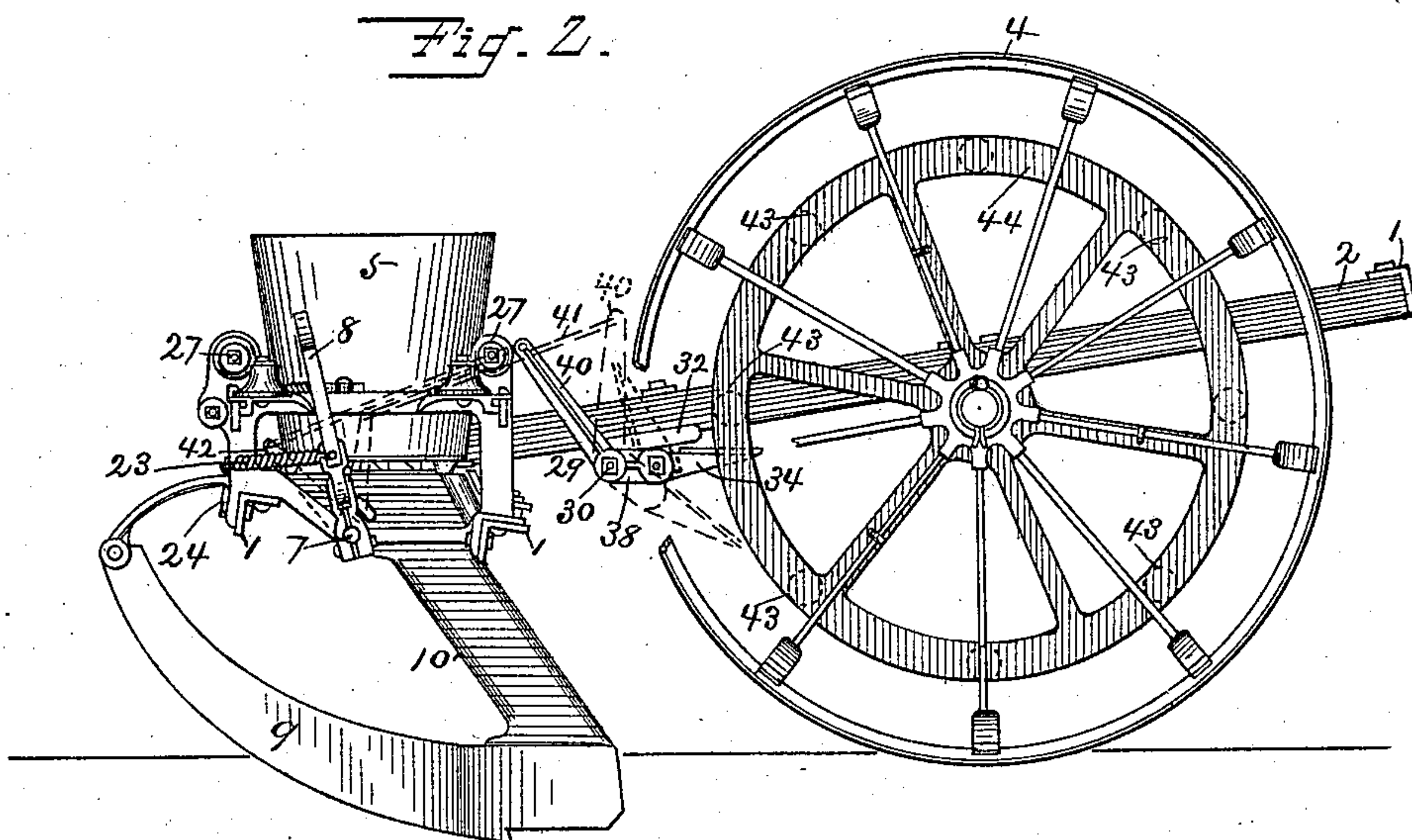
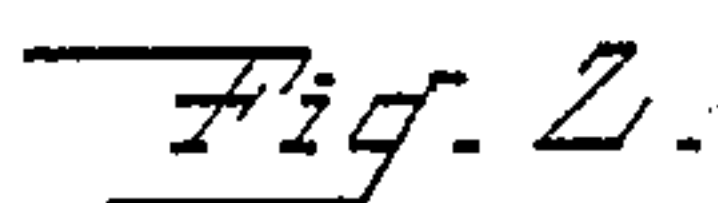


2 Sheets—Sheet 1.

DRILLING ATTACHMENT FOR CORN PLANTERS.

Patented Dec. 29, 1896.



Inventor:
R. Murchison,
By W. B. Richards,
his Atty.

(No Model.)

