

No. 815,139.

PATENTED MAR. 13, 1906.

H. BRAMMER.
MACHINE FOR MAKING TUBS.
APPLICATION FILED AUG. 1, 1903.

3 SHEETS—SHEET 1.

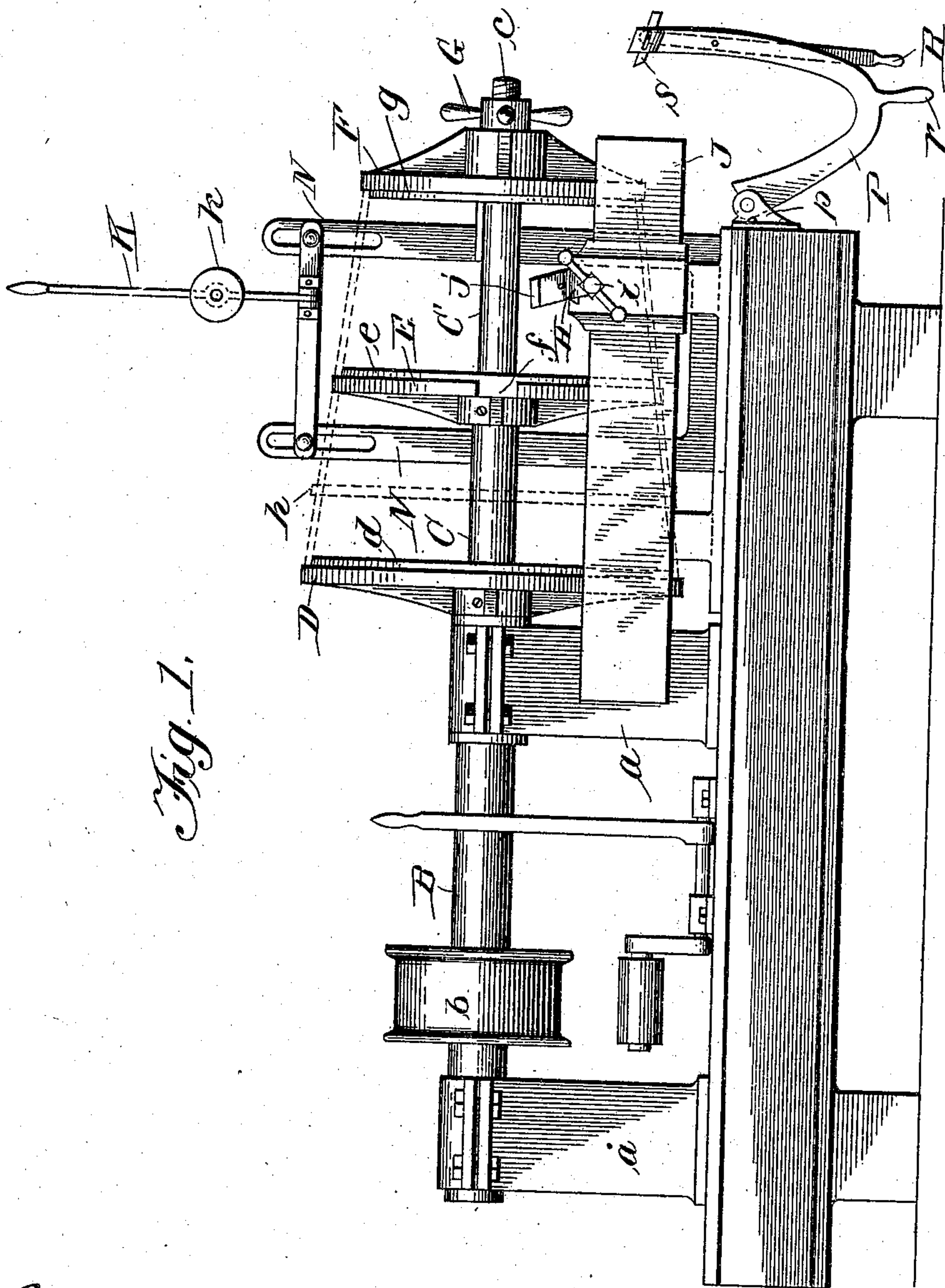


Fig. 1.

