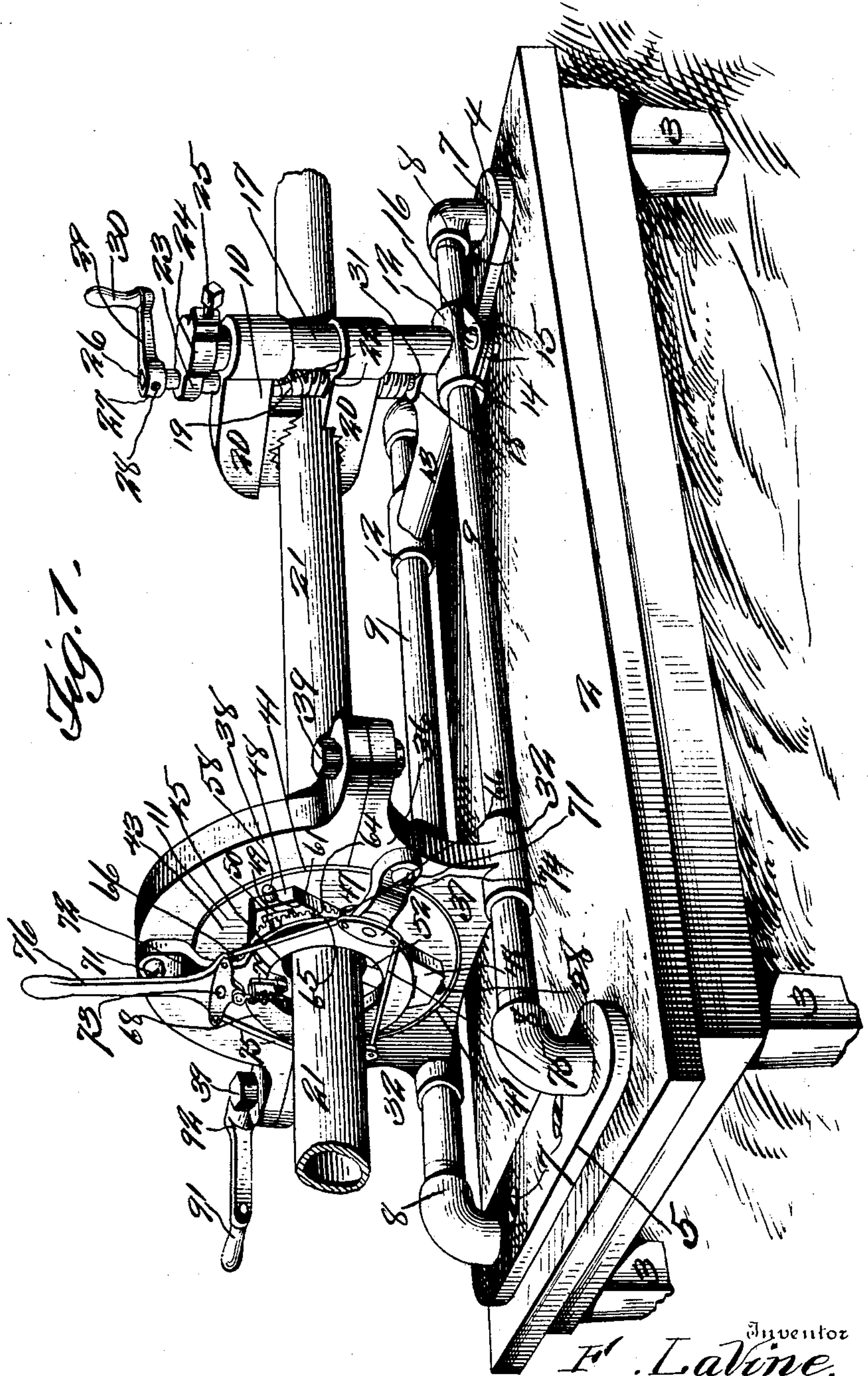


F. LA VINE.
PIPE CUTTING MACHINE.
APPLICATION FILED JAN. 26, 1909.

932,989.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 1.



