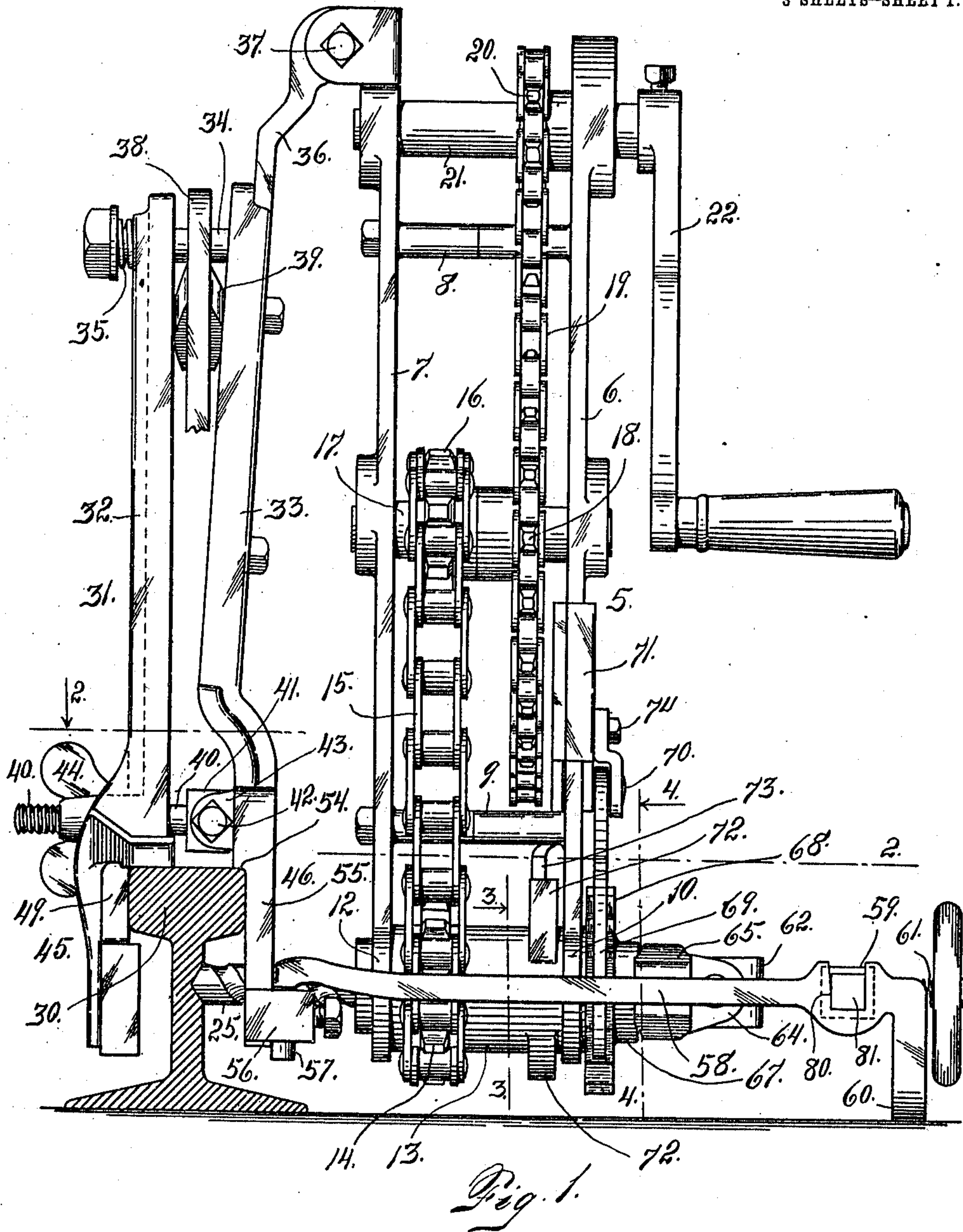


C. J. COULTER.
COMBINATION RAIL CLAMP AND MACHINE TOOL.
APPLICATION FILED MAY 25, 1909.

990,115.

Patented Apr. 18, 1911.

3 SHEETS—SHEET 1.



Witnesses
Otto E. Haddock.
J. D. Thornburgh.