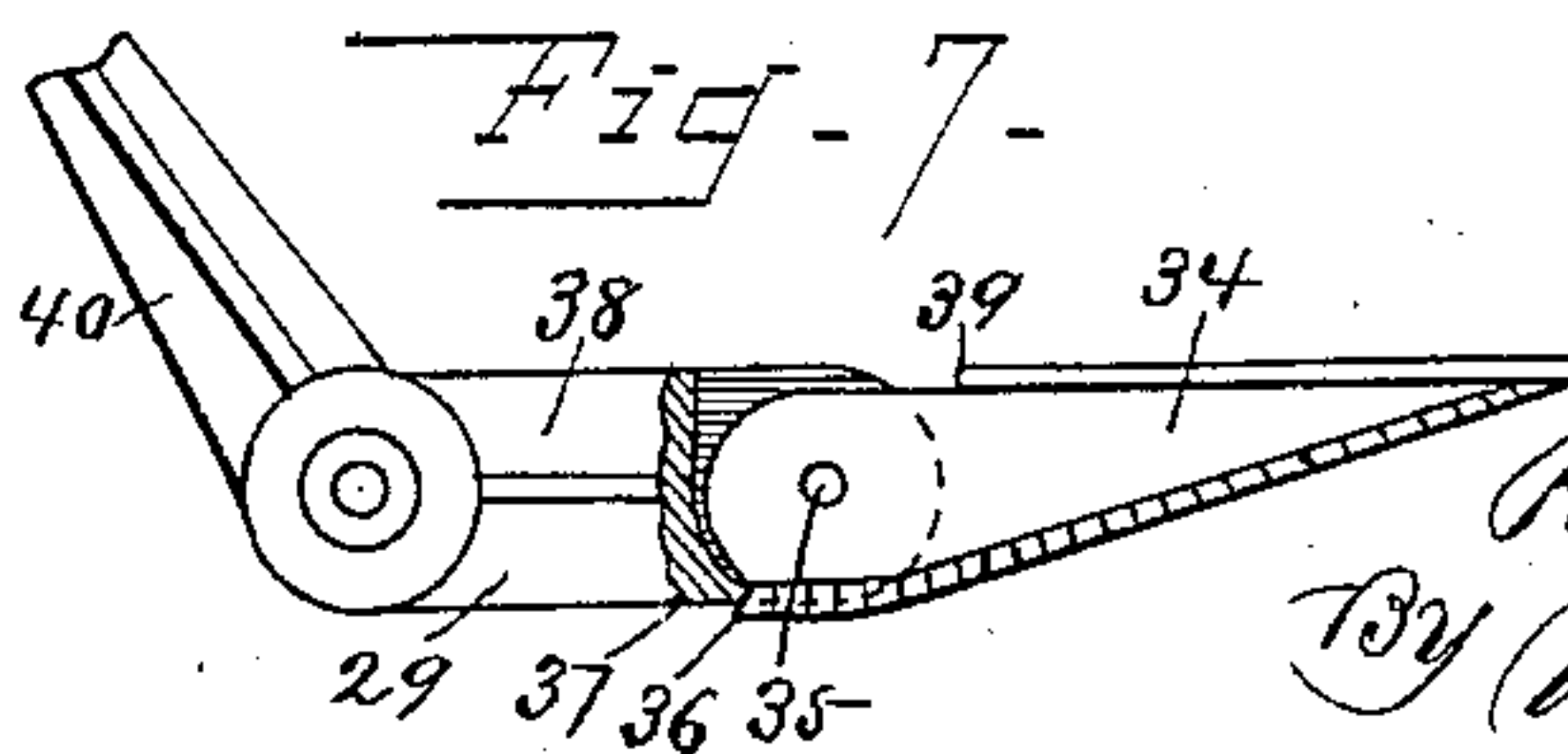
