

