

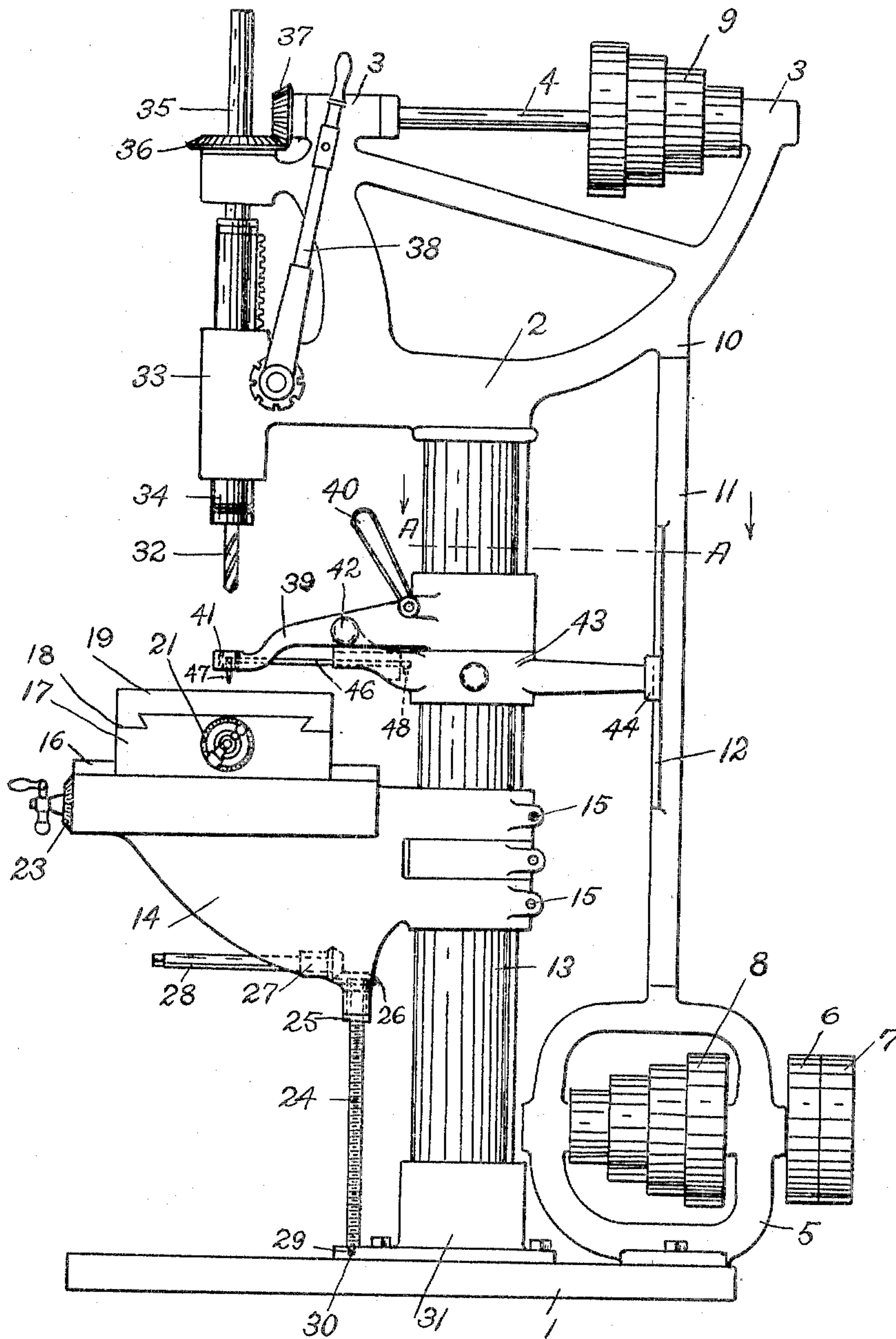
No. 793,901.

PATENTED JULY 4, 1905.

H. F. NOYES.
DRILL PRESS.

APPLICATION FILED AUG. 24, 1904.

4 SHEETS—SHEET 1.



WITNESSES

FIG. 1.

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4 SHEETS—SHEET 2.

