

(No Model.)

3 Sheets—Sheet 1.

R. L. WIGGINS.

MACHINE FOR REAMING HOLES IN SPOOL BLOCKS.

No. 488,643.

Patented Dec. 27, 1892.

FIG. 1.

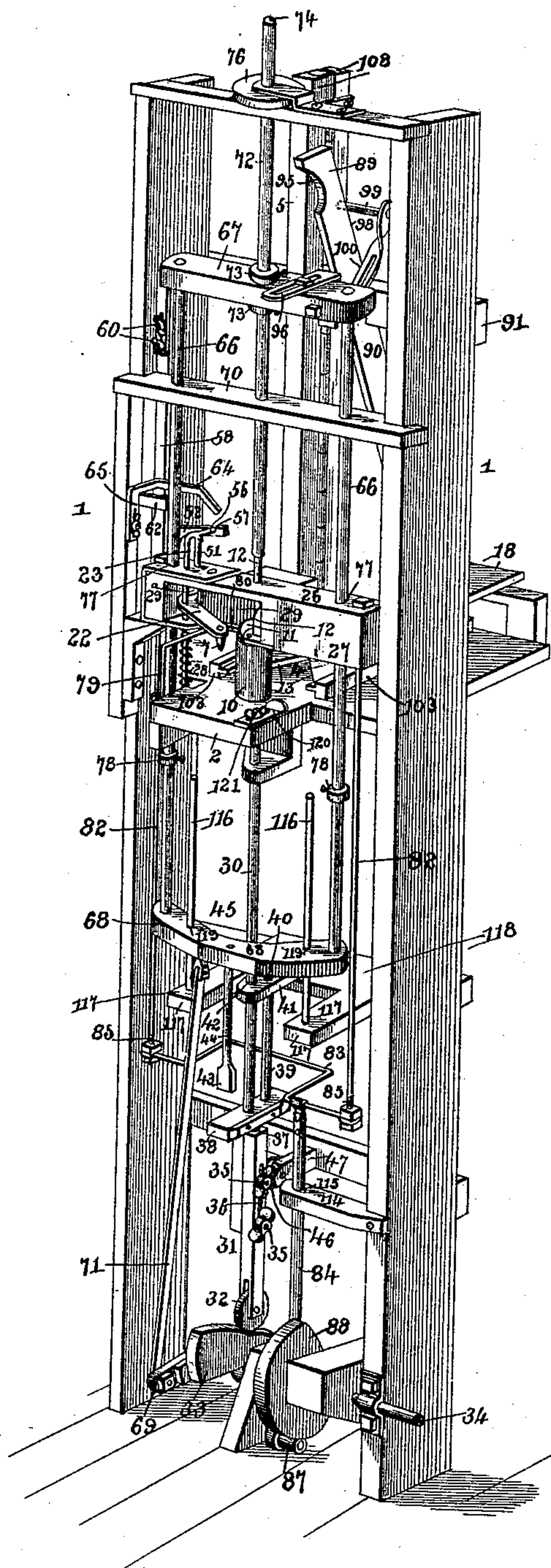
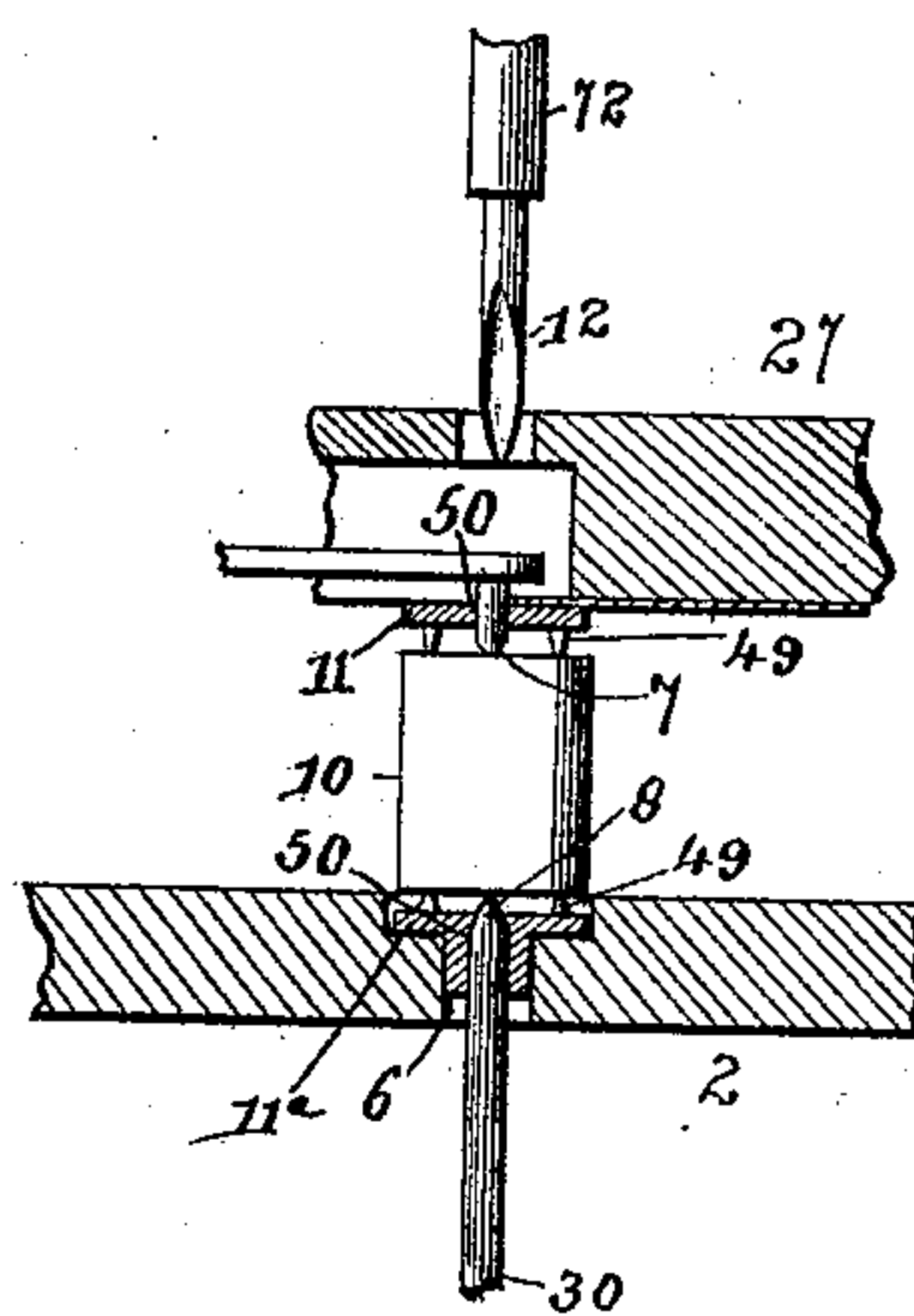


FIG. 9.