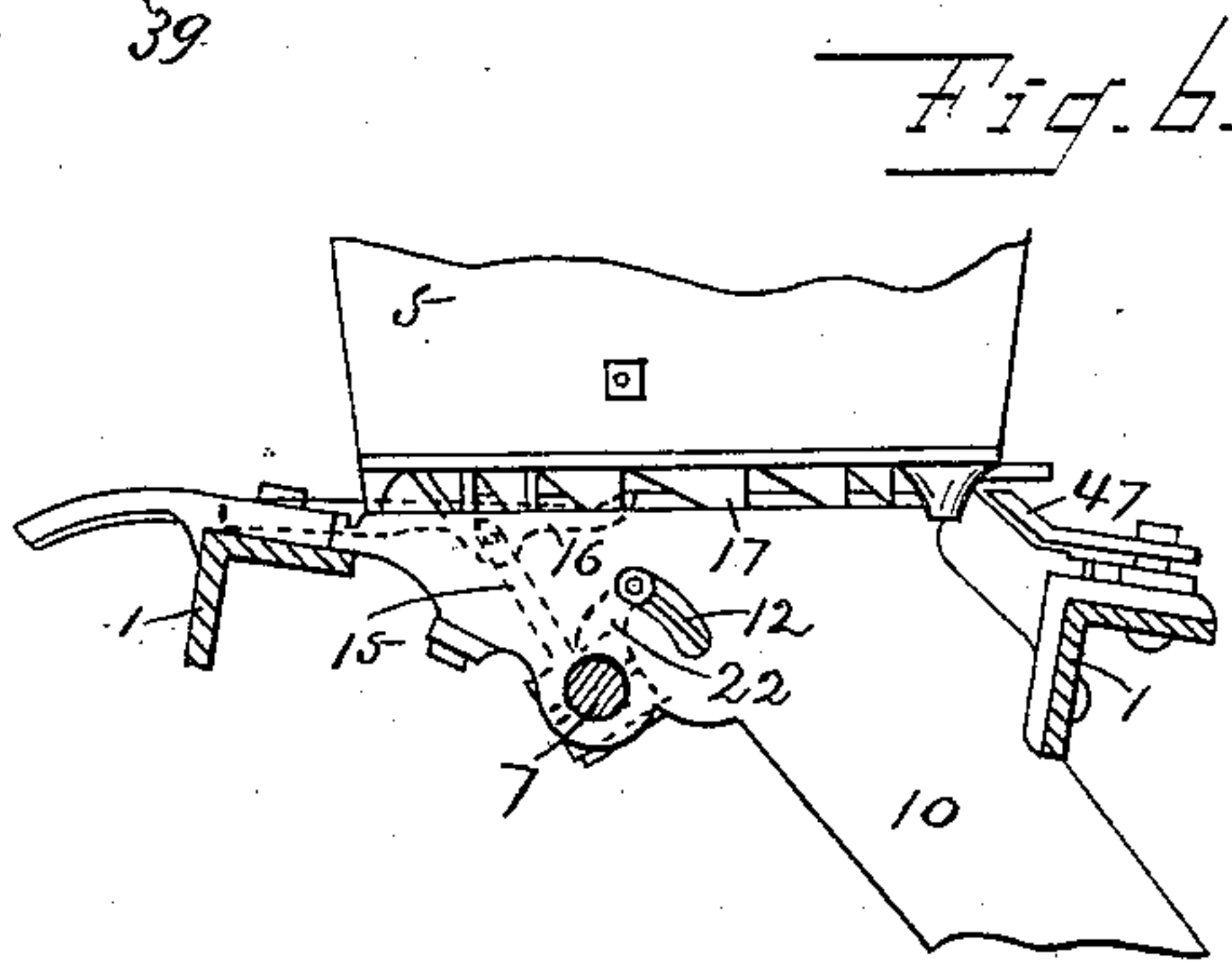
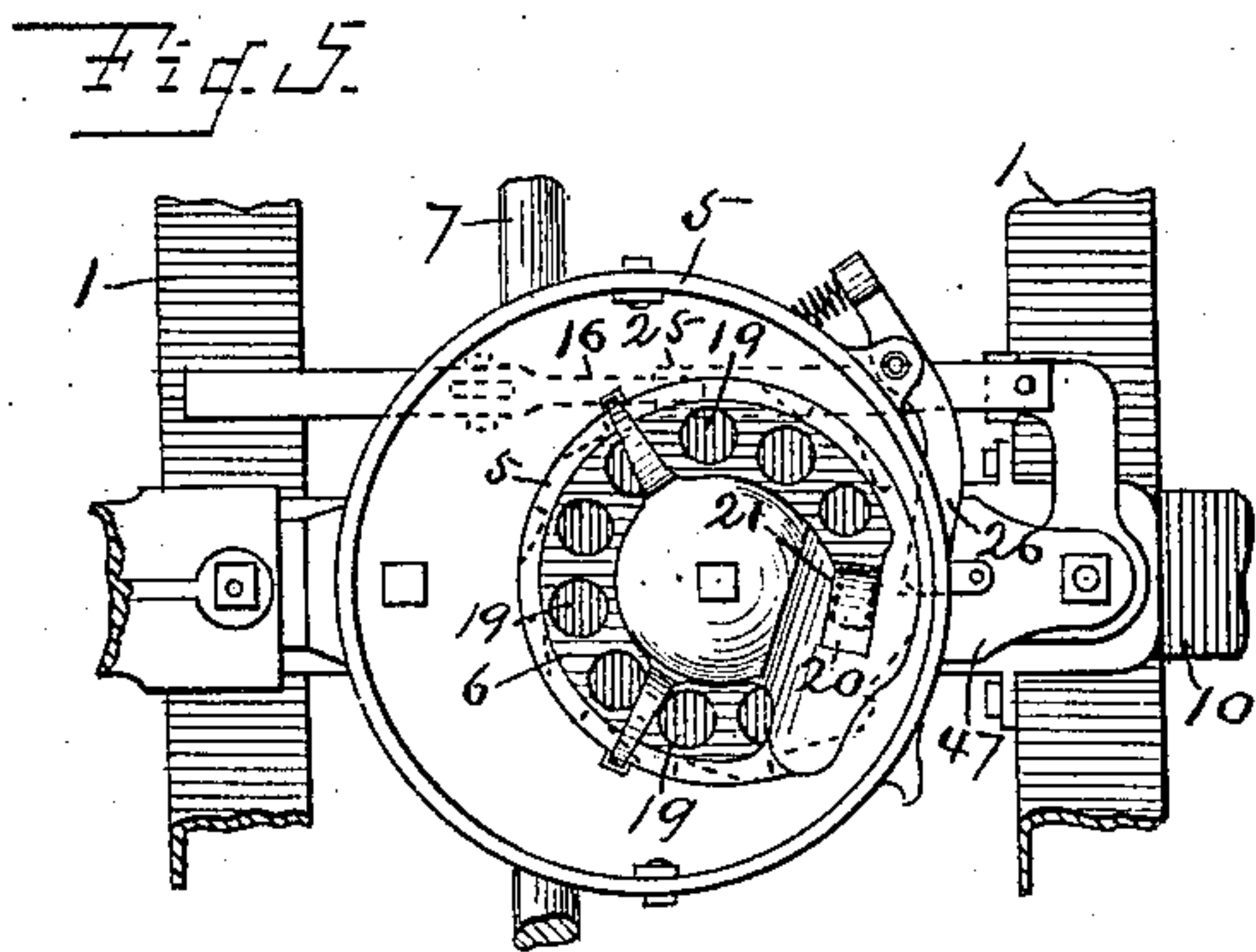
