Apr. 17, 1923.

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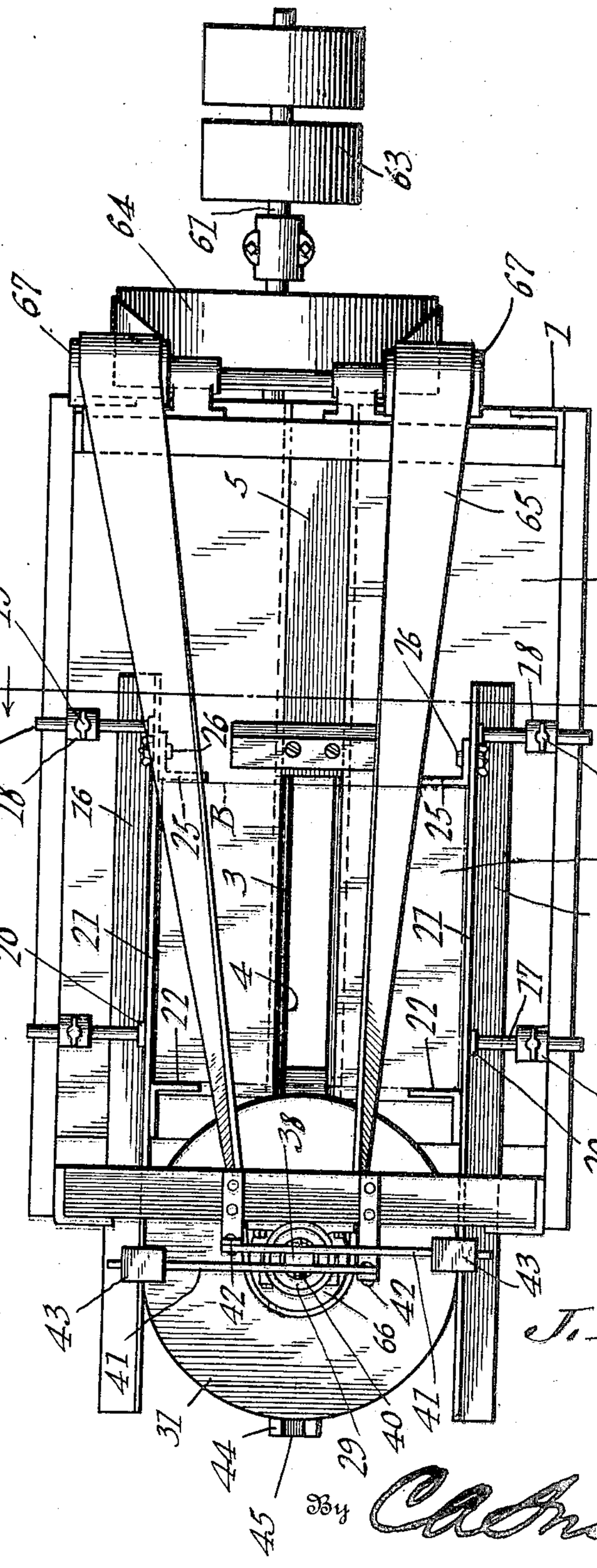
J. L. WALKER

MACHINE FOR MAKING BARREL HEADS

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4 Sheets-Sheet 1

Fig. 1.