Witnesses

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(No Model.)

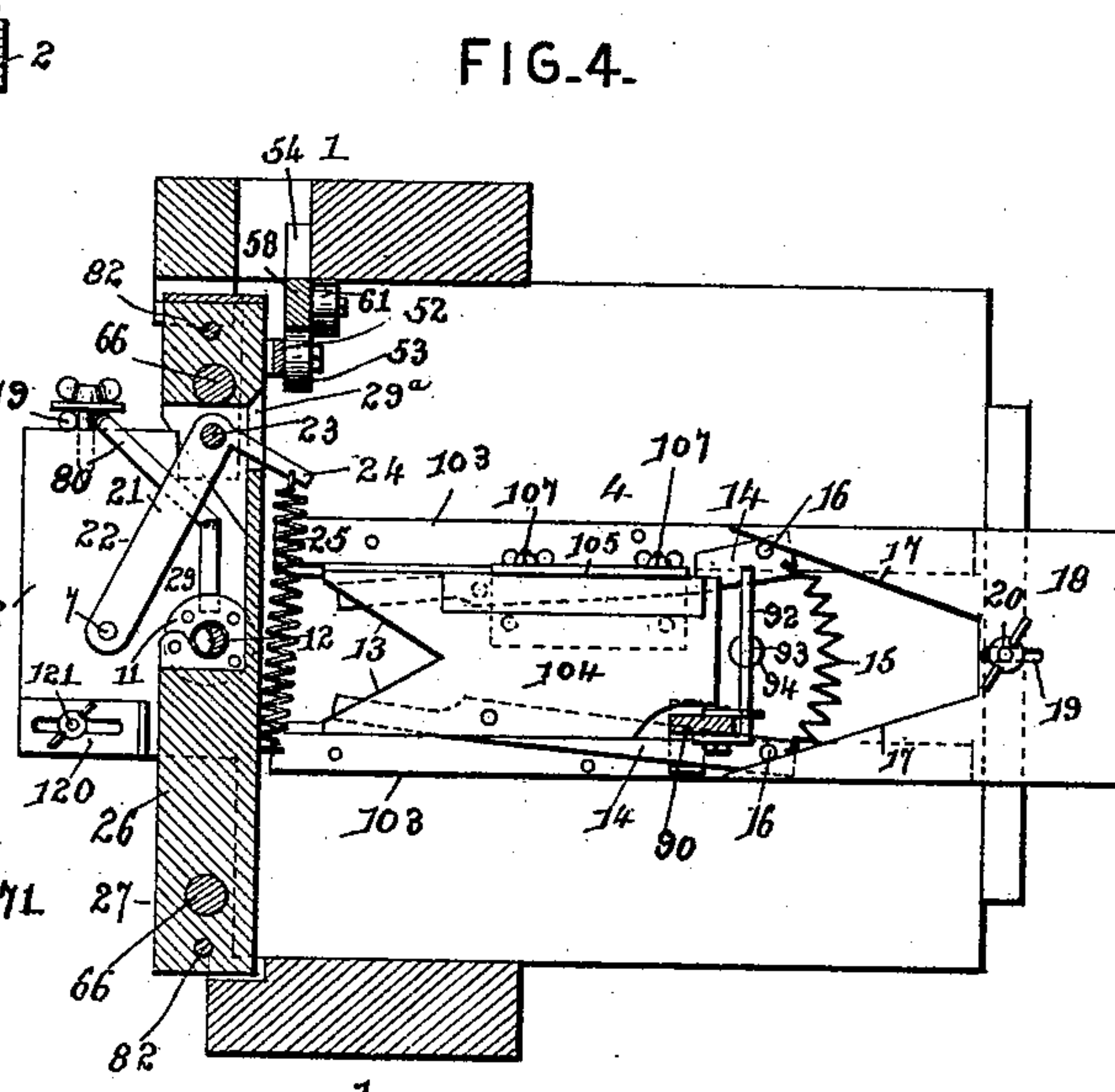
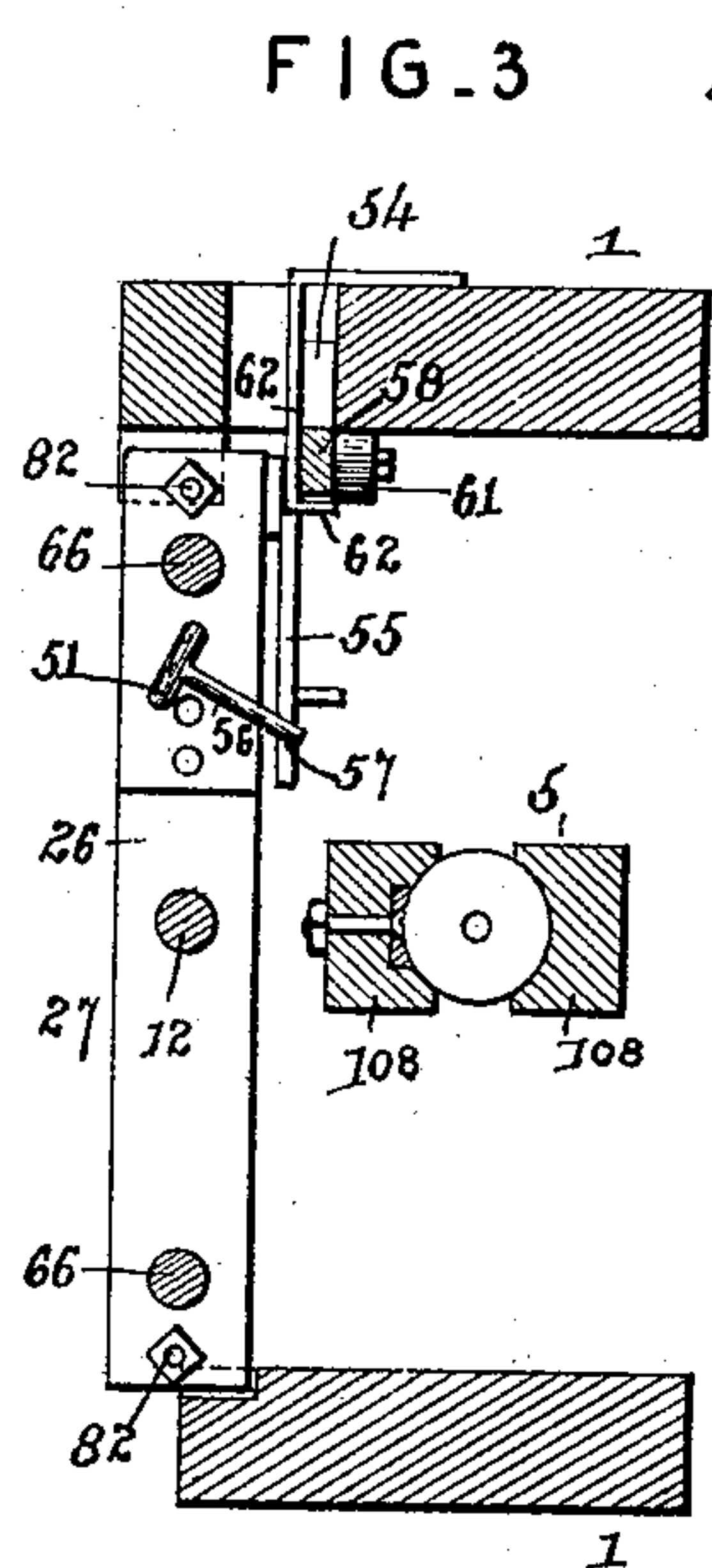
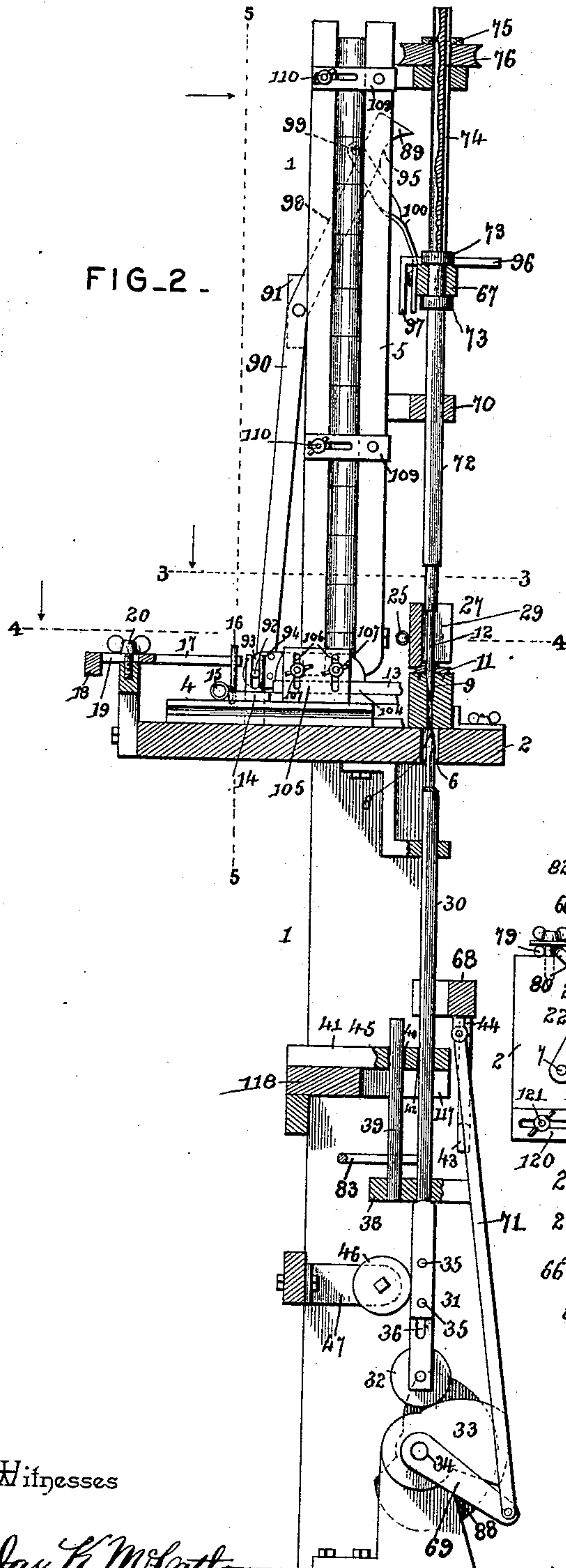
3 Sheets—Sheet 2.