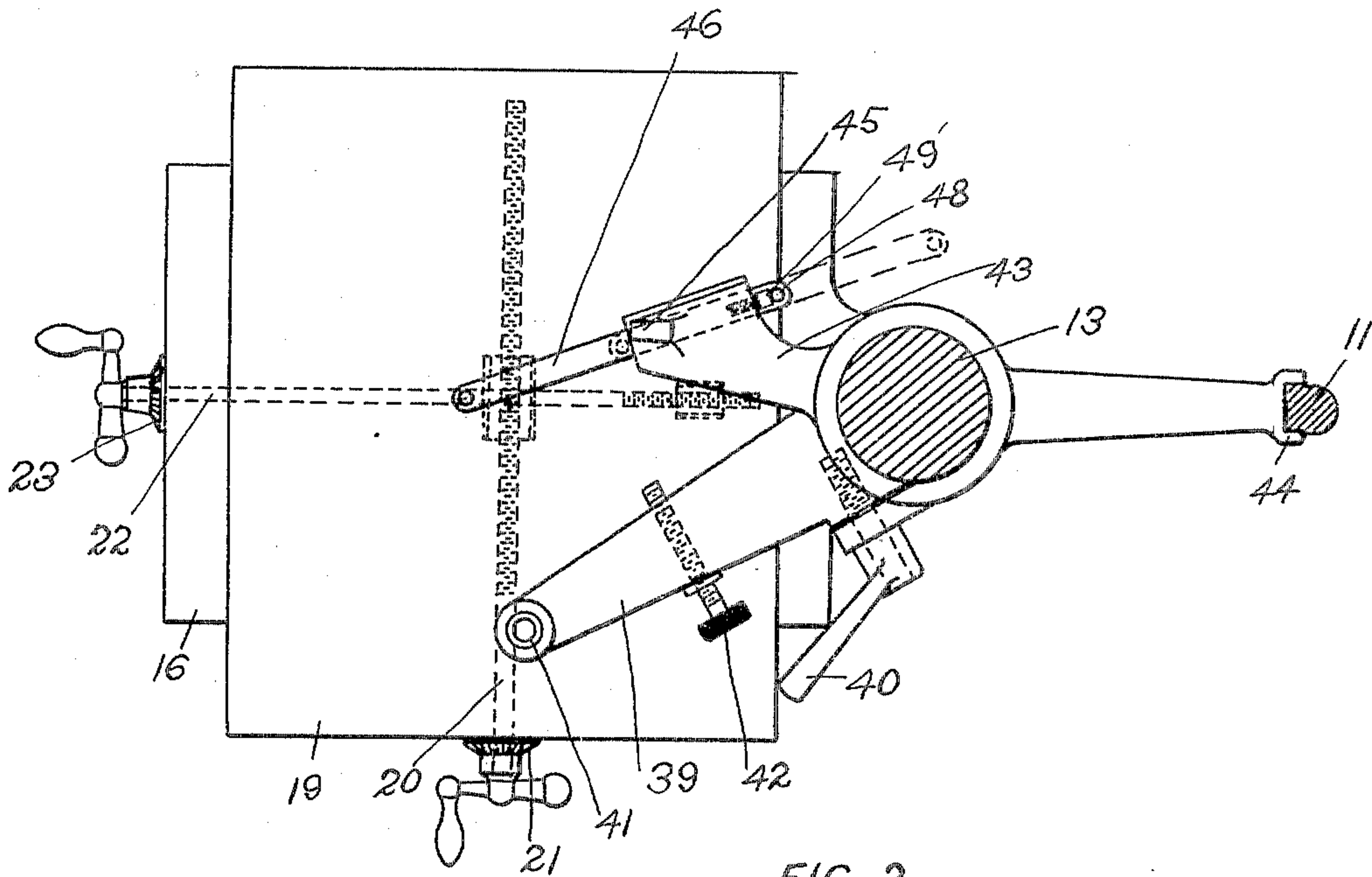


FIG. 2.