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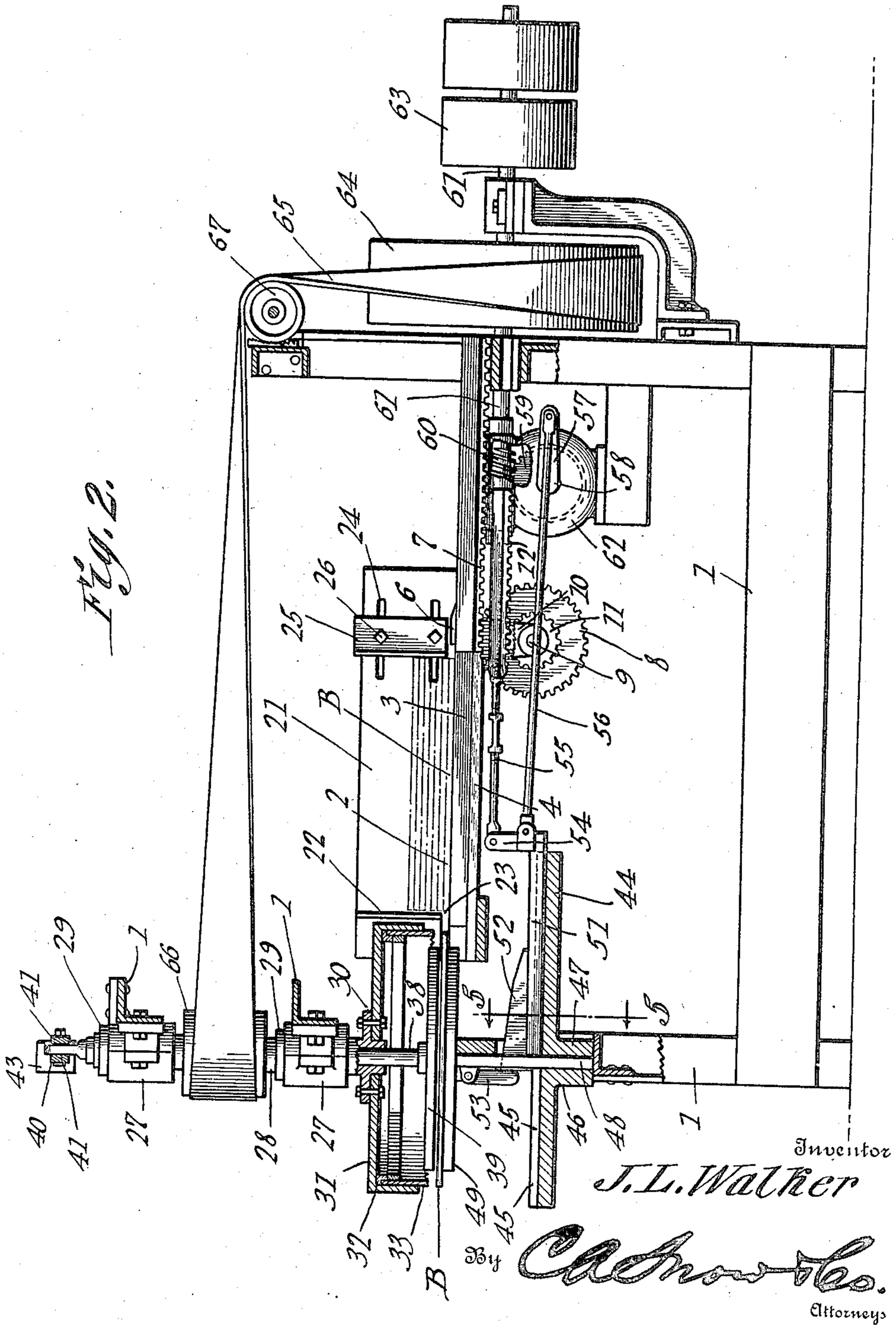


Fig. 2.

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Fig. 3.