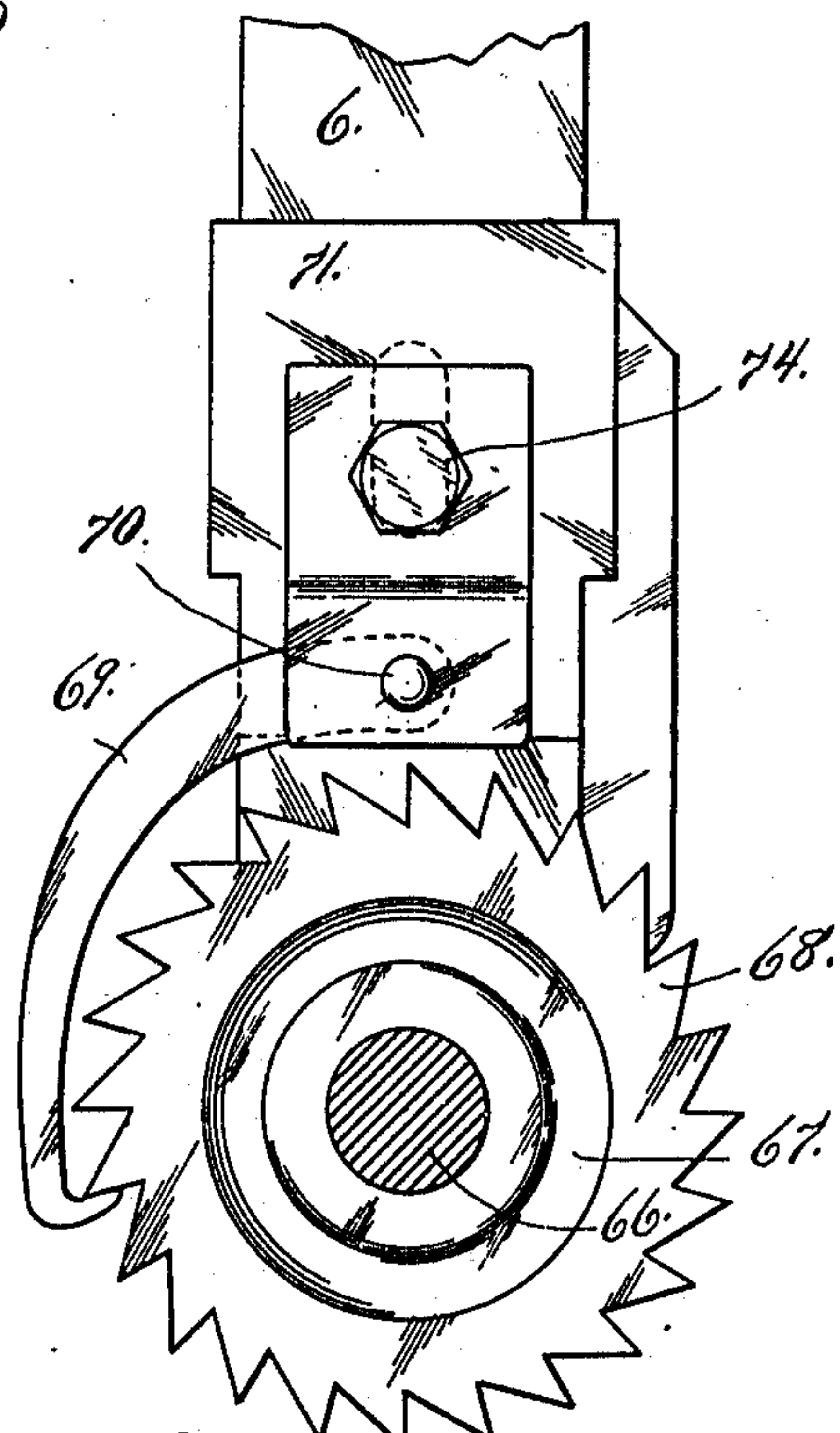
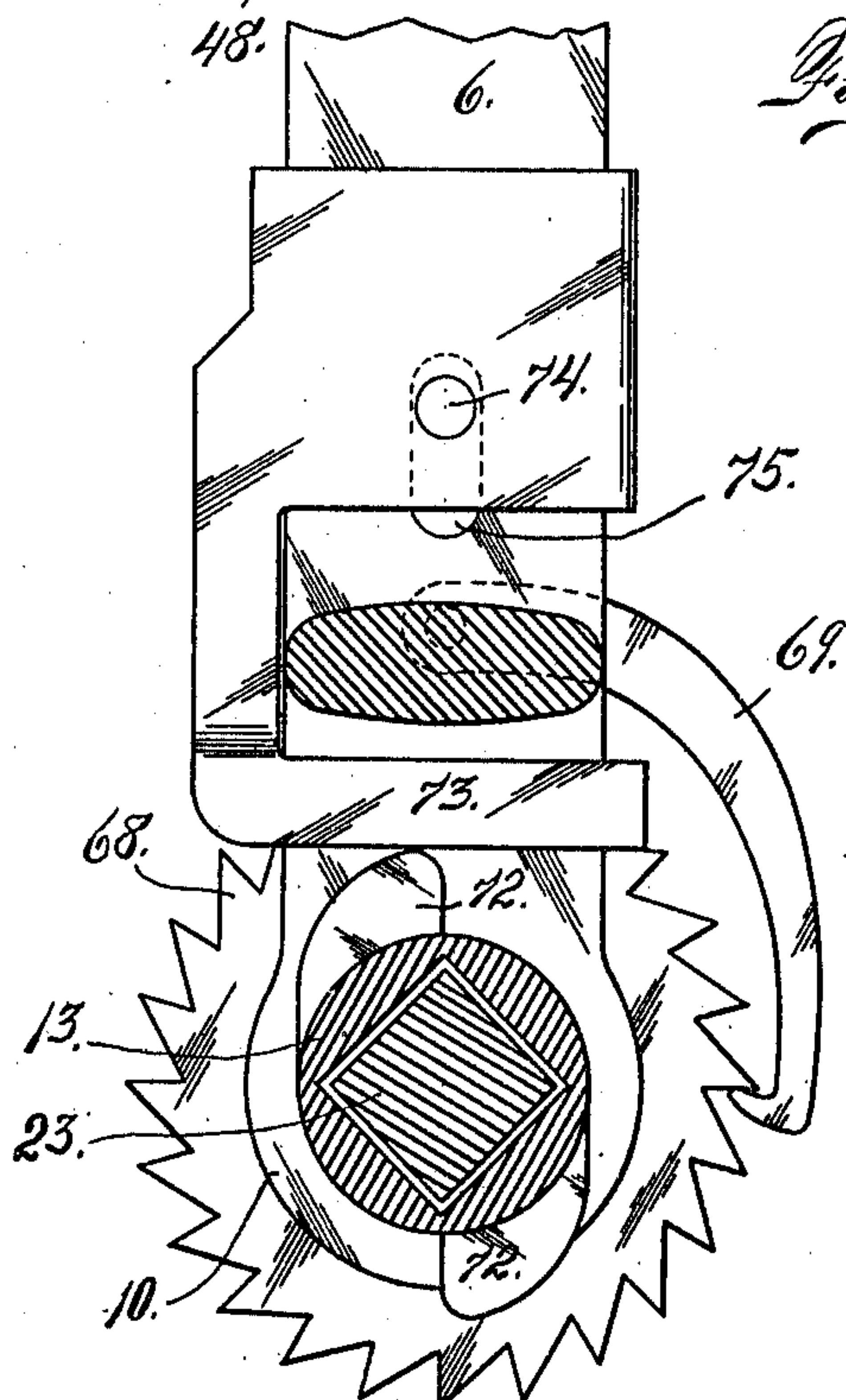
