

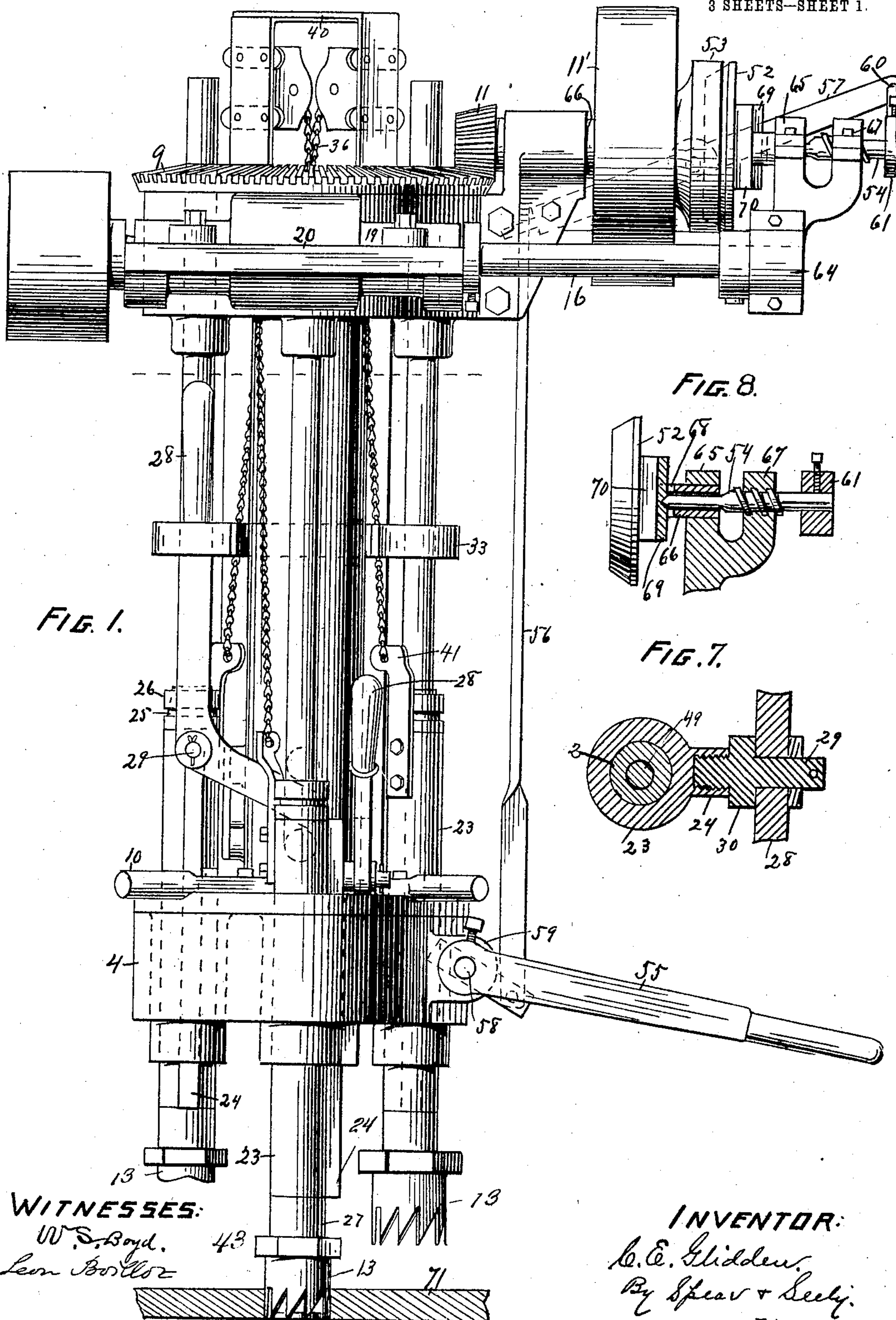
No. 832,546.