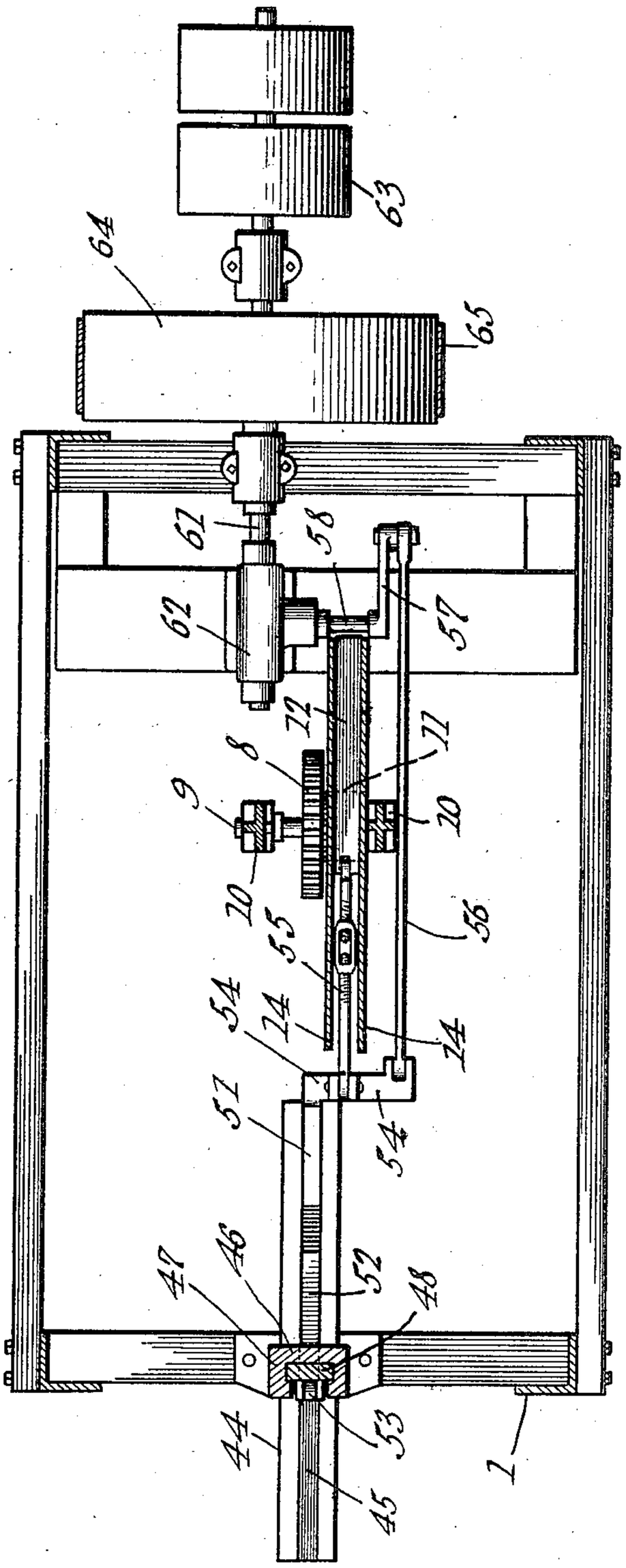
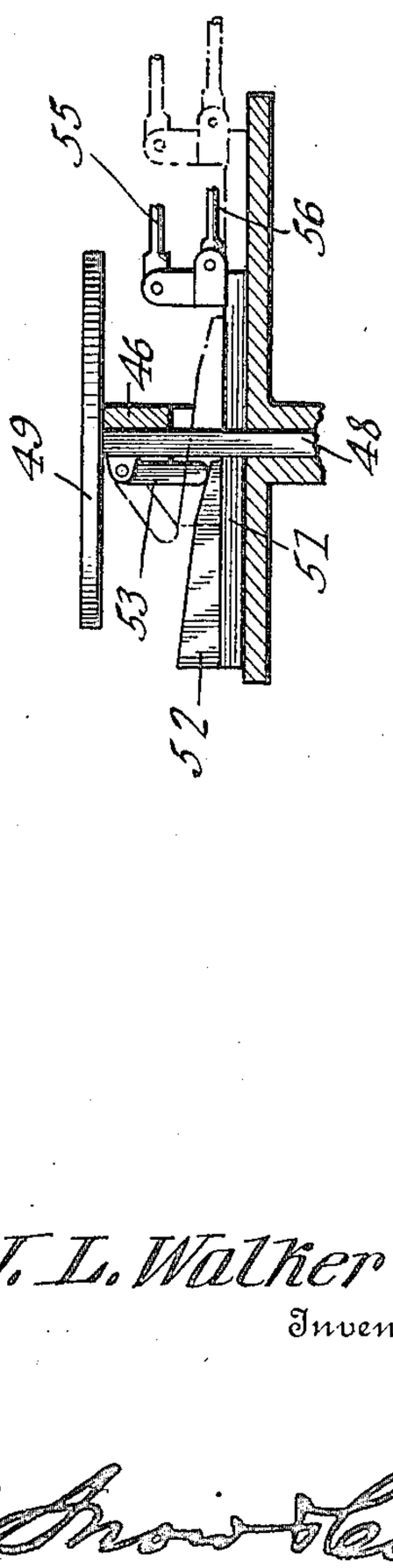


Fig. 6.



