

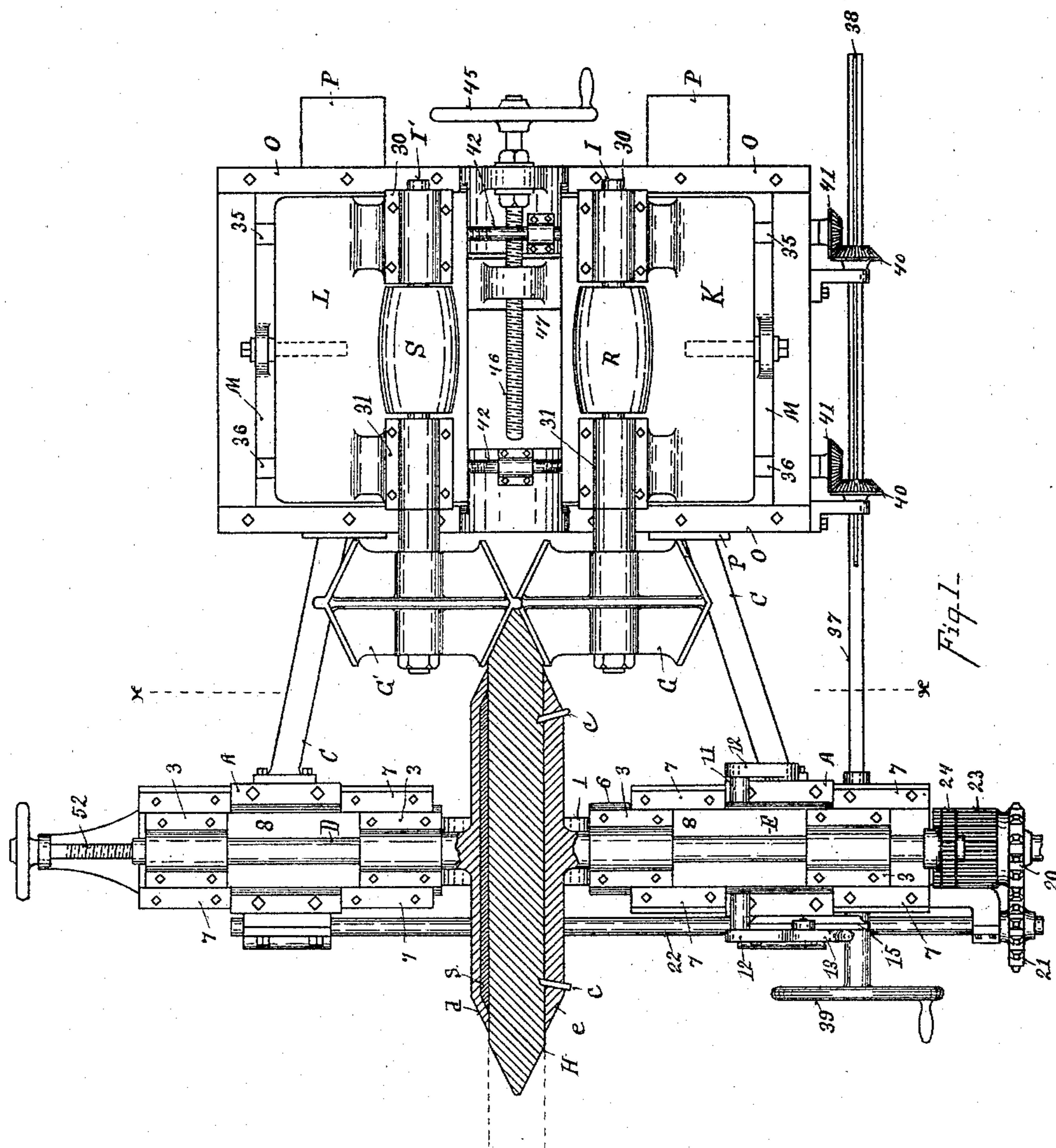
(No Model.)