PATENTED OCT. 2, 1906.

C. E. GLIDDEN.
MACHINE FOR MANUFACTURING LUMBER.

APPLICATION FILED AUG. 17, 1905.

3 SHEETS—SHEET 1.



WITNESSES:
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Leon Bollor

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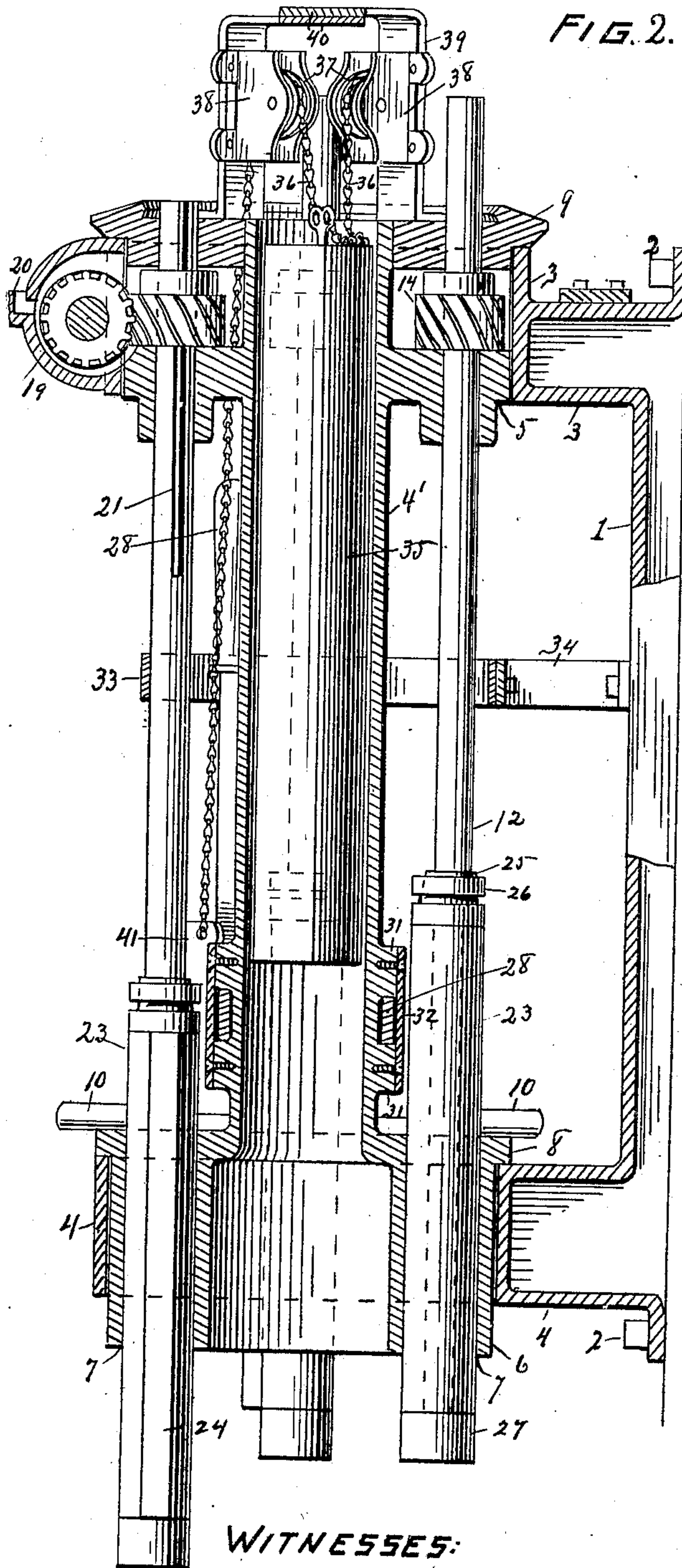
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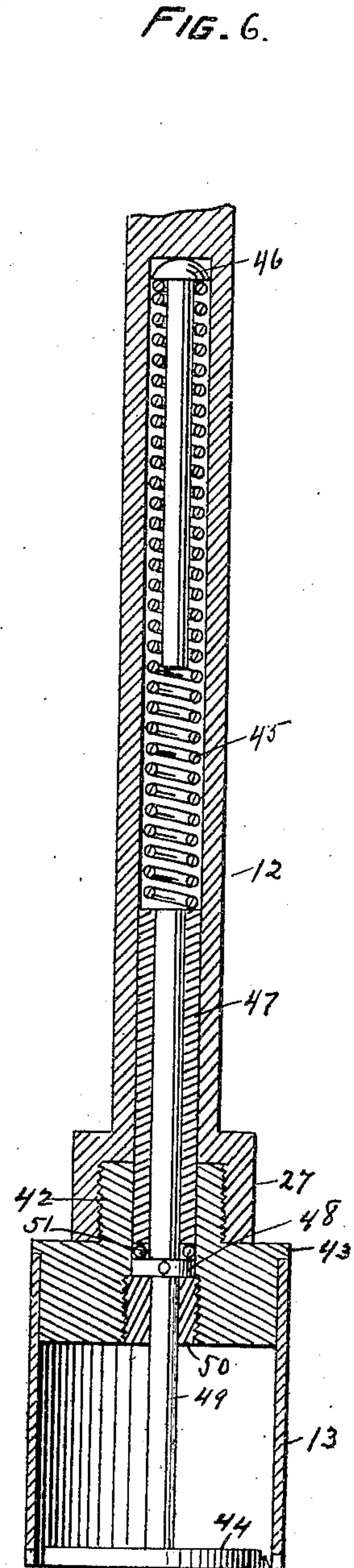
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3 SHEETS—SHEET 2.