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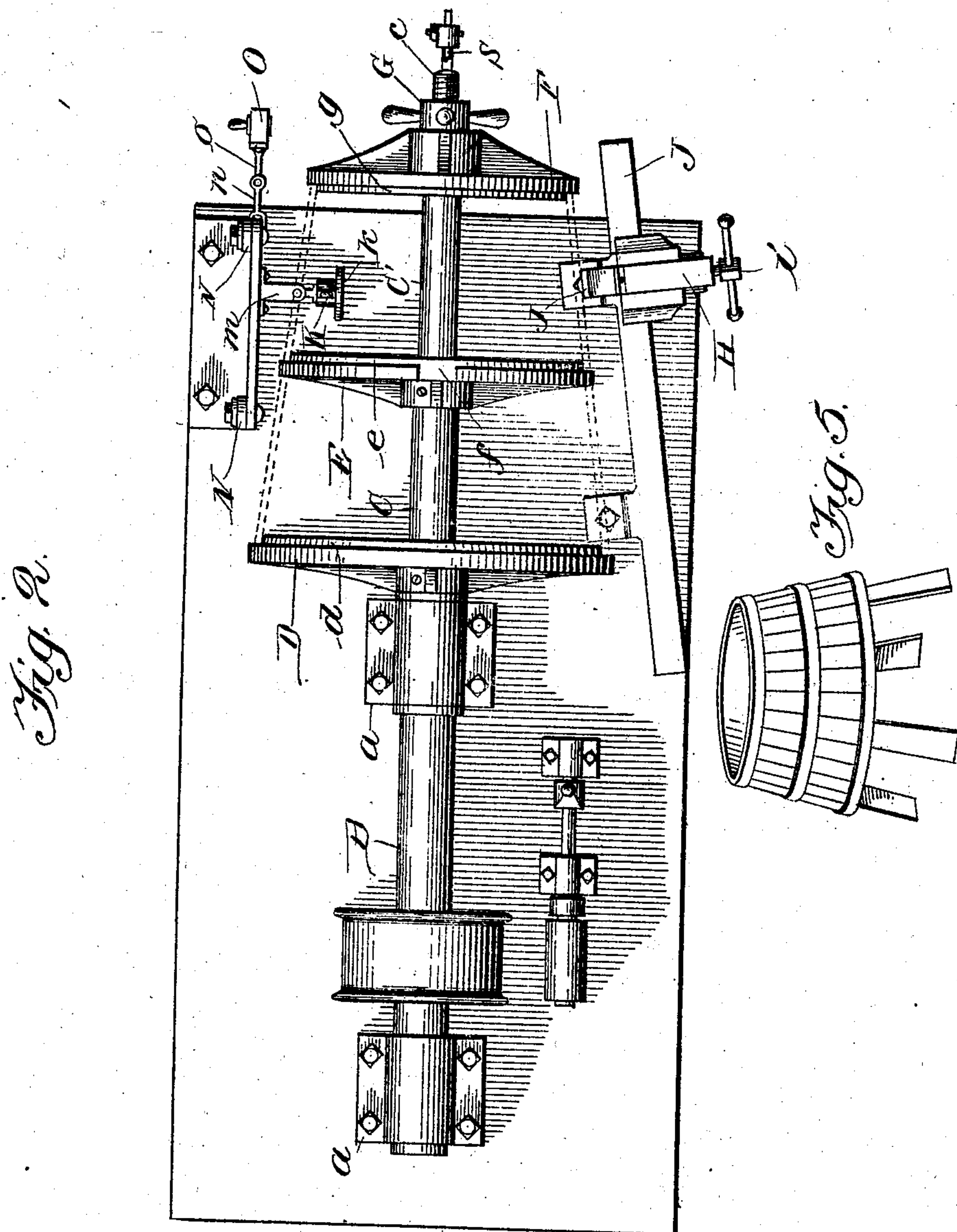
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3 SHEETS—SHEET 3.