4 Sheets—Sheet 1.

F. H. KANE.
BARREL HEAD MACHINE.

No. 488,167.

Patented Dec. 13, 1892.



Witnesses

C. W. Miles

T. Simmons

Inventor

Frank H. Kane

By his Attorneys Wood & Boyd

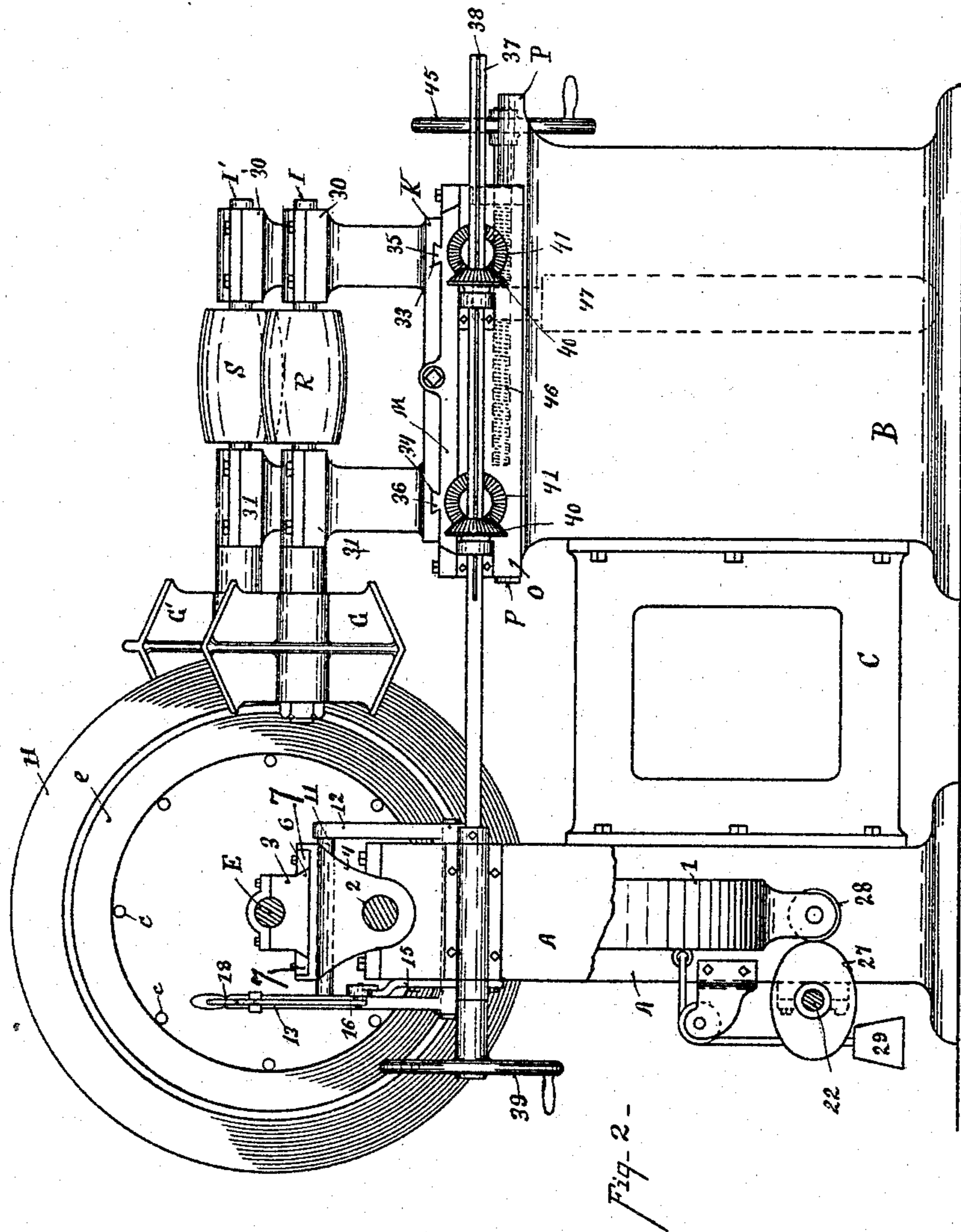
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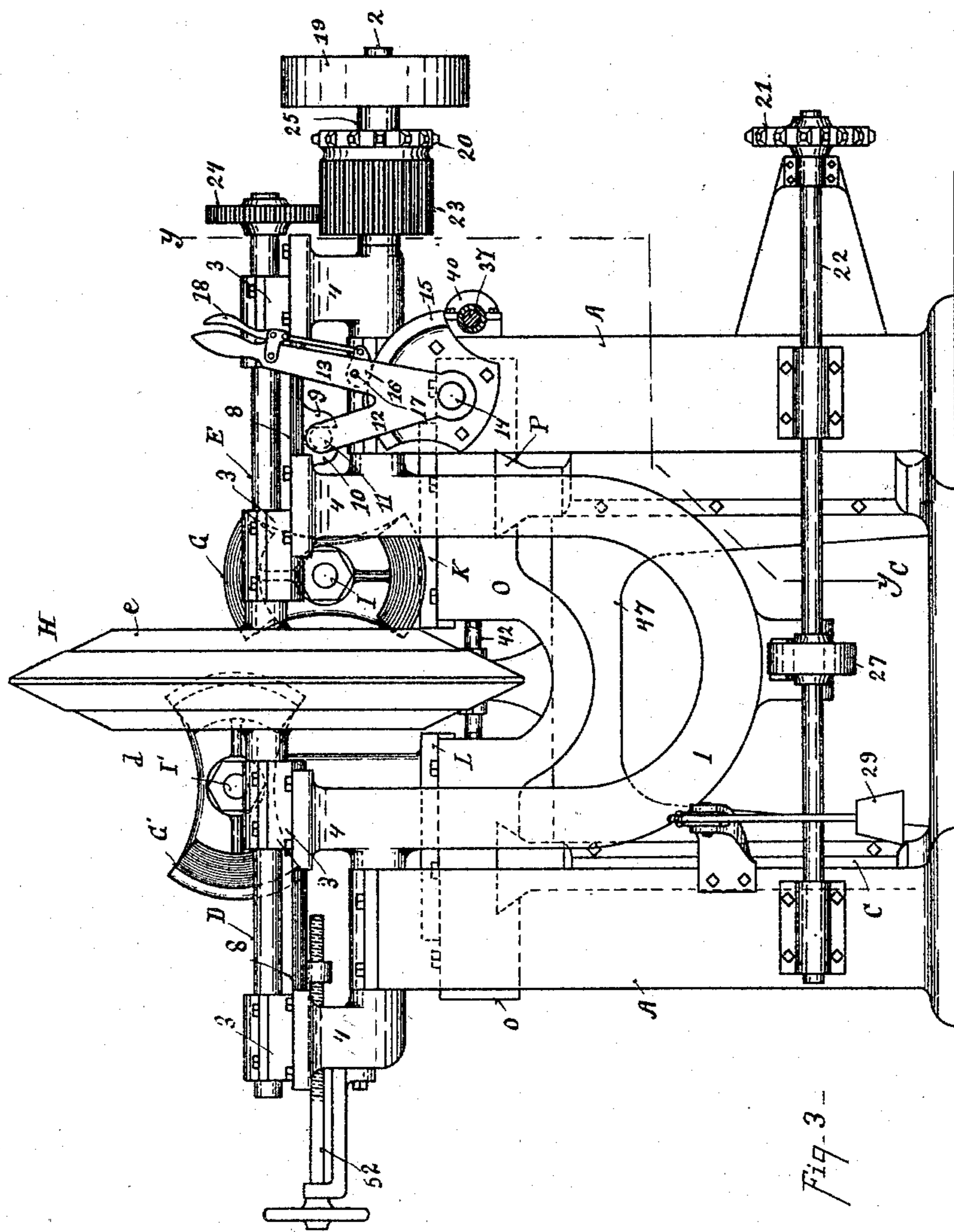


