

No. 750,941.

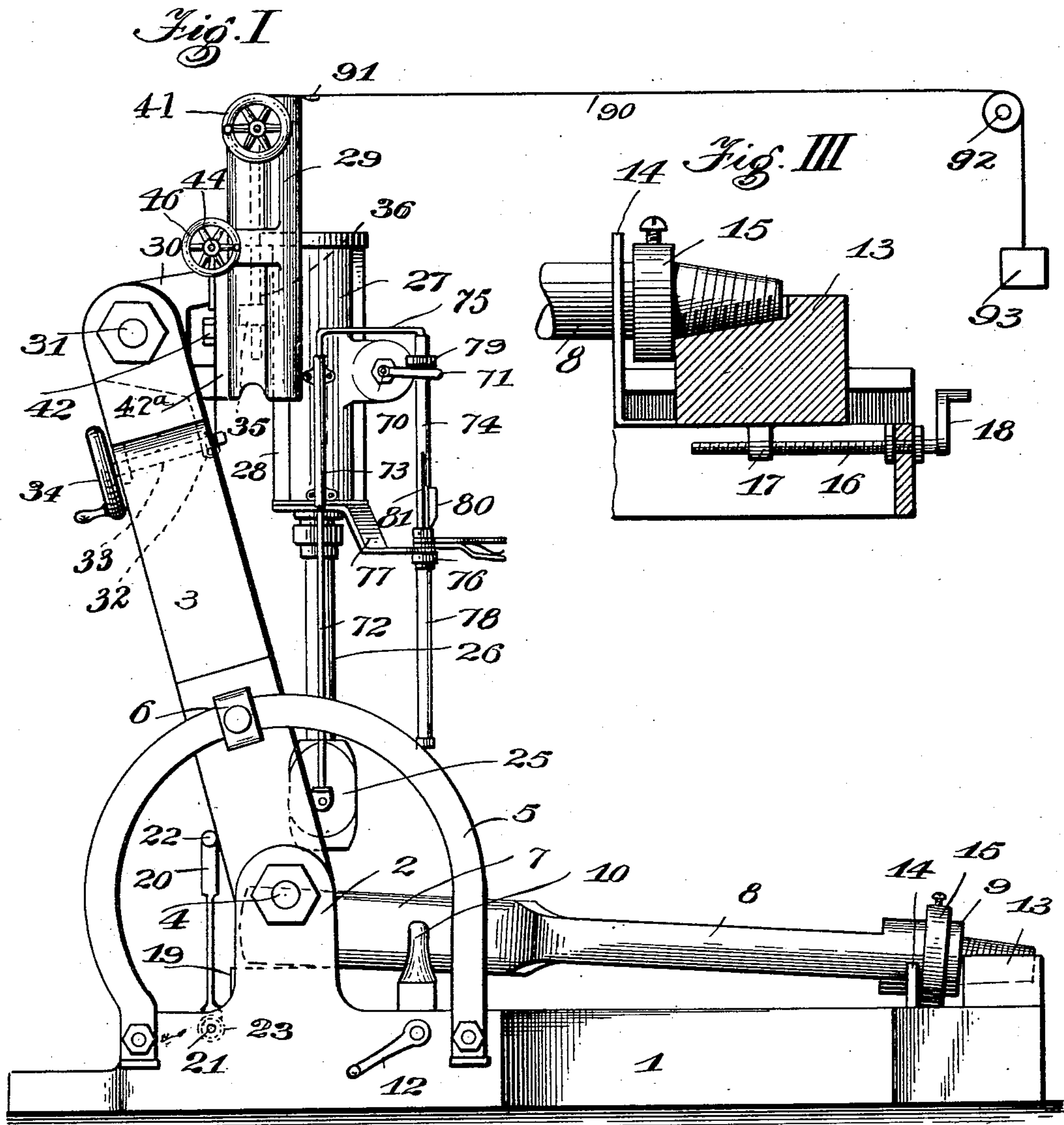
PATENTED FEB. 2, 1904.