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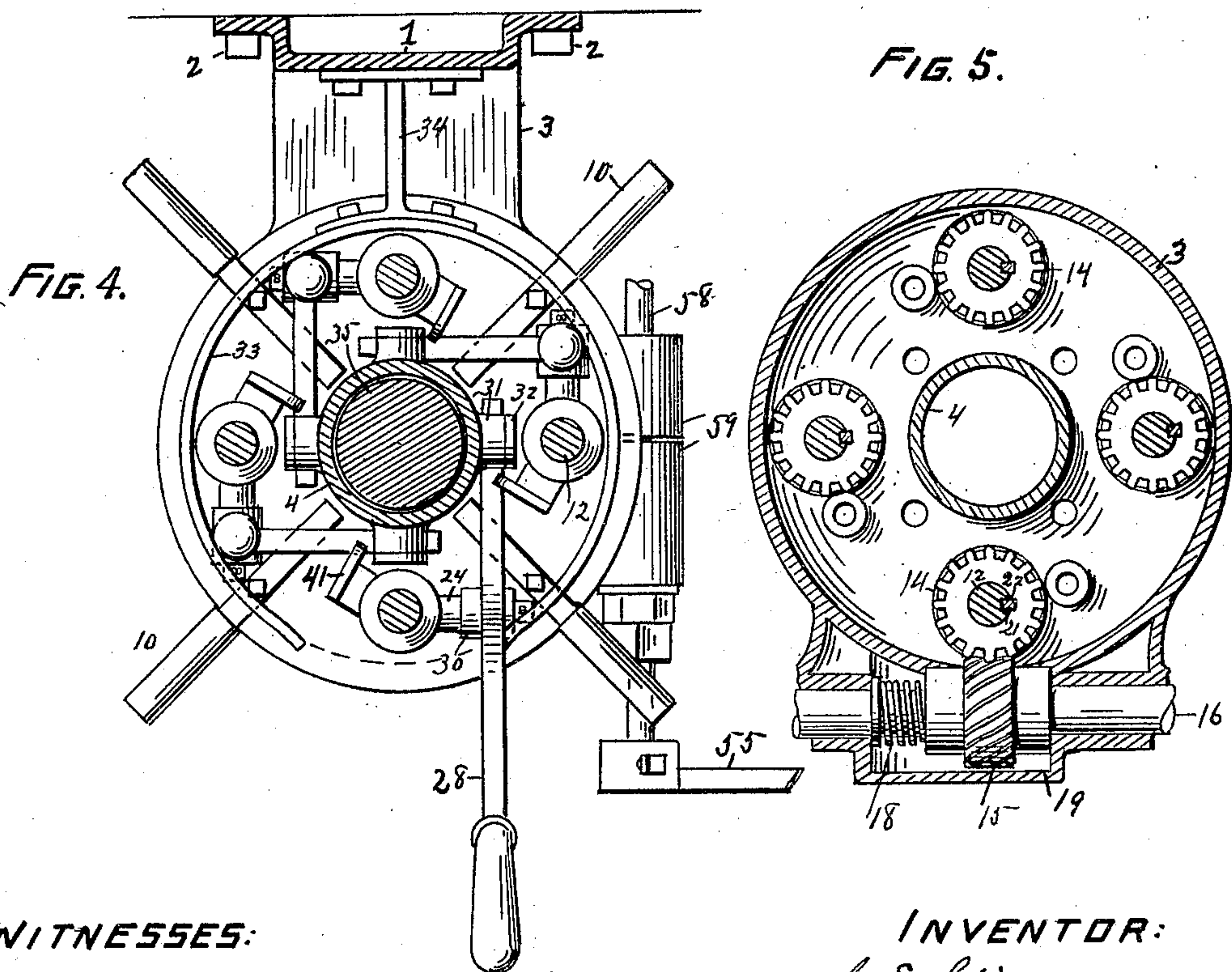
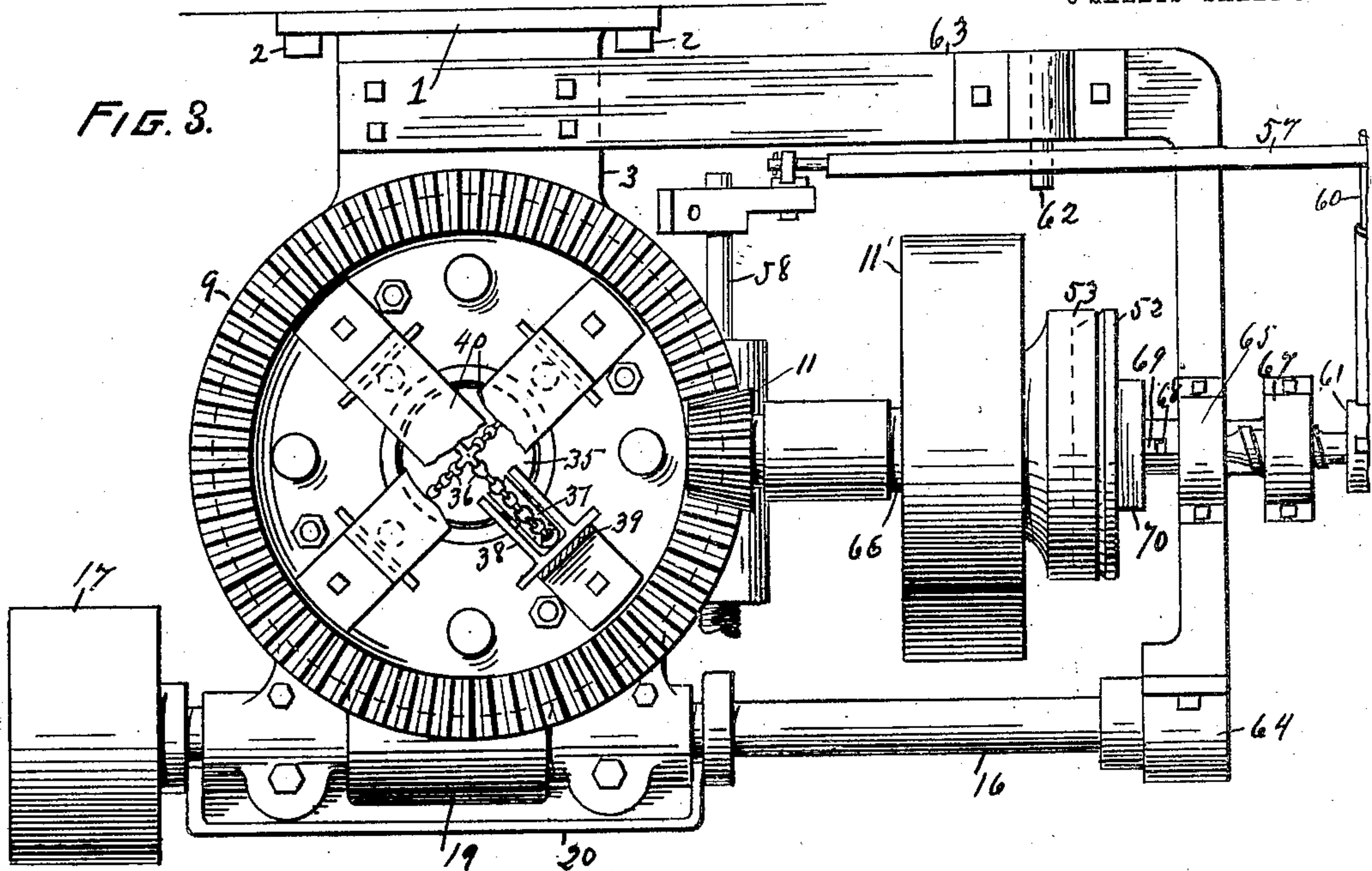
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES EDWARD GLIDDEN, OF SISSON, CALIFORNIA.