Fig. 3 -

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Inventor

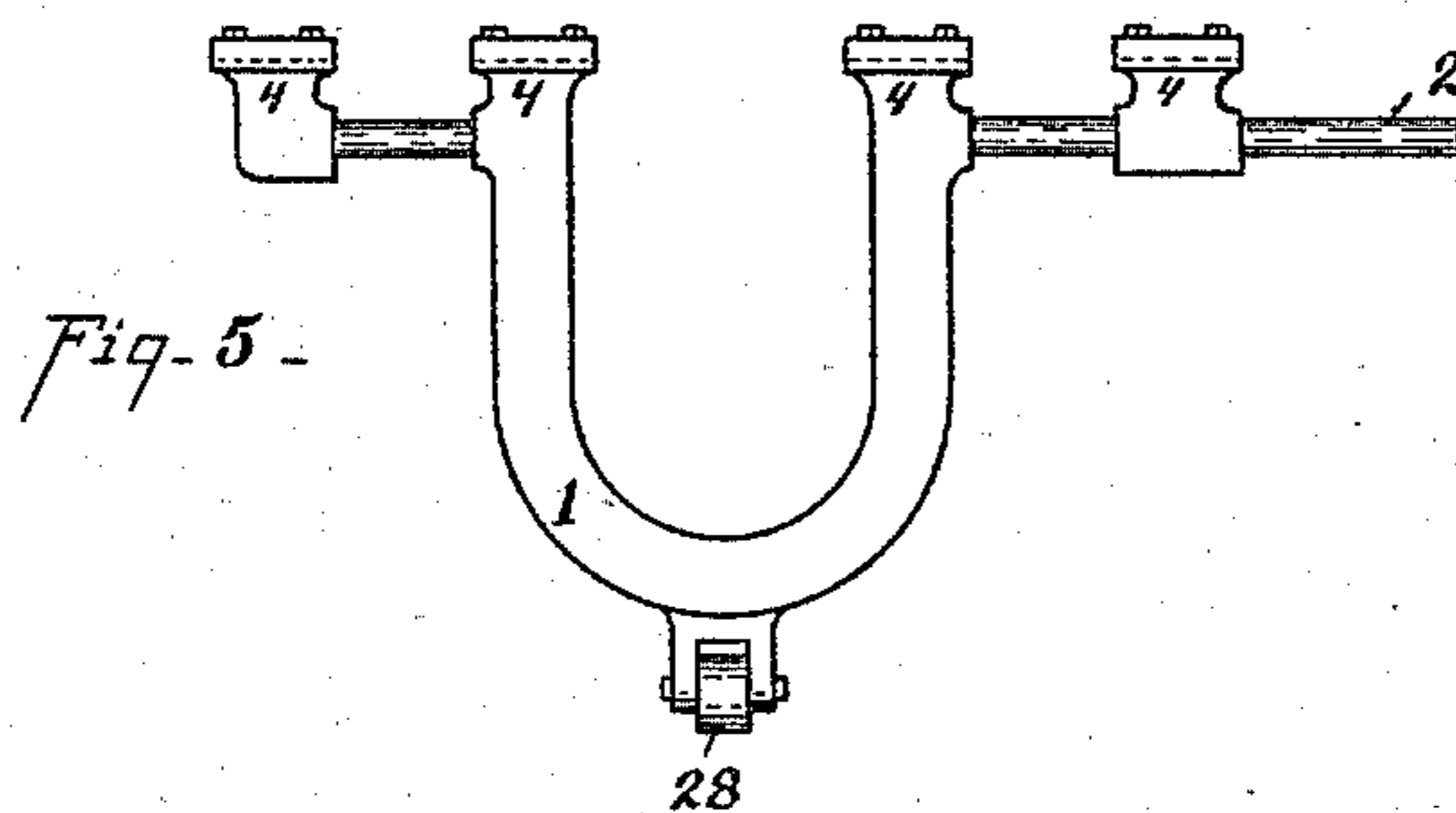