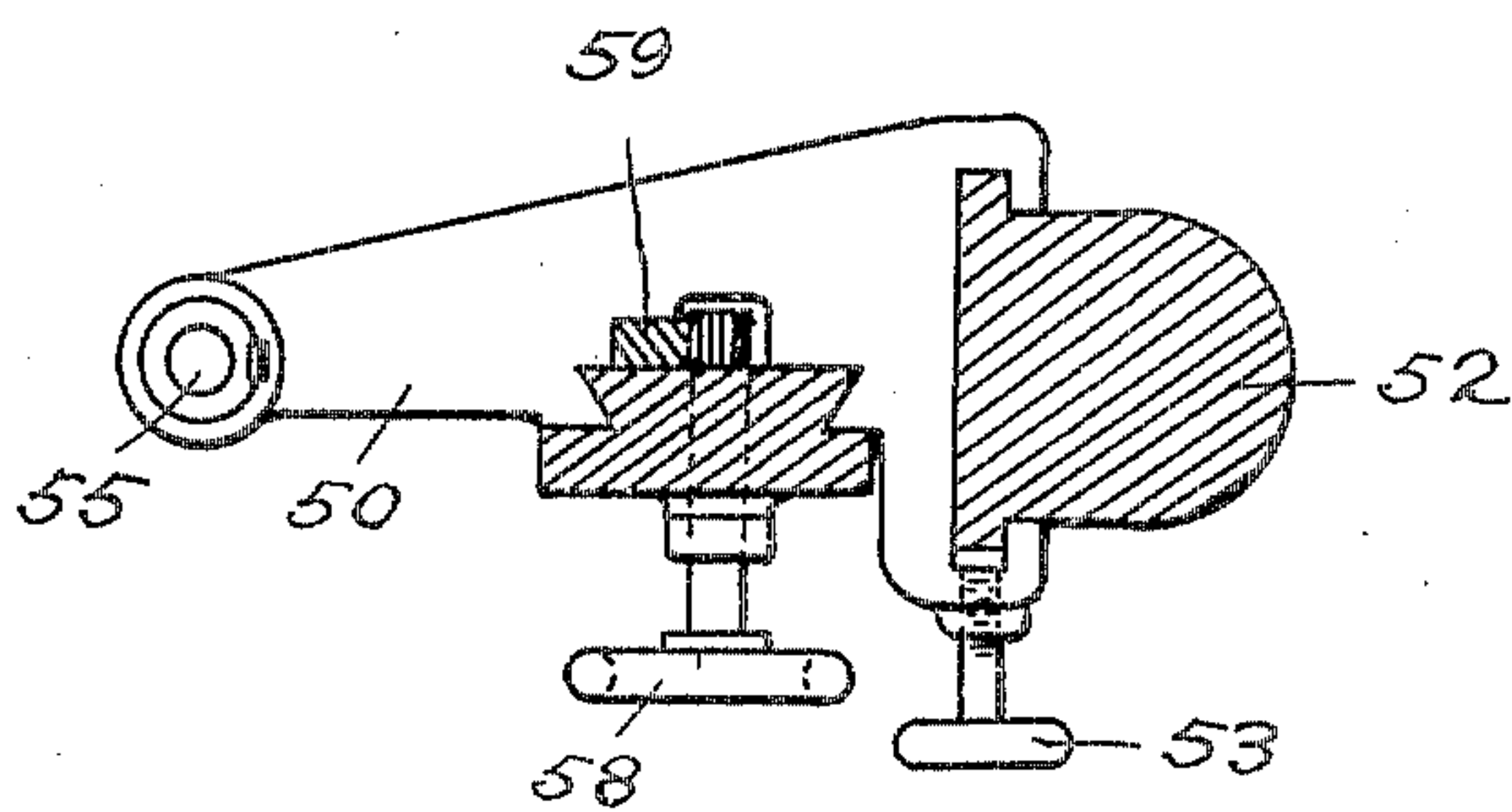


FIG. 4.

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4 SHEETS—SHEET 3.