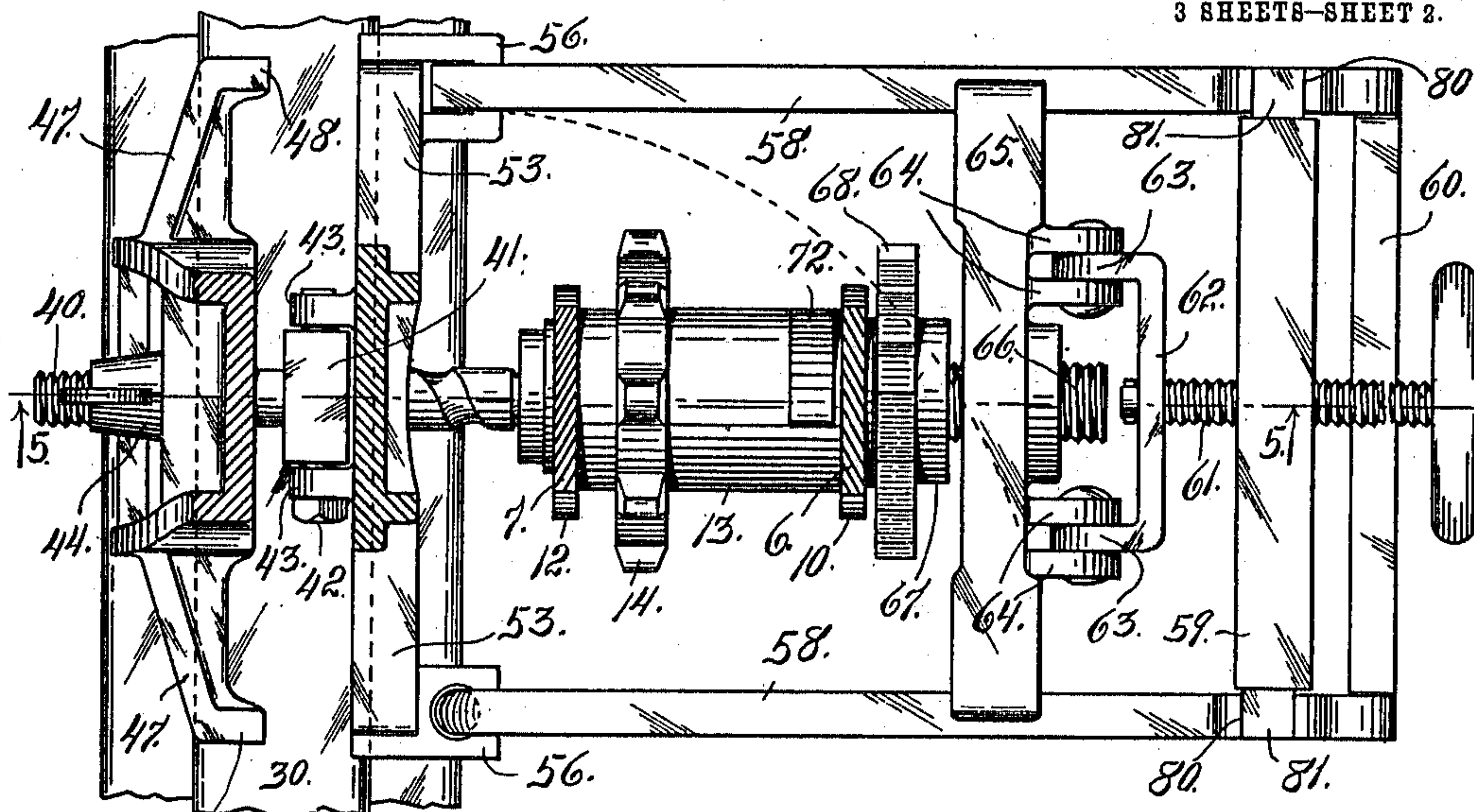
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