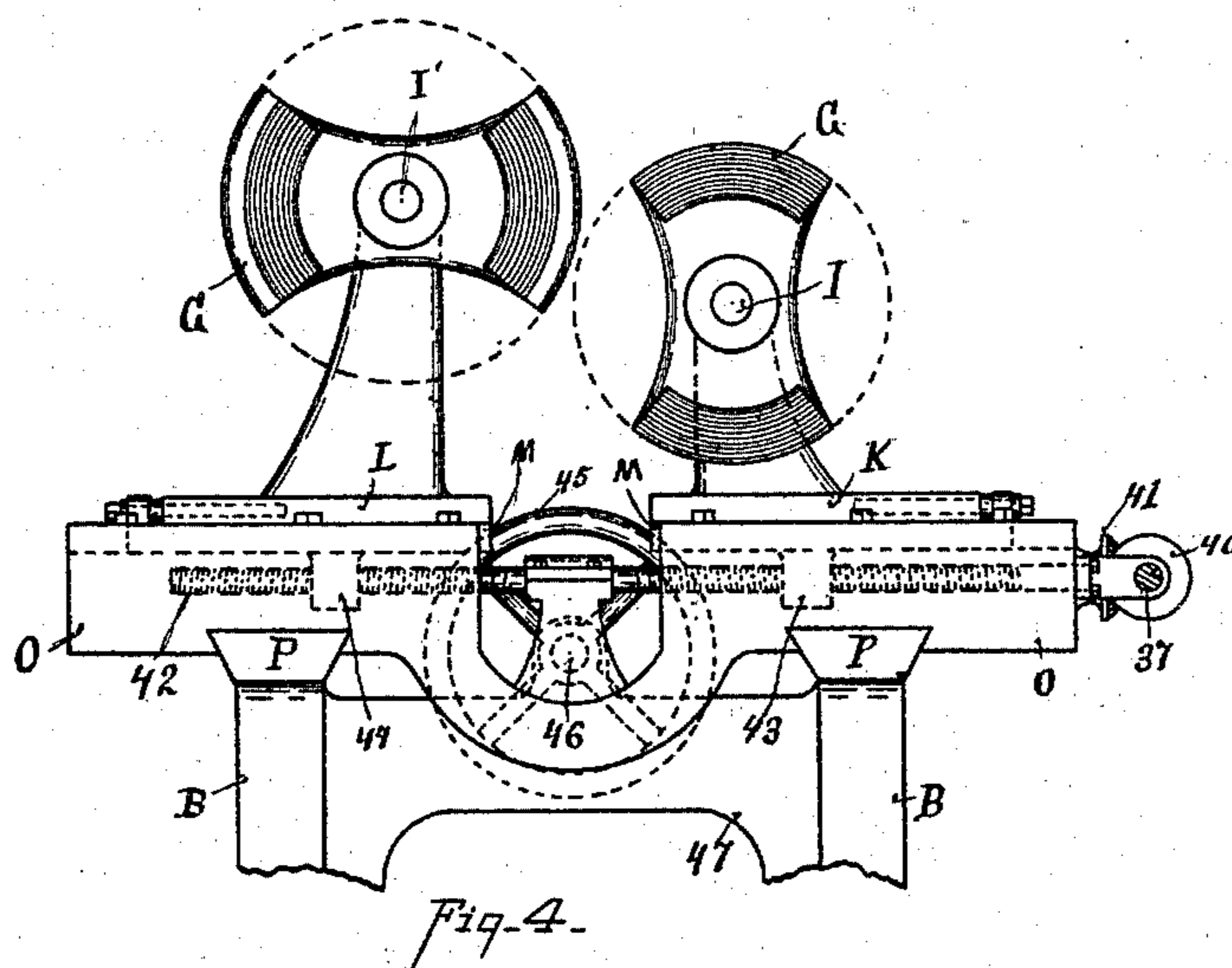
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By his Attorneys Wood & Bz

UNITED STATES PATENT OFFICE.

