

S. McCLELLAN.
CHAIN BREAST RATCHET DRILL.
APPLICATION FILED DEC. 24, 1908.

976,131.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

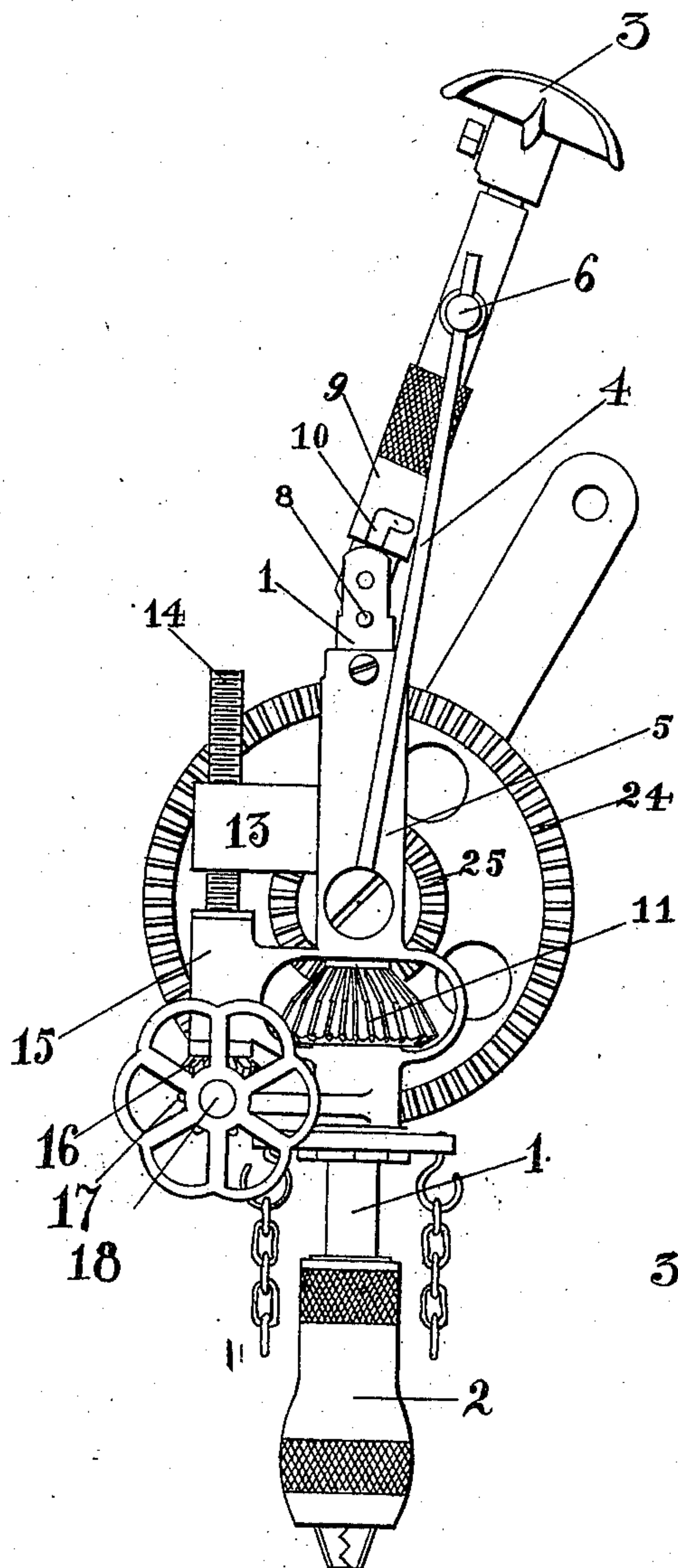


Fig. 1

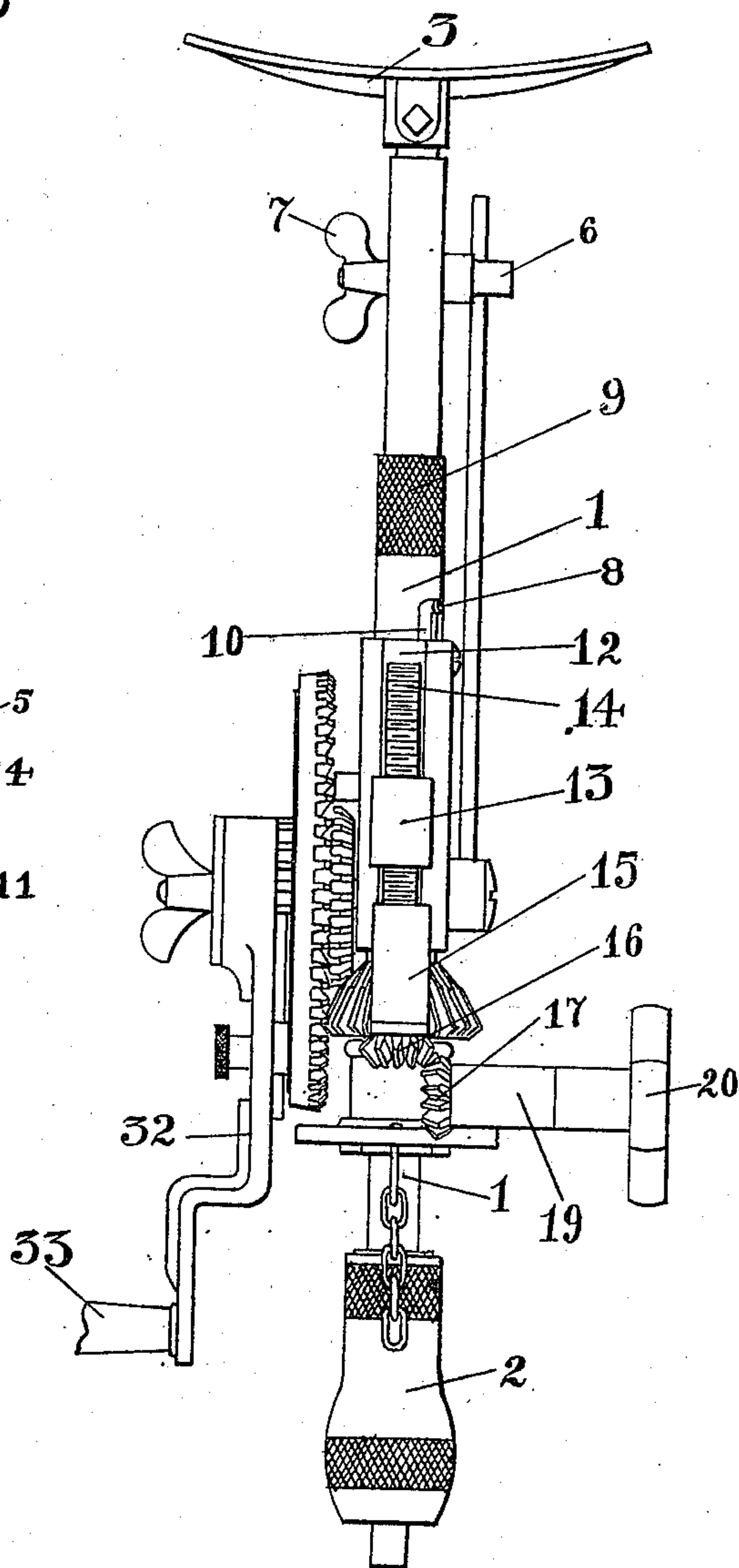


Fig. 2

Inventor

S. McClellan,

By

John S. Duffie,

Attorney

Witnesses

J. L. Curran

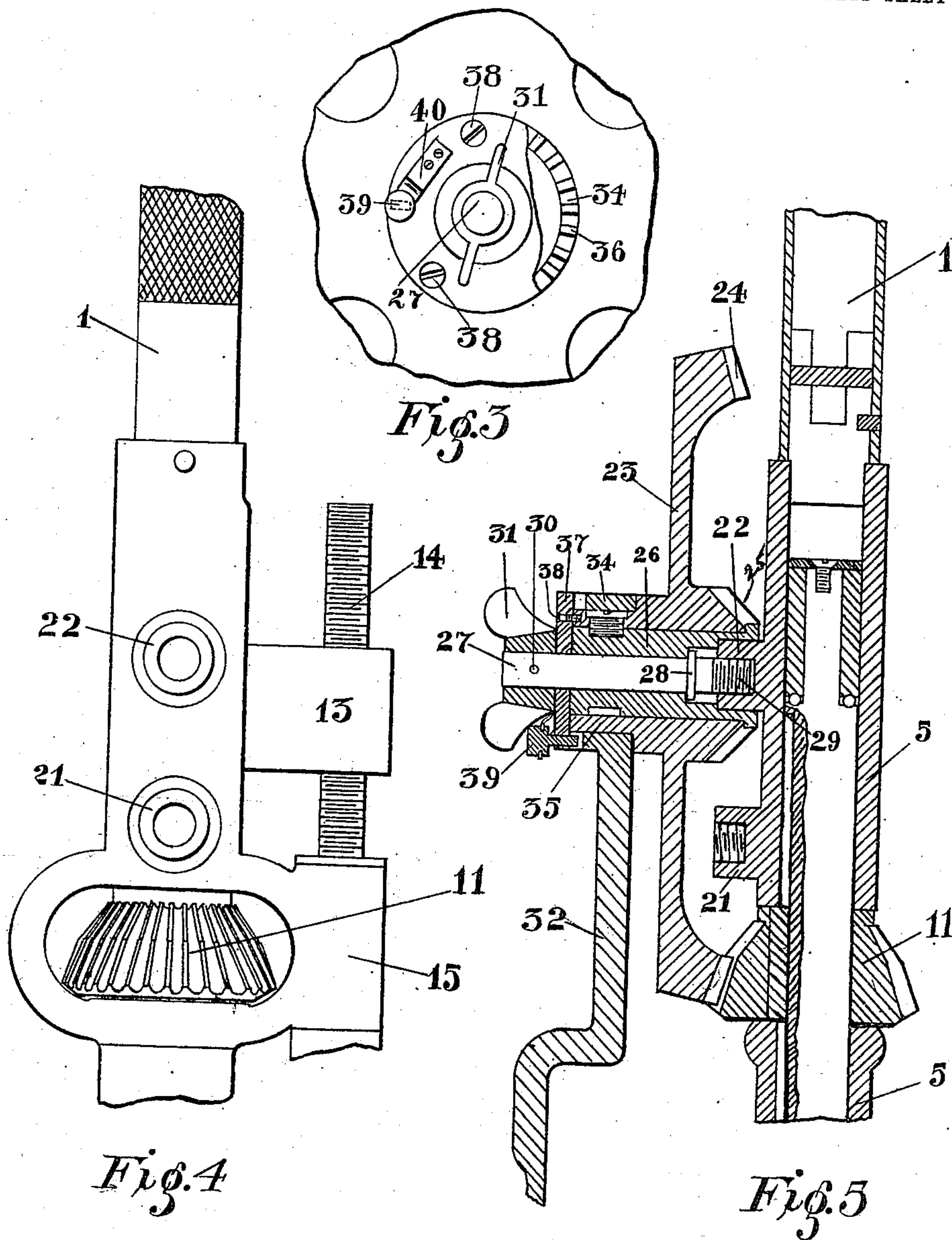
R. D. Ruffe.

S. McCLELLAN.
CHAIN-BREAST RATCHET DRILL.
APPLICATION FILED DEC. 24, 1908.

976,131.

Patented Nov. 15, 1910.

2 SHEETS-SHEET 2.



Witnesses

F. L. O'Rand

[Signature]

Inventor

S. M^cClellan,

By

[Signature]
Attorney

UNITED STATES PATENT OFFICE.

STEPHEN McCLELLAN, OF BROOKLYN, NEW YORK.

CHAIN BREAST RATCHET-DRILL.

976,131.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed December 24, 1908. Serial No. 469,117.

To all whom it may concern:

Be it known that I, STEPHEN McCLELLAN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Chain Breast Ratchet-Drills, of which the following is a specification.

My invention has relation to chain breast drills and although it is for the same purpose and has the same functions as my former Patents 661,416, patented Nov. 6, 1900, and 714,939, patented December 2, 1902, yet its construction is entirely different, and I believe that I have produced a much more efficient tool, which can be manufactured, possibly, one-third cheaper or thereabout.

Another object of my present invention is to enable one to drill in corners and other places wherein it is difficult to insert a drill of the types now upon the market, many of which can only be used under the most favorable conditions.

Another department in which my invention is superior to others of its class is the manner in which the feed chain is drawn taut, forcing the drill rigidly against the material to be drilled. Said chain is so attached to my present drill that it makes no difference at what angle the workman is boring, for said chain is attached to an annular plate immediately above the chuck of my invention and said plate never changes its relative position in respect to the stock of my invention.

Another feature of my invention is that the same feeding arrangement that is used in connection with my drill, while employing a chain, may be used while employing my invention as a press drill. It is obvious that while using my drill in this manner it will be necessary to rest the breast-plate thereof upon a solid structure as a support. If found necessary, on account of a limited amount of space, the drill may be used in this manner while the upper section of the stock is held at a required angle. This is a valuable feature as often in certain kinds of work a chain cannot possibly be used.