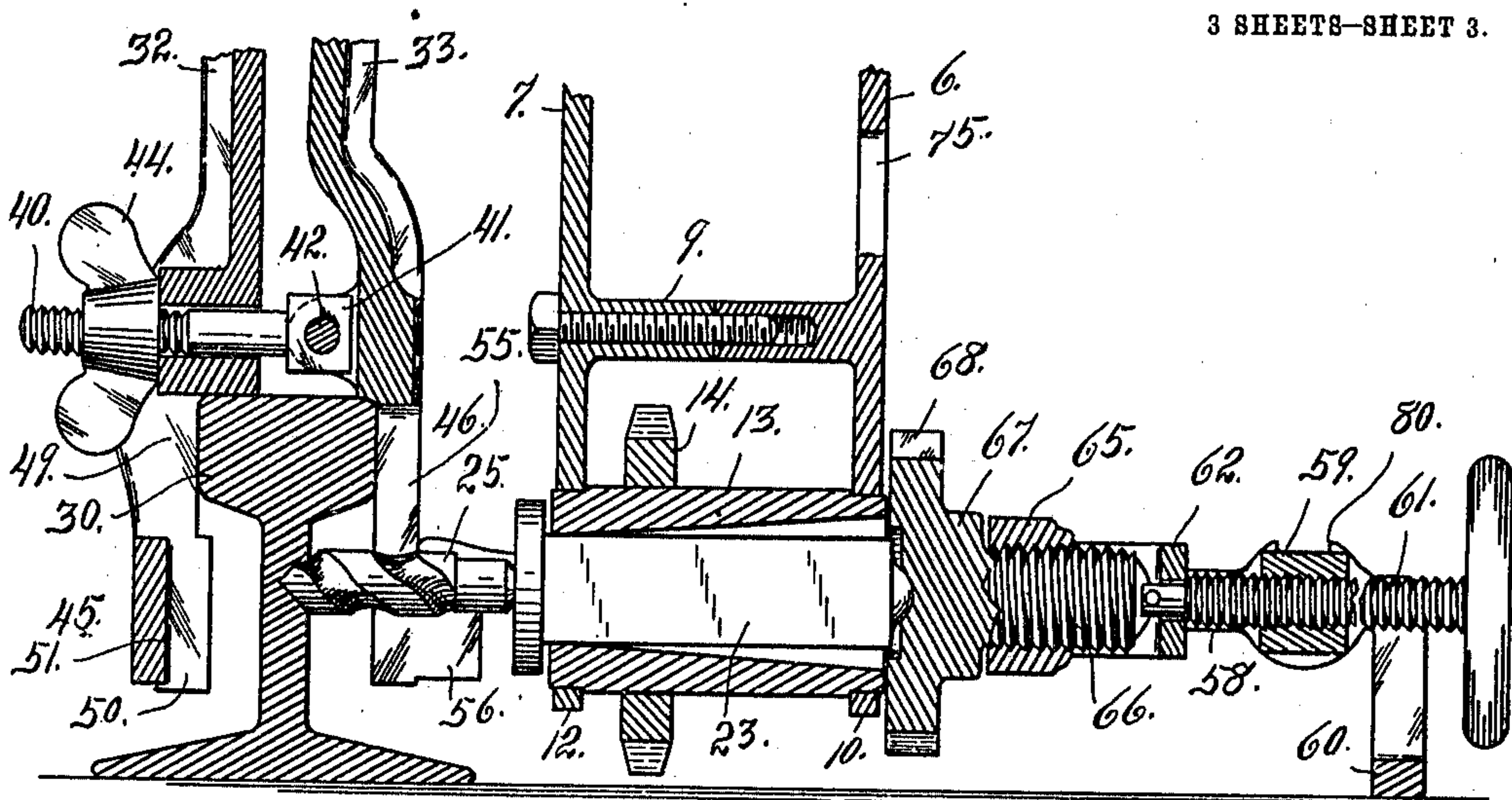


Fig. 5.