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MACHINE FOR MAKING BARREL HEADS

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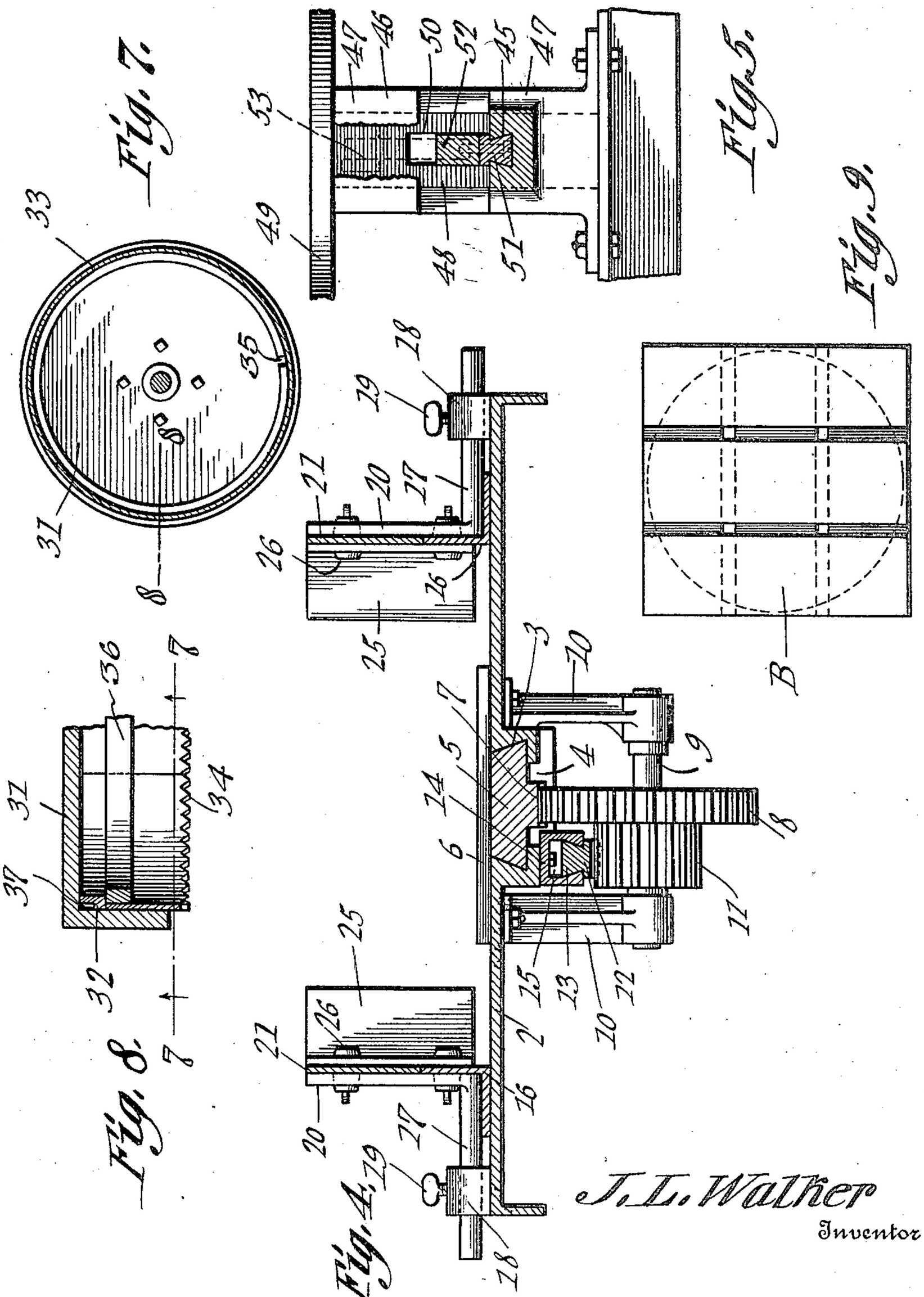


Fig. 7.

Fig. 5.

Fig. 9.

Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOSEPH L. WALKER, OF BATON ROUGE, LOUISIANA, ASSIGNOR TO THE K-D BARREL & HAMPER CO., OF BATON ROUGE, LOUISIANA.

MACHINE FOR MAKING BARREL HEADS.

Application filed December 19, 1922. Serial No. 607,827.

To all whom it may concern:

Be it known that I, JOSEPH L. WALKER, a citizen of the United States, residing at Baton Rouge, in the parish of East Baton Rouge and State of Louisiana, have invented a new and useful Machine for Making Barrel Heads, of which the following is a specification.

This invention relates to machines for making barrel heads, one of its objects being to provide means whereby blanks can be fed automatically and in properly timed relation to a cutting mechanism, novel means being employed for gripping the blank during the cutting operation so as to hold it against movement relatively to the cutter.

Another object is to provide means for automatically directing the blank against the cutter and for ejecting it therefrom, thereby to allow unrestricted movement of the formed head while being ejected subsequently to the formation thereof.

Another object is to provide a cutter of novel construction the parts of which are fastened together securely without the use of bolts or similar fastening means.

A still further object is to provide a rotary cutter utilizing an ordinary saw blade.

A further object is to provide a lifting mechanism of novel construction whereby blanks are directed into engagement with the saw.

Another object is to provide a blank container adjustable to accommodate a stack of blanks of any desired size.

A still further object is to provide a machine of this character which is entirely automatic and which, after being supplied with a quantity of blanks, can be set in motion and will successively shape the blanks and deliver them from the machine without any attention on the part of the operator.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims, it being understood that various changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings.

Figure 1 is a plan view of the machine, the belt being indicated by dotted lines.

Figure 2 is a vertical longitudinal section.

Figure 3 is a horizontal section taken directly below the feed table of the machine.

Figure 4 is an enlarged section on line 4—4 Figure 1.

Figure 5 is an enlarged section on line 5—5 Figure 2.

Figure 6 is a vertical longitudinal section through a portion of the blank lifting mechanism and showing by full and broken lines two of the positions of part of the mechanism.

Figure 7 is a horizontal section through the saw, the cutter head being shown in bottom plan, the section being on line 7—7 Figure 8.

Figure 8 is an enlarged section on line 8—8 Figure 7.

Figure 9 is a plan view of a blank.

Referring to the figures by characters of reference 1 designates a suitably constructed supporting structure on which is mounted a feed table 2 provided with a longitudinal dove-tailed groove 3 having a slot 4 in the bottom thereof. A feed block 5 is mounted to slide within this groove and carries a cross head 6 which rests on and slidably engages the table 2. A rack bar 7 is provided on the bottom of the feed block and constantly meshes with a gear 8 carried by a shaft 9 supported in hangers 10. A smaller gear 11 rotates with gear 8 and meshes with a rack bar 12 the upper portion of which is dove-tailed longitudinally as indicated at 13 and slides within a guide rail 14, attached to the table 2 and having a dove-tailed channel therein as shown at 15.

Adjustably mounted on the side portions of the table 2 are angle strips 16 having arms 17 extending laterally therefrom and slidable within ears 18 on the table 2. Set

screws 19 or the like serve to hold the arms against movement but by loosening them the strips 16 can be shifted toward or from each other.

The arms 17 have tongues 20 projecting upwardly therefrom to which are secured the upstanding portions of the angle strips 16 and side walls 21. Secured to the inner sides of the walls 21 are angle strips 22 constituting abutments, the lower ends of these abutments being cut away as at 23 to provide sufficient clearance to allow a blank to be delivered longitudinally under the abutments. Longitudinal slots 24 are formed in the walls 21 near their other ends and adjustably connected to these slotted portions of the walls are angle strips 25, there being clamping bolts 26 extending through strips 25 and slots 24 for holding the strips in any positions to which they may be moved. The walls 21 and the angle strips 22 and 25 cooperate to form a stack holder which, obviously, is adjustable both in width and length to accommodate stock of different dimensions.