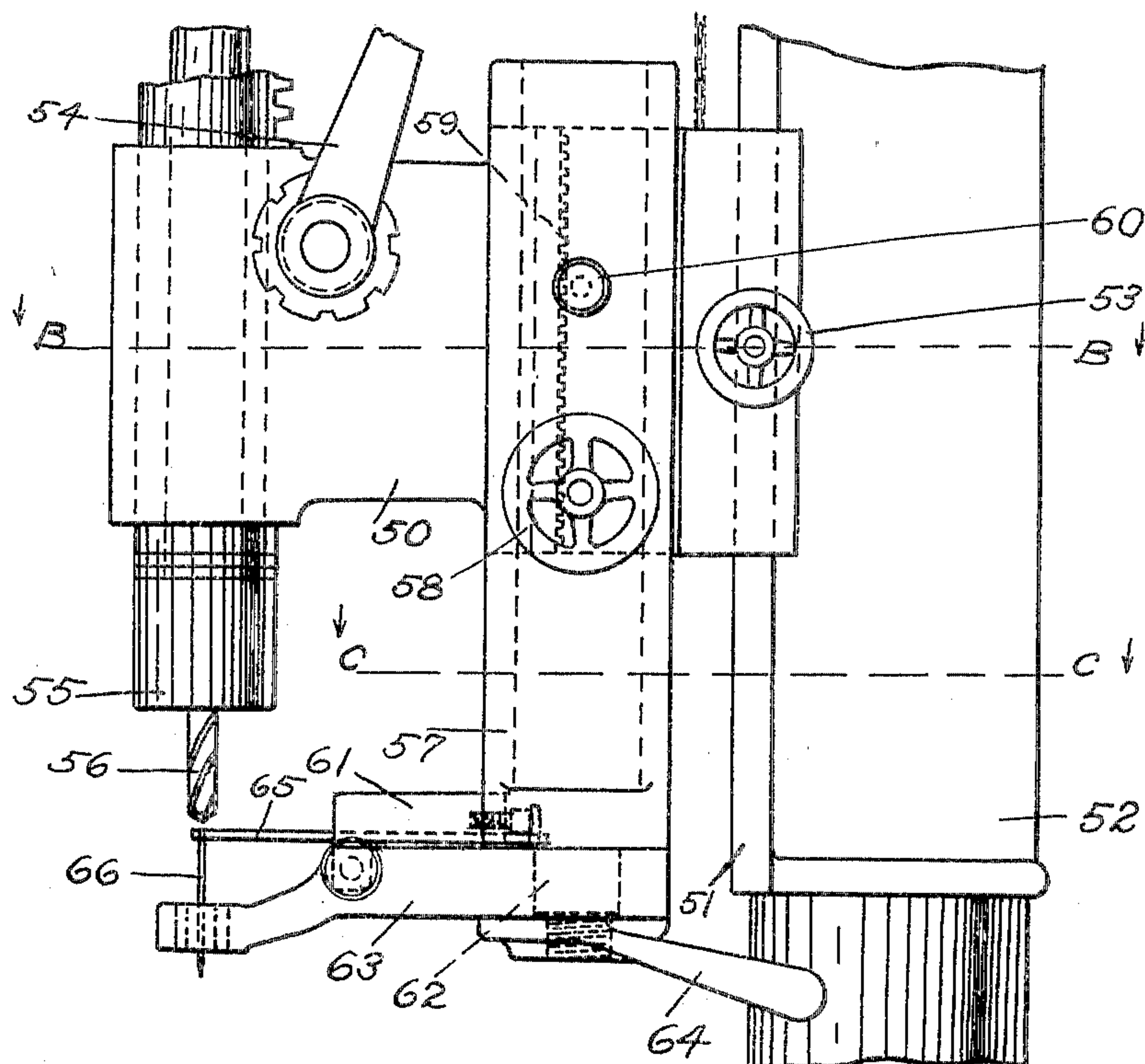


FIG. 3.

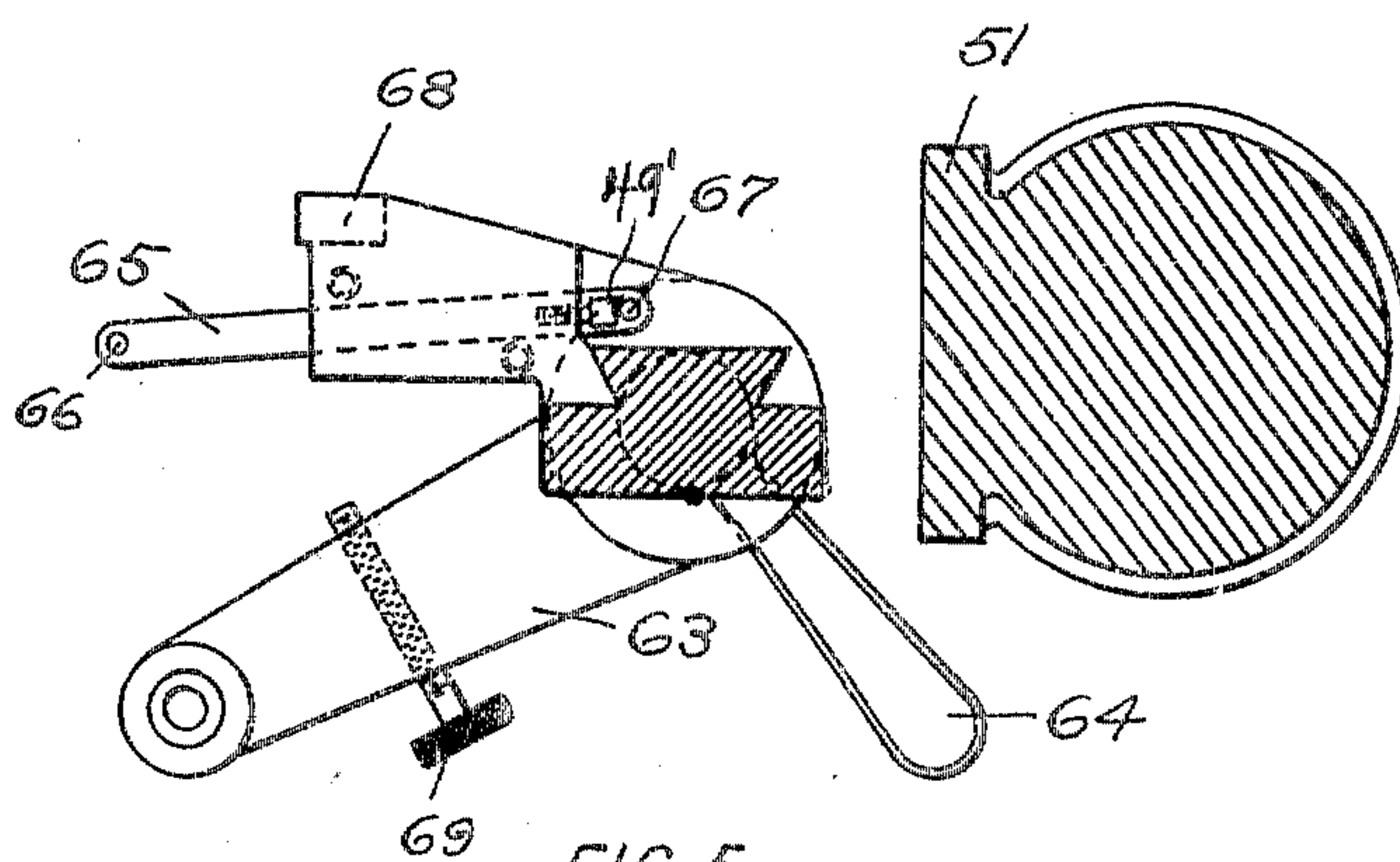


FIG. 5.