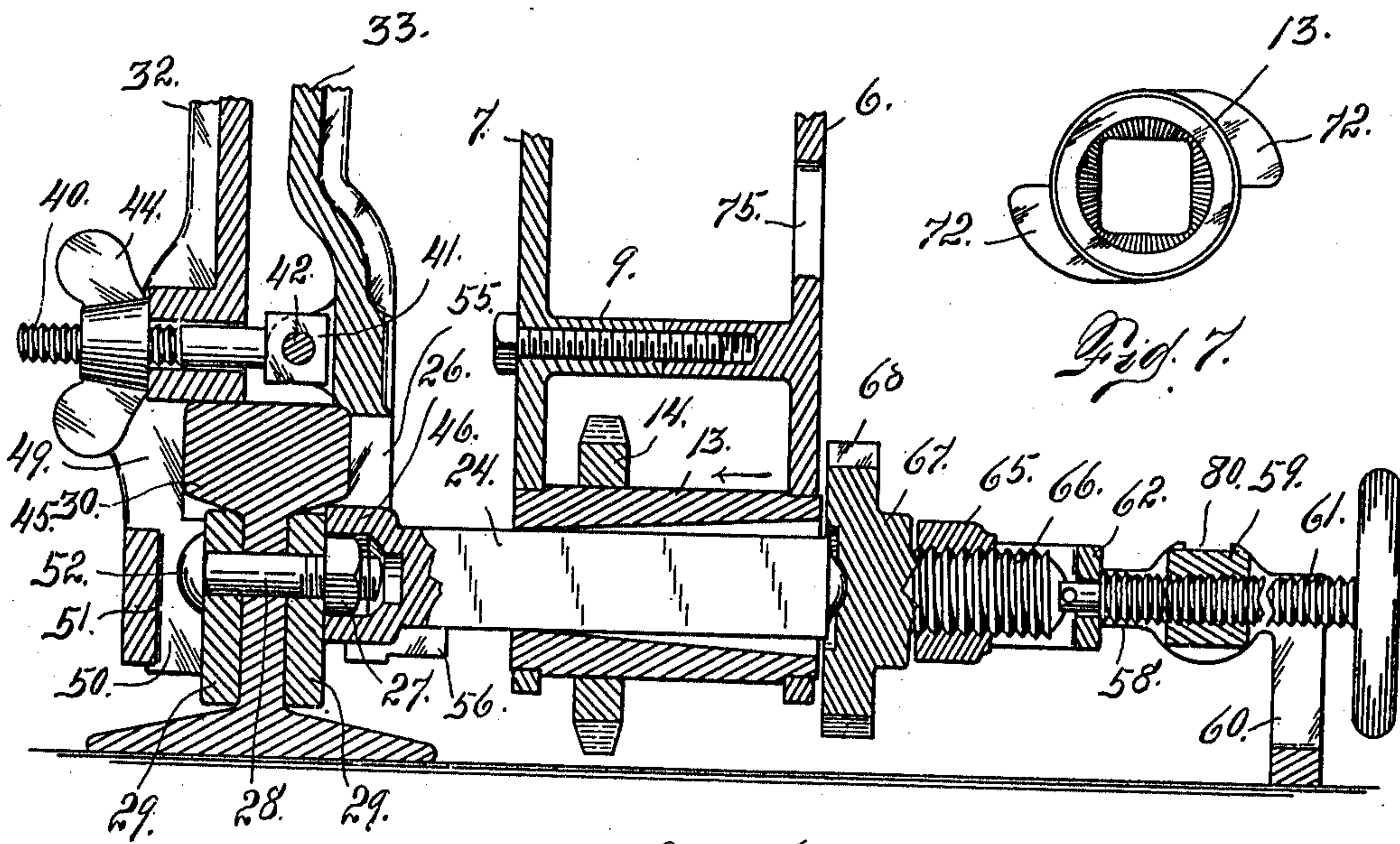


Fig. 6.