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Witnesses

Jas. K. McLaughlin

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(No Model.)

3 Sheets—Sheet 3.

R. L. WIGGINS.

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FIG. 5.

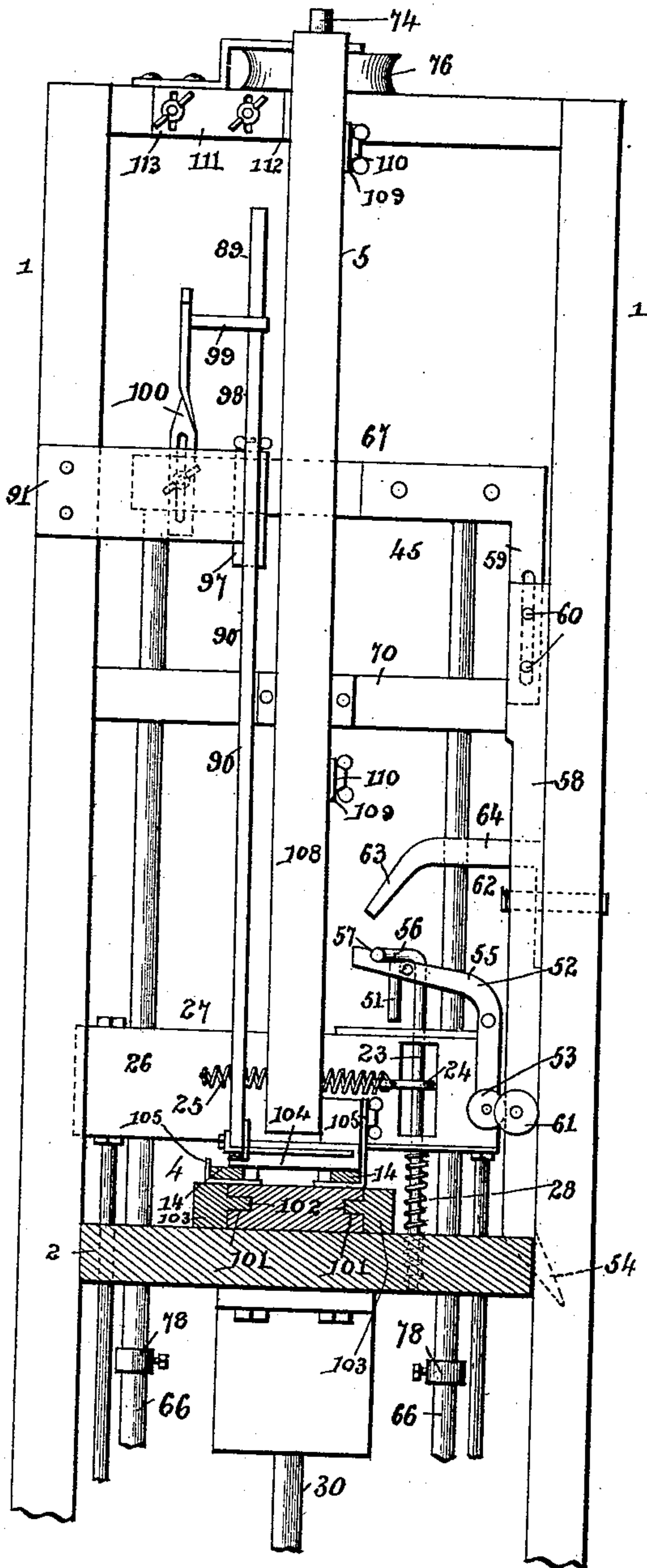


FIG. 6.