Fig. 3.

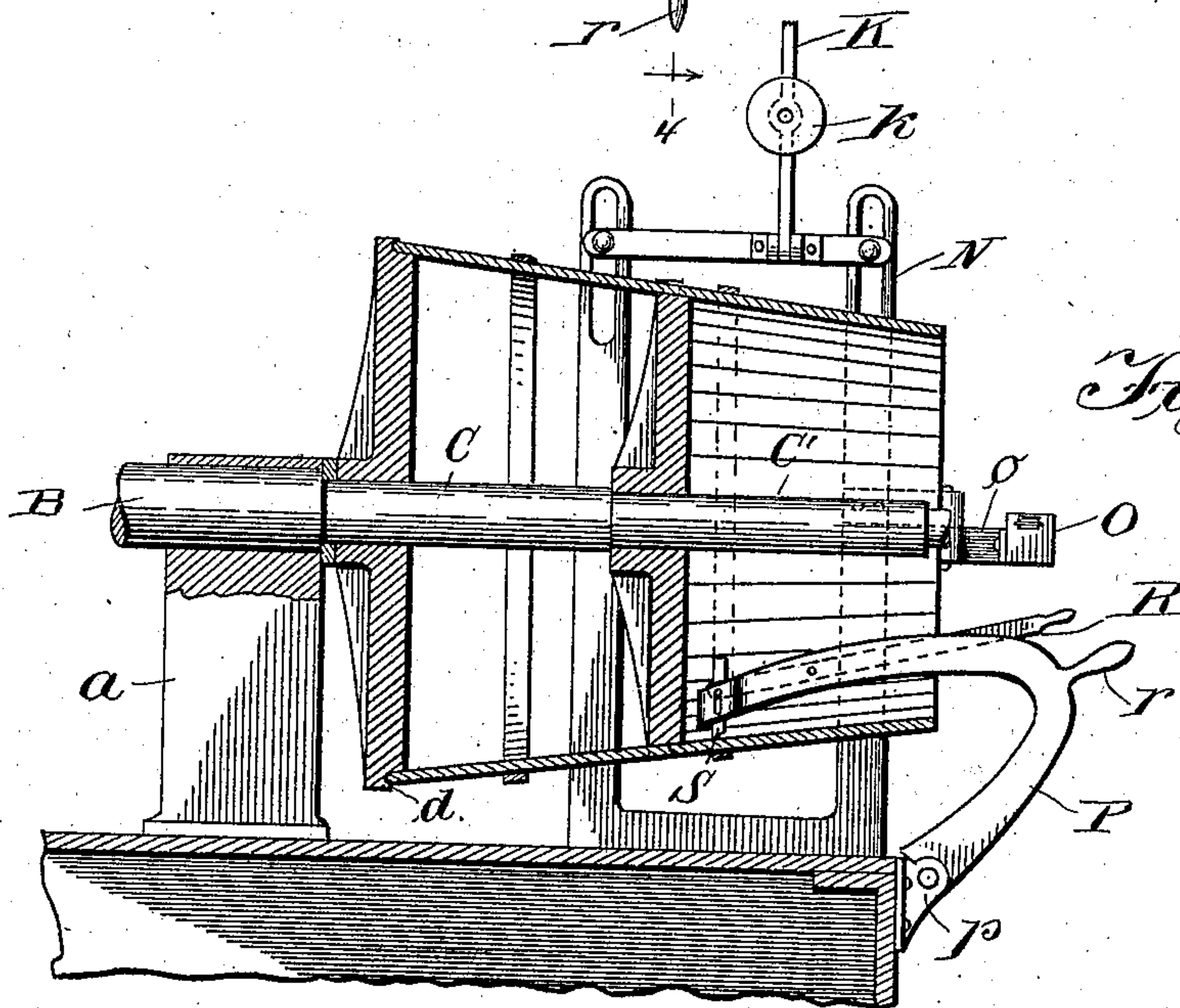