FRANK H. KANE, OF RIVERSIDE, OHIO.

BARREL-HEAD MACHINE.

SPECIFICATION forming part of Letters Patent No. 488,167, dated December 13, 1892.

Application filed May 12, 1891. Serial No. 392,445. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. KANE, a citizen of the United States, and a resident of Riverside, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Barrel-Head Machines, of which the following is a specification.

The primary object of my invention is to provide a machine which will cut a barrel-head from strips of wood clamped between two heads from a square into a circular or elliptical form by means of revolving cutters, thereby forming the circle of the head simultaneously with the beveling of the peripheral edge to fit the crozing of the barrel.

Another object of my invention is to provide a machine which will cut different-sized heads by two revolving cutter-heads that are adjustable in parallel planes toward each other for cutting the blank and giving it the required bevel.

Another object of my invention is to provide means for manipulating said machine readily.

Another object of my invention is to suspend the barrel-head upon a vibratory frame, so as to cut elliptical forms as well as circular.

The various features of my invention will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top plan view of my improvement with barrel-head and clamps in section. Fig. 2 is a side elevation of the same, partly in section, on the line *y y* of Fig. 3. Fig. 3 is a front end elevation. Fig. 4 is a section on line *x x*, Fig. 1. Fig. 5 is a side elevation of the vibratory clamping-frame.

A A represent the front posts of the machine, and B B the rear posts.

C C represent couplings for uniting the front and rear posts together.

The frame is preferably made of five parts bolted together, as shown in Figs. 1 and 2.

1 represents a yoke which is journaled to the posts A A. Upon this yoke are supported the pillow-blocks 3 for supporting the axis of the clamping-jaws.

4 represents brackets which are part of the

yoke 1 and which support the auxiliary pillow-blocks 3.

D represents a shaft journaling in the pillow-blocks 3, forming one side of the divided axis for revolving the clamps and blank from which the barrel-head is formed. E represents the opposite section of said shaft.

d represents one of the clamping-jaws attached to the shaft D, and *e* represents the opposite jaw attached to the opposite shaft-section E. The shaft-section E is moved longitudinally, carrying the jaw *e* to or from the jaw *d*. The pillow-blocks 3 are provided with dovetailed or V-shaped tenons 6 on either side, which slide in ways formed in the brackets 4 to permit a movement of the pillow-blocks longitudinally. These tenons are held in place by gibbs 7, secured to the brackets 4. Pairs of pillow-blocks 3 are connected together by a coupling-arm 8. 9 10 represent lugs depending from one of said coupling-arms 8. In the recess between said lugs is engaged a stud 11, which is supported in arms 12 of the setting-lever 13. This lever journals upon the shaft 14.

15 represents a segment for locking the setting-lever 13 in position. The engagement is formed by means of cam 16, journaling on the center 17. 18 represents a lock-lever for releasing said cam, so as to allow the setting-arms to move free and move the pillow-blocks forward and backward, carrying with them shaft E, whereby the clamp-jaw *e* is moved to or from the clamp *d* by the setting-lever 13, so as to clamp the blank or barrel-head H between said jaws and hold it in position for revolution and cutting. These jaws and the clamped blank or head are revolved by the following instrumentalities: 19 represents the main driving-pulley, mounted loose upon shaft 2. 20 represents a sprocket-wheel driving by transmission a sprocket-wheel 21 on the shaft 22. 23 represents a spur-gear driving the spur 24, which is keyed upon the sectional shaft E. The said spur-gear 24 is in mesh with the spur-gear 23 and moves longitudinally thereon whenever the setting-lever 13 is moved to operate the jaw *e*. I prefer to have the driving-pulleys 19 and 23 connected together by a sleeve 25 and journaled loosely