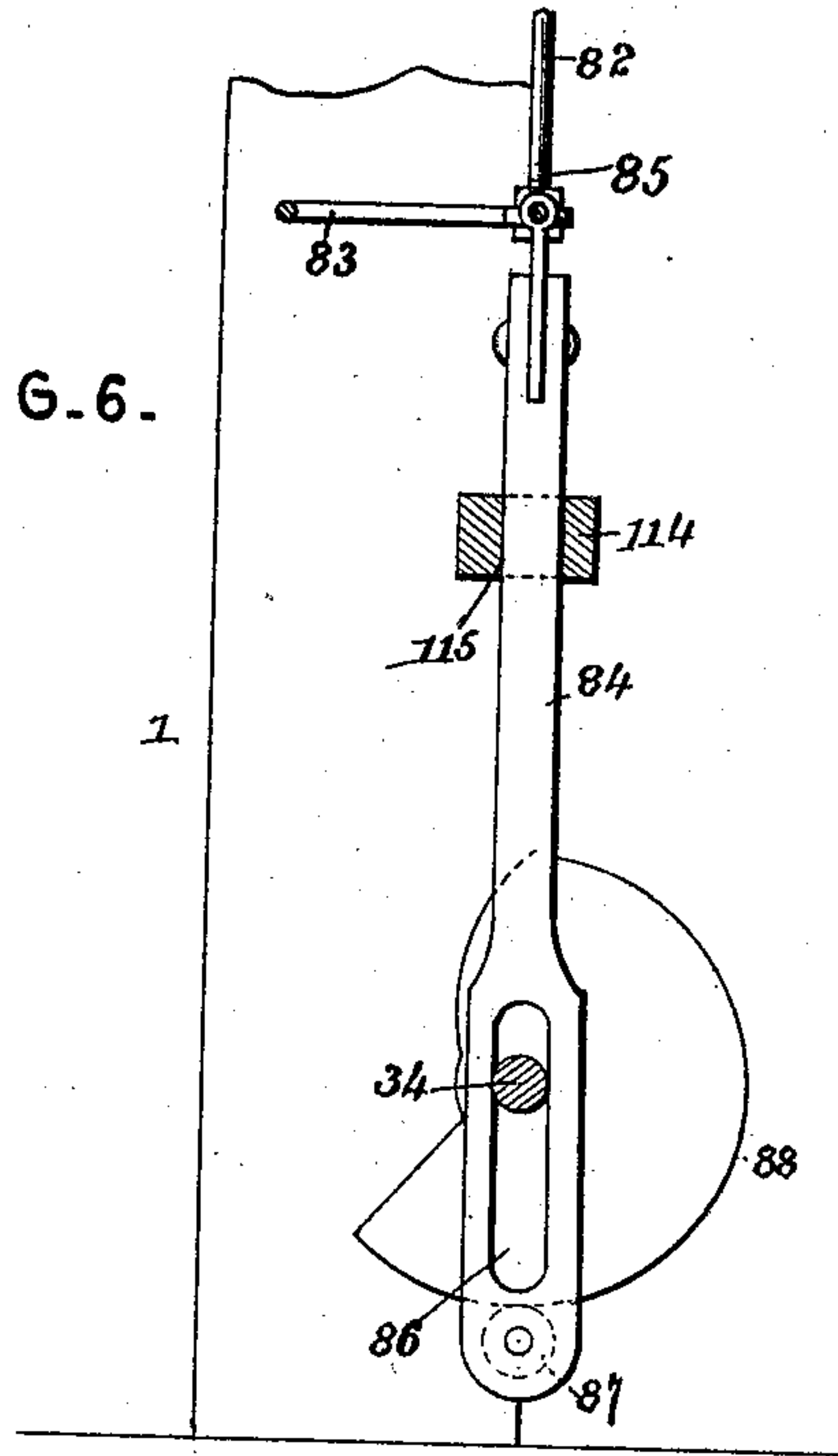


FIG. 7.