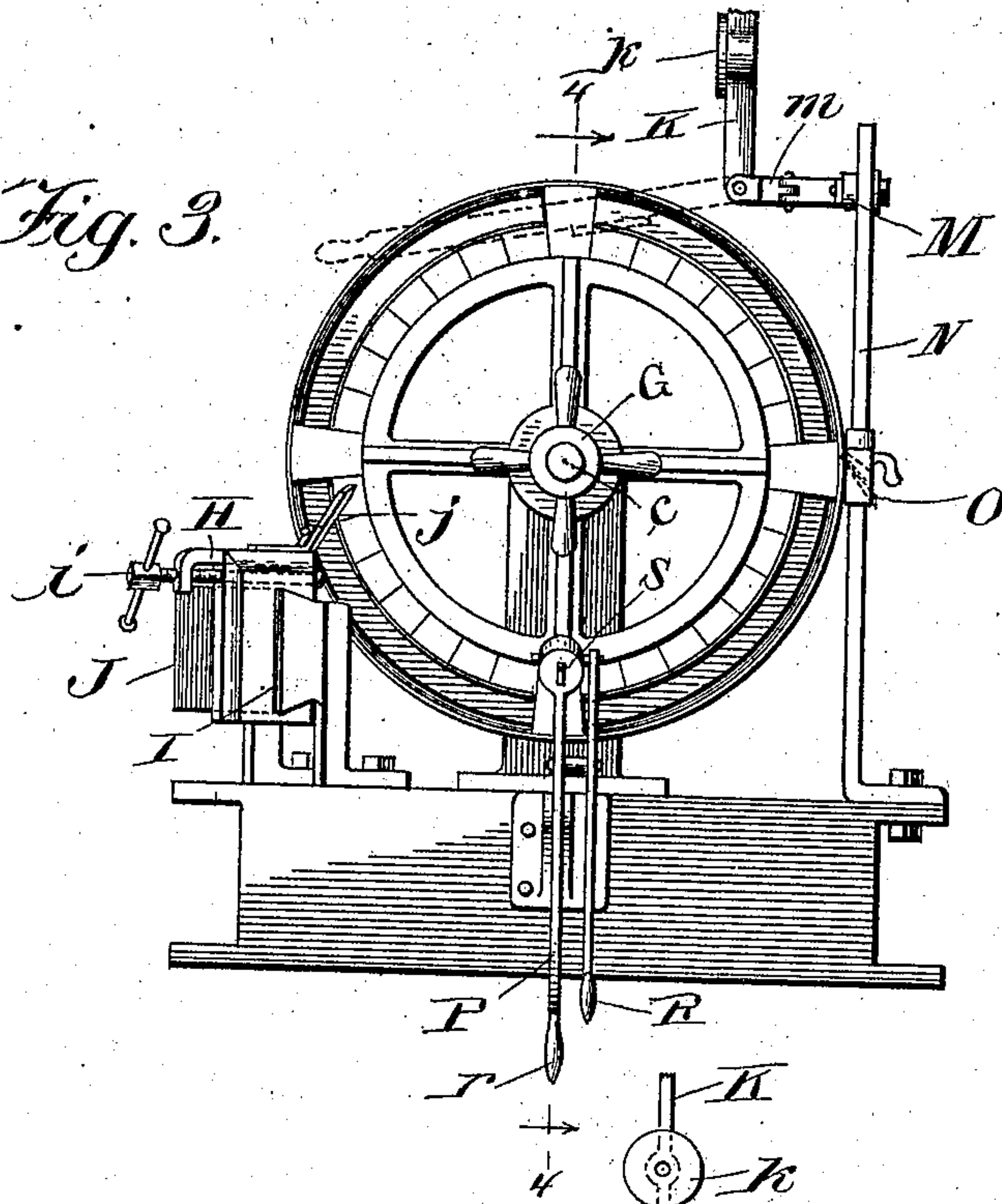