The supporting structure 1 is provided at one end with bearings 27 in which is journaled a tubular shaft 28. A collar 29 is carried by this shaft and normally rests on one of the bearings 27, thus to support the shaft. The shaft has a limited upward movement, however, limited by a collar 30 carried by the lower portion of the shaft. To this collar is detachably secured a hollow cylindrical cutter head 31. An abutment ring 32 is removably seated within the cutter head and is adapted to be engaged by one edge of a saw blade 33. The saw blade has teeth 34 on its other edge and is made of a flexible sheet of steel cut to proper length and adapted to be bent to circular form with its ends abutting as shown at 35. The blade is so proportioned that when it is formed into a circle it will fit snugly within the cutter head 31. A split holding ring 36 preferably formed of spring metal is adapted to be contracted and inserted into the cutter head and against the abutment ring. It is then allowed to expand and will bind tightly against blade 33 so as to hold it in frictional engagement with the inner surface of the cutter head. In Figure 8 the abutment ring 32 has been shown provided with an annular groove 37. When the blade is first placed in the cutter head the abutment ring is located as shown in Figure 2 so that the inner edge of the blade will be seated in the groove 37. As the blade wears down through constant use, however, the ring 32 can be removed and reversed so as to be positioned as shown in Figure 8. Thus the worn blade can be held projected a sufficient distance beyond the cutter head to permit more continued use than would otherwise be possible.

Slidably mounted in the tubular shaft 28 is a plunger 38 to one end of which is secured a clamping disk 39 mounted to work within the space surrounded by the blade 33. The other end of the plunger is pivotally connected, as at 40, to opposed levers 41. Each lever is fulcrumed at one end on a pin carried by a bracket 42 while a weight 43 is mounted on the other end portion of each lever. The parts are so proportioned that when the weighted ends of the levers are in their lowermost positions the disk 39 is supported with its lower face below the level of the teeth 34. It is to be understood that while the plunger 38 and the clamping disk 39 are free to move upwardly and downwardly, they do not rotate with the shaft 28 or the cutter head 31.

Arranged within the structure 1 below the level of the table 2 is a guide bar 44 having a dove-tailed groove 45 extending longitudinally therein. This guide bar is integral with a standard 46 provided with opposed guideways 47 in which a shank 48 is mounted for sliding movement. This shank has a clamping disk 49 at its upper end preferably of the same diameter as the disk 39 and normally supported with its upper face flush with or slightly below the level of the top of table 2. A slot 50 is formed in the shank 48 and is so located as to receive a dove-tailed slide 51 mounted for reciprocation within the groove 45. Mounted on this slide is a tapered lifting cam 52 also adapted to work within the slot 50. A latch 53 is pivotally connected to the shank 48 and hangs downwardly across the upper portion of the slot 50 and normally projects into the path of the cam block 52.

An arm 54 is extended from the slide 51 and has a rod 55 pivotally connected thereto and to the rack bar 12. A pitman 56 connects arm 54 to a crank arm 57 extending from the shaft 58 of a worm gear 59 and this gear meshes with a worm 60 carried by the main or drive shaft 61 of the machine. The worm and its gear are preferably located in a housing 62.

Shaft 61 is adapted to be driven by a belt not shown, a pulley 63 being provided therefor. Another pulley 64 is secured to this shaft and is adapted to transmit motion through a belt 65 to a pulley 66 secured to the tubular shaft 28, it being understood that idler pulleys 67 can be provided for the belt wherever desired.

When the machine is set in motion the cutter head 31 will rotate at a high speed and the non-rotatable disks 39 and 49 will be spaced apart to receive a blank between them. A stack of blanks is placed on the table 2 in the container formed by the walls 21 and the angle strips 22 and 25. Each blank is preferably made up of crossed strips of wood fastened together and one of these