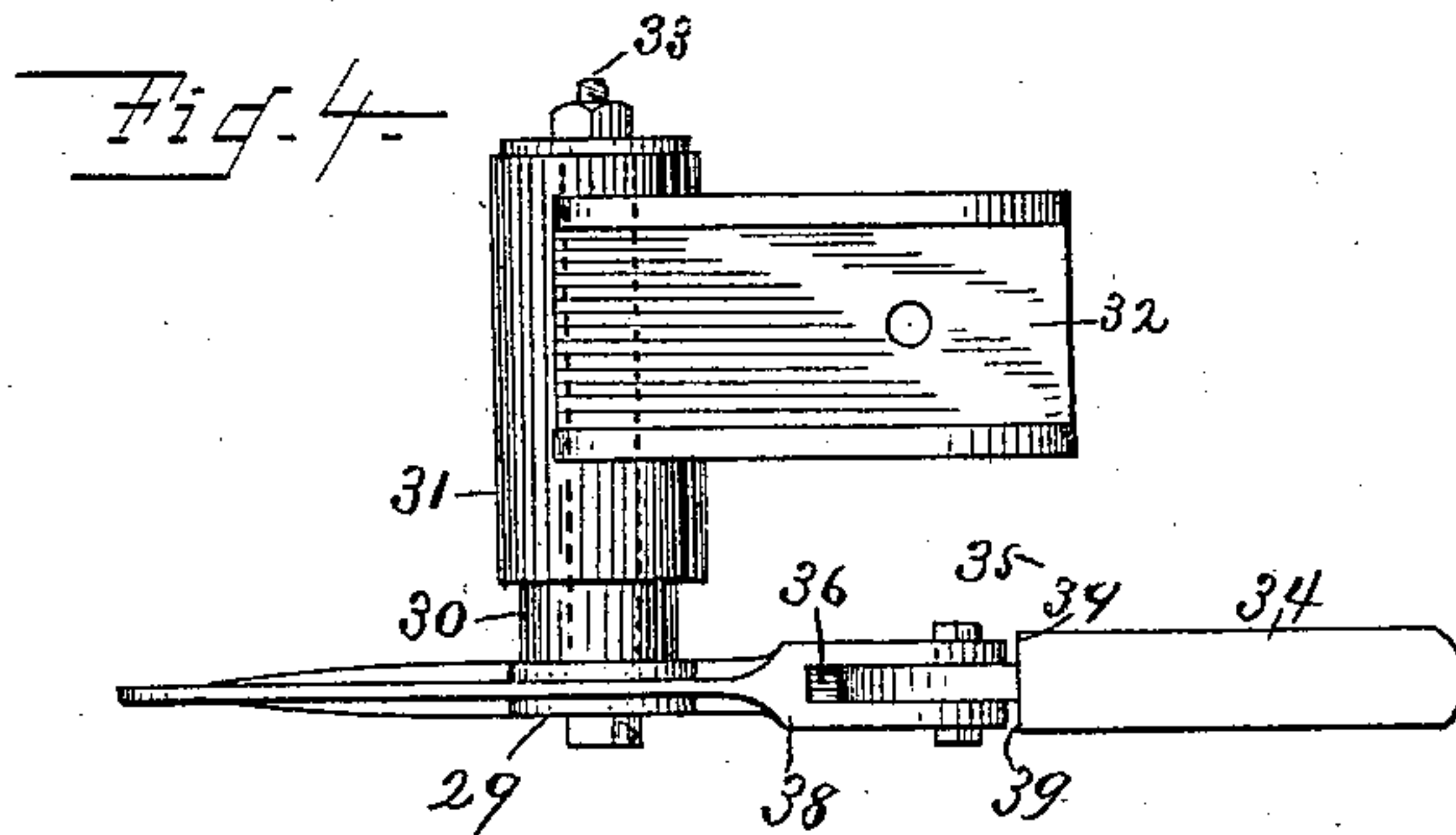