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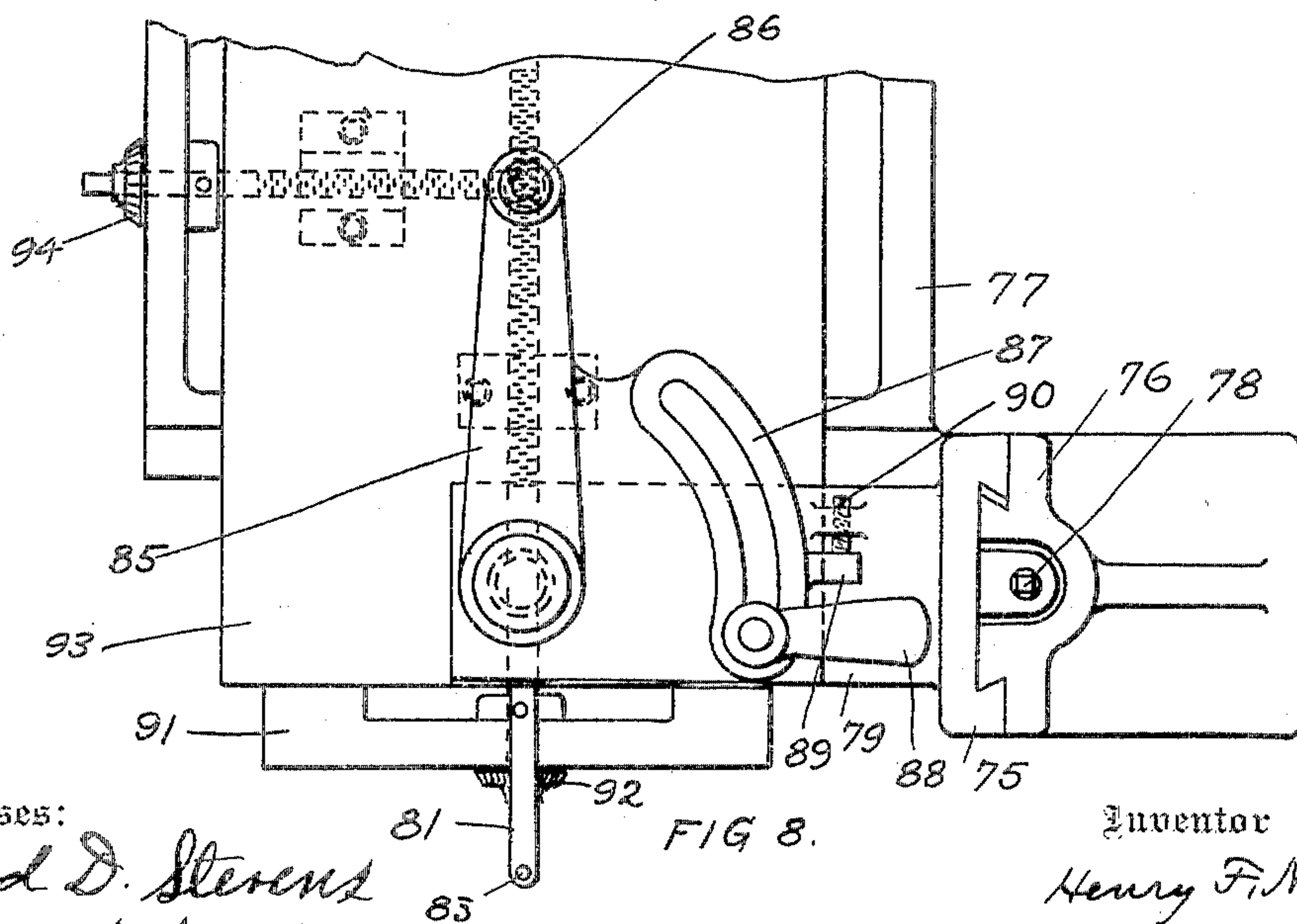
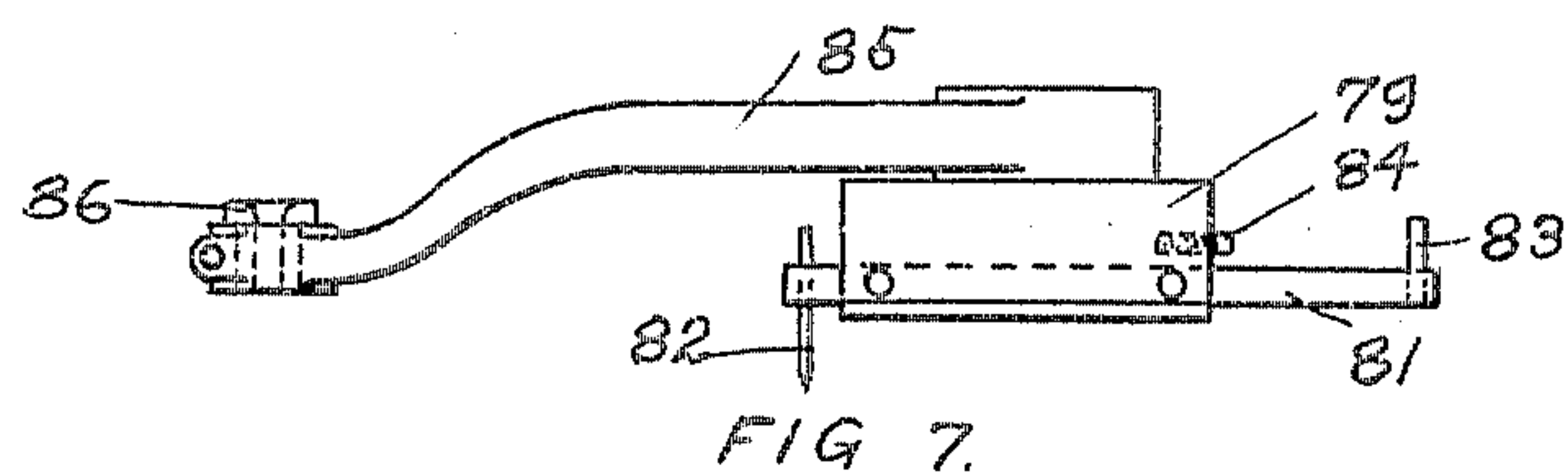