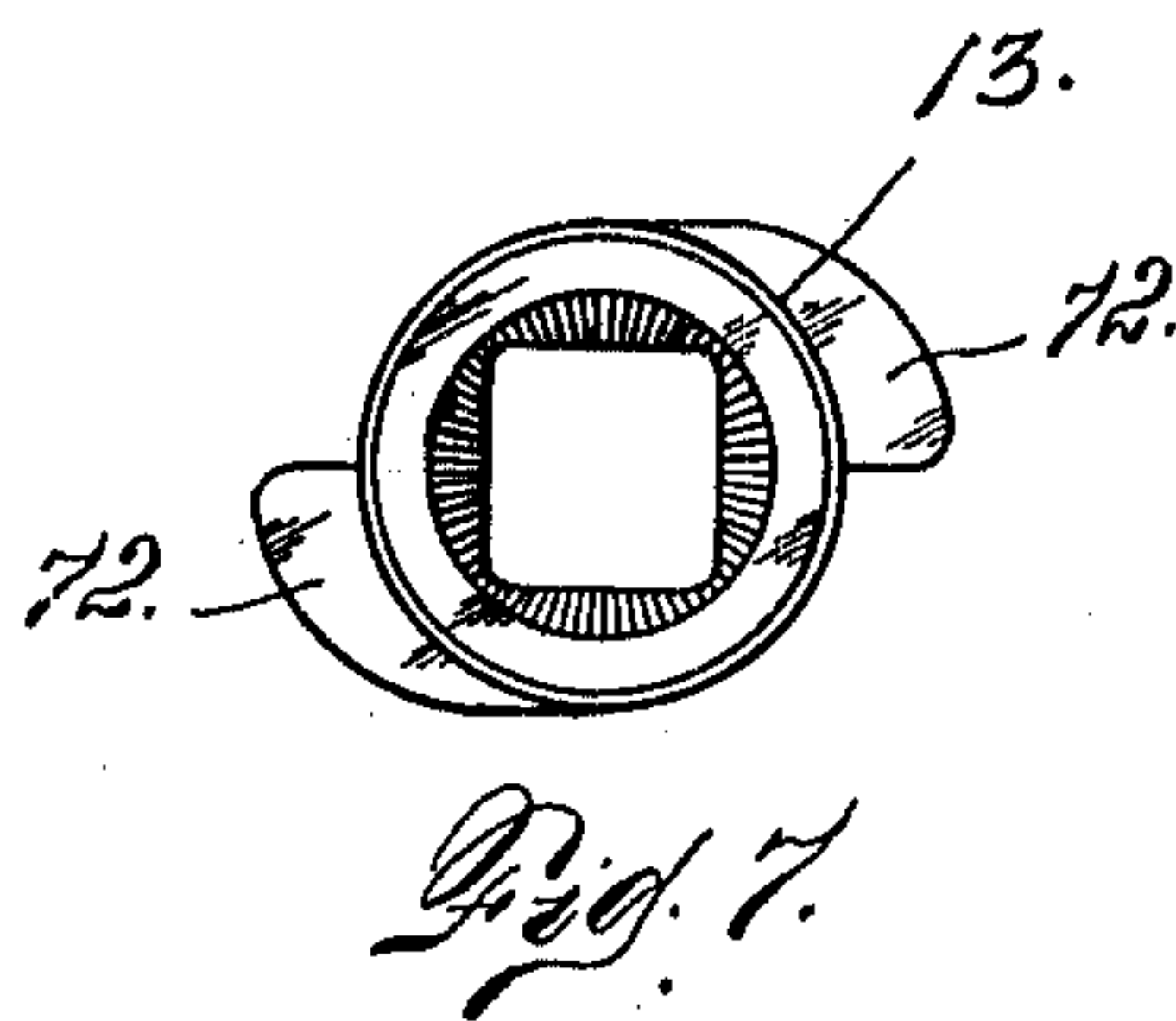


Fig. 7.

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UNITED STATES PATENT OFFICE.

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COMBINATION RAIL-CLAMP AND MACHINE-TOOL.

990,115.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed May 25, 1909. Serial No. 498,298.

To all whom it may concern:

Be it known that I, CHARLES J. COULTER, citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Combination Rail-Clamps and Machine-Tools; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in what I term a combination rail clamp and machine tool.

This machine is particularly adapted for use in connection with the drilling of holes in the webs of railway rails and applying the fish plates thereto in the forming of the joints between the rails.

My present invention discloses a construction similar to that set forth in my previous application, Serial Number 407861, filed December 23rd, 1907, in which special attention was given to the mechanism for operating the tool as a drill or wrench.

In my present invention the claims will be directed more particularly to the clamping construction, or the improvements for clamping the rail while drilling the web thereof and applying the nuts to the bolts for securing fish plates to the web in forming the joint, though in order that the function and purpose of the clamping mechanism may be clearly understood, the entire construction, including the tool operating mechanism, is illustrated.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In these drawings Figure 1 is a side elevation of the complete machine, shown connected in operative relation with a railway rail, the latter being shown in cross-section. Fig. 2 is a horizontal section taken on the line 2—2 Fig. 1, looking downwardly. Fig. 3 is a vertical section taken on the line 3—3 Fig. 1, viewed in the direction of the arrow. Fig. 4 is a section taken on the line 4—4 Fig. 1, looking toward the left, or in the direction of the arrow adjacent said line. Fig. 5 is a