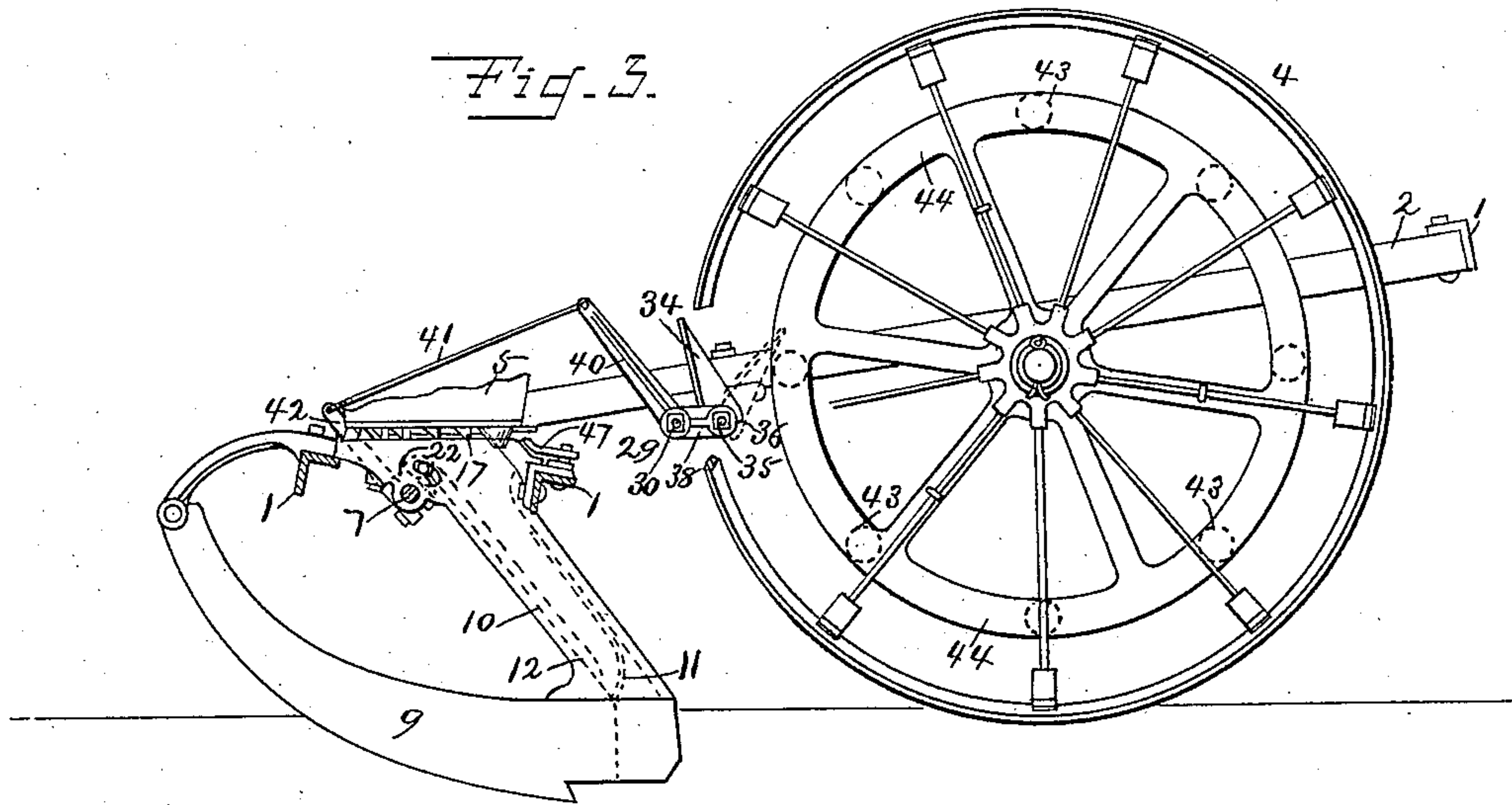
2 Sheets—Sheet 2.