MACHINE FOR MANUFACTURING LUMBER.

No. 832,546.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed August 17, 1905. Serial No. 274,615.

To all whom it may concern:

Be it known that I, CHARLES EDWARD GLIDDEN, a citizen of the United States, residing at Sisson, in the county of Siskiyou and State of California, have invented certain new and useful Improvements in Machines for Manufacturing Lumber, of which the following is a specification.

In the manufacture of lumber or of different articles therefrom—as boxes, &c.—it frequently happens that a defect of some kind, as a knot or decayed portion, may cause the loss of a large piece of the material owing to the necessity of throwing away the entire width of the board for the length of the defect, and where the defect occurs substantially at the center of the piece being cut to some desired length at least half of that length must be thrown away. To avoid this waste without detracting from the efficiency and durability of the board, I have devised a machine by which one or more preferably circular portions of the board large enough to include the defect can be cut out and similar number of corresponding portions of a sound piece of material can be inserted and secured therein, thus rendering the defective piece as useful for boxes and many other purposes as though it had never been defective. The process of manufacturing lumber in this manner is preferably performed by the mechanism that will be hereinafter more particularly described and claimed, and also illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a vertical central section. Fig. 3 is a broken top plan. Fig. 4 is a transverse section on line 4 4 of Fig. 2, some of the parts being broken away. Fig. 5 is a broken horizontal section through a portion of the driving mechanism. Fig. 6 is an enlarged longitudinal sectional view of the lower portion of the spindles. Fig. 7 is a similar transverse sectional view through the same with its supporting mechanism. Fig. 8 is a broken sectional view through part of the clutch-operating mechanism.