J. S. BROWN.
TOOL DRESSER.

APPLICATION FILED AUG. 7, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses

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Fig. II

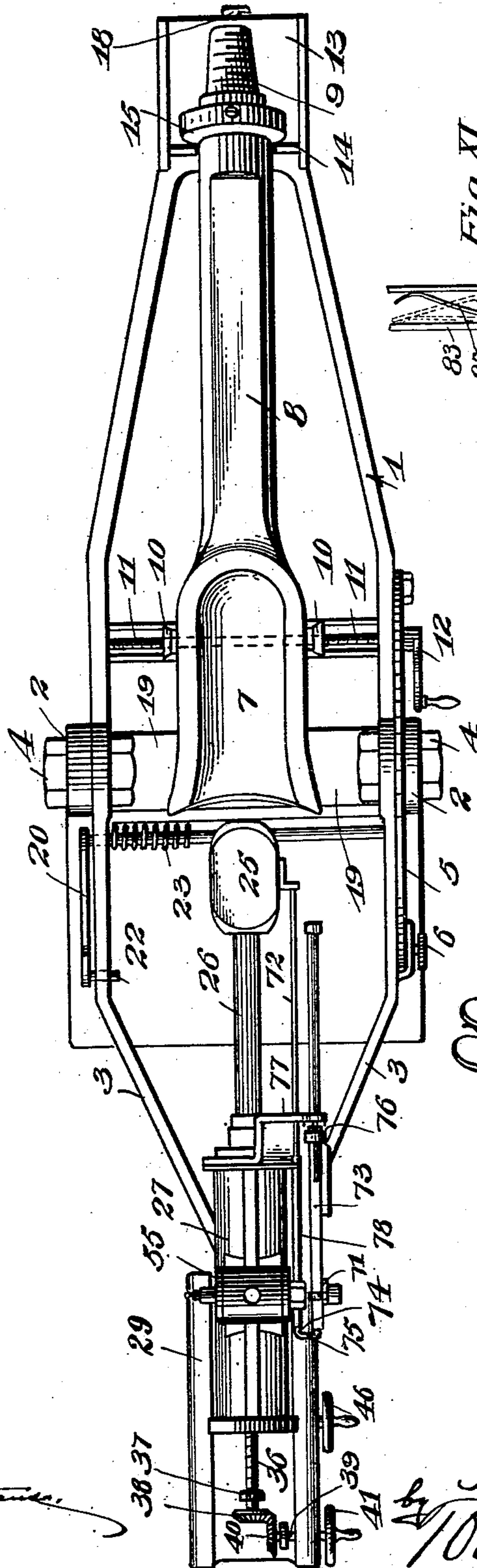


Fig. XI.