R. MURCHISON.

DRILLING ATTACHMENT FOR CORN PLANTERS.

No. 574,208.

Patented Dec. 29, 1896.



Witnesses:
G. P. Richards.
H. M. Richards.

Inventor:
R. Murchison,
By W. B. Richards,
his Atty.

UNITED STATES PATENT OFFICE.

RODERICK MURCHISON, OF KEWANEE, ILLINOIS, ASSIGNOR TO THE PETERS PUMP COMPANY, OF SAME PLACE.

DRILLING ATTACHMENT FOR CORN-PLANTERS.

SPECIFICATION forming part of Letters Patent No. 574,208, dated December 29, 1896.

Application filed March 13, 1896. Serial No. 583,063. (No model.)

To all whom it may concern:

Be it known that I, RODERICK MURCHISON, a citizen of the United States, residing at Kewanee, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Drilling Attachments for Corn-Planters, of which the following is a specification.

The invention herein described relates to improvements in corn-planters; and the leading object of the invention is to provide drilling attachments for that class of check-rower corn-planters in which an intermittently-rotating seed-cup disk or wheel in the seedbox and a discharging valve or valves in the seed-tube are operated by a rock-shaft, which rock-shaft is given motion in one direction by a tappeted check-row line stretched over the ground being planted and in an opposite or
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reverse direction by a spring or equivalent device. Further objects of the invention are to provide such drill attachments for check-rower corn-planters of the class described, which attachments are simple and cheap in construction, certain and efficient in action, readily and easily applied to different makes of check-rowers of the class referred to, not liable to get out of order, which will not operate in backing the machine, and can be easily and quickly thrown into and out of gear with their operating mechanism.

For the purpose of carrying out these objects the invention consists in novel structural features and novel organization and combinations of parts, the operations of which parts as organized and combined are herein-after fully described, and the construction and combination of which parts are made the subject-matter of the appended claims.

In the accompanying drawings, which illustrate my invention, Figure 1 is a top plan of one side part of a check-rower corn-planter with part of the wheel-rim broken away and the seedbox in section embodying my invention. Fig. 2 is a side elevation of the parts shown at Fig. 1 with the check-row line removed and part of the wheel broken away; Fig. 3, a sectional elevation of parts and side elevation of other parts in the line 3 3 in Fig. 1, but showing a portion of the drill attachment differently adjusted from that shown at Fig. 1; Fig. 4, an enlarged top

plan of a portion of the drill attachment; Fig. 5, an enlarged sectional plan of the seed-box and plan of parts adjacent thereto; Fig. 6, an enlarged side elevation of the lower part of the seedbox and upper end of the seed-tube and adjacent parts, partly in section and partly in elevation; Fig. 7, an enlarged side elevation, partly in section, of a portion of the drill attachment.

My drilling attachment can be applied to any check-rower corn-planter of that class or type in which a rock-shaft operated by a check-rower line having tappets is the medium through which intermittent rotary motion is given to a seed-cup disk or wheel in the seedbox and a seed-discharging valve in the seed-tube.

In the present instance I have shown the invention adapted to a check-rower planter of an ordinary type and ordinary construction, with transverse frame-bars 1, side frame-bars 2, braces 3, split wheels 4, seedboxes 5, seed-cup disks 6, rock-shaft 7, forked levers 8, runners 9, seed-tubes 10, seed-tube valves 11, valve-openers 12, and check-rower line 13 with tappets 14, the operation of which is in an ordinary manner and may be briefly described as follows:

A forked lever 8, contacting successively with the tappets 14 of the stretched wire, will be swung rearwardly thereby and will thus give a swing or oscillatory movement in one direction to the rock-shaft 7, and this movement of the rock-shaft, by means of the radius-arm 15, connected with the rock-shaft, will give a forward throw to the pawl 16, and its forward end coming in contact with one of the ratchet-teeth 17 on the under side of the seed-cup disk 6 will give a partial rotation to said disk and bring one of its holes or cups 19, with its charge of seed, under the cut-off 20 and over the discharge-opening 21 in the bottom of the seedbox, whence it passes downward in the hollow tube 10 to the spring-valve 11 and is there detained until discharged by the downward movement of the valve-opener 12, which occurs at each succeeding movement in the direction described of the rock-shaft, by means of the radius-arm 22, which projects from the rock-shaft and is pivotally connected with the valve-opener 12. When the forked lever escapes from a tappet 14, the spring 23, which connects a forked lever with

an arm 24, projecting from a frame-bar, will give a return movement to the rock-shaft and thus restore the pawl 16 to its normal position and also retract the valve-opener 12 to its normal shown position. The pawl 16 is held in contact with the ratchet-teeth 17 by means of a spring 25, and the seed-cup wheel is held from backward movement by means of a spring-actuated detent-pawl 26. Ordinary guide-pulleys 27 direct the check-rower line properly to the forked lever. An ordinary line-doffer 28 is shown, but need not be herein described. The seed-cup disks 6 are substitutive in the usual manner for others having larger or smaller seed-cups for varying the quantity or number of seed dropped in each hill and for thinner disks and small seed-cups for dropping a single grain in each charge.