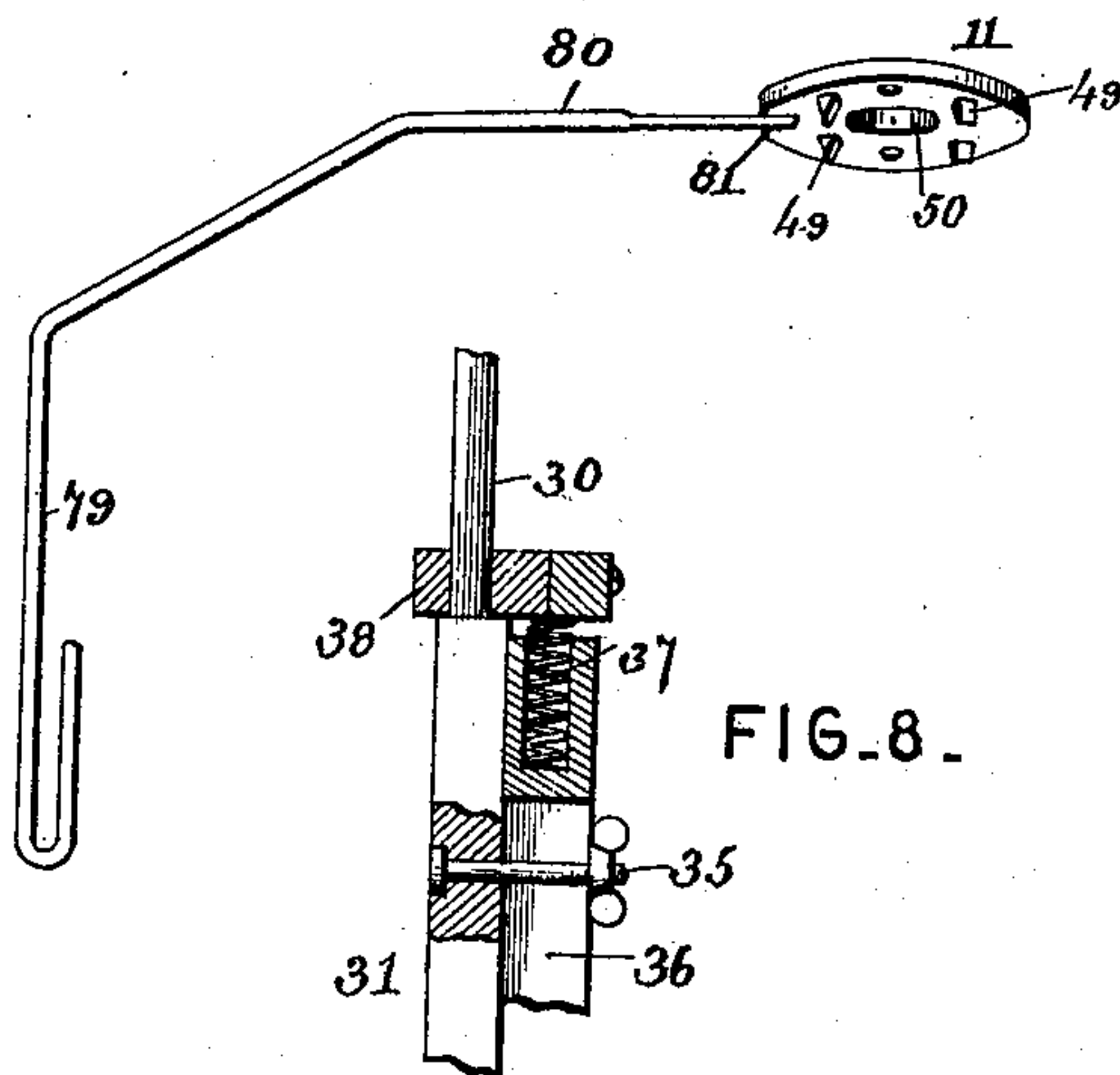


FIG. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

RICHARD LEANDER WIGGINS, OF WILLIMANTIC, CONNECTICUT.

MACHINE FOR REAMING HOLES IN SPOOL-BLOCKS.

SPECIFICATION forming part of Letters Patent No. 488,643, dated December 27, 1892.

Application filed June 14, 1892. Serial No. 436,730. (No model.)

To all whom it may concern:

Be it known that I, RICHARD LEANDER WIGGINS, a citizen of the United States, residing at Willimantic, in the county of Windham and State of Connecticut, have invented a new and useful Improvement in Machines for Reaming Holes in Spool-Blocks, of which the following is a specification.

My invention relates to improvements in reaming machines.

The object of the present invention is to provide a machine for reaming, enlarging or truing holes in blocks and more especially the holes in white birch spool blocks when the latter are in the rough.

A further object of the invention is, preparatory to reaming, to center the spool blocks from their openings instead of from their sides, whereby the operation of reaming and truing will be unaffected by any swelling or shrinkage of the spool blocks.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended.

In the drawings—Figure 1 is a perspective view of a reaming machine constructed in accordance with this invention. Fig. 2 is a central vertical sectional view. Fig. 3 is a horizontal sectional view on line 3, 3 of Fig. 2. Fig. 4 is a similar view on line 4, 4 of Fig. 2. Fig. 5 is a detail sectional view of the upper portion of the machine; on line 5, 5 of Fig. 2. Fig. 6 is a similar view of the lower portion. Fig. 7 is a detail perspective view of the clearing arm and the spurred disk. Fig. 8 is a detail sectional view of the foot of the stem of the lower centering plug. Fig. 9 is a detail sectional view showing a modification of a portion of the invention.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a main frame provided intermediate its top and bottom with a horizontal spool table 2 on which is mounted a reciprocating carriage 4 which conveys spool blocks from a hopper 5 to the front of the table 2, and deposits them over an opening 6, where a spool block is centered by an upper centering plug 7 and a lower centering plug 8

which enter the central opening 9 of a cylindrical spool-block 10. The spool block 10, while the centering plugs 7 and 8 are still in the central opening is clamped by a spurred disk 11 which holds the spool block 10 against lateral movement while the same is being reamed. The centering plugs are then withdrawn, and a reamer 12 descends and enlarges and trues the central opening 9 of the spool block. It will thus be seen that the spool block is centered from the central opening and not from its sides, whereby any swelling or distortion of the spool block will not interfere with the reaming.

It frequently happens that after spool blocks have been prepared in the rough, the drying of the wood makes them oval in cross section, and it would be impossible to gage the center from the outside surface, so that the above provision of centering from the central opening is of great importance.

The carriage 4 is provided with a V-shaped mouth 13 to receive the spool-block and the latter is positively held therein by spring-actuated fingers 14, which are pivoted intermediate their ends and have their rear ends separated by a spiral spring 15 which causes the front ends of the fingers to clamp the spool-block. The rear ends of the fingers are provided with vertical pins 16 arranged to engage converging sides 17 of a plate 18, which is arranged back of the carriage and is adapted when the carriage moves inward or rearward to draw the rear ends of the fingers together to open the front ends thereof to release a spool, and to prepare the mouth of the carriage for the reception of another spool. The plate 18 is adjustably mounted being provided with a slot 19 and secured by a set screw 20 arranged in the slot.

The upper centering plug 7 depends from the outer end of a long arm 21 of an L-shaped lever 22 which is mounted on a vertically movable spring depressed rod 23, and has its short arm 24 connected by a spiral spring 25 with a cross bar 26 of a spool clamping frame 27, and the said spring 25 is adapted to draw the short arm toward the cross bar 26 to throw the upper centering plug 7 outward away from the cross-bar 26, when the spring depressed rod 23 is raised against the action of a spring 28 disposed on the lower portion of

the rod 23 and interposed between the lower end of the same and the cross bar 26, the latter being provided with a recess 29 and an opening 29^a to receive the L-shaped lever 22.

5 The lower centering plug is arranged beneath the spool table 2, and is arranged at the upper end of a stem 30, and may form a part thereof; and the lower end of the stem is squared and has attached to it a cushioned
10 foot 31 provided at its lower end with an anti-friction roller 32 and arranged above and operated by a cam 33 which is mounted on a shaft 34 and is adapted to lift the lower centering plug to carry the same upward through
15 the openings 6 of the table 2 into the lower end of the central opening of the spool block. The foot 31 is longitudinally slotted and is secured to the stem by bolts 35 arranged in the slot 36, and it is held downward upon the
20 cam 33 by a spiral spring 37 interposed between the upper end of the foot 31 and a horizontal block 38 of the stem. At the inner end of the block 38 is secured a guide rod 39 having its upper end arranged in an opening 40
25 of a guide plate 41 which is also provided with an opening 42 to receive the stem, and the said horizontal block projects outward from the front of the frame and is adapted to be engaged by the lower end 43 of a depending push
30 rod 44 of a reamer carrying frame 45 to prevent the reamer striking the lower centering plug. The spring actuated foot is adapted to yield to the cam and insures a steady movement free from jerks. The foot is guided by
35 an anti-friction roller 46 mounted on a horizontal bracket arm 47 extending forward from the rear of the main frame, and arranged in rear of the foot and the stem of the lower centering plug.