Witnesses

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Inventor
F. LaVine,

By *D. Swift & Co.*

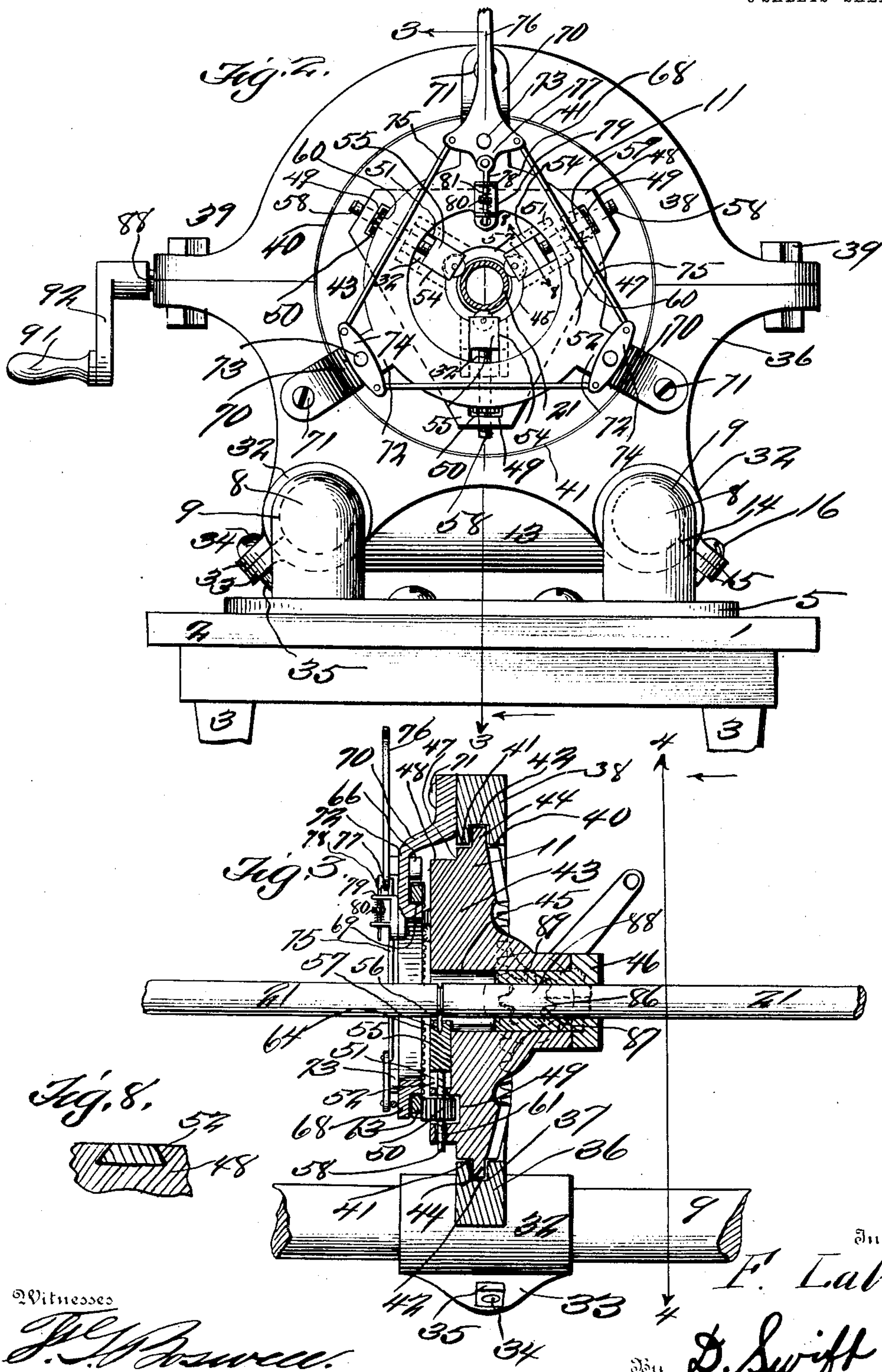
Attorneys

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