When the drilling attachment is used, the check-rower line is dispensed with and a thin seed-cup plate is used in the seedbox to separate single grains of seed from the mass in the seedbox and deliver such charges of single grains to the seed-tube at each intermittent movement of the seed-cup plate or disk. The drilling attachment in this instance comprises a bent arm or lever 29, having an integral hollow journal 30 projecting laterally therefrom and through a bearing 31, which is fixed to a plate 32, that is bolted to a side frame-bar 2. The journal 30 is held in the bearing 31 by a bolt 33. (See Fig. 4.) The arm or lever 29 has an extension 34 hinged to its rear end part by a pivot-pin 35, Fig. 7, in such manner that said extension may be oscillated or swung in a vertical plane. The downward swing of this extension is limited by shoulders 36 thereon coming in contact with shoulders 37 on the rear end 38 of the main part of the lever, Fig. 7, and its upward swing is limited by shoulders 39 thereon coming in contact with the upper side of the main rear part 38 of the lever, as shown by full lines at Fig. 3 and dot-lines at Fig. 2, in which turned-back position it will sustain itself, as its upper portion is inclined back of or past its pivotal point. The outer end of the forward end part 40 of the arm or lever 29 is pivotally connected by a link 41 with the outer end of an upwardly-projecting radius-arm 42, which projects from the rack-shaft 7. When the extension 34 is in its horizontal position, as shown by full lines at Figs. 1, 2, and 7, its rear end part is within the orbital path of a circular series of tappet-pins 43, which project axially from an annulus or ring-shaped plate 44, which is bolted to the spokes of one of the planter-wheels. The annulus 44 may be otherwise constructed and fixed in place, and may in case of a rotating axle be fixed thereto.

The tappet-pins 43 preferably have each a loose antifriction-sleeve 45 mounted thereon, and as these tappets successively come into contact with the lever 29 or its rear extension each of them turns or swings said lever in one direction on its pivotal point, the journal 30, and in doing so forces the rear end of

said lever downwardly and its forward end upwardly and backwardly into the position shown by dot-lines at Fig. 2, and the lever 29, as it swings into such position, will by means of the link 41 draw the radius-arm 42 backwardly at its outer end and thereby swing or oscillate the rock-shaft 7 in one direction, the same direction that it is moved by the tappets on the check-rower line, and thereby give a partial rotation to the seed-cup wheel and movement to the discharging-valve in the seed-tube, the same as is given to said parts by the tappets on the check-rower line. Immediately after the escape of each tappet-pin 43 from the rear extension of the lever 29 the spring 23 not only restores the valve and valve-opener in the seed-tube and the pawl which actuates the seed-cup wheel to their normal positions, but also, by means of the arm 42 and link 41, restores the lever 29 to its normal position, as shown by full lines at Fig. 2, and ready for the action of the next succeeding tappet-pin 43.

The extension 34 of the lever 29 will not interfere with backing the planter, as it will swing upwardly, as shown by dot-lines at Fig. 3, when a tappet-pin 43 comes in contact therewith, and thus permit of said pins passing the lever as the planter-wheel turns backwardly. The driver may with his foot or by other means turn the extension 34 upwardly, as shown by full lines at Fig. 3 and dot-lines at Fig. 2, where it will remain, and while in such position the tappet-pins 43 will not come in contact therewith, and hence will not operate the drilling mechanism in turning the planter around at the ends of rows, in moving it from place to place, or in moving it over ground where planting is not desired, and while the lever 29 is otherwise in operative position for drill-planting.

The tappet-pins 43 are at such short distances apart that they will operate the seed-cup disk much more rapidly than is done by the check-rower line, and hence make the deposits of the single grains of seed at short distances apart, as is usual in drill-planting. The starting and stopping of the intermittently-rotating seed-cup plates at the passage of each seed-cup beneath the cut-off will, by the slight jars given thereby to the seed-cups in contact with the seed in the seedbox, tend to effect a complete settlement of the single-grain charge in each seed-cup before it passes beneath the cut-off, and hence produce regular dropping of such charges of seed, which is not accomplished by a continuously-rotating seed-cup plate.

The use of the lower valve in drilling, by dropping the single grains from a point near the deposit of the seed in the soil, will secure substantially accurate dropping of the grains at uniform distances apart, which is not done when the grains fall from the seed-cup disk to the place of deposit and sometimes fall direct, while at other times they strike the sides of the seed-tube duct, and are also affected

more or less in this respect by changes in the rate of speed of the planter in operation. If preferred, however, the lower valve may be removed when the planter is used as a drill.