blanks has been illustrated in Figure 9. Motion will be transmitted from the main shaft 61 through the worm gearing to the crank arm 57 and this will result in the reciprocation of slide 51 in groove 45. The slide will transmit motion through rod 55 to the rack bar 12 which will cause the two gears 11 and 8 to rotate. As gear 8 is of greater diameter than gear 11 the rack 7 with feed block 5 and cross head 6 will be moved along table 2 at a greater speed than rack bar 12 and slide 51. During the movement of slide 51 toward the left of Figure 2 the cross head 6 will engage the lowermost blank B of the stack mounted on the table and will slide the blank off of table 2 and into the space between disks 39 and 49. While this action is taking place the large or advancing end of the cam block 52 will come against the depending latch 53 and move it from the full line position shown in Figure 2 to the dotted line position shown in Figure 6. After the blank has been deposited on the disk 49 the movement of the parts is reversed by the crank 57, and as the slide 51 moves to the right in Figure 2 the small tapered end of the cam block 52 will wedge under the latch 53 as shown by full lines in Figure 6. Thus during the completion of this movement of the slide the cam block will thrust upwardly against latch 53 and cause shank 48 and disk 49 to move upwardly and thereby clamp the blank B against the disk 39. Further upward movement of disk 49 will raise disk 39 against the action of the weighted levers 41 and will bring the blank B against the rapidly rotating saw so as to cause the saw to cut the blank and produce a circular head. Immediately following the completion of this cut the cam block 52 will pass from under the latch 53, thereby allowing the latch, shank 48 and disk 49 to gravitate to their normal positions. At the same time the weighted levers 41 will thrust disk 39 downwardly to its normal position, thereby ejecting the formed head from the saw and bringing it into position where it will be ejected from the machine when another blank is fed to position between the disks.

By referring to Figure 6 of the drawing it will be noted that the lifting cam is tapered abruptly for a short distance near its small end and then gradually for the remainder of the distance. Thus when the cam is moved to the right in Figures 2 and 6 it will act first to quickly raise disk 49 to clamp the blank B and bring the blank close to the saw teeth, and subsequently to gradually lift the disk 49 so as to force the blank slowly against the teeth of the saw.

What is claimed is:

1. The combination with cutting means, of means for feeding a blank thereto including a slidable member, a lifting cam, means for sliding the cam back and forth, and means cooperating with the cam during the movement of the cam in one direction, for successively raising and releasing the slidable member, and, during the movement of the cam in the opposite direction, for leaving the slidable member undisturbed.

2. The combination with a rotary cutter head and means thereon for cutting a circular object, of normally spaced, relatively movable non-rotatable clamping members, a pivoted element movable with one of the members, a lifting cam engaging said element, and means for reciprocating the cam relatively to said element to intermittently raise and release the clamping member movable with said element.

3. The combination with cutting means, of means for feeding a blank thereto including a non-rotatable slidable member, a lifting cam mounted for reciprocation, and pivoted means movable with said member and cooperating with the cam to intermittently raise and release the member during the reciprocation of the cam.

4. The combination with a cutter head, and normally spaced non-rotatable clamping means slidable relatively to the cutter head, of reciprocating means movable in one direction to successively raise the clamping means to grip a blank therebetween, feed the blank to the cutter head, and remove the blank from the cutter head, and movable in the opposite direction while the clamping means is stationary.

5. The combination with a cutter head and normally spaced blank gripping means adjacent thereto, of a feed table, a feed member slidably mounted on the table for ejecting a blank from a stack of blanks to position said blank between the gripping means, a rack bar movable with the feed member, a drive rack bar slidably mounted, means for transmitting motion from one rack bar to the other to move one of the bars at a greater speed than the other bar, and means for actuating the drive rack bar.

6. The combination with a cutter head and normally spaced blank gripping means adjacent thereto, of a feed table, a feed member movable thereon for ejecting a blank from a stack of blanks to position said blank between the gripping means, a rack bar movable with the feed member, a drive rack bar, speed increasing means for transmitting motion from the drive rack bar to the bar of the feed member, means for actuating the drive rack bar, and means operating in properly timed relation with the rack bars for gripping a blank between the gripping members and feeding it to the cutter head.

7. The combination with a cutter head and normally spaced blank gripping means adjacent thereto, of a feed table, a feed member movable thereon for ejecting a blank from

a stack of blanks to position said blank between the gripping means, a cam mounted for back and forth sliding movement, means cooperating therewith during the movement of the cam in one direction, for shifting the gripping means to successively grip a blank, feed the blank to the cutter head and release the gripping means for return to normal positions, means for reciprocating the cam, and speed increasing means actuated by the movement of the cam for driving the feed member.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOSEPH L. WALKER.

Witnesses:
G. D. ALEXES,
T. JONES CROSS.