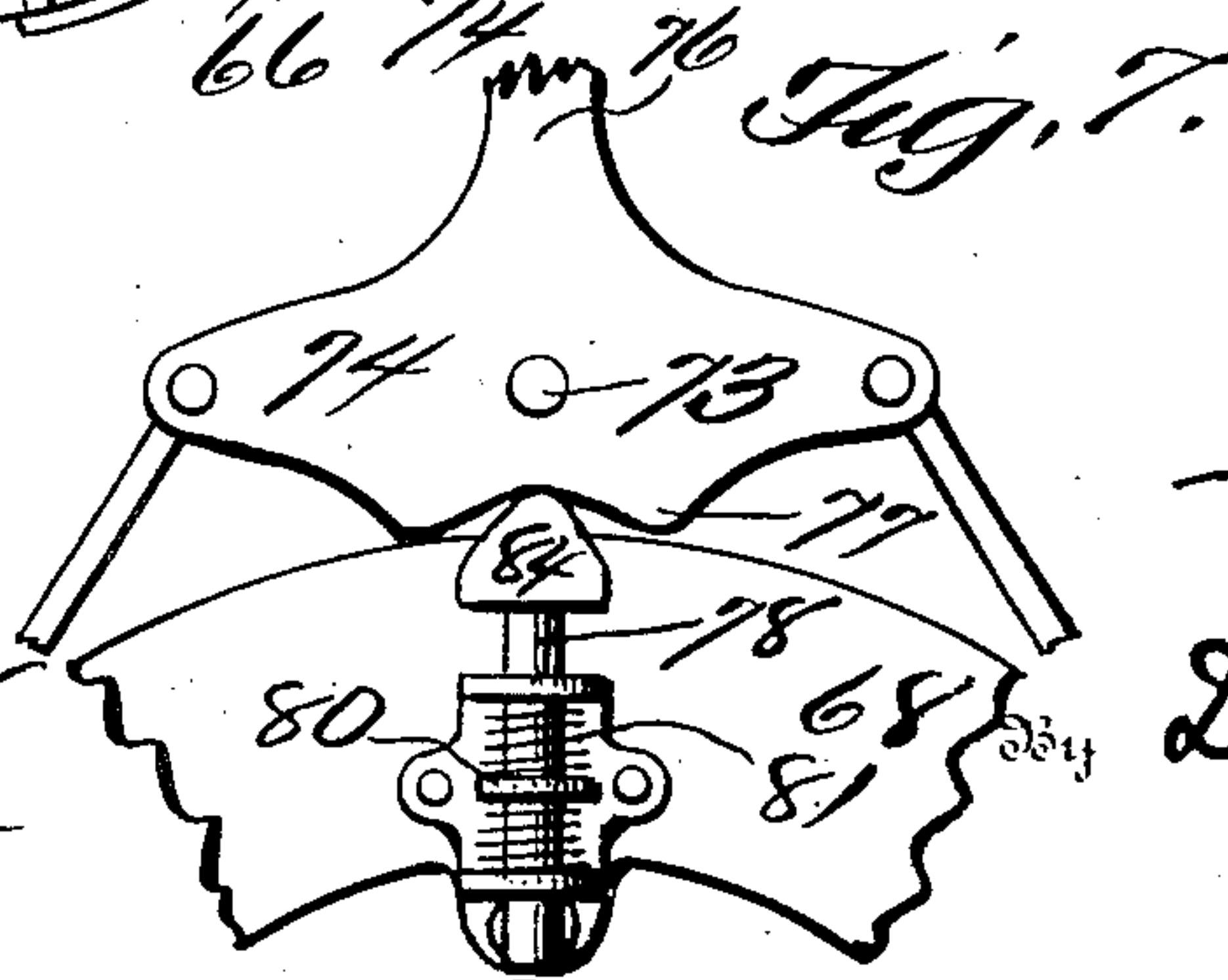
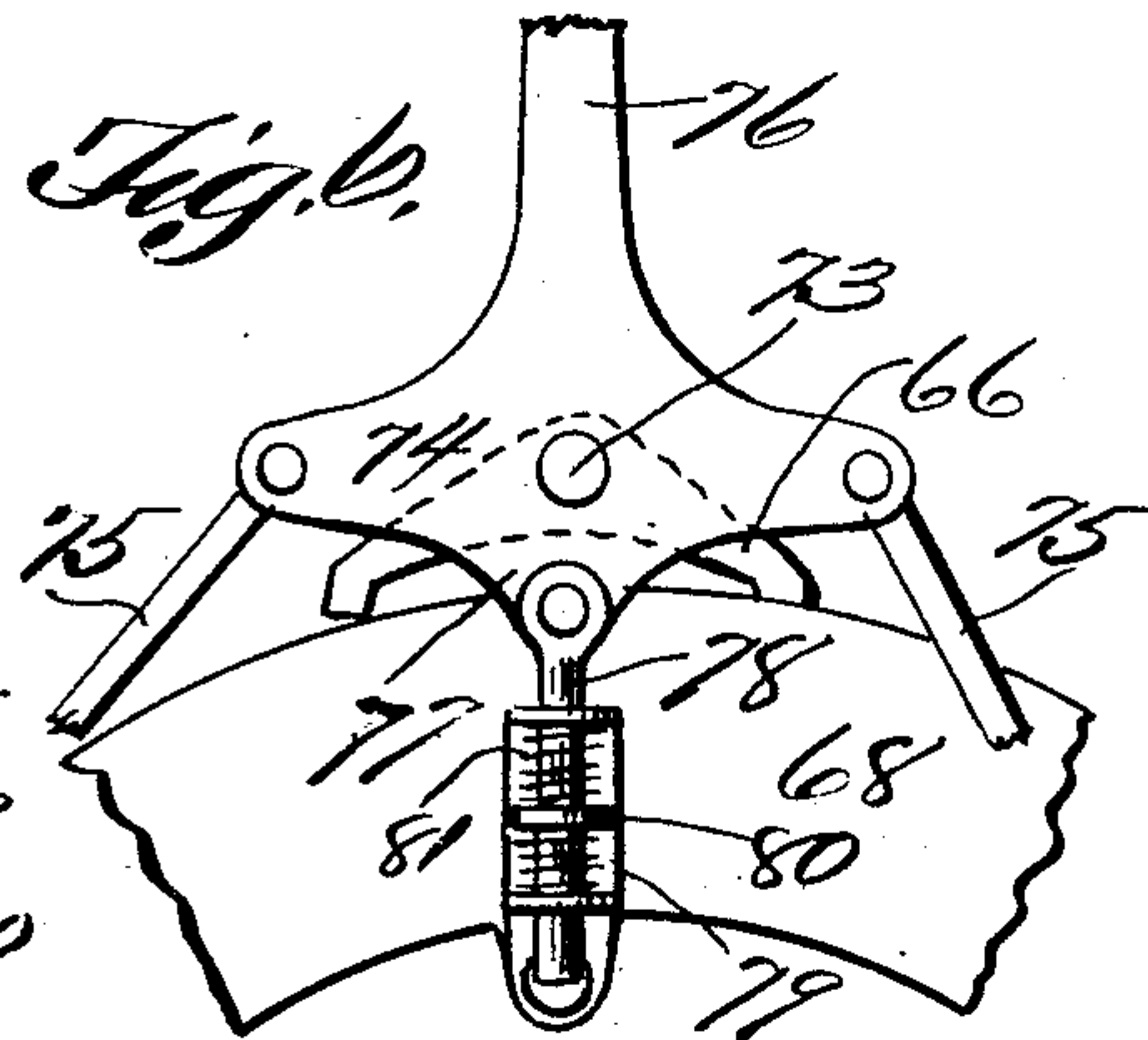