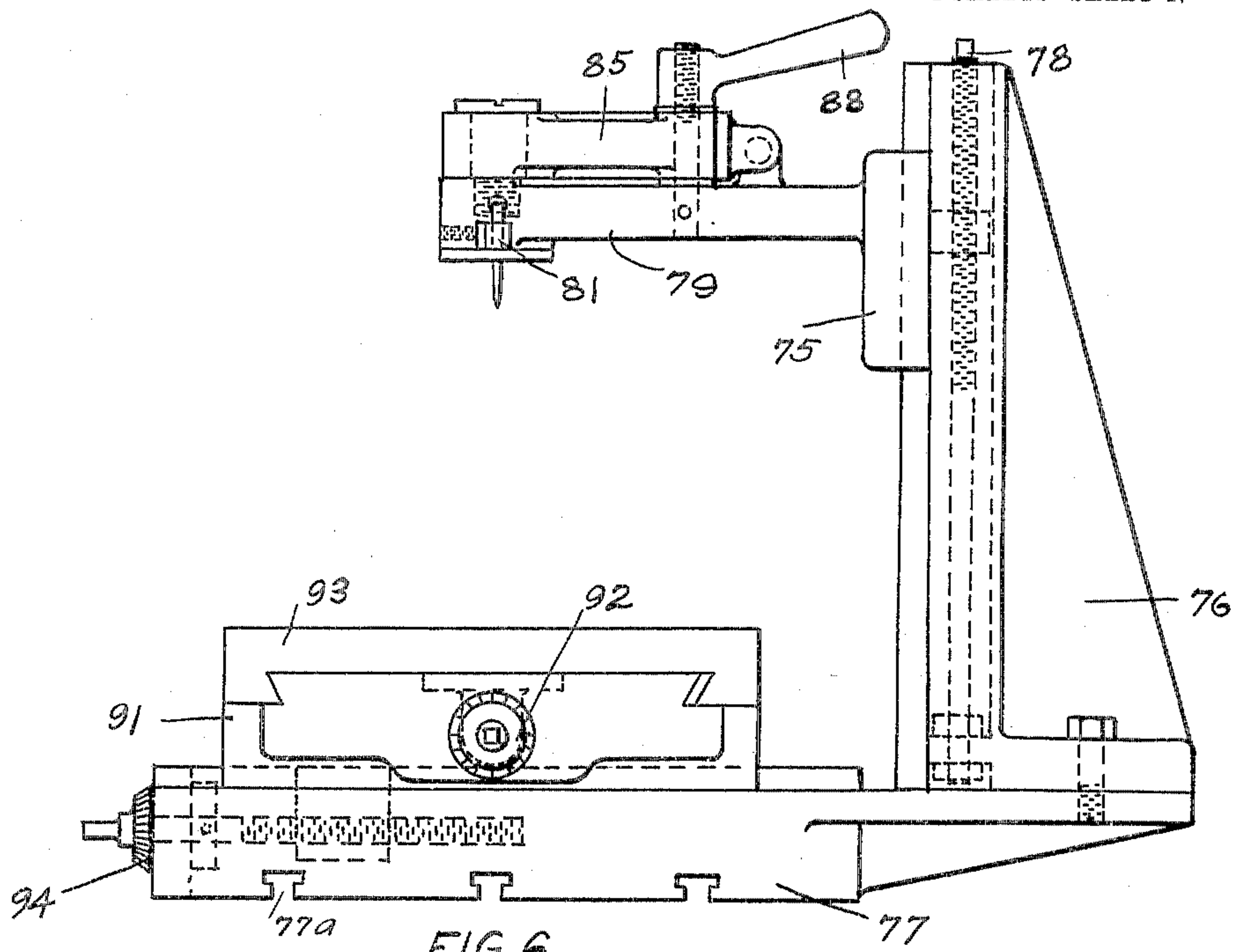
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UNITED STATES PATENT OFFICE.