Referring more particularly to the drawings, 1 indicates a support or bracket which may be secured to a wall or other support in any desired manner, as by screws 2. Two arms 3 and 4 project from the upper and lower ends, respectively, of the bracket, the

outer ends of which are provided with large circular openings in alinement and in which is rotatably mounted a cylindrical drum-carrier 4'. The ends of the drum are provided with extensions 5 and 6 to fit their respective openings in the bracket-arms and are each provided with a plurality of holes or openings 7, four being shown in the drawings. The lower extension 6 is preferably provided with a flange 8, which rests upon its arm to partially help support the drum and its accessories, and a gear-wheel 9 is secured to the extreme upper end of the drum and rests upon its arm to assist in supporting the drum. The drum may be rotated by means of handles 10 at the lower end or by a pinion 11 at the upper end, which meshes with the gear-wheel 9 and which is driven from a source of power (not shown) through a pulley 11'.

Journaled vertically through the openings 7 are shafts or spindles 12, which are adapted to carry a series of different-sized circular cutters 13 at their lower ends and a gear-pinion 14 at their upper ends. The gear 14 is preferably provided with spiral teeth, which are engaged by corresponding teeth on a pinion 15 on the shaft 16, which is driven from any source of power (not shown) through the pulley 17. The pinion 15 is preferably slidably mounted on its shaft, so as to yield sufficiently to permit of pinion 14 being moved into position with the rotation of the drum until its teeth registers with those of pinion 15 when pinion 15 is forced back into its normal position by a spring 18. The boxing in which the shaft 16 is journaled is preferably formed or provided with a casing 19 to protect the spiral gear from dust and to furnish an abundant supply of oil to prevent excessive wear. The wheel 9 and the extension 5 also form a housing to exclude dust from all the gears. The outer edge of the lower portion of the casing is preferably extended to form a lip 20 for an oil-reservoir.

The upper end of each spindle is provided with a key-seat 21, with which a key 22 in its respective pinion 14 engages to permit of the spindle being moved longitudinally while it is being rotated. The lower end preferably passes through a long tube 23, which forms an extended bearing in the openings 7 in the lower extension 6. The tube is held against rotation by means of a fin or projection 24, which fits in a corresponding recess in the

side of the opening, and the spindle is kept from dropping through the tube by means of ordinary tapering split ring 25 and clamping-screw 26 and is kept from being forced upward through it by means of an enlargement or collar 27 at its lower end.

Each tube is moved vertically to bring the cutter at the lower end of the spindle into its operative position by means of a lever 28, which is pivotally secured to its upper end, preferably upon the fin 24. The pivot consists of a pin 29, which is provided with screw-threads at its inner end, a key at its outer end, and a collar or shoulder 30 on its intermediate portion, the lever and a washer being mounted between the collar and the key. The inner end of the lever fits loosely or longitudinally movable between two bosses 31 on the side of the drum 4 and a plate 32 thereon, while the outer end is adapted to be raised and held in that position by a ring or circular clamp 33, which is held axially in alinement with the drum by a support 34, which projects outward from the base of the bracket 1. One side of the ring is open at the point where it is desired to lower the handle or lever for operating the cutter.

The tubes and spindles are returned to their normal positions by means of a counter-balance 35, which fits within the drum 4' and is common to all of the tubes and is connected therewith by means of chains 36. Each of the chains passes over a pulley 37, mounted above the drum in arms 38, which project inward from a support or standard 39, which is secured to the upper face of the gear-wheel 9. The standards can be arranged in pairs and connected at their upper ends by cross-bars 40, which are arranged one above the other, as shown in Figs. 1 and 2. The lower ends of the chains are preferably connected with their respective tubes by means of flat strips 41, which are bolted in position with their upper ends extending above the tubes and perforated for the reception of the chains. In this manner the counterweight needs only to be heavy enough for one tube and spindle, for while it is being used for them the other tubes and spindles are held in their elevated positions by the engagement of the handles 28 with the clamps 33, and the chains 36 will lie slack when the counterweight is drawn up, as shown in Fig. 2.