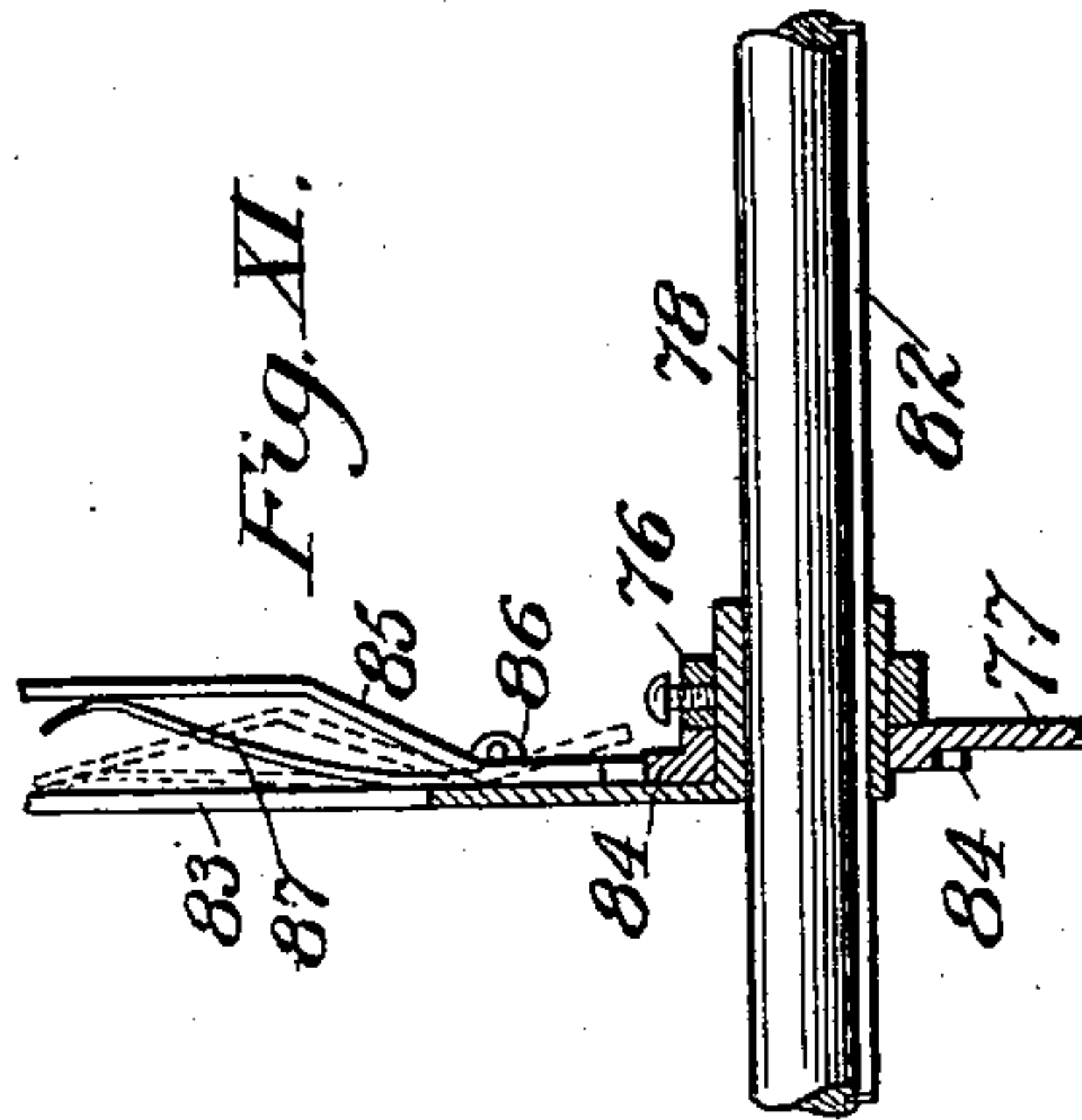