40 After the spool block has been centered by the two centering plugs entering the central opening, it is clamped by the said spurred disk 11 which has small spurs 49 depending from its lower face, and which is provided
45 with a central opening 50 to permit the passage of the upper centering plug, and to enable it to move independently of the centering plug. The upper end of the rod 23 is U-shaped and provides a depending portion 51
50 which is arranged parallel with the rod, and which is located in an opening of the cross bar 26, when the block is being centered; but when a block is clamped, the cross-bar descends independently of the rod 23 and a further movement of the machine lifts the latter
55 causing the depending parallel portion 51 to become disengaged from the cross bar 26 allowing the spring 25 to draw the short arm of the L-shaped lever toward its cross bar 26 to throw
60 the centering plug 7 away from the spurred disk to provide a passage for the reamer 12. The centering plug is raised out of the opening of the spurred disk by a bell-crank lever 52 which is fulcrumed at its angle, and has
65 one arm provided at the end with a roller 53 which is adapted to be engaged by a foot 54 of the reamer carrying frame to raise the other

arm 55 which engages a horizontal pin 56 of the rod 23 to lift the depending parallel portion 51 out of the opening of the cross bar. 70 The upper edge of the arm 55 is slightly curved to facilitate the movement of the bell-crank lever, and is provided at its outer end with a shoulder 57 which limits the outward swing of the long arm of the L-shaped lever 22 by forming a stop for the horizontal pin 56. The foot 75 54 is formed at the lower end of a bar 58, which is adjustably connected with the reamer carrying frame by a longitudinally slotted L-shaped plate 59 and set screws 60; and the said bar 80 58 is vertically disposed, and is provided with an anti-friction roll 61 which bears against one side of the main frame; and a guide 62 is secured to the main frame and extends horizontally therefrom and receives the bar 58. 85 The longitudinally slotted plate and the set screws permit the foot to be adjusted to operate the bell-crank lever at the proper time. The centering plug is returned within the recess of the cross-bar 26 and allowed to enter 90 the opening of the spurred disk when the clamping frame is raised to release the spool-block, by an inclined guide 63 of an arm 64 of a plate 65 which is adjustably mounted on the frame and arranged above the cross bar 95 26, and is adapted to be engaged by the horizontal pin 56 to turn the latter at right angles to the cross bar 26 to bring the centering plug 7 directly over the central opening of the spurred disk when the cross bar 26 is lifted. 100 This turning movement also brings the depending parallel portion 51 of the rod 23 directly over its opening of the cross bar and the spiral spring 28 disposed on the rod 23 causes the latter to move downward. 105

The reamer carrying frame is vertically movable, and is composed of side rods 66 and top and bottom cross bars 67 and 68 which connect the ends of the side rods, and the latter are round and are arranged in openings of 110 a stationary transverse bar 70 of the main frame and are guided by the same. Vertical motion is imparted to the reamer carrying frame by a pitman 71 which has its upper end connected to the bottom cross-bar 68, and 115 its lower end attached to a crank 69 at the inner end of the shaft 34. The reamer is secured to the lower end of a vertical shaft 72, which is journaled in the upper cross bar 67 of the reamer carrying frame, and is held 120 against vertical movement in the bearing opening of the top cross-bar 67 by collars 73 which are secured by set screws to the shaft, and are arranged above and below the cross-bar 67. The shaft 72 is carried verti- 125 cally by the reamer carrying frame 45 and is provided with a longitudinal groove 74 in which is arranged a key 75 of a pulley 76, whereby the latter will cause a rotation of the shaft and will allow the same to move verti- 130 cally.

The side bars 66 of the reamer carrying frame, pass through openings 77 of the cross bar 26 and form guides upon which the cross-

bar 26 moves, and they are provided with adjustable lifting collars 78 which are secured to the side rods by set screws and are adapted to engage the lower face of the cross-bar 26 to lift the same as the reamer ascends after the operation of reaming to release the spool block.

The spool block is prevented from clinging to the spurred disk 11 by a vertically adjustable rod 79 mounted at one side of the spool table 2 and having a horizontally disposed clearing arm 80 which extends inward and rests upon the top of the spool block. The spurred disk 11 is provided in its lower face with a recess 81 to receive the end of the clearing arm when the clamping frame descends to prevent the clearing arm interfering with the clamping of the spool block. When the clamping frame ascends, the clearing arm holds the spool block down upon the table, until it is thrown from the table by the next spool to be operated on. The rod 79 is provided with a longitudinal opening and is adjustable by set screws arranged within the opening; and this opening is formed by bending the lower end of the rod on itself or by any other suitable means.

The clamping frame 27 is composed of the cross-bar 26, parallel to side rods 82 and a lower cross rod 83, which is provided intermediate its ends with an angular bend, and which is connected to the upper end of a pitman 84. The bottom cross-rod 83 is provided at its ends with eyes which receive threaded ends 85 of the side rods 82, and are secured to the latter by nuts arranged above and below the eye whereby the cross rod 83 is adjustably connected to the lower ends of the side rods 82, and the upper ends of the rods 82 are similarly secured to the cross-bar 26. The lower end of the pitman 84 is enlarged and is provided with a longitudinal slot 86 in which is arranged the shaft 34, and it is provided at its lower end with a laterally extending anti-friction roller 87 which is mounted on a pin, and which is engaged by a cam-wheel 88 mounted on the shaft 34 and causing the clamping frame to descend to clamp a spool block. The open or mutilated portion of the cam wheel 88 permits the clamping frame to be lifted by the collars 78 of the side rods 66 to release a spool-block.

The vertical reciprocation of the reamer carrying frame actuates the spool carriage by engaging and causing an oscillation of the upper end 89 of a swinging lever 90, which is fulcrumed on a bracket arm 91 at a point intermediate its ends, and it is provided at its lower end with a laterally extending pin 92 which is arranged in a bifurcation 93 of a stud 94 of the carriage 4. The front portion of the upper end 89 of the swinging lever 90 is provided with a curved edge 95 which is engaged by a horizontally adjustable plate 96 mounted on the top cross bar 67 of the reamer carrying frame and provided with a depending extension 97 and adapted to force

the upper portion 89 of the swinging lever 90 rearward to move the carriage to the front of the frame. The upper portion 89 of the swinging lever 90 is inclined toward the front of the frame, and its rear edge 98 is engaged by a horizontally extending pin 99 of a vertically adjustable plate 100, which is mounted on the top cross bar 67 and is staggered slightly toward the rear of the frame and has its upper end provided with a quarter turn.