section taken on the line 5—5, Fig. 2, the upper part of the construction being broken away. Fig. 6 is a view similar to Fig. 5, the machine, however, in Fig. 6 being equipped for use as a wrench, while in Fig. 5 it is equipped for use as a drill. Fig. 7 is an end view of the spindle holding sleeve.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the upright frame of the tool operating mechanism, the same being composed of two parallel upright members 6 and 7, suitably connected as shown at 8 and 9, whereby they are properly spaced and their parallelism maintained. The lower extremities of these members 6 and 7 are provided with circular parts 10 and 12, forming bearings for a rotatable sleeve 13, upon which is mounted and made fast a sprocket wheel 14. A chain 15 connects the wheel 14 with a similar wheel 16 mounted on a spindle 17, centrally journaled in the two members 6 and 7; also mounted upon the spindle 17 is a relatively large sprocket wheel 18, which is connected by a chain 19 with a relatively small sprocket 20 fast on a shaft 21, to which is applied a hand-crank 22.

Mounted within the sleeve, whose opening is polygonal, preferably square in cross-section, is a tool holding spindle 23, or 24, as the case may be. The spindle 23 is adapted to hold a bit 25, for drilling metal; while the spindle 24 applied to the nut 27 of the bolt 28 is employed for securing the fish plates 29 to the web of the rail 30. The sleeve is adapted to hold either tool in operative relation, the two spindles being readily interchangeable by swinging the frame 5 outwardly from the rail in a manner hereinafter explained.

Coöperating with the spindle rotating mechanism heretofore briefly outlined, is a rail clamp, the frame work of which is designated 31, the same being composed of two members 32 and 33, whose upper extremities are connected by a pin 34, the member 32 being freely slidable on the pin, a coil spring 35 being interposed between the head of the pin and the last named member. The member 33 is provided with an upwardly projecting extension 36, which is pivotally connected as shown at 37. Also loosely mounted on the pin 34 is a clamping lever 38, having a wedge-shaped edge 39, adapted to pass between the parts 32 and 33, whereby their

lower extremities are caused to clamp the tread of the rail on opposite sides. The two parts 32 and 33 are further connected by a bolt 40, whose head 41 is trunnioned, or
 5 pivotally connected, with the frame member 33, by means of a bolt 42 passing through ears 43, with which the part 33 is provided, the said ears having openings registering with the opening formed through the head
 10 of the bolt, at right angles to the stem of the latter. To the threaded extremity of the bolt which passes loosely through an opening formed in the member 32, is a nut 44, which as shown on the drawings is of the winged
 15 or butterfly variety, for convenience of hand manipulation. By virtue of this connection the small bolt 42 forms a fulcrum for the frame member 33, whereby, as the lever 38 is operated to spread the parts 32 and 33
 20 above the fulcrum, the portion of the part 33 below the fulcrum is caused to clamp the rail.

The two members 32 and 33 below the bolt 40 are equipped with jaws 45 and 46. The
 25 jaws 45 have parts 47 projecting laterally in opposite directions from the bolt 40, being provided with inwardly projecting lugs 48, adapted to rest on top of the tread of the rail. Extending below the top of the rail,
 30 this jaw has a part 49 adapted to engage the vertical face of the tread of the rail on one side. Below the part 49 is a part 50, centrally recessed as shown at 51, to make room for the head 52 of the bolt 28, when the machine is used as a wrench. The jaw 46 is provided with parts 53, which project laterally
 35 in opposite directions from the part 33, and have a shoulder 54 engaging the top face of the tread of the rail. Below this shoulder is
 40 a downwardly extending part 55, which engages the vertical face of the tread of the rail on the side opposite the part 49. The lower extremity of the jaw 46 is provided with apertured lugs 56, adapted to receive
 45 the hooked extremities 57 of the yoke arms 58 connected by transverse members 59 and 60.

The auxiliary feed screw 61 is threaded in a central opening formed in the part 59, and
 50 the inner extremity of the screw 61 is journaled in a U shaped member 62, whose arms 63 are pivotally connected with lugs 64 formed on the cross-head 65, whose extremities are recessed to engage the yoke arms 58
 55 upon which the cross-head is mounted to slide freely. Threaded in this cross-head is a feed screw 66, formed integral with an abutment 67, upon which is formed a ratchet wheel 68. This abutment 67 is adapted to engage
 60 one extremity of the spindle 23 or 24, as the case may be, depending on whether the machine is used for drilling or as a wrench for operating nuts upon the fish plate bolts. The auxiliary feed screw 61 is used for tak-
 65 ing up the thrust of the cross-head and feed

screw, or for quickly shifting the cross-head and the abutment feed screw, in order to bring the abutment into operative engagement with the apertured extremity of the operating spindle, after which the spindle is
 70 fed longitudinally through the sleeve, by the automatic operation of a pawl 69, pivotally mounted as shown at 70, upon a keeper 71, vertically slidable upon the member 6 of the frame 5.