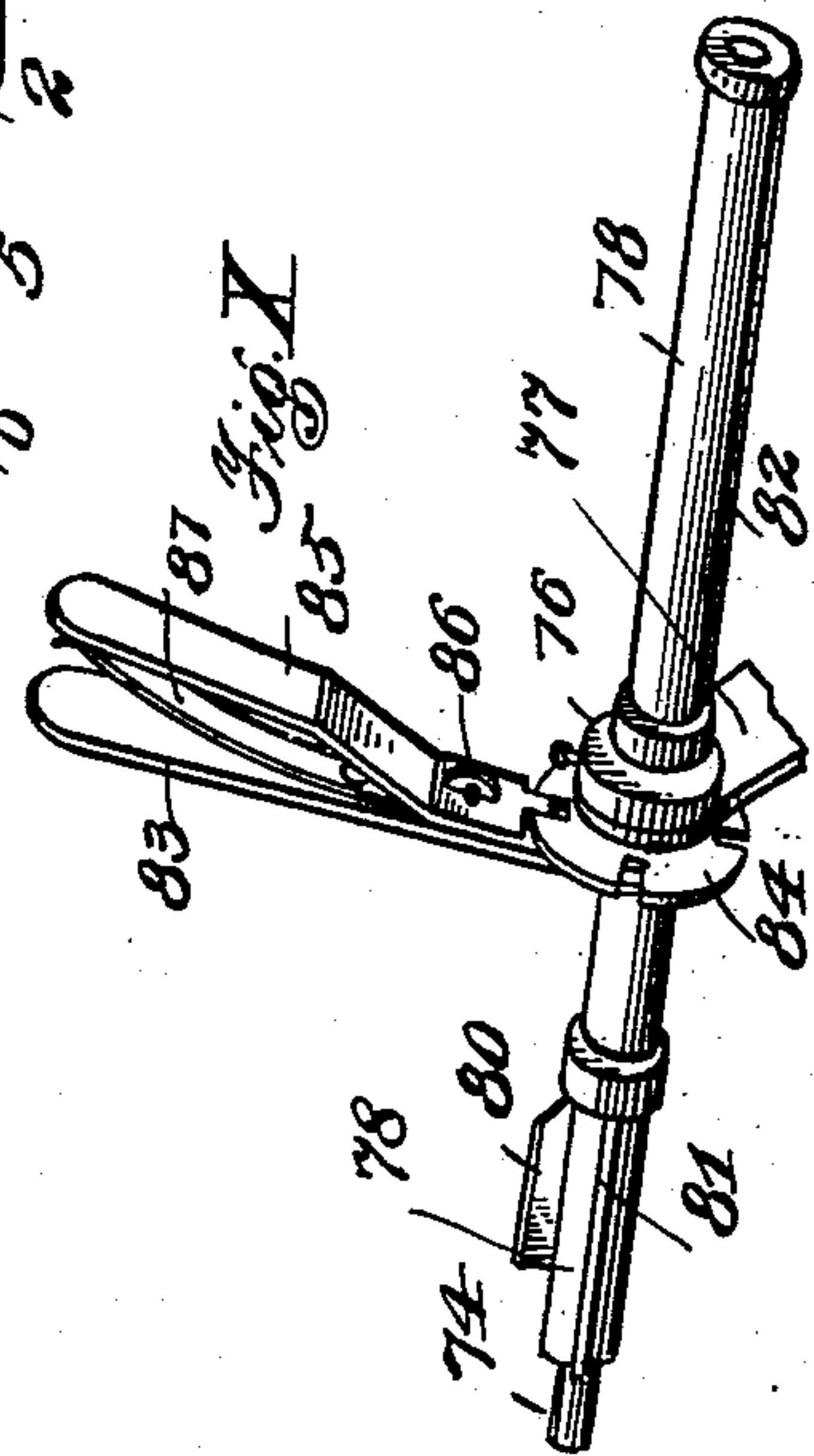