5 In the use of this planter in check-row planting the seed-cup plates are changed, as described, and the check-rower line used in the ordinary manner, and the drilling attachment can be thrown out of gear to not interfere with check-row planting, as hereinbefore
10 described, by simply turning the extension 34 into the position shown by full lines at Fig. 3. The link 41 may also, if preferred, be disengaged from the radius-arm 42. The
15 lever and link will then remain in position where they can be quickly and readily adjusted for drill-planting.

I do not claim as my invention the adjustable plate 47 as a cover for the opening in the
20 upper end of the seed-tube.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a check-rower corn-planter comprising intermittently-rotating seed-cup disks or wheels in the seed-
25 boxes, discharging valve or valves in the seed-tubes, a rock-shaft, a check-rower line with tappets, which line gives motion to the rock-shaft in one direction, and a spring which
30 gives motion in a reverse direction to said rock-shaft; of a drilling attachment, comprising actuating mechanism connected with the wheels or axle of the planter, and means for transmitting motion therefrom to the rock-
35 shaft to turn or swing it in one direction only, substantially as described.

2. The combination with a check-rower corn-planter comprising intermittently-rotating seed-cup disks or wheels in the seed-
40 boxes, discharging valve or valves in the seed-tubes, a rock-shaft, a check-rower line with tappets, which line gives motion to the rock-shaft in one direction, and a spring which gives a reverse motion to said rock-shaft; of
45 a drilling attachment comprising a tappet-wheel actuated by the wheel or wheels of the planter, a lever hinged to or pivotally mounted on the planter, one end of which lever is adapted to be acted on by said tappet-wheel
50 to swing the lever in one direction, a radius-arm projecting from said rock-shaft, and a link connecting said radius-arm and one end of said lever, whereby the movement of the lever in one direction will give a movement
55 in one direction to the rock-shaft, substantially as described.

3. The combination with a check-rower corn-planter having a rotary seed-cup disk or wheel, a valve or valves in the seed-tube, a
60 rock-shaft, means for transmitting motion from said rock-shaft to said disk and valve or valves, and a spring for giving return motion to said rock-shaft; of a drilling attachment comprising a tappet-wheel actuated by the
65 wheel or wheels of the planter, a lever hinged to or pivotally connected with the planter, the rear end part of which lever is pivoted to or

hinged to its main portion and adapted to be acted on by said tappet-wheel to swing the lever in its forward direction, a radius-arm
70 projecting from said rock-shaft, and a link connecting said radius-arm and one end of said lever, whereby the swing of said lever in one direction will swing the rock-shaft in one direction to operate the seed-cup disk and
75 valve or valves, and thereby the check-rower spring will give a reverse movement to said lever, rock-shaft, and the disk and valve-operating mechanism, substantially as described.
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4. In a combined check-rower corn-planter and drill attachment, a rock-shaft and seed-cup disk and seed-tube valve operated thereby, a tappet-wheel, a lever hinged or jour-
85 naled to the planter, with its rear end part located in the common orbital path of the tappets of the tappet-wheel for operation, and hinged to the main portion of the lever, whereby it can be turned upwardly to throw it out of the common path of said tappets,
90 substantially as described.

5. In a combined check-rower corn-planter and drill attachment, a seed-cup disk and seed-tube valve, a rock-shaft and means for
95 actuating said disk and valve by oscillations of the rock-shaft, a tappet-wheel, a lever hinged or journaled to the planter, with its rear end part located in the orbital path of the tappets of the tappet-wheel for operation, and hinged to the main portion of the lever,
100 substantially as described.

6. A drilling attachment to corn-planters, comprising and in combination, a drive-wheel having tappets, an arm or lever adapted to be
105 actuated by said tappets, a rocking arm which receives motion from said arm or lever, and a rod connecting said rocking arm with the dropper-actuating shaft of the planter, substantially as described.

7. In a corn-planter, in combination substantially as described, with the seed-dropping mechanism in the seedbox and seed-
110 tube, a tappet-wheel, and a lever hinged or journaled to the planter, with its rear end part located in the orbital path of the tappets
115 of said tappet-wheel and hinged to the main portion of the lever.

8. In a corn-planter, and in combination with the seed-dropping mechanism in the seedbox, a tappet-wheel, an arm projecting
120 laterally from the planter-frame, a forwardly-projecting lever for which said arm is a center of motion, and a rearwardly-projecting lever for which said arm is also a center of motion, said rearwardly-projecting lever being
125 hinged so that its rear end may be turned upwardly, substantially as described.

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

RODERICK MURCHISON.

Witnesses:

B. F. HOLCOMB,
H. M. RICHARDS.