(No Model.) 2 Sheets—Sheet 1.

E. W. SANDERSON.

MACHINE FOR LEVELING, CHAMFERING, AND CROZING ENDS OF BARRELS.

No. 568,170. Patented Sept. 22, 1896.

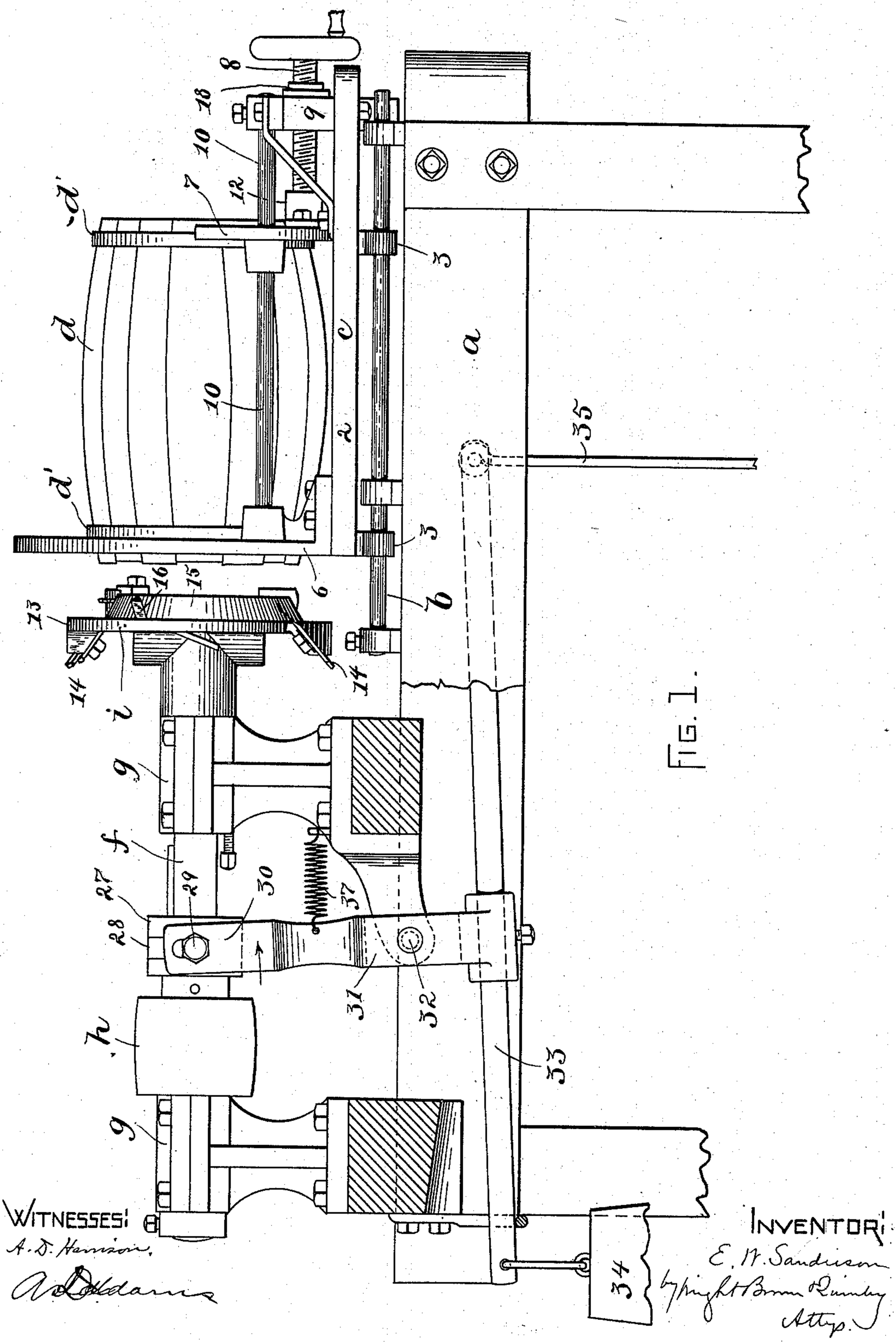

FIG. 1.

WITNESSES:
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E. W. Sanderson
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(No Model.) 2 Sheets—Sheet 2.