Fig. X



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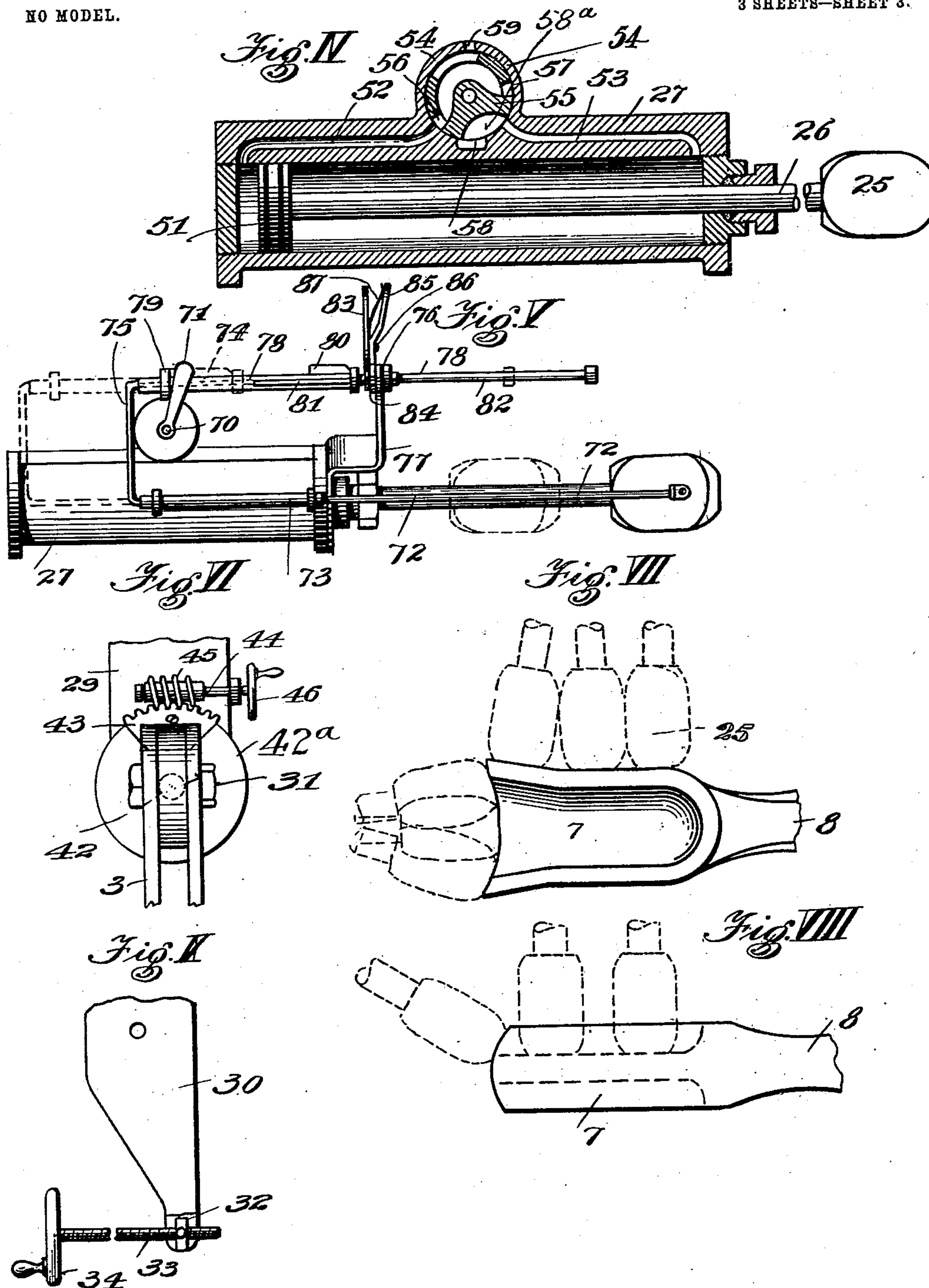
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TOOL DRESSER.

APPLICATION FILED AUG. 7, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JACOB S. BROWN, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO WILLIAM H. CLARK, OF FULLERTON, CALIFORNIA.

TOOL-DRESSER.

SPECIFICATION forming part of Letters Patent No. 750,941, dated February 2, 1904.

Application filed August 7, 1902. Serial No. 118,830. (No model.)

To all whom it may concern:

Be it known that I, JACOB S. BROWN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Tool-Dresser, of which the following is a specification.

My invention relates particularly to a machine for dressing tools—such, for instance, as bits and reamers—which are used in well-drilling apparatus, and has for its object to provide a machine whereby a tool or bit which has become worn, upset, or had its shape otherwise distorted may be dressed into any desired shape.

Another object of my invention is to provide a machine which is portable and which may be readily transported into the field of operations where bits are being used and which can be quickly set up and operated with facility, thus saving a great deal of expense in dressing the bits, as heretofore the dressing has been performed largely by hand at the scene of operations, owing to the inconvenience of sending the tools in from the field to be dressed.

Another object of my invention is to provide a machine which has a large range of action and which is adjustable to take in many shapes and sizes of tools.

Another object is to provide a device of the character described which is comparatively simple, compact, durable, and efficient.