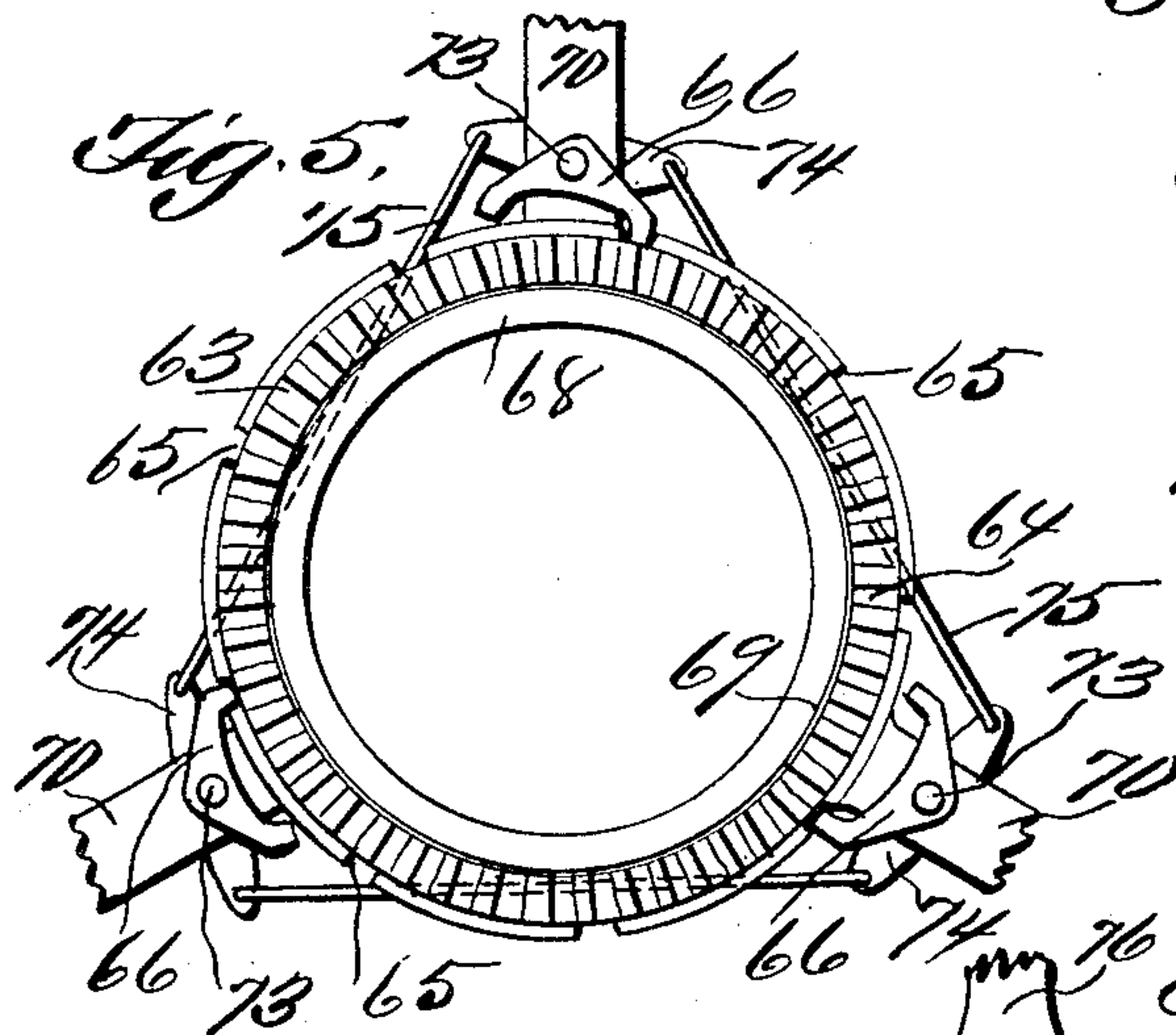
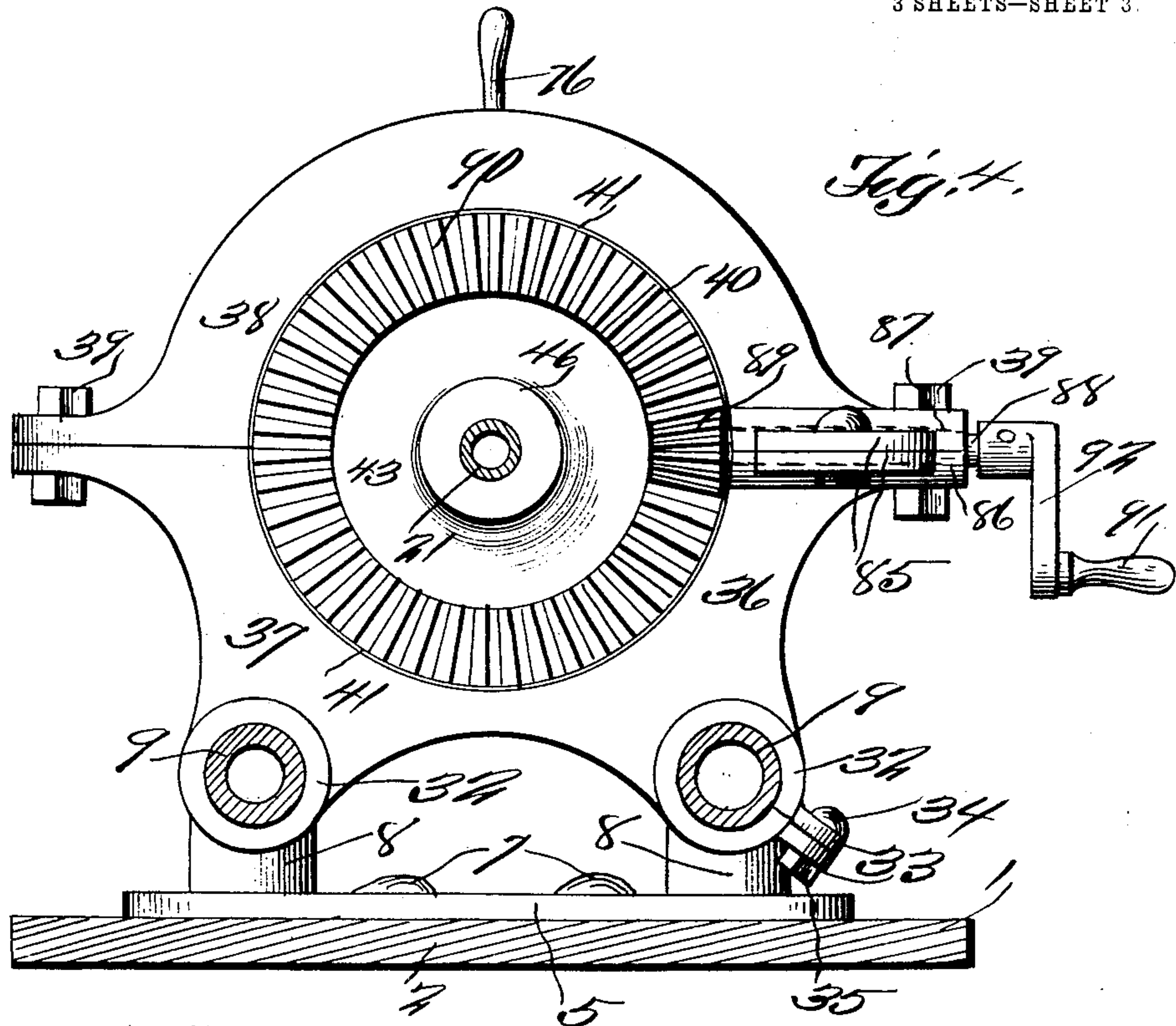