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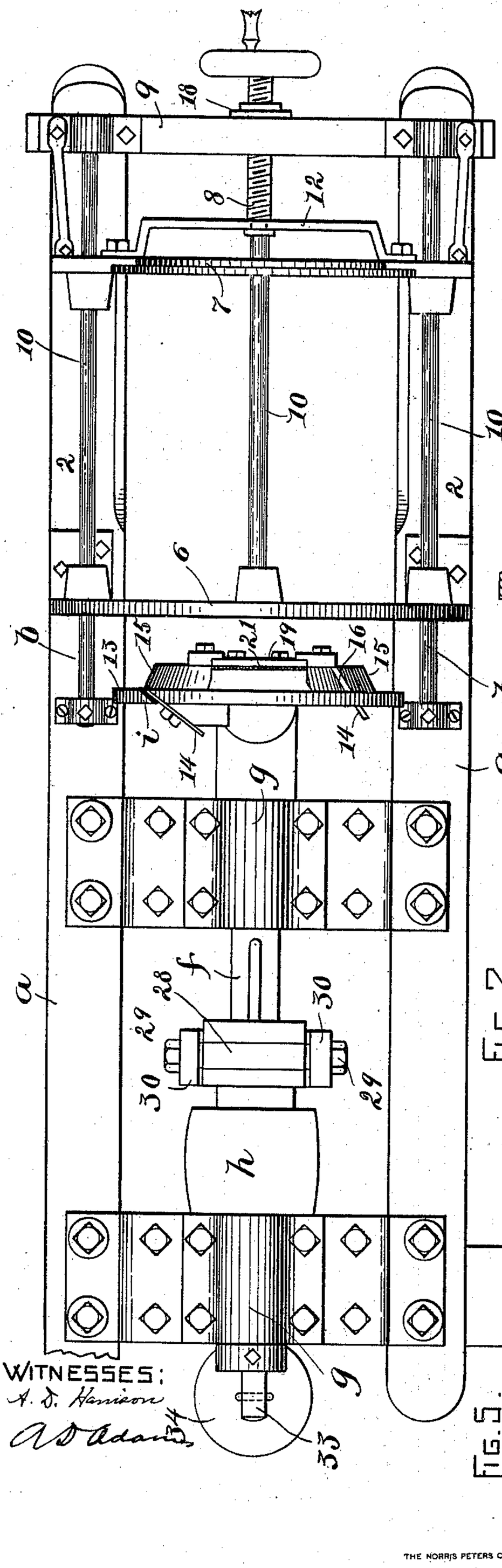

FIG. 2.

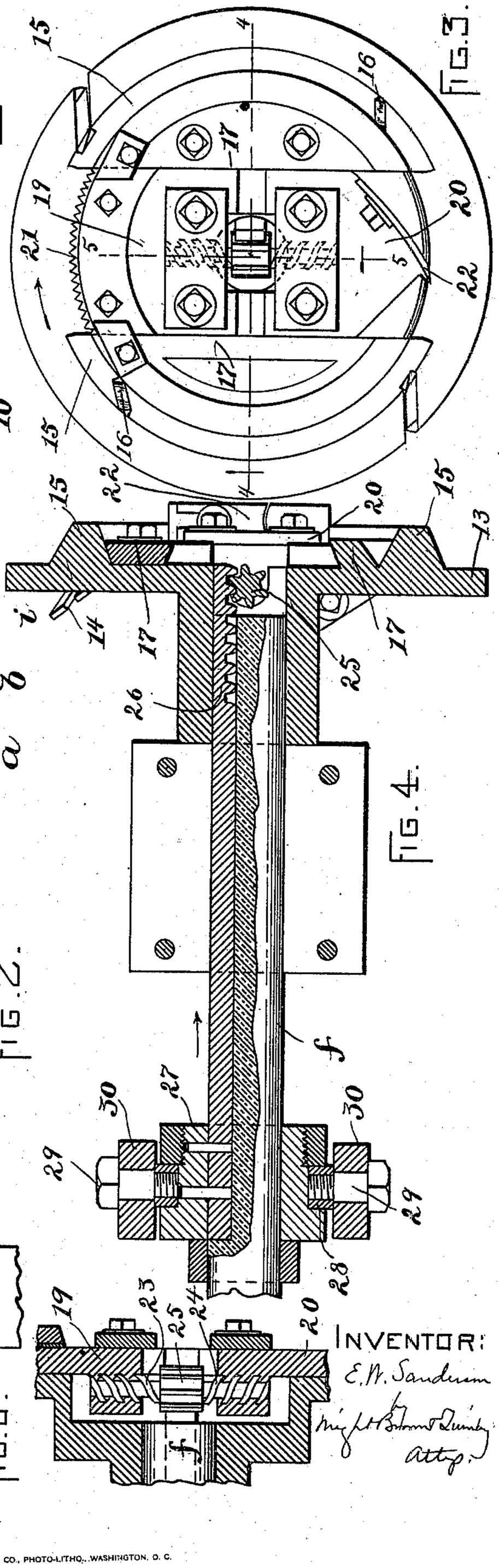

FIG. 3.