The saws or cutters are secured to the lower ends of the spindles in any suitable manner, preferably by means of a hub 42, which is screw-threaded and provided with the usual shouldered flange 43. Located within each cutter is a presser or follower 44, which is yieldingly held in engagement with the portion of the material being severed by a spring 45 in the hollow portion of the spindle. As it is desirable that the follower remain stationary or non-rotatable to prevent its friction with the board, a button 46 is

preferably placed between the upper end of the spring and the bottom of the socket or hollow within the spindle and a sleeve 47 between its lower end and a shoulder, as a collar 48, on the stem 49 of the follower. The stem projects up through the hub of the cutter and a hollow plug 50, which engages with the under side of the collar 48 and holds the stem and follower from being forced outward by the spring. Balls 51 are preferably seated between the end of the sleeve and the collar to prevent the friction between them.

When it is desired to rotate the drum through the gear and pinion at the upper end, a tapering or cone-shaped clutch member 52 is thrown into engagement with a socket member 53 of the pulley 11' on the shaft of the pinion 11 by means of a screw-threaded push-rod 54. The rod is partially rotated by means of a handle 55, a connecting-rod 56, and a lever 57. The handle and the rod 56 are connected with the opposite ends of a rock-shaft 58, mounted in bearings 59 at one side of the lower arm 4, and the lever is connected with the free end of a pin or projection 60, which is connected with the push-rod 54 in any suitable manner, as by a collar 61. The pivot or fulcrum of the lever consists of a pin 62, which projects inward from the side of a frame 63, which is secured to the arm 3 at one end and is provided with bearings 64 and 65 for the shafts 16 and 66, respectively, at the other. The rod 54 is mounted in a screw-threaded bearing 67, which is preferably connected with the bearing 65 and is in alinement with the end of the shaft 66.

The end of the shaft 66 is hollow for a short distance and provided with a transverse slot 68, which intersects the inner end of the hollow. A pin or short bar 69 projects through the slot in the shaft and engages with a projection 70 on one side of the clutch member 52 to force it into engagement with the other member when the push-rod is rotated, and its inner end, which projects into the hollow of the shaft, is forced into engagement with the pin and forces it over. The pitch of the screw-threads upon the push-rod is sufficient to operate the clutch when the rod is given a partial rotation, and the taper of the clutch members is sufficient to cause them to be disengaged as soon as the pressure is removed by the reverse rotation or withdrawal of the push-rod.

In using the machine as above described the piece of material to be operated upon, as a board, (shown at 71 in Fig. 1,) is placed upon a suitable support (not shown) below the group or battery of cutters, and the drum is rotated until a cutter of the desired size is brought to the front or into operative position with its handle or lever opposite the open space in the guard-ring. The attendant then lowers the cutter and applies sufficient power to force the cutter through the

board, after which the handle is raised and the block of severed material is forced out of the cutter by the spring in the spindle which was compressed during the cutting operation.

5 After the defective portions have been removed in this manner pieces of exactly the same size, which have previously been cut from sound material and preferably glued, are inserted and, if desired, the surface of the
10 board dressed or planed in the usual manner, when it is ready for use. In case the defect is too large to be removed by one operation, two or more cuts can be made, each hole being preferably filled before the next one is
15 made, so that if the edge of the cutter should overlap the edge of the other hole it will remove enough of the plug therein to permit of the insertion of a plug in the hole last made, thereby leaving a perfect piece of material
20 with the last operation. In this manner a great saving can be effected in the manufacture of boxes and other articles, as the waste material which must be rejected and thrown away on account of knots and other defects
25 can be utilized the same as though it were perfect.

The machine is small and can be secured to the wall or other support where it will occupy but little room and yet be convenient for use.
30 It requires no particular skill to operate, as all that is necessary is to rotate the drum until the desired cutter is in position, which can be done manually by the projecting handles or mechanically by throwing the clutch into
35 operation by the lever mounted at the bottom of the machine, after which the operating-handles can be swung down from and up into position in the retaining-clamp.

