounted upon shafts 12, to which cranks or hand-wheels may be attached, the said two pinions being moved in unison by means of the gears 13 at either side of the machine, the upper members of which are connected by the counter-shaft 14. These parts for giving longitudinal movement to the ring 9 are duplicated in connection with the tool carrying and operating mechanism, as will be hereinafter described.

To the face of the ring 9 at distances apart of one hundred and twenty degrees are connected radially-movable rollers 15, which hold and guide the clamping-hoop 16, in which the free end of the barrel is confined. Each roller 15 is carried upon a slide, as 17, working in ways in projections formed upon the ring 9. Each slide carries a rack, as 18, with which meshes a pinion 19, secured to a shaft 20, mounted in bearings upon said projections. The shafts 20 are shown provided with cranks whereby the slides 17 may be readily moved. Each slide may also be provided with a scale, as indicated, so that they may all be set to the same distance from the center of the ring 9. This completes the description of the barrel holding and rotating mechanism.

The tool holding and operating mechanism is mounted to move longitudinally upon the base 4 in the same manner and by the same means as just described with respect to the ring 9. The tool-holder is indicated at 20 and is mounted upon ways 21, such as to provide for it a movement across the bed 4, and it and said ways are mounted upon other ways, as 22, for giving to the tool a movement longitudinally as to the barrel and bed-plate. These parts are mounted upon a pedestal, as 23, which rests and is adapted to slide upon ways 24, extending crosswise of the bed-plate. The pedestal may be given its move-

ment across the bed-plate by means of a screw, as indicated at 25, which screw is fixed in the base 26, which carries the tool holding and operating mechanism, the nut, as 27, projecting from the bottom of said pedestal through the slot 28 in the plate 26 and traveling upon said screw. Upon the rear end of the plate 26 is mounted a frame 28. This frame carries a shaft 29, upon which is keyed or mounted a bevel-gear 30. With said gear meshes a like gear 31, carried on a vertical shaft mounted adjustably at its lower end in ways 32, extending longitudinally of the frame 28, and at its upper end in a like manner in ways 33, parallel to the ways 32. The adjustability of this vertical shaft 34 and the tool-holder pedestal across the bed of the machine provides for locating them at positions necessary to operate upon barrels and casks of different sizes. Also the independent adjustability of the tool-holder provides for shifting the tool to a limited extent without moving the pedestal. To this shaft 34 at its upper end is connected a crank-disk 35, provided with a diametrical dovetailed groove in which is mounted a wrist-pin 36, which may be set at the desired distance from the center of the disk to give the necessary reciprocation to the tool-holder, to which it is connected by means of the pitman 37.

On one end of the shaft 29 is a bevel-gear, as 38, which meshes with a like gear 39, splined upon a shaft 40, mounted in bearings upon the bed-plate 4 and extending longitudinally thereof to the barrel-rotating mechanism, to which it is geared by means of the pinion 41. By this connection the tool-holder is made to reciprocate as the barrel rotates, and by so proportioning the gears as to make the shaft 40 rotate twice to each rotation of the barrel the tool is caused to make two reciprocations for each rotation of the barrel.

The operation of the mechanism is as follows: A barrel having been inserted and properly centered and a tool inserted in the holder 20, of the form necessary to cut the ends of the staves of which the barrel is composed, the clutch 8 is operated to throw the mechanism into gear, and as the barrel rotates the tool will cut away the ends of the staves, as indicated in the drawings, leaving them longer at two opposite points and shorter at two opposite points midway between the first, and accordingly carrying the taper or curve from one set of points to the other. This tool having performed its work, it is replaced by another, substantially as indicated in the drawings, which shall follow the same movements of the first and groove or croze the end of the barrel for the reception of the concave head.

The manner of constructing and adjusting

the various parts of the machine may be variously changed and modified without departing from the purpose of the invention.

A barrel constructed in the manner above described will be as strong at the head as at any other part. The arched or convex form of the head will withstand great pressure from within. With heads thus formed it will not be necessary to make them of such great thickness as they are now made. They may be made considerably thinner and of an even thickness throughout. They may also be curved or bowed either with the grain or across the grain, as suits the manufacturer.

I claim—

1. In a lathe, a tool-holder reciprocable longitudinally of the lathe-bed and adjustable laterally of said bed so as to engage the tool with the end of the work at different points longitudinally and laterally, of a vertical shaft in said bed adjustable laterally thereof, a rotary shaft extending transversely of the bed and geared to the vertical shaft, and a connection from said vertical shaft to the tool-holder for reciprocating the tool, as and for the purpose set forth.

2. The combination with the reciprocating and laterally-adjustable tool-holder, of a vertical shaft independently adjustable across the bed of the lathe, a connection to said shaft by which it is rotated at twice the speed of the lathe-head, and an extensible connection between said shaft and the tool-holder, substantially as and for the purpose set forth.

3. The combination with the reciprocating and laterally-adjustable tool-holder, of a vertical shaft independently adjustable across the bed of the lathe, a connection to said shaft by which it is rotated at twice the speed of the lathe-head, a diametrically-slotted disk at the upper end of said shaft, a wrist-pin located adjustably therein, and an extensible pitman connected to said pin and to the tool-holder, as and for the purpose set forth.

4. The combination with the fixed universal plate or lathe-head, of the ring-plate adjustable to and from the lathe-head, and rollers mounted upon said plate and radially adjustable with relation thereto, said rollers being flanged upon one side, and adapted to furnish a bearing for one of the clamping or truss hoops against the chime side of which the flanges of said rollers engage, substantially as and for the purpose set forth.

Signed at Nancy, in the Department of Meurthe-et-Moselle and Republic of France, this 8th day of November, A. D. 1895.

ADOLPHE FRUINSHOLZ.

Witnesses:

AUG. DAUW,

V. COTTULLY.