on the shaft 2. Whenever it is desired to form an elliptical-shaped head, it is necessary to vibrate the frame 1, so as to move in an eccentric path, and this is accomplished by means of the cam-shaft 22, cam 27, keyed thereon, engaging with the friction-roller journaled at the base of the yoke 1. 29 represents a weight for holding the friction-pulley of said yoke in contact with the cam. It is essential that the cam-shaft 22 be revolved an equal number of revolutions with the shafts E D, so as to properly present the blank H to the cutters. For this purpose the drivers 20, 21, 23, and 24 are of the same size. Whenever it is desired to change the eccentricity of the head, the cam 27 is changed, so that the desired shape of the head is regulated by the contour of the cam 27. The barrel-head is cut from a rectilinear piece or pieces forming the head, which are held between the jaws *e d*, as shown in dotted lines, Fig. 1. This is accomplished by means of beveled cutters or bits G G', which are mounted upon the shafts I I'. These shafts are supported in boxes 30 31, supported upon the tables K L, which are supported in turn by the plates M, which are secured to the traveling frame O, which slides upon ways P P. The said tables K L are provided with dove-tailed grooves 33 34, which move upon tongues 35 36 on the supporting-plate M. The bits G G' are driven by means of pulleys R S, keyed to their respective shafts, and they have two adjustments, one radially toward the axis of the revolving blank H, which determines the size or radius of the head, and a lateral movement to or from each other in parallel planes for cutting the blank off and giving the same its appropriate bevel, so that the barrel-head will fit the crozing of the barrel.

The longitudinal adjustment of the cutters or bits G G' is accomplished by the following instrumentalities: 37 represents a shaft provided with a feather 38. 39 represents a hand-wheel for turning the same. 40 represents bevel-gears splined upon said shaft. 41 represents bevel-gears meshing with bevel-gears 40 and keyed upon the shafts 42. Said shafts 42 are provided with right and left screw-threads, which engage, respectively, with ears 43 44, projecting outward from the base of the plates M, so that the said cutter-bits G G' are drawn toward each other or moved apart by the revolution of the hand-wheel 39. The splining of the gears 40 upon the shaft 37 is for the purpose of allowing the shafts I, carrying the cutter-bits, to be moved longitudinally by means of the hand-wheel 45. This is keyed upon a screw-threaded shaft 46, which taps into the cross-bar 47, which connects the ways P P together, so that as said hand-wheel 45 is turned the frame O, which supports the cutter-heads, is moved longitudinally on the ways P P and moving the cutters G G' radially to or from the axis

of the barrel-head or blank H. In order that the two cutters G G' may cut the blank H entirely in two without coming in contact with each other, one is raised above the other in a horizontal plane, as shown in elevation, Fig. 2, the standards supporting said shafts I' being longer than the others.

In order to adjust the clamps to different thicknesses of heads and to vary the depth of the bevel, I adjust pillow-blocks 3, which support shaft D upon the brackets 4 by means of screw-shaft 52, by means of which the head may be adjusted so as to make the bevel greater or less upon either side, as desired.

I have shown the cutters of a V-shaped face and having a flat center, with cutting-faces upon each side of the bevel. This form of cutter is employed when the cutters are drawn together to form the head from the blank, each cutter forming one side of the bevel and forming the bead. When, however, the cutters are driven radially toward the axis of the barrel-head, only one of the beveled faces is employed.