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY BRAMMER, OF ST. LOUIS, MISSOURI.

MACHINE FOR MAKING TUBS.

No. 815,139.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed August 1, 1903. Serial No. 167,871.

To all whom it may concern:

Be it known that I, HENRY BRAMMER, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Machines for Manufacturing Tubs, of which the following is a full, clear, and exact description.

My invention relates to a machine which while particularly adapted for quickly and economically making tubs may be used for other cooperage-work; and its object is to avoid the necessity for the numerous hand operations now used in the construction of tubs and to make it possible to form and finish the tub, all excepting the inserting of the bottom therein, while the assembled parts are on the mandrel of the machine. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a front end view. Fig. 4 is a longitudinal central section. Fig. 5 is a perspective view of a specimen of the style of tubs made on said machine.

In the drawings, A represents a suitable supporting-frame, which has arising from near one end and at about the center of length of its plain level top suitable standards *a a*. Journaled in bearings in the upper end of these standards is a longitudinal shaft B, which is actuated by means of a suitable belt that engages pulley *b*, secured on it between its bearings. One end of the shaft B extends through the bearings located near the center of the machine and extends unsupported to and slightly beyond the adjacent end of the supporting-frame to form a mandrel. The portion C of this mandrel nearest the bearing is slightly less in diameter than shaft B, and the portion C', extending from about the center of length thereof to a point just beyond the vertical plane of the end of the supporting-frame, (which it overhangs,) is reduced to a still less diameter, and the end portion *c* from a point about the end of the supporting-frame to its extremity is still further reduced in diameter and is screw-threaded.

A circular chuck D is secured by set-screws on portion C, which is of a diameter slightly greater than that of the circle bounding the spread of the feet of the legs of the

tub to be manufactured by the machine and has in its side facing the extremity of the mandrel a concentric circular groove *d*, in which the feet of the legs of said tub are seated. Loosely mounted upon the portion C' of the mandrel is a chuck E, which is preferably less in diameter than chuck D (according to the diameter of the bottom or lower edge of the staves of the tub) and is likewise provided with a concentric circular groove *e* in its face nearest the extremity of the mandrel and adjacent to its circumference to provide a seat for the lower edges of the staves and is also provided with a series of transverse recesses or seats *f*, which are of a depth and width sufficient for the extended staves forming the legs to pass through. On the portion *c* of the mandrel is another circular chuck F, which has adjacent to its circumference and in the face thereof opposing chuck E a concentric circular groove *g*. This chuck F is held in place and is forced toward chuck D by a suitable nut G, which preferably is provided with radiating arms for the convenience of the operator in manipulating the same. While chucks D and E are mounted loosely on the shaft B, they are held stationary during the operation of the machine by means of screws or any other suitable manner.

The tub which my invention is particularly designed to operate on consists of staves slightly tapered toward their upper ends and assembled around the axis of the tub so that the upper end of the latter is less in diameter than the lower end of the same. This tub is particularly adapted for washing-machines and is provided with four equidistant corresponding legs, which are made integrant with and consist of the downward extension of, say, four staves of the tub. The staves of the tub are first assembled in a suitable iron ring and then slipped concentrically over the mandrel in such manner that the feet of the longer staves forming the legs of the tub will enter the groove *d* of chuck D and at points near the body of the tub pass through the recesses *f* in the periphery of chuck E and so that the lower edges of the shorter staves forming the body of the tub will enter groove *e* of chuck E. Chuck F is then moved tightly up against the upper edges of both the long and short staves by the proper manipulation of nut G, and thus clamps them in place, whereupon the metal ring is removed. A suitable band or clamp-

ing-ring *h* of suitable diameter is then slipped over the barrel of the tub until it clamps and binds the leg portions of the longer staves and is made to bind said leg portions so tight that chuck *F* can, if desired, be permitted a slight longitudinal movement toward the extremity of the mandrel. When the walls of the tub are thus completed, the outer circumference thereof is planed by means of a laterally-adjustable planing device comprising a holder *H*, which consists of a bar the longitudinal sides of which are beveled and seated in the dovetailed groove in the upper surface of a suitable carrier *I*. The outer end of holder *H* is bent downward and is tapped by a suitable bolt *i*, that extends into or through the carrier and is manipulated to adjust the end of this holder is provided with a suitable bit *j*, which is secured to and extends upward at a suitable inclined angle from a plate secured to and mounted upon the inner end of the holder, substantially as shown. Carrier *I* consists of a substantially rectangular block which has a horizontal dovetailed groove of sufficient dimensions on its inner side and is slipped over the end of and adjustable longitudinally upon the longitudinal oblique bar or track *J*, whose angular position is parallel to the angle of the sides of the tub it is desired to plane, which latter operation is accomplished by the planing device described while the tub is being revolved rapidly and satisfactorily.