FIG. 4.

FIG. 5.

WITNESSES:
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UNITED STATES PATENT OFFICE.

EDWARD W. SANDERSON, OF MERRIMAC, NEW HAMPSHIRE.

MACHINE FOR LEVELING, CHAMFERING, AND CROZING ENDS OF BARRELS.

SPECIFICATION forming part of Letters Patent No. 568,170, dated September 22, 1896.

Application filed April 18, 1896. Serial No. 588,084. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. SANDERSON, of South Merrimac, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Machines for Leveling, Chamfering, and Crozing the Ends of Barrels, of which the following is a specification.

This invention has for its object to provide a simple and effective machine for performing the several operations of chamfering the inner surface of a barrel at its end, leveling the end at the outer margin of the chamfered surface, howeling the inner surface of the barrel at the inner margin of the chamfered surface, and crozing the howeled surface.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation and partial section of a machine embodying my invention. Fig. 2 represents a top view of the same. Fig. 3 represents an end view of the cutter-head having the several cutters which perform the operations above enumerated. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents a section on line 5 5 of Fig. 3.

The same letters and figures of reference indicate the same parts in all the views.

In the drawings, *a* represents a substantially horizontal supporting-frame, having horizontal guides or ways *b b*, on which a carriage *c* is mounted to move back and forth. The said carriage comprises a base 2, having ears 3 3, which embrace the guides *b'*, a bracket 6, affixed to the base and having a circular orifice formed to fit one end of a barrel *d*, a yoke or clamp 7, which is formed to fit the lower portion of the opposite end of the barrel and is adjustable toward and from the bracket 6 by means of an adjusting-screw 8, which engages a nut 18, affixed to a cross-bar or standard 9, which is in turn affixed to the base of the carriage *c*, said clamp 7 being fitted to move independently upon parallel rods 10, which are affixed to the bracket 6 and cross-bar 9. The adjusting-screw 8 is journaled at one end in a boss 12, formed on or affixed to the clamp 7. The rotation of the screw 8 moves the clamp 7 upon the rods 10 and causes it to either hold or release a barrel *d*. When the clamp is moved toward the bracket 6, it bears against the rear edge of one of the hoops *d'* which hold the staves in position, and forces the other hoop *d'* against the rear side of the bracket 6.

f represents a shaft journaled in bearings *g g*, affixed to the frame *a*, said shaft being driven by power communicated in any suitable way, as by a driving-belt running upon a pulley *h*, affixed to the shaft. To one end of the shaft *f* is affixed a head *i*, on which are located the various cutters which perform the several operations of chamfering, leveling, howeling, and crozing the end of the barrel supported by the carriage *c*. The cutter-head *i* comprises a flange 13, which occupies a plane at right angles with the shaft *f* and is provided with inclined bits or cutters 14, arranged to level the end of the barrel. At one side of the flange 13 are two segmental projections 15, having slots through which project the chamfering bits or cutters 16, arranged to enter the end of the barrel and chamfer the outer ends of the staves. Between the segmental projections 15 15 are guides 17, Figs. 3 and 4, between which are fitted two slides 19 and 20. To the outer end of the slide 19 is affixed the crozing-tool 21, which is arranged to project through the space between the ends of the segmental projections 15. To the slide 20 is affixed the inclined howeling bit or cutter 22, arranged to project between the projections 15 at one side of the axis of the cutter-head. The slides 19 and 20 are moved simultaneously in opposite directions, to simultaneously project or retract the tools 21 and 22, by means of a shaft having screw-threads 23 24 of opposite pitch, and an intermediate pinion 25, the threaded portions of said shaft being engaged with correspondingly-threaded nuts formed in the slides 19 and 20, as shown in Fig. 5, while the pinion 25 is located between the slides. With the pinion 25 meshes a rack 26, which is movable lengthwise of the shaft *f* in a slot or guide formed in said shaft. (See Fig. 4.) The rack 26 is connected at its outer end with a ring 27, which surrounds the shaft *f*, and has a peripheral groove in which is loosely fitted a ring 28. Said ring is connected by studs or bolts 29 29 with ears 30,