The mode of operation is as follows: Before the machine is started the jaw *e* is moved away from jaw *d* a sufficient space to allow the insertion of the blank H, which may be formed of several pieces of timber or of only one piece, if desired. The jaw *e* is then moved up by the setting-lever 13 to clamp the head between it and the jaw *d*. For this purpose the said jaw *e* may be armed with spurs *c*. The opposite head may be provided with spurs or with friction-plate *s*, formed of rubber, felt, or other similar material. When the head is clamped in position and the cutter-shafts adjusted longitudinally to or from the axis of the main shaft to determine the size of the barrel-head, the cutters G G' being moved apart by the hand-wheel 13, so that the ends of the blank H may pass freely between them, the machine is set in motion, the operator moving the hand-wheel 39 and drawing the cutters G G' together by the gradual turning of said wheel until the blank is cut in two and beveled. The operator stops the machine, reverses the movement of the hand-wheel 34, opens up the bits or cutters G G', then by the setting-lever 13 moves the sectional shaft E and its jaw *e* backward, and a new blank is inserted, and the operation is proceeded with as before. As the machine is herein constructed, however, the mode of operation may be varied by first setting the cutter-bits G G' together in position. Then instead of manipulating the hand-wheel 39 and shaft 37 to draw the cutters G G' together the hand-wheel 45 may be turned to drive the cutters G G' forward toward the axis of the driving-shaft D E and the barrel-head reduced to size by the endwise movement of the cutters; but the former is the preferred form of operation.

Having described my invention, what I claim is—

1. In a barrel-head machine, the combination of a vibratory yoke-frame provided with adjustable pillow-blocks, a rotary shaft supported horizontally in said blocks and composed of two sections, a clamping-jaw supported on each section of said shaft, one of said jaws being adjustable to and from the other, two rotary convexed and beveled cutters having their axes in different vertical and horizontal planes, and mechanism for moving said cutters toward and from a barrel-head blank held by the clamping-jaws to simultaneously operate upon opposite sides of said blank and form the circle of the barrel-head simultaneously with the beveling of its peripheral edge, substantially as described.

2. In a barrel-head machine, the combination of the vibratory yoke 1, having brackets 4, the pillow-blocks 3, the rotary sectional shaft D E, the clamping-jaws *d e*, the coupling-arm 8, having lugs 9 and 10, and the setting-lever 13, having arms 12, provided with a stud 11, engaged with said lugs, substantially as described.

3. In a barrel-head machine, the combination of the vibratory yoke-frame 1, provided with adjustable pillow-blocks 3, the rotary sectional shaft D E, supported in said blocks and provided with clamping-jaws *d e*, one of which is adjustable toward and from the other, the coupling-arm 8, connecting the pillow-blocks, the setting-lever 13, adapted to engage said coupling-arm, the shaft 22, having a cam 27 in engagement with the vibratory

yoke-frame, and the cutters G G', adjustable toward and from a barrel-head blank held by the clamping-jaws, substantially as shown and described.

4. In a barrel-head machine, the combination of the rotary shaft-section D, supported in adjustable blocks and carrying a clamping-jaw *d*, the regulating screw-shaft 52, the rotary shaft-section E, carrying a clamping-jaw *e* and supported in adjustable pillow-blocks, the coupling-arm 8, connecting the pillow-blocks of said shaft-section E, and the setting-lever 13, connected with said coupling-arm, substantially as described.

5. In a barrel-head machine, the combination, with the rotary sectional shaft D E, provided with clamping-jaws *d e*, of the rotary cutters G G', the shafts I I', the movable tables K L, on which said shafts are mounted at different elevations, the plates M, that support said tables, the traveling frame O, to which the plates M are secured, the ways P for said traveling frame, and mechanism for actuating said tables and frame to move the cutters to and from the barrel-head blank held by the clamping-jaws, substantially as described.

In testimony whereof I have hereunto set my hand.

FRANK H. KANE.

Witnesses:

T. SIMMONS,
C. W. MILES.