The sleeve 13 is provided with cams 72, which as the sleeve 13 is rotated are alternately caused to engage an arm 73 rigidly connected with the slidable keeper 71. As
 75 the sleeve is rotated these cams act upon the keeper 71 and cause the latter to reciprocate upon the frame member 6, the upward movement being accomplished through the medium of the cams 72 and the arms 73, while
 80 the downward movement is accomplished by gravity. As the pawl 69 is carried upwardly it acts upon the ratchet 68, to give the same a partial rotation, whereby the feed screw 66 is given a corresponding movement,
 85 thus advancing the abutment 67 together with the spindle 23 or 24 as the case may be.

Attention is called to the fact that when the machine is used for a wrench, the yoke together with the cross-head and feed screw
 90 mechanism may be removed and the spindle operated sufficiently for applying the removing nuts, without the necessity for the feed, accomplished by the feed screw 66.

In order to detach the yoke having the arms 58, and carrying the cross-head 65, it
 100 is only necessary to lift the yoke arms sufficiently to disengage their hooked extremities 57 from the apertured lugs 56 of one of the rail clamp members.

The sliding keeper 71 is connected with
 105 the frame member 6 by a bolt 74, which passes through a vertical slot 75 formed in the frame member 6, to allow the keeper to slide freely upon the said member.

From the foregoing description the use
 110 and operation of my improvement will be readily understood. In order that the operating spindle 23 or 24 may be placed in position within the sleeve 13, the frame 5 is swung outwardly, away from the rail clamp-
 115 ing mechanism, after which the spindle for either wrench or drilling purposes may be applied. The frame 5 is then returned to its normal position and the yoke arms 58 connected with the apertured lugs 56 of the
 120 rail clamping frame. The space between the abutment 67 and the outer end of the spindle is then quickly taken up by the use of the auxiliary feed screw 61. The hand-crank 22 may then be turned, whereby rotary
 125 movement is imparted to the sleeve 13 and consequently to the spindle 23, or 24. Assuming that the spindle 23 and the drill bit 25 are employed, the ratchet 68 will be
 130 operated by virtue of the action of the cams

72 upon the arm 73 of the slidable keeper 71, whereby the latter is caused to reciprocate or rise and fall alternately, thus operating the feed screw 66 and causing the abutment 67 to press upon the extremity of the spindle, whereby the drill bit 25 is caused to keep pace with its cutting action, its operating extremity being held constantly in contact with the metal to be drilled, until the perforation in the web of the rail is formed and adapted to receive the fastening bolt 28. After the desired number of holes are drilled in the webs of the two rails, which are to be connected by the fish plates 29, bolts may be passed through said openings together with registered openings formed in the fish plates. The screw bolts are then applied and nuts started upon their threaded extremities. The spindle 23 may then be removed from the sleeve 13 and the wrench spindle 24 be put in place, after which the rotary action of the sleeve 13 is continued until the nut is fastened. After this occurs, the auxiliary feed screw 61 is moved to withdraw the abutment 67, sufficient to permit the backward movement of the spindle within the sleeve, preparatory to the use of the wrench for tightening another nut.

It may be stated that the lower part of the jaw 46 or the portion thereof that engages the vertical face of the tread of the rail, is bifurcated to straddle the operating tool, whether in the form of a drilling bit or a socket wrench.

The extremities of the cross bar 59, in which the auxiliary feed screw is threaded, engage bearing recesses 80 formed near the outer extremities of the yoke arms 58, the said recesses being open at the top to permit the cross bar to be quickly disengaged from the yoke arms by lifting upwardly on the outer extremity of the auxiliary feed screw. This construction makes it possible to quickly withdraw the cross bar, when it is desired to move the mechanism from the rail. It is often important that this operation should be quickly accomplished, as for instance,

when a train is rapidly approaching. It makes it possible to withdraw the cross head much more quickly than could be done by the slow operation of turning the auxiliary screw within its threads in the cross bar 59.

The extremities of the bar 59 are preferably formed rectangular in cross section, as best illustrated in Fig. 1 of the drawing.

The recesses which receive the extremities of the cross bar are designated 80, while the extremities of the bar which engage said recesses are designated 81.

Having thus described my invention, what I claim is:

1. The combination with a machine tool, of a rail clamp pivotally connected in operative relation with the tool at one extremity, and detachably connected with the tool at the other extremity, substantially as described.

2. The combination with an operating tool, of a rail clamp pivotally connected in operative relation with the tool at one extremity and detachably connected with the tool at the other extremity, the said rail clamp having two lever-like members pivotally connected intermediate their extremities and jaws arranged below their pivotal point to engage the tread of the rail, substantially as described.

3. The combination with an operating tool, of a rail clamp composed of two members connected in operative relation intermediate their extremities and having opposing jaws below said connection arranged to engage the tread of the rail, one of the said members being pivotally connected at one extremity with the operating tool and detachably connected therewith at its opposite extremity, whereby the tool is held in operative relation with the rail, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES J. COULTER.

Witnesses:

A. J. O'BRIEN,

A. EBERT O'BRIEN.