Referring to the drawings, Figure I is an elevation of the complete machine. Fig. II is a plan with the machine arranged in another position. Fig. III is a detail, partly in section, of one of the bit-adjusting devices. Fig. IV is a sectional detail of the piston and valve. Fig. V is a detail of the valve-operating mechanism. Fig. VI is a detail of one of the adjusting devices for tilting the cylinder transversely. Fig. VII is a detail of a portion of a bit, the dotted lines showing various positions of the hammer. Fig. VIII is a view similar to Fig. VII with the bit or tool turned. Fig. IX is a detail of part of the adjusting mechanism. Fig. X is a detail of part of the

valve-operating mechanism. Fig. XI is a sectional detail view of the parts shown in Fig. X.

1 is a base which is provided with oppositely-arranged lugs 2.

3 is a yoke pivoted at 4 to the lugs 2.

5 is a segment which is attached to one side of the base 1 and which is concentric with the pivot 4. The yoke 3 may be rocked upon its pivot 4 and moved into various positions and held in suitable position by clamping it to the segment 5 by means of a clamping device 6.

7 is a head of a tool, such as a well-drilling bit, having a shank 8. The tool may be clamped upon the base 1 by means of clamping devices, one device preferably engaging the head 7 and another clamping device engaging the butt 9. The clamping device which engages the head 7 may comprise a pair of jaws 10, which are slidably mounted to move transversely of the base 1 and which are engaged by a right and left screw 11. The screw 11 may be actuated by means of a crank 12. The adjusting device which engages the butt of the tool may comprise a block 13, which is suitably fashioned to receive the tapered end of the butt, and a plate 14, which projects from the base and engages one side of a collar 15, which is clamped on the butt. The other side of the collar 15 bears against the block 13, and the latter is slidably mounted in the base 1 and may be moved longitudinally of the base by means of a screw 16, which passes through a threaded lug 17, projecting from the lower portion of the block 13. The screw 16 may be rotated by means of a crank 18, and the tool may thereby be advanced or retracted. The head of the tool may rest upon an anvil 19, which is mounted upon the upper face of the base 1. By turning the crank 12 the jaws 10 may be moved toward each other to squeeze the bit between them and hold the bit in a central position upon the anvil 19.

20 is an arm pivoted at 21 to the base. The upper end of the arm 20 is offset, as at 22, and rests behind and against the yoke 3. A coiled spring 23 may be connected to the arm 20 to hold the arm against the yoke, so that

the arm acts as a counterbalance and affords a yielding or flexible support for the yoke 3.

25 is a hammer which is carried by the shank 26. The end of the hammer may be slightly rounded, as shown.

27 is a cylinder provided with a way 28, which slides in a suitable groove in a head 29. The head 29 is mounted upon a bracket 30, which is pivoted at 31 to the upper end of the yoke 3. Pivoted to the lower end of the bracket 30 is a nut 32. (Shown in detail in Fig. IX.) A screw 33 may be rotatably mounted on the yoke 3, and one end of the screw may pass through the nut 32. The screw 33 may carry a hand-wheel 34, and by turning the hand-wheel 34 the screw 33 may be rotated and the bracket 30 rocked upon its pivot 31 into various positions. The nut 32 affords a flexible connection between the bracket and screw and allows the tilting of the bracket without cramping the screw.

Projecting from the back of the cylinder 27 is a threaded lug 35, (shown in dotted lines in Fig. I,) and passing through the lug 35 is a screw 36, which is rotatably mounted in a lug 37 on the head 29, the upper end of the screw 36 being provided with a bevel-gear 38.

39 is a shaft mounted in the head 29 and carries at one end a bevel-gear 40, which meshes with the bevel-gear 38. The outer end of the shaft 39 may carry a hand-wheel 41, so that the gear 40 may be rotated, and thereby the gear 38 and screw 36. When the screw 36 is rotated, the cylinder 27 is moved along the head 29.

The head 29 is pivotally connected to the bracket 30 by means of a bolt 42. (See Figs. I and VI.)

42^a is a disk-shaped bearing-plate on the bracket 30, upon which the head 29 swivels.

43 is a segmental gear rigidly attached to the bracket 30.