When the sides of the tub have been planed, the middle metal band for the tub is slipped over the end of the mandrel and upon the same as far back as possible by hand and is then forced still farther back as far as it will go to tighten and hold the staves together, preferably by means of a revolving disk *k*, which is journaled in suitable bearings located at a suitable point mediate the ends of the lever *K*. This lever *K*, which is suitably fulcrumed at one end, is swung transversely over the tub substantially as shown in Fig. 3. Its fulcrum consists of a bracket *m*, which is pivotally connected to lever *K* and secured to cross-bar *M*, and the ends of this bar *M* are adjustably secured in vertically-elongated slots of the standards *N N*, that arise from and have their lower ends secured to the supporting-frame *A* on the side of the mandrel opposite the planing device hereinbefore referred to. When the lever *K* is moved into the position shown in dotted lines in Fig. 3, the disk *k* comes in contact with the sides of the tub in such position that by moving the lever toward the bottom of the tub said disk will engage the forward edge of the band and forces it toward the lower edge of the tub rapidly and securely. Nut *G* is then removed from the end of the mandrel, and likewise chuck *F*, so as to leave the tub in the condition substantially as shown in Fig. 4, and the

upper edges of the tub are planed while the mandrel and the chucks *D* and *E* are revolving the tub. This I accomplish by means of a plane *O*, which is carried on the end of a swinging arm *o*, that is pivoted or hinged to the end of a longitudinal stationary arm or bracket *n*, secured to and projecting longitudinally from the standard *M* nearest the adjacent end of the supporting-frame. Normally the plane *O* is in the position shown in Figs. 2, 3, and 4; but when it is desired to use the same it is swung laterally at about an angle of ninety degrees to its original position to bring the bit thereof against the edges of the tub to plane the same as desired.

After the three operations just referred to—to wit, planing the outside of the tub, putting the metal band upon the same, and planing the upper edges of the sides thereof—have been accomplished a circumferential groove of suitable depth is made in the inner surface of the sides of the tub near their lower edges for the reception of the tub-bottom. The means for accomplishing this consist of a chisel or plane *S*, adjustable transversely in suitable guide-bearings in the end of the longer leg of a U-shaped swinging frame *P*. The end of the shorter arm of frame *P* is pivoted to suitable lugs *p*, secured to and projecting from the end of the supporting-frame in such manner that its movement when swung into the position shown in Fig. 4 is limited to substantially the position illustrated. When in this position, the chisel *S* is moved to its work and cuts the circumferential groove in the inner circumference of the walls of the tub, while the latter is rapidly revolving, by means of a lever *R*. This lever is fulcrumed mediate its ends to the side of the longer arm of the U-shaped frame *P*, and the extremity of its shortest branch is pivoted to chisel *S*, which latter has laterally-projecting pins projecting therefrom that extend out through slits elongated in the direction of the movement of the chisel, to the outer end of one of which the adjacent end of the lever is pivotally connected. The outer end of the longer arm of lever *R* is provided with a handle, which is within convenient reach of the operator when he has moved the frame *P* into the position shown in Fig. 4. When the groove for the bottom of the tub has been made, frame *P* is swung out of the tub into the position shown in Fig. 2, whereupon the tub which is now ready to have the bottom inserted therein is removed from the mandrels by loosening and removing the clamping-ring and slightly loosening, should this be necessary, the iron band upon the tub through the medium of the disk *k*, as hereinbefore explained.

The operation of my improved machine is apparent from the foregoing description. There are details of construction, however, which may be changed or modified without

departing from the spirit of my invention. All such changes or modifications I desire to be understood as coming within the scope of my invention if capable of accomplishing the same result.