With these and other objects in view my invention consists of the novel construction and arrangement of parts as are hereinafter described in this specification, illustrated in the accompanying drawings and pointed out

particularly in the claims hereunto appended.

Referring to the drawings Figure 1 is a side elevation of my drill, the drill-stock thereof being shown at an angle. Fig. 2 is an edge view of my device. Fig. 3 is a detail. Fig. 4 is an enlarged view of a portion of said drill-stock partly broken away showing the beveled gear wheel mounted thereon. Fig. 5 is a vertical sectional view of my device partly broken away. In this figure the manner in which the handle engages the hub of the larger gear wheel is a modification of that form shown in Fig. 2.

Referring more particularly to the drawings my invention is described as follows: A drill-stock 1, which is provided with the usual chuck 2, at its lower end, is provided at its upper end with a breast-plate 3, secured thereto by substantial fastening means, said drill-stock adapted to be broken and held at whatever angle is desired by means of a rod 4, the lower end of which is pivotally held to the casing 5, of said drill, its upper end passing through the perforated lug 6, held rigidly when desired by means of a thumb-nut 7. Formed to the lower section of said drill-stock is a lug 8; slidably encircling the upper section of said drill-stock is a sleeve 9, said sleeve being provided near its lower end with an L-shaped recess 10, said L-shaped recess being adapted to receive said lug 8, when said drill-stock is in its normal position as shown in Fig. 2. The upper broken section of said drill-stock is securely held in place in said casing 5, by means of a screw or its equivalent. The beveled gear wheel 11, slidably encircles said drill-stock somewhat below the center thereof when the drill stock is in its normal position. The casing 5 is so shaped at this point that the gear wheel 11, is allowed free movement, and the lower section of said drill-stock is so held by the casing 5, that said gear wheel 11, is adapted for rotation. Cut in said casing is a vertical slot 12. Rotatably held to the upper end of the lower section of said drill-stock is an ear 13, which protrudes from said lower section through said vertical slot 12. Said ear is provided with an internally threaded perforation near its outer end. Passing through said perforation is an externally threaded vertically disposed bolt 14, the lower unthreaded portion of which is provided with

a suitable bearing 15, in said casing 5. The beveled gear 16, is secured or formed to the lower end of said bolt 14. A similar beveled gear 17, whose teeth intermesh with those of the gear 16, is formed or secured to the inner end of a rod 18, which is provided with a suitable bearing 19, formed to said casing. The hand-wheel 20, is keyed or formed to the outer end of said rod 18, thus adapting said bolt 14, to be rotated, which rotation will force out or draw in said chuck 2. Two additional projecting lugs 21 and 22, one arranged above the other in a vertical line are formed to said casing.

A large gear wheel 23, provided with two sets of teeth 24 and 25, is adapted to rotate around either of said lugs 21 and 22 as an axis, the lug around which it rotates depending upon which set of teeth it is desired to have intermeshing with those of said gear wheel 11. It will be obvious that said gear wheel 11, is actually a double gear wheel being provided with teeth at differently arranged angles. Said large gear wheel 23, is provided with a loose core 26; passing through the central perforation in said core is a pin 27, provided with a collar 28, the inner end of said pin being provided with threads 29, said threads being engaged by those in either of said lugs 21 or 22. Said collar 28, binds against shoulders formed by an enlargement of the central perforation in said loose core 26. The outer end of said pin is provided with a transverse perforation 30. A thumb-nut 31, provided with a registering perforation is adapted to fit over the outer end of said pin when a second pin is passed through said registering perforations adapting said pin to be rotated so that it might be engaged with or disengaged from the threads in said lugs 21 and 22.

A crank handle 32, which is bent outwardly then downwardly near its outer end is provided with the usual handle 33; a ring 34, is formed to its inner end, said ring fitting over the hub 35, of said large gear wheel 23. The outer edge of said ring 34, is provided with teeth 36. A plate 37, which is provided with a central hole encircles said pin 27, said plate being securely held to the hub of said gear wheel 23, by means of a plurality of screws 38. Passing through a perforation near the outer edge of said plate is a plunger 39, which is held in position by means of a spring 40. Said plunger is wedge-shaped at its inner end and is so held to said spring 40, that it may be rotated, adapting it to engage said teeth 36, when said handle 32, is revolved in either direction. The manner of engagement between the ring of said handle and the hub of said large gear wheel is preferably shown in Fig. 5. Another manner of accomplishing this result is illustrated in Fig. 2 conventionally.