44 is a shaft rotatably mounted on the head 29 and carries a worm 45, which meshes with the segmental gear 43. The outer end of the shaft 44 may carry a hand-wheel 46. By rotating the hand-wheel 46 the head 29 may be rocked upon its pivot 42, the segmental gear 43 being stationary and the screw 45 traveling with the head 29.

The shank 26 may form a continuation of a piston-rod 50, which is carried by a piston 51, the piston being mounted inside the cylinder 27.

52 and 53 are passages leading from opposite ends of the cylinder to a valve-chest 54.

55 is a cylindrical valve provided with ports 56 and 57. The ports 56 and 57 are movable into register, respectively, with the passages 52 and 53 when the valve 55 is rocked.

58 is an exhaust-port.

58^a is a recess in the valve which brings the passages 52 and 53 alternately into communication with the exhaust-port 58.

59 is an inlet-port in the valve-chest 54.

In Fig. IV the valve 55 is shown as rocked into position, in which the port 56 is in communication with the passage 52, while the passage 53 is in communication with the exhaust-port 58. When in this position, steam may enter the cylinder through the passage 52 from the valve-chest 54.

The valve 55 has extending from it a shaft 70, and rigidly mounted on the shaft 70 is an arm 71.

72 is a rod which is slidably mounted in a sleeve 73, which sleeve is carried by the cylinder 27. One end of the rod 72 may be attached to the hammer 25, so that as the hammer reciprocates the rod 72 will likewise be moved. 74 is another rod rigidly connected to the rod 72 by a cross-bar 75. The rod 74 is slidably mounted in a suitable lug 76, which lug is connected with the cylinder by means of a bracket 77. (See Fig. II). Mounted upon the rod 74 is a sleeve 78, which is provided with a collar 79 and lateral wings 80 and 81. The sleeve 78 is provided with a spline 82.

83 is a handle which is rigidly attached to the sleeve 78 near the lug 76.

84 is a disk having a series of notches in its edge and is rigidly attached to the bracket 77 and concentric with the sleeve 78.

85 is a latch pivoted at 86 to the handle 83, and one end of the latch may engage with a notch in the disk 84. The latch 85 may be held normally in engagement with the disk 84 by means of a spring 87. By moving the latch 85 out of engagement with the notched disk 84 the sleeve 78 may be rotated upon the rod 74 and the wings 80 and 81 turned through arcs of about ninety degrees. When the rod 72 is reciprocated, the rod 74 is likewise moved and also the sleeve 78 and the collar 79 and one of the wings 80 or 81 brought into contact alternately with arm 71 at each end of a stroke and the valve 55 thereby rocked. In Fig. V the wing 81 is shown as being in position to have a path of movement which will bring it into engagement with the arm 71. When the hammer is retracted, the collar 79 is moved to the left, and the wing 81 toward the end of the stroke strikes against the arm 71, as shown in dotted lines, thereby throwing the valve 55. If it is desired to give a longer stroke to the hammer, the wing 80 may be brought into a position to engage the arm 71, and when such is the case the hammer will move farther back before the wing 80 strikes against the arm 71.

Fig. VII shows one position in which the tool may be placed when being dressed by the machine, and the dotted lines indicate several working positions which the hammer may have. Any of these positions shown and also intermediate positions may be obtained by manipulating the various parts of the machine. For instance, in dressing up the end of the

bit the yoke 3 may be dropped into the position shown in Fig. II, so that the hammer 25 will have a working stroke against the end of the bit. By manipulating the hand-wheel 46 the head 29 may be tilted, and thereby the cylinder 27, to bring the working stroke of the hammer at right angles to any point of the arc forming the face of the tool. In dressing the sides of the tool the yoke may be swung into an upright position, as shown in Fig. I, which will give the hammer a substantially vertical stroke, and the stroke of the hammer may be adjusted to conform to the slightly-rounded side of the bit by rotating the hand-wheel 34, which rocks the head 29 and attached parts upon the pivot 31. By rotating the hand-wheel 41 the hammer may be advanced or retracted from its work, thereby securing a hard or light blow, as desired. In dressing the ends of the bit, so as to secure the proper clearance, by suitably adjusting the yoke the hammer may be given the inclination shown in Fig. VII and the upper half of the bit dressed. When it is desired to dress the other half of the bit, the bit may be turned over and the other half finished.