The carriage is provided in its sides with longitudinal grooves 101 and receives in them flanges 102 of guide strips 103 secured to the upper face of the table and arranged parallel thereon. The spring actuated fingers which engage the spool block are pivoted to the lower face of a top plate 104, which is adjustably mounted above the body of the carriage 4 by an L-shaped plate 105 having a horizontal portion secured to the body of the carriage and having a vertical portion provided with vertical slots 106, in which are arranged set screws 107 which secure the horizontal plate 104 in its vertical adjustment. The V-shaped mouth 13 is formed by a V-shaped recess in the front end of the body of the carriage and a corresponding recess in the front end of the horizontal plate 104; and the front ends of the fingers are inclined toward each other to confine a spool block in the mouth of the carriage.

The hopper 5 is vertically disposed and is composed of parallel sections or bars 108, which have their opposed faces longitudinally concavely grooved, and which are adjustably connected together by horizontally disposed slotted plates 109 and set screws 110. The front section or bar 108 of the hopper is adjustably secured to the main frame by a horizontally disposed L-shaped plate 111, which has one arm 112 arranged transversely of the frame and provided with vertical slots, and a rearwardly extending arm 113 provided with a longitudinal slot and secured to the front bar or section of the hopper by a set screw.

The horizontally disposed L-shaped plate or knee is secured to the main frame by set screws arranged in the vertical slots of the transverse arm. The pitman 84 is guided by a horizontal bracket arm 114 which extends inward from one side of the frame, and is provided with an opening 115 to receive the pitman 34. The lower end of the reamer carrying frame is guided by vertical parallel guide rods 116 which rise from horizontal arms 117 of a bracket plate 118, and which are arranged in openings 119 of the bottom cross bar 68; and the latter is bowed outward to clear the lower centering plug stem and carries the depending push bar 44 which prevents the reamer coming in contact with the lower centering plug. The forward movement of the carriage is limited by a vertically adjustable stop plate 120, which is mounted on the front end of the spool table and is provided with a longitudinal slot to receive a set

screw 121, and has its inner end bent vertically to form a flange to be engaged by the carriage.

In Fig. 9 of the accompanying drawings is illustrated a modification of a portion of the invention in which a lower spurred disk 11^a is employed, and is arranged in a depression in the face of the spool table. If found necessary or desirable the lower spurred disk 11^a may be employed to assist in holding the spool blocks.

The machine is also adapted for operating on finished spools to enlarge and true the hole of the same, and in such cases the clamping disk will be spurless to avoid injuring the spools or marring their surfaces.

What I claim is—

1. In a reaming machine, the combination of a frame, a reamer, a vertically movable centering plug, adapted to enter the opening of a spool block, and means for clamping a spool block after the latter is centered, substantially as described.
2. In a reaming machine, the combination of a frame provided with a spool table having an opening, a reamer, the upper and lower vertically movable centering plugs arranged above and below the spool table and adapted to enter the opening of a spool block to center the latter, and means for clamping the spool block after the latter has been centered, substantially as described.
3. In a reaming machine, the combination of a frame having a spool table, a vertically movable centering plug arranged below the spool table, a vertically movable and horizontally swinging centering plug arranged above the spool table, said centering plug being adapted to enter the opening of the spool block, a reamer arranged above the spool table and means for holding a spool block after the latter has been centered, substantially as described.
4. In a reaming machine, the combination of a frame provided with a spool table, a spurred disk arranged above the spool table, and having an opening and adapted to clamp a spool block when the latter has been centered, a reamer arranged above the spool table and adapted to pass through the opening of the disk into the spool block opening, and a centering plug having a vertical movement and adapted to enter the opening of the spool block through the opening of the disk to center the spool block, and having a horizontal movement to carry it away from the reamer, substantially as described.
5. In a reaming machine, the combination of a frame having a spool table, a vertically movable spurred disk having an opening, a reamer, a centering plug, and a clearing arm adapted to engage the upper end of a spool block to free the latter from the disk, substantially as described.
6. In a reaming machine, the combination of a frame having a spool table, a vertically movable disk adapted to clamp a spool block,

and having an opening, a vertically movable rod, an L-shaped lever fulcrumed at its angle on the rod and carried by the same, a centering plug depending from one of the arms and adapted to enter the opening of the disk, and a spring engaging the other arm of the L-shaped lever to carry the centering plug away from the disk, substantially as described.

7. In a reaming machine, the combination of a frame having a spool table, a vertically movable cross-bar a spurred disk having an opening and secured to and carried by the cross-bar, a vertically movable spring actuated rod mounted in the cross-bar and provided at its upper end with a depending parallel portion adapted to enter an opening of the cross-bar to prevent the rod turning, said rod being provided at its upper end with a horizontally extending pin, an L-shaped lever secured at its angle to the rod a depending centering plug carried by one of the arms of the L-shaped lever and adapted to enter the opening of the disk, a spring connected to the other arm of the L-shaped lever and to the cross-bar and adapted to move the centering plug away from the disk, and means for lifting the rod and an inclined guide arranged to engage the horizontal pin to turn the rod and carry the centering plug over the opening of the disk, substantially as described.

8. In a reaming machine, the combination of a frame, a vertically movable reamer carrying frame, a cross-bar vertically movable thereon, a spurred disk having an opening and secured to and carried by the cross-bar, a vertically movable spring actuated rod mounted on the cross-bar and provided at its upper end with a depending parallel portion adapted to enter an opening of the cross-bar to hold the rod against turning, a pin extending horizontally from the upper end of the rod, an L-shaped lever secured at its angle to the rod, a centering plug depending from one arm of the lever, a spring connecting the other arm of the lever with the cross-bar, an inclined guide arranged to engage the pin, and a bell-crank lever fulcrumed on the cross-bar, and actuated by the reamer carrying frame and arranged to engage the horizontal pin to lift the rod, substantially as described.

9. In a reaming machine, the combination of a frame, a vertically movable reamer carrying frame, a cross-bar mounted thereon, a vertically movable rod mounted on the cross-bar, a spring for moving the rod downward, an L-shaped lever secured at its angle to the rod, a centering plug depending from one arm of the L-shaped lever, a spring connecting the other arm of the lever with the cross-bar, and a bell-crank lever fulcrumed on the cross-bar and actuated by the reamer carrying frame and arranged to engage the rod, and having a stop arranged to limit the turning of the rod, substantially as described.