Thus it will be seen from the foregoing

description that I have an invention which will attain the objects set forth in this specification by the virtue of its construction, but I may claim the right to make any slight changes in the construction set forth above which will not depart from the spirit of the claims and which will be obviously necessary in its manufacture.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A chain breast drill comprising a drill-stock and a casing, said drill-stock being in two sections, the upper of which sections is securely held to the upper end of said casing, the lower section being rotatably and slidably held in the lower portion of said casing, said upper section being capable of being broken and held at any desired angle, and means to hold said upper section at whatever angle is desired.

2. A chain breast drill comprising a drill-stock and a casing, said drill-stock being in two sections, the upper of which is securely held to the upper end of said casing, the lower of which is rotatably and slidably held in the lower portion of said casing, said upper section being capable of being broken and held at any desired angle, means to hold said upper section at whatever angle desired, said means including a rod pivotally held to any point of the casing at its lower end and slidably held to said upper section near its upper end, said rod being adapted to be held firmly to said upper section by means of a thumb-nut, a sleeve provided with an L-shaped recess, said upper section being adapted to be held in a straight or normal position by said sleeve, a lug formed on the upper section, said lug being adapted to engage said L-shaped recess in the sleeve when said sleeve is holding the upper section in a straight position, substantially as described.

3. A chain breast drill comprising a drill-stock and a casing, means to cause said drill-stock to rotate, means to cause the same to slide in said casing, said first-mentioned means comprising a beveled gear wheel splined to said lower section, two lugs formed to said casing, a large gear wheel adapted to rotate about either of said lugs as an axis, said large gear wheel provided with two sets of teeth, either of which sets is adapted to intermesh with those of said first-mentioned gear wheel, substantially as shown and described.

4. A chain breast drill comprising a drill-stock and a casing, means to cause said drill-stock to slide within said casing, when desired, means to cause the same to rotate, said first-mentioned means comprising an ear loosely held to the upper end of said lower section, said casing provided with a vertically disposed slot, said ear protruding

from said slot and provided with an internally threaded vertically disposed perforation, a vertical externally threaded bolt, the lower unthreaded portion of which is provided with a bearing in said casing, passing through said perforation, a rod provided with a hand-wheel keyed to its outer end and provided with a suitable bearing in said casing, two intermeshing beveled gears, one of which is keyed to the lower end of said vertical bolt, the other of which is keyed to the inner end of said rod, substantially as described.

5. In a ratchet chain drill comprising a casing having formed thereon two internally threaded lugs, a large gear wheel adapted to rotate about either of said lugs as an axis, a loose core passing through the center of said gear wheel, said core adapted to be firmly held to either of said lugs, said core acting as a bearing upon which rotates said large gear wheel, a pin provided at its inner end with a number of threads and a collar, said threads adapted to engage the said threads of either of said lugs as desired, said core provided with a central longitudinal perforation the inner portion of which is of a greater diameter than the outer portion thereof, said collar of said pin binding against the shoulder formed by the enlargement of the inner portion of said longitudinal perforation when said gear wheel is being removed, a thumb nut provided at the outer end of said pin for the manipulation of the same, said gear wheel held against sidewise movement by suitable means.

6. In a ratchet chain drill comprising a casing having formed thereon two internally threaded lugs, a large gear wheel adapted to rotate about either of said lugs as an axis, a loose core passing through the center of said gear wheel, said core adapted to be firmly held to either of said lugs, said core acting as a bearing upon which rotates said large gear wheel, a pin provided at its inner end with a number of threads and a collar, said threads adapted to engage the said threads of either of said lugs as desired, said core provided with a central longitudinal perforation the inner portion of which is of a greater diameter than the outer portion thereof, said collar of said pin binding against the shoulder formed by the enlargement of the inner portion of said longitudinal perforation when said gear wheel is being removed, a thumb nut provided at the outer end of said pin for the manipulation of the same, said gear wheel held against sidewise movement by suitable means, said means consisting of an annular recess cut in the outer periphery of said core near the outer end thereof, a set screw passing through a suitable perforation in said hub which may register with any point of said annular recess, said set screw extending into and working in said annular recess, substantially as shown.

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

STEPHEN McCLELLAN.

Witnesses:

R. P. DUFFIE,
RUTH M. DUFFIE.