If desired, the weight of the yoke and attached parts may be counterbalanced by means of a cable 90, which may be attached at 91 and which may pass over a block 92 and carry a weight 93.

It is evident that many variations may be made in the herein-described embodiment without departing from the spirit of my invention.

I claim—

1. The combination of a base, means for holding a tool to said base embracing a clamping device connected to the base, a hammer, means for carrying the hammer embracing a yoke connected to the base and a head connected to the yoke by means allowing the head to be tilted in two planes at right angles to each other and to the yoke, and means for reciprocating the hammer.

2. The combination of a base, means for holding a tool on said base, a yoke pivoted on said base, a bracket pivoted to said yoke, a head swiveled transversely on said bracket, a hammer, and means for reciprocating the hammer, said means being carried by the head.

3. The combination of a base, means for holding a tool on said base, a yoke pivoted to said base, a segment rigidly attached to said base, a clamping device carried by the yoke and engaging said segment, a hammer, means carrying said hammer connected to the yoke, means for actuating the hammer, and means for tilting the hammer-carrying means transversely of the yoke and for moving said hammer-carrying means longitudinally of said yoke.

4. The combination of a base; means for holding a tool on said base, a yoke pivoted to

said base, means for adjusting said yoke relatively to said base, a reciprocatory hammer, means slidably supporting said hammer and connected to said yoke, means for reciprocating the hammer, and means for varying the length of stroke of the hammer.

5. The combination of a base, means for holding a tool on said base, a yoke pivoted to said base, a bracket pivoted to said yoke, means for adjusting said bracket relatively to said yoke, a hammer, means for carrying said hammer connected to said bracket, and means for actuating the hammer.

6. The combination of a base, means for holding a tool on said base, a yoke pivoted to said base, a bracket pivoted to said yoke, a nut connected to said bracket, a screw rotatably mounted on said yoke and engaging said nut, a hammer, means for carrying said hammer connected to said bracket, and means for actuating said hammer.

7. The combination of a base, means for holding a tool on said base, a yoke pivoted to said base, a bracket connected to said yoke, a head mounted on said bracket, a cylinder slidably mounted on said head, means for moving said cylinder along said head, a hammer, and means coöperating with said cylinder for actuating the hammer.

8. The combination of a base, means for adjustably holding a tool on said base, a yoke connected to the base, a head, means connecting said head and yoke, means for tilting said head in two different planes relatively to the yoke, a hammer, and means for actuating said hammer said actuating means being connected to said head.

9. The combination of a base, means for holding a tool on said base, a yoke pivoted to said base, a bracket pivoted to said yoke, a head swiveled on said bracket, a segmental gear carried by said bracket, a worm carried by said head and meshing with said segmental gear, a hammer, means for carrying said hammer connected with said head, and means for actuating said hammer.

10. The combination of a base, means for holding a tool on said base, a yoke connected to said base, a head connected with said yoke, a cylinder slidably mounted in said head, a screw rotatably mounted on said head, means on said cylinder engaging said screw, a hammer, means for rotating said screw, and means mounted in the cylinder for actuating said hammer.

11. The combination of a base, an anvil on said base, a pair of jaws slidably mounted in said base near the anvil, means for moving said jaws, a movable block slidably mounted in said base transversely of the path of movement of said jaws, said block having a semi-conical recess, a guard-plate mounted on said block and beyond one end of the block, a screw revolubly mounted on said base, means con-

nected to said block engaging said screw, a hammer, means for carrying said hammer connected to said base, and means for actuating said hammer.

5 In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the

county of Los Angeles and State of California, this 30th day of July, 1902.

JACOB S. BROWN.

Witnesses:

G. T. HACKLEY,
JAMES R. TOWNSEND.