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DRILL-PRESS.

SPECIFICATION forming part of Letters Patent No. 793,901, dated July 4, 1905.

Application filed August 24, 1904. Serial No. 221,974.

To all whom it may concern:

Be it known that I, HENRY F. NOYES, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented a new and useful Improvement in Drill-Presses, of which the following is a specification.

In the use of drill-presses of whatever character whenever it is desired to drill a hole accurately in a particular location without the use of a "jig" or structure specially made to handle a certain piece of work it is customary to lay off the position for the hole by means of a center-punch mark at its center and then with dividers scribe a circle of the required diameter of the hole, which circle is then made more distinct by marking with a number of prick-punch holes or indentations. The work is then placed on the table and the drill started as near the center of the circle as possible. Usually even if it is started in the desired direction it will often run a little to one side, and before the lip of the drill is sunk below the surface the hole is examined, and if found out of center a channel or groove is chipped with hammer and chisel on that side of the hole to which it is desired to draw the drill and the latter started again. Usually even a second trial and channel will be found necessary before the hole is started aright.

The object of my invention is to provide a means of guiding the drill close to the work, thereby to prevent it from running, and to provide a means of locating the center of the proposed hole accurately with reference to the drill-guiding means and by using the center-punch mark only, thereby doing away with the necessity of the scribed and marked circle, and, furthermore, to combine said guiding and said locating means so that each may be readily and in proper sequence moved into position for its desired function.

The embodiment of my invention, herewith illustrated, includes, in brief, a drill-guide combined with a centering-pointer, and, among the structures to which my invention is applicable, I have chosen to show an upright drill with a plain head, the same with a sliding head, and a self-contained construction applicable to any upright drill.

In the accompanying views, Figure 1 is a side elevation of one form of drill-press with my improvement applied thereto. Fig. 2 is a plan view taken at A A, Fig. 1. Fig. 3 is a partial elevation showing my invention as applied to a drill with a sliding head. Fig. 4 is a sectional plan taken on line B B, Fig. 3. Fig. 5 is a sectional plan taken on line C C, Fig. 3. Fig. 6 is a side elevation illustrating my invention as applied in a self-contained structure suitable for any upright drill-press. Fig. 7 is a front elevation of Fig. 6, showing the drill-guide and pointer; and Fig. 8 is a plan view of Fig. 6.

Referring to Figs. 1 and 2, I provide a substantial base 1, a column 2, firmly fastened to the base and having at its top boxes 3, adapted to carry a horizontal driving-shaft 4. Fastened to the base is a counter-shaft bracket 5, carrying tight and loose pulleys 6 and 7, respectively, and a cone-pulley 8. The latter is adapted to drive a similar cone-pulley 9, with which the upper shaft 4 is provided. Interposed between a projection 10 on the column 2 and the counter-shaft bracket 5 is a strut 11, adapted to stiffen the column and provided with planed ways 12, to which reference will be made further on. The column is provided with a turned portion 13, to which is fitted a table-arm 14, clamping-bolts 15 being supplied to clamp the arm firmly to the column. Substantial ways 16 form a part of the table-arm, and fitted to these is a cross-slide 17, having ways 18, to which is fitted a work-carrying table 19. To operate the table 19, I provide a screw 20, having a graduated dial 21, and to move the cross-slide I provide a screw 22, having a graduated dial 23, it being evident that by means of these screws a fine adjustment of the table in two directions at right angles to each other is obtained. To raise and lower the table, a vertical elevating-screw 24 is provided, fitted to a free nut 25, which is carried by the table-arm. This nut can be turned by bevel-gears 26 and 27, the latter being fastened to a horizontal shaft 28, which is adapted to be turned readily by hand. To prevent the elevating-screw 24 from turning, I provide it with a tongue 29, adapted to fit a groove 30, which is formed

in a flanged column-supporting bracket 31. By means of this construction the table-arm and table may be readily swung around to one side, while the screw is always prevented from turning by the tongue 29. To carry a drill 32, I provide a vertical head 33, having fitted to it a sleeve 34, in which a drill-spindle 35 is adapted to revolve about a vertical axis. The spindle is provided with a bevel-gear 36, which is splined thereon, and is adapted to mesh with a bevel-gear 37, which is fastened to the upper shaft 4. The drill is moved vertically by the handle 38, which operates a gear meshing on a rack formed on sleeve 34, all the above-described parts being constructed in a usual and well-known manner. To guide the drill, I prefer to provide a guide-arm 39, in this case adapted to fit the turned portion of the column 13 and provided with a clamping-lever 40, by means of which the guide-arm can be firmly clamped and released and moved into and out of alinement with the drill. The guide-arm is provided at its outer extremity with a bushing 41, which may be changed to suit the size of drill and which is located with its center at the same distance from the center of the column as the drill. This arm also carries an adjusting-screw 42, and, to provide a means for quickly alining the bushing with the drill, a stop-arm 43 is fitted to the column and provided with a projecting lug 45, located in the path of the screw 42, while the stop-arm is also provided at its back end with forked projections 44, adapted to straddle and fitted to the ways 12 of the strut 11. In order to locate the center of the proposed hole in the work in its proper position with reference to the guide-arm, bushing, and drill, I prefer to provide a slide 46 nicely fitted to a groove in the stop-arm 43 and having at its outer end a pointer 47. This slide is fitted so as to move in a line which will cross the center line of the drill-spindle, and to enable the pointer to be located so that its center line is in axial alinement with the drill the slide is provided at its back end with a projection 48, adapted to contact a projecting screw 49, with which the stop-arm 43 is provided.