What I claim as new, and desire to secure by Letters Patent, is—

1. A machine for the manufacture of tubs, comprising a mandrel; two chucks, the opposing faces of which are constructed to clamp staves endwise between them, and the chuck farthest from the unsupported end of said mandrel having a series of recesses in its periphery for the passage therethrough of elongated staves; and a removable clamping-ring.

2. A machine for the manufacture of tubs, comprising a mandrel; several independently-movable chucks mounted thereon, the chucks nearest the unsupported extremity of the mandrel having in its side farthest from said extremity a circular concentric groove, the other chucks having in their sides facing said end chuck concentric grooves and the intermediate chuck having a series of transverse recesses in its periphery; and a removable clamping-ring.

3. In a machine for the manufacture of tubs, a mandrel; several chucks mounted and independently movable thereon; means for removably retaining the chuck nearest the unsupported end of the mandrel in proper relative position; and a removable clamping-ring; in combination with a U-shaped frame pivoted at the extremity of one of its branches, and adapted to have its other branch enter longitudinally within the circumference of the work held by the chucks; and a suitable cutting device carried by said last-mentioned branch and adapted to cut a circumferential groove in the inner walls of the bottom of said work; a swinging arm mounted on a bracket near the end of the machine; a planing device carried thereby; a lever adjustable vertically on the bracket supporting said swinging arm and capable of movement in planes at right angles to each other; and a revolving disk mounted on said lever adapted to engage the circumference of the work held by said chucks.

4. In a machine for the manufacture of tubs, a mandrel; several chucks mounted and independently movable on said mandrel; means for removably retaining the chuck nearest the unsupported end of the mandrel in proper relative position; and a removable clamping-ring; in combination with a laterally-adjustable planing device; a carrier movable in a longitudinal direction upon which said planing device is mounted; a longitudinally-adjustable frame adapted to enter within the inner circumference of the work held by the chucks; and a cutting device adapted to cut a circumferential groove in

the inner walls of the bottom of said work; a swinging arm mounted on a bracket near the end of the machine; a planing device carried thereby; a lever adjustable vertically on the bracket supporting said swinging arm and capable of movement in planes at right angles to each other; and a revolving disk mounted on said lever adapted to engage the circumference of the work held by said chucks.

5. In a machine for the manufacture of tubs, a mandrel; several independently-movable chucks mounted on said mandrel; means for removably retaining the chuck nearest the unsupported end of the mandrel in proper relative position; and a removable clamping-ring; in combination with a lever adjustable vertically in its standards and capable of movement in planes at right angles to each other; a revoluble disk journaled therein and adapted to be moved by said lever transversely against and longitudinally upon the circumference of the work held by the chucks; a longitudinally-movable frame adapted to enter within the inner circumference of said work; and a cutting device carried by said frame and adapted to cut a circumferential groove in the inner walls of the bottom of the work; a swinging arm pivoted to a suitable bracket mounted on the standard carrying said lever, and a planing device carried by said arm adapted to cut away the upper portion or top of the tub.

6. In a machine for the manufacture of tubs, a mandrel; several independently-movable chucks mounted on said mandrel; means for removably retaining the chuck nearest the unsupported end of the mandrel in proper relative position; and a removable clamping-ring; in combination with a transversely-adjustable planing device; a carrier movable in a longitudinal direction upon which said planing device is mounted; a lever adjustable vertically in its standards and capable of movement in planes at right angles to each other; a revoluble disk journaled therein and adapted to be moved by said lever transversely against and longitudinally upon the circumference of the work held by the chucks; a longitudinally-movable frame adapted to enter within the inner circumference of said work; and a cutting device carried by said frame and adapted to cut a circumferential groove in the inner walls of the bottom of the work; a swinging arm pivoted to a suitable bracket mounted on the standard carrying said lever, and a planing device carried by said arm adapted to cut away the upper portion or top of the tub.

In testimony whereof I have hereunto set my hand this 2d day of July, 1903.

HENRY BRAMMER.

Witnesses:

PAUL MANNY,
FRANK J. KOTSREAN.