formed on a shipping-lever 31, which is pivoted at 32 to a fixed support on the frame of the machine. To the shipping-lever 31 is affixed an elongated bar or lever 33, upon one arm of which is hung a weight 34, which normally holds the shipping-lever in the position shown in Fig. 1, the other arm of the bar 33 being connected by a rod 35 with a treadle (not shown) whereby the operator may move the shipping-lever in the direction indicated by the arrow marked thereon in Fig. 1, to move the rack 26 in the same direction, as indicated by the arrow in Fig. 4, and thus cause the rotation of the pinion 25 and threaded portions 23 and 24 in the direction required to simultaneously project the slides 19 and 20 and the tools 21 and 22 carried thereby. When pressure is removed from the treadle, the weight 34 moves the shipping-lever 31 back to the position shown in Fig. 1, and in so doing causes the rack 36 to rotate the pinion 25 in the opposite direction, thus retracting or withdrawing the slides 19 and 20 and the tools carried thereby, as shown in Fig. 3.

The operation of the machine is as follows: An incomplete barrel is placed on and secured to the carriage by inserting one end in the orifice in the bracket 6 and the other end in the clamp 7. The clamp is then adjusted forward independently by means of a screw 8 until by its pressure against the hoop *d'* on which it bears it coöperates with the bracket 6 in tightly clamping and holding the barrel, the said bracket and clamp grasping the barrel by the two hoops *d' d'*. The carriage is then pushed forward by hand, the carriage *i* being arranged to present the end of the barrel to the cutter-head in such manner that the chamfering-tools will first act to chamfer the ends of the staves on their inner surface, after which the ends of the staves are leveled by the leveling-bits 14. During this part of the operation the crozing and howeling tools are withdrawn, so that they are not in position to act upon the barrel. After the chamfering and leveling operations having been completed the forward motion of the carriage is stopped, and the operator, by pressure upon the treadle above mentioned, moves the shipping-lever in the direction indicated by the arrow in Fig. 1, thus causing the rack 26 and pinion 25 to project the crozing and howeling tools 21 and 22, said tools forming the usual groove for the reception of the head of the barrel. The operator then releases the treadle, whereupon the weight 34 retracts the crozing and howeling tools, and the carriage is then moved backwardly by a reverse rotation of the feed-screw 8, this motion also releasing the barrel by moving the clamp 7 away from the bracket 6, so that the barrel may be readily removed and another one inserted.

It will be seen that the machine above described is simple in construction and is adapted to be conveniently and rapidly operated.

A spring may be substituted for the weight 34 as the means for retracting the howeling and crozing tools. In Fig. 1 I show a spring 37 arranged to move the shipping-lever back to its starting position, either wholly or in part. Said spring may be used as an auxiliary to the weight 34 as a means for quickly starting the shipping-lever in its backward movement.

The clamp 7, formed to engage a hoop near the outer end of the barrel, exerts pressure on the barrel through said hoop and does not bear on the ends of the staves. I thus insure a firm and extended bearing of the clamp on the barrel and avoid injury to the finished ends of the staves, which would be liable to result from the employment of a clamp bearing directly on said ends.

I claim—

1. In a machine of the character specified, the combination of a supporting-frame, a barrel-holding carriage thereon, a shaft journaled in bearings on the frame, a cutter-head on the shaft provided with a series of relatively-fixed cutters, radially-movable slides on said head having supplemental cutters and oppositely-threaded nuts, a shaft journaled in the cutter-head and having oppositely-threaded portions engaged with said nuts, and an intermediate pinion, a rack movable in the driving-shaft and meshing with said pinion, and shipping mechanism for moving said rack.

2. In a machine of the character specified, the combination of a supporting-frame, a barrel-holding carriage thereon, a shaft journaled in bearings on the frame, a cutter-head on the shaft provided with a series of relatively-fixed cutters, radially-movable slides on said head having supplemental cutters and oppositely-threaded nuts, a shaft journaled in the cutter-head and having oppositely-threaded portions engaged with said nuts, and an intermediate pinion, a rack movable in the driving-shaft and meshing with said pinion, a pivoted shipping-lever connected with said rack, and means for oscillating said lever.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of April, A. D. 1896.

EDWARD W. SANDERSON.

Witnesses:
JOHN DENNIS,
C. F. BROWN.