In the operation of this invention the position for the hole in the work having first been laid off, as described, by making a center-punch mark at its center, the work is secured to table 19. The guide-arm is loosened and moved out of the way and the pointer moved into alinement with the drill-spindle. The table is then adjusted by means of the table-screws until the center-punch mark is directly beneath the pointer. The latter is then moved back out of the way and the guide-arm moved into alinement with the drill and firmly clamped with the lower side of its guiding-bushing close to the face of the work. The work is then ready for drilling.

Referring now to Figs. 3, 4, and 5, I provide a sliding head 50, adapted to be adjust-

ed on ways 51, which form a part of a column 52. A hand-wheel 53 is provided to fasten the head firmly in any desired position. The head 50 is provided with a lever 54, adapted to raise and lower a drill-spindle 55 and drill 56. An adjustable slide 57 is fitted to move vertically in the head 50, and a hand-wheel 58, having teeth adapted to fit the teeth of a rack 59, which is fastened to the head 50, is adapted to move the slide 57 up or down, as is desired. The screw 60 is provided to clamp the slide in position. The slide is provided at its lower extremity with a projecting arm 61 and with a turned portion 62, to which is fitted a guide-arm 63. A clamping-screw 64 serves to clamp the guide-arm in position. The projecting arm 61 is slotted and fitted with a pointer-slide 65, having a pointer 66 and a stop-pin 67. A stop-screw 49' is also provided in arm 61 to limit the movement of the slide 65 at a position in which the pointer 66 will be in axial alinement with the drill. The arm 61 is also provided with a lug 68, located in the path of the adjusting-screw 69, so that the guide-arm 63 may be stopped in the position of alinement with the drill. The manner in which this form of my invention is used is entirely similar to that previously described.

Referring now to Figs. 6, 7, and 8, I provide a base 77, having T-slots 77^a, by means of which the base may be readily clamped to a drill-press table. Fastened to this base is an upright bracket 76, carrying a nicely-fitted slider 75. To raise and lower the slider, a screw 78 is provided. The slider carries a projecting arm 79, near the end of which is planed a slot, to which is fitted a slide 81, provided with a pointer 82 and a stop-pin 83, and an adjusting-screw 84, fitted to the arm 79, is adapted to contact the stop-pin 83 and locate the pointer in its proper place. Pivoted to the arm 79 is a guide-arm 85, carrying at one end a bushing 86, adapted to guide the drill. The guide-arm 85 is also provided with a curved slotted portion 87, and a clamping-screw 88, fitted to the arm 79, serves to clamp the guide in any desired position. To locate the guide-bushing concentrically with the drill, the guide-arm is provided with a projection 89, and the arm 79 is provided with an adjusting-screw 90, adapted to contact the projection 89. To move the work readily into a position located by the pointer, I provide the base with a cross-slide 91, operated by a dial-screw 94, and fitted to the cross-slide is a table 93, operated by the dial-screw 92. In operation this construction is first clamped to a drill-press table in a position of alinement with the drill, the work fastened to the table, and then located for drilling in the same manner as in the two previous constructions.

Thus will be seen the advantages of this invention. The position for a hole in work

to be drilled can be readily and quickly located without laying off the hole further than to make a center-punch mark at its center, and the work can be drilled without further examination with the surety that it will be properly located and that the drill will not run to one side. The hole is more accurately and surely placed with much less time and labor than when laid off by hand.

10 I claim—

1. In a drilling-machine, comprising a rotatable drill-holder, and a work-support having means permitting vertical and universal horizontal adjustment thereof, a work-centering pointer and means for supporting the same independently of the work-support in fixed relation with the axis of the drill-holder, substantially as described.

2. In a drilling-machine, comprising a rotatable drill-holder, and a work-support having means permitting movement of one with relation to the other axially of said holder, a transversely-movable work-centering pointer and means for holding the same in axial alignment with the drill-holder, substantially as described.

3. In a drilling-machine, comprising a rotatable, axially-movable drill-holder, and a work-support having means permitting universal, transverse adjustment thereof, a work-centering pointer, and means for supporting

the same, independently of the work-support, in axial alinement with the drill-holder and permitting transverse movement of the pointer, substantially as described. 35

4. In a drilling-machine, comprising a rotatable, axially-movable drill-holder, and a work-support having means permitting universal, transverse adjustment thereof, a work-centering pointer, and means for supporting the same, independently of the work-support in axial alinement with the drill and permitting vertical and transverse movement of the pointer, substantially as described. 40

5. In a drilling-machine, comprising a rotatable, axially-movable drill-holder, and a work-support having means permitting universal, transverse adjustment thereof, a work-centering pointer, an arm, supported independently of said work-support, for holding said pointer in axial alinement with the drill-holder, means permitting movement of said arm to carry said pointer to one side of the axis of said holder, and means for limiting the movement of said arm in one direction when the pointer is in said position of alinement, substantially as described. 55

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