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UNITED STATES PATENT OFFICE.

FREDERICK LA VINE. OF DALLAS CITY, ILLINOIS.

PIPE-CUTTING MACHINE.

932,989.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed January 26, 1909. Serial No. 474,251.

To all whom it may concern:

Be it known that I, FREDERICK LA VINE, a citizen of the United States, residing at Dallas City, in the county of Hancock and State of Illinois, have invented a new and useful Pipe-Cutting Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to pipe cutting machines, especially to a device of this character, the knives of which are circular and are revolved in an annular plane about the pipe to be cut, and at the same time revolve upon their respective pivots or centers, and the said knives are fed toward and concentric to the center of the said pipe; this is all accomplished by the rotation of a revolving member or disk, as will be hereinafter clearly described, which description will coincide with the disclosure in the drawings.

An object of the invention is the provision of means whereby the said knives may be held so as to limit their feeding toward the center of the pipe and vice versa.

Another object of the invention is to provide means for holding a pipe to be cut in a rigid position, and, after the pipe is cut, the cutting mechanism is so constructed as to allow the same to be receded upon its horizontal support, so as to allow the pipe to project beyond, so as to receive a stock and die for threading the pipe, or, the means for supporting the pipe rigidly, may be manipulated so as to release the pipe, thus allowing the same to be drawn beyond the cutting mechanism, so as to allow the end thereof to be threaded by the use of a stock and die; after the pipe is drawn forward, the said means is again tightened upon the pipe, as will be clearly evident.

This invention comprises further objects and combinations of elements, which will be hereinafter more fully described, shown in the accompanying drawings, and the novel features thereof will be pointed out by the appended claims.

The features, elements and the arrangement thereof, which constitute the above entitled invention, may be changed and varied, that is to say, in an actual reduction to practice, with the understanding that the changes and variations accruing from said reduction to practice are limited to the scope of the appended claims.

To obtain a full and correct understanding of the details of construction, combinations of features, elements and advantages, reference is to be had to the hereinafter set forth description and the accompanying drawings in connection therewith, wherein—

Figure 1 is a perspective view of the pipe cutting machine, showing means for supporting the pipe. Fig. 2 is a front elevation of the pipe cutting machine and its support. Fig. 3 is a sectional view upon line 3—3 of Fig. 2. Fig. 4 is a sectional view upon line 4—4 of Fig. 3, looking in the direction of the arrow. Fig. 5 is a rear face view of the annular rack-ring, showing its teeth and the pawls for engaging the teeth upon the periphery of the ring. Fig. 6 is a detail view of the means for operating the pawls. Fig. 7 is a view of a slight modification of a portion of the apparatus. Fig. 8 is a sectional view upon line 8—8 of Fig. 2.