Having described my invention, I claim—

40 1. In a machine for manufacturing lumber, a bracket provided with an arm at each end, each arm being provided with a circular opening, a carrier, each end of which is provided with a perforated enlargement to fit
45 the openings in its respective arm and the lower enlargement is provided with a flange for resting on its arm, a gear-wheel at the upper end for resting on that arm and forming a housing, a vertically-movable spindle in the
50 registering perforations of said extensions, a hollow cylindrical cutter at the lower end and a pinion at the upper end of each spindle, said pinions being in said housing, a pinion for engaging with the gear-wheel to rotate
55 the carrier and bring any spindle to a desired position, and a pinion for engaging with the spindle-pinion and rotating it when in that position.

2. In a machine for manufacturing lumber,
60 a bracket having arms, the outer end of each of which is provided with an opening, a shaft journaled in the upper arm, a spiral-toothed pinion slidably mounted on said shaft, a spring at one side of said pinion, a carrier rotatably mounted in the openings in said arm,

a plurality of spindles mounted in the carrier, the lower end of each of which is provided with a cylindrical cutter, a spiral gear at the upper end, means for rotating the carrier to bring the pinion at its upper end into engage- 70 ment with the actuation spiral pinion on the side opposite said spring, and means for moving the spindle vertically while in said position.

3. In a machine for manufacturing lumber, 75 a rotatably-mounted carrier, the ends of which are provided with perforated extensions, a longitudinally-movable, non-rotatable tube in each perforation of the lower extension, a longitudinally-movable spindle in 80 each tube and the registering perforation in the other extension, a collar on the spindle at each end of the tube, a cylindrical cutter in the lower end of the spindle and means at the upper end for rotating it, and a handle con- 85 nected with each tube for moving it longitudinally.

4. In a machine for manufacturing lumber, a rotatably-mounted carrier provided with perforated extensions at its ends, a longitudi- 90 nally-movable tube in each perforation of the lower flange provided with a pin, a spindle in each tube and in the registering perforation in the upper extension, a cutter at the lower end of the spindle and means at the upper 95 end for rotating it, a handle pivotally mounted on the upper end of each pin, the inner end of which is movably supported by the intermediate portion of the carrier and the outer end is movable to and from a vertical 100 position, and means for simultaneously holding all of said handles except one in a vertical position.

5. In a machine for manufacturing lumber, a rotatably-mounted carrier, the intermediate 105 portion of which is provided with bosses, longitudinally-movable tubes mounted in the carrier, a handle pivotally secured to each tube, the inner end of which fits movably between said bosses, and means for locking the 110 outer ends of the handles in a vertical position.

6. In a machine for manufacturing lumber, a rotatably-mounted hollow carrier, a plural- 115 ity of vertically-movable tubes in the carrier, a spindle in each tube, a plate on the upper end of each tube, a pulley above each tube, a counterweight in said hollow, a chain from each plate over its respective pulley and secured to the counterweight, and means for 120 moving the tube and spindle downward against the action of the counterweight.

7. In a machine for manufacturing lumber, a rotatably-mounted carrier, a plurality of spindles mounted therein, the lower end of 125 each of which is hollow, a cylindrical saw at the lower end of each spindle, the hub of which is perforated, a perforated plug in said hub, a follower within each saw, the stem of which projects through said plug and hub 130

and into the hollow of the spindle, a collar
on the stem above the hub, balls thereon, a
sleeve on the balls, a spring in engagement
with the upper end of the sleeve, and a but-
5 ton between the other end of the spring and
the bottom of the hollow in the spindle.

In testimony whereof I affix my signature,

in presence of two witnesses, this 22d day of
July, 1905.

CHARLES EDWARD GLIDDEN.

Witnesses:

M. R. SEELY,
W. S. BOYD.