10. In a reaming machine, the combination of a main frame, a reamer carrying frame vertically movable therein and provided with a

depending foot, a cross-bar mounted on the reamer carrying frame, a rod mounted for vertical movement on the cross-bar, an L-shaped lever secured at its angle to the rod, and having one arm actuated by a spring, a centering plug depending from the other arm, and a bell-crank lever fulcrumed on the cross-bar and having one arm arranged to engage the rod to lift the same and having its other arm arranged to be engaged by the foot of the reamer carrying frame, substantially as described.

11. In a reaming machine, the combination of a reamer carrying frame, a main frame, a vertically adjustable foot depending from the reamer carrying frame, a cross-bar mounted on the reamer carrying frame, a rod mounted for vertical movement in the cross-bar, a spring actuated L-shaped lever secured at its angle to the rod, a centering plug depending from one of its arms, a horizontal pin projecting from the upper end of the rod, and a bell-crank lever fulcrumed on the cross-bar and having one arm arranged to engage the pin and provided with a stop to limit the swing of the same, and having its other arm provided with a roller and arranged to be engaged by said foot, substantially as described.

12. In a reaming machine, the combination of a main frame, a reamer carrying frame mounted thereon and having a vertical movement and provided with side rods, a cross-bar mounted on the side rods and having a vertical movement and adapted to be raised by the reamer carrying frame, a pitman connected with the cross-bar, and a cam arranged to engage the pitman to move the same downward to cause the cross-bar to clamp a spool block, substantially as described.

13. In a reaming machine, the combination of a main frame, a reamer carrying frame mounted thereon and having a vertical movement, and provided with side rods a cross-bar mounted on the side rods and having a vertical movement and adapted to clamp a spool block, means for moving the cross-bar downward, and collars arranged on the side rods and adapted to engage the cross-bar and raise the same, substantially as described.

14. In a reaming machine, the combination of a main frame, a reamer carrying frame having a vertical movement therein, a reamer, a cross-bar mounted on the reamer carrying frame and having a vertical movement collars secured to the reamer carrying frame and arranged below the cross-bar, and adapted to engage and lift the latter, and means for moving the cross-bar downward to clamp a spool block, substantially as described.

15. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a clamping frame having a cross-bar adapted to engage a spool block to hold the same, said clamping frame having a vertical movement and being raised by the reamer carrying frame, a horizontal shaft having a crank arm, a pitman connecting the

reamer carrying frame with the crank arm, a cam wheel mounted on the horizontal shaft and a pitman 84 having its upper end connected with the clamping frame and having its lower end engaged by the cam wheel to move the clamping frame downward, substantially as described.

16. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a clamping frame mounted on the reamer carrying frame and having a vertical movement and being raised by the reamer carrying frame, a horizontal shaft having a crank arm connected with the reamer carrying frame, a cam wheel mounted on the horizontal shaft, and a pitman having its upper end connected to the clamping frame and provided at its lower end with a longitudinal slot to receive the shaft and having a laterally extending roller arranged to be engaged by the cam wheel whereby the clamping frame is moved downward to clamp a spool block, substantially as described.

17. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame having side rods, a vertically movable clamping frame having a cross-bar mounted on the side rods, collars arranged on the side rods and adapted to engage the cross-bar to lift the clamping frame, a horizontal shaft having a crank arm connected with and actuating the reamer carrying frame, and a cam wheel for depressing the clamping frame, substantially as described.

18. In a reaming machine, the combination of a main frame, vertical parallel guide rods mounted thereon, a vertically movable reamer carrying frame composed of side rods and top and bottom cross-bars, the latter being provided with openings to receive the guide rods, a clamping frame having vertical movement and mounted on the side rods and comprising a cross-bar, side rods having their upper ends secured to the cross-bar and a cross-rod connecting the lower ends of the side rods of the clamping frame, collars arranged on the side rods of the reamer carrying frame and adapted to engage and lift the clamping frame, and means for reciprocating the reamer carrying frame and for depressing the clamping frame, substantially as described.

19. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a horizontal shaft, a cam mounted on the horizontal shaft, the lower centering plug having a stem arranged to be lifted by the cam, and a push bar depending from the carrying frame and arranged to engage the said stem, substantially as and for the purpose described.

20. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a lower centering plug having a stem, a longitudinally slotted foot secured to the stem and having a limited movement and provided with an anti-friction wheel, a spring cushioning the foot, a cam

wheel arranged to lift the foot and a push bar depending from the reamer carrying frame and adapted to engage the stem, substantially as described.

5 21. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a hopper, a reciprocating spool carriage arranged below the hopper, and an oscillating lever fulcrumed intermediate
10 its ends and having its lower end connected with the carriage and having its upper end actuated by the reamer carrying frame, substantially as described.

22. In a reaming machine, the combination
15 of a main frame, a vertically movable reamer carrying frame, a hopper, a reciprocating spool carriage, an oscillating lever fulcrumed intermediate its ends and having its lower end connected with the carriage and having
20 its upper portion inclined toward the reamer carrying frame and provided with a curved edge, a plate arranged on the reamer carrying frame and adapted to engage the curved edge of the lever, and a horizontal pin adapted
25 to engage the inclined portion of the lever, substantially as described.

23. In a reaming machine, the combination of a main frame, a reamer carrying frame, an adjustable plate horizontally disposed on the
30 reamer carrying frame, a vertically adjustable plate mounted on the reamer carrying frame and having a horizontally arranged pin, a carriage, an oscillating lever fulcrumed intermediate its ends and having its lower end
35 connected with the carriage, and having its upper end arranged to be engaged by the pin

and the horizontal plate, substantially as described.

24. In a reaming machine, the combination of a main frame, a hopper, and a carriage re- 40
ciprocating below the hopper and comprising a body, an L-shaped plate secured to the body and having a vertical portion provided with vertical slots, a horizontal plate secured to the said vertical portion, and having set
45 screws arranged in the slots, and spring actuated fingers pivotally mounted on the carriage, substantially as described.

25. In a reaming machine, the combination of a main frame, a reciprocating spool car- 50
riage, and a hopper arranged above the spool carriage and comprising the grooved sections, one of which being adjustably secured to the main frame, the slotted plates secured to one
55 of the sections and connected with the other by set screws arranged in the slots, substantially as described.

26. In a reaming machine, the combination of a frame, a reamer, a centering plug adapted to enter the opening of a spool block, and a 60
clamping disk having an opening receiving the centering plug and adapted to clamp a spool block after the latter has been centered, substantially as described.

In testimony that I claim the foregoing as 65
my own I have hereto affixed my signature in the presence of two witnesses.

RICHARD LEANDER WIGGINS.

Witnesses:

E. M. DURKEE,
C. M. PALMER.