In regard to the drawings, wherein similar reference characters indicate corresponding parts in the several illustrations, 1 designates a bench or table, composed of a top and legs 3. Upon the top plates 4 and 5 are fixed by screws or other suitable means 7. These plates are provided with threaded sockets 8, in which pipes or bars 9 are threaded, which bars or pipes are disposed parallel to each other. Capable of adjustment upon the said parallel pipes or bars are the pipe-supporting means and the pipe cutting mechanism 10 and 11, as shown. The pipe-supporting mechanism has sleeves 12, which are received by the said parallel pipes or bars. The said sleeves have brazed between them a bar, rod or pipe 13, as shown, and one of the sleeves is split, as shown at 14, the free ends of which are provided with ears 15, into which a bolt 16 extends, having a suitable nut, whereby the said sleeve may be tightened upon one of the said parallel bars or rods, there being two sleeves that are joined together, both may be held in parallel relation upon the said parallel bars. Projecting from one of the sleeves is a vertical hollow standard or member 17, which is brazed to said sleeve. Projecting laterally of said standard, and brazed thereto and to the bar or pipe 13, is an offset bearing 18, for the reception of the right and left threaded shaft 19. The said standard is provided with a pair of sliding jaws 20, the teeth of which are adapted to engage the pipe 21 to be cut. The right and left

threaded shaft extends through and is threaded in the bores 22 of said jaws, and by the manipulation of the said right and left threaded shaft, the jaws may be opened or closed when desired. The upper portion of the right and left threaded shaft is journaled in a suitable bearing 23, which is provided with a cap plate 24, adapted to fit over the upper end of the said standard, and held in a rigid position by means of the set screw 25, as shown clearly in the rear view of the apparatus. The upper portion of the said right and left threaded shaft is contracted, as shown, so as to be properly received by the said bearing, the extreme end of the said right and left threaded shaft is provided with a rectangular portion 26, which receives a collar 27, held in position thereon by means of set screw 28, and extending laterally of said collar is a crank 29, having a suitable handle 30, by the manipulation of which the right and left threaded shaft may be rotated, for opening or closing the said jaws. The lower end of the said right and left threaded shaft is contracted, as shown at 31, so as to be properly received by its bearing.

The cutting mechanism is surmounted upon sleeves 32 similar to the sleeves hereinbefore described, one of which is split, the free portions of which have ears 33, which receive the bolt 34, having threaded thereto a nut 35, and by the tightening of said nut, the said sleeve may be securely held upon one of the said parallel bars. The last-named sleeves have brazed above and between them the frame for the pipe cutting mechanism, and in this manner the said last-named sleeves may be held in parallel relation upon the said parallel bars. The said frame 36 for supporting the pipe cutting mechanism comprises two parts 37 and 38, the part 37 being brazed to the said last-named sleeves, while the upper part 38 is held to the lower part by suitable cap screws or bolts 39. When these two parts are placed in registration, an annular opening 40 is formed, by the semi-annular openings 41 of each of said parts. The said annular opening is provided with an annular groove 42, which receives the revolving disk or member 43, which carries the suitable pipe cutting mechanism proper, as clearly shown. The said disk or member 43 is provided with an annular rib 44, to be received by the said groove, and in which the said rib revolves. The said disk or member 43 is provided with a central cylindrical opening 45, designed for the reception of pipes to be cut. This central opening may be of such a size as to receive approximately the largest size of pipe, and, by the use of the bushing 46 or similar bushings of diminutive sizes, smaller pipes may be supported in said central opening. The face 47 of the said disk or mem-

ber 43 is provided with an offset portion 48, the shape of which, as shown in one of the figures of the drawings, is triangular, and the corners thereof are provided with recesses 49, in which pinions 50 are positioned, and are adapted to rotate. Beyond the said recesses, that is to say, toward the center of the said central opening, the said offset portion is recessed, radially of the said central opening as shown at 52. The walls 51 of the recesses 52 are beveled, and are adapted to be engaged by the beveled faces 54 of the blocks 55. These blocks have pivoted in their lower portions disk knives 56, the annular peripheries of which are beveled and provided with cutting edges, so as to properly cut the pipe to be severed. These disk knives revolve in recesses 57 of said blocks, and the said blocks are provided with threaded contracted shanks 58, the threads of which engage the threads 59 of the bores 60 of the said pinions. The extremities of the said reduced threaded shank portions are movable in bearings 61 of the said offset portion, as clearly shown. It will be clearly evident, upon an examination of the drawings, that by the rotation of the said pinions, the said blocks and their knives will be moved toward and concentric with the center of the said central opening.

63 designates an annular rack ring, the teeth 64 of which, as shown, engage the said pinions, and, when this ring is held stationary, and the disk or member 43 is rotated, the said pinions will force the blocks and their knives radially inward or outward, as will be clearly understood. The annular periphery of the ring 63 is provided with teeth 65, to be engaged by the ratchets or pawls 66, their operation being hereinafter disclosed. This ring has a slip bearing upon the annular bearing ring 68, which is provided with an annular shoulder 69, designed for holding the ring in engagement with the said pinions. The annular bearing ring 68 has a plurality of radial projections 70, which are secured to the two parts of the said frame by means of screws, bolts or other fastening means 71, as shown. These projections form bearings 72, for the pivots of said ratchets or pawls. The pivot pins 73 of the said ratchets or pawls are extended beyond the said projections, and are provided with cross bars 74, all of which are connected by the pitman rods 75, which are disposed in the form of a triangle, as shown clearly in Fig. 2 of the drawings. One of the cross bars, or, in other words, the upper one is provided with an upwardly projecting handle 76, and projecting downward from said bar is an extension 77, as shown. This extension 77 has pivoted thereto a rod 78, which has a sliding movement in a U-shaped bracket 79, as shown clearly in Fig. 2 of the drawings. The rod 78 is provided

with a collar 80, upon either side of which and encircling said rod 78 a spring 81 is mounted. These springs allow the upper cross bar 74 and its handle to have a yielding action. When the handle is operated in one direction or the other, the said ratchets or pawls are manipulated, so as to cause their engagement with the teeth upon the periphery of the said rack ring, thereby retarding the movement of the said rack ring, which will cause the said pinions to operate. A slight modification of the springs and especially their rod 78, for allowing the said handle to have movement, is shown in Fig. 8, in which figure the said rod 78 is not pivoted to the lower extension of the said cross bar, but the said rod or bar 78 is provided with a V-shaped head 84, which is adapted to cooperate with a V-shaped recess of the lower extension of the said cross bar. When the said handle, as shown in this modification, is manipulated, the action of the rod or bar 78 is downward against the tension of the springs in lieu of being upward, but the result is the same.

The two parts of the frame in which the disk or member 43 revolves are provided with rearwardly extending parallel disposed ears 85, their adjacent faces being provided with semicircular recesses 86 which, when in registration, form a bearing 87 for the shaft 88. Secured to and adapted to rotate with this shaft 88 is a beveled pinion 89, the teeth of which are designed to mesh with the teeth 90, formed upon an annular plane upon the rear face of the said disk or member 43, as shown in the drawings. 91 designates a handle, which projects laterally from the crank 92, which is carried by the said shaft 88. When the shaft 88 is rotated in one direction or the other by the handle, the disk or member 43 is rotated, and the cutting knives are carried therewith, thereby having action upon the pipe to be severed. When the said rack ring is retarded in its movement by the ratchets or pawls, the said pinions of the offsets are rotated, because of the fact that they are carried by the moving or revolving disk or member 43, and when the said pinions are rotated, the knives and their blocks are moved toward and concentric with the center of the central opening of the said disk or member 43.

From the foregoing, the essential features, elements and the operation of the device, together with the simplicity thereof, will be clearly apparent.

Having thus fully described the invention, what is claimed as new and useful is:—

1. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in rapidly moving blocks carried by said member, means for

advancing the blocks toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having means for providing resiliency therefor.

2. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, means for simultaneously advancing the blocks toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having means for providing resiliency therefor, and means for manually operating said revolving member.

3. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means when released prevents the advancing action of said knives, said manually operated means having means for providing resiliency therefor.

4. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having means for providing resiliency therefor.

5. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having means for providing resiliency therefor.

6. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks

having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means when released preventing the advancing action of said knives, said manually operated means having means for providing resiliency therefor.

7. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, and means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having ratchets or pawls simultaneously manipulated which retard the said second-named means.

8. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having ratchets or pawls simultaneously manipulated which retard the said second-named means, said manually operated means having means for providing resiliency therefor.

9. In a pipe cutting machine, means for

rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having ratchets or pawls simultaneously manipulated to retard the said second-named means, said manually operated means when released preventing the advancing action of said knives.

10. In a pipe cutting machine, means for rigidly supporting a pipe, a revolving member having radially moving knives, said knives being pivoted in radially moving blocks carried by said member, said blocks having pinions for advancing them toward and from the center of said member, means retarded by manually operated means for causing the advancement of the knives toward and concentric with the center of said member, said manually operated means having ratchets or pawls simultaneously manipulated to retard the said second-named means, said manually operated means when released preventing the advancing action of said knives, said manually operated means having means for providing resiliency therefor.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK LA VINE.

Witnesses:

WM. H. SCOTT,
ORVILLE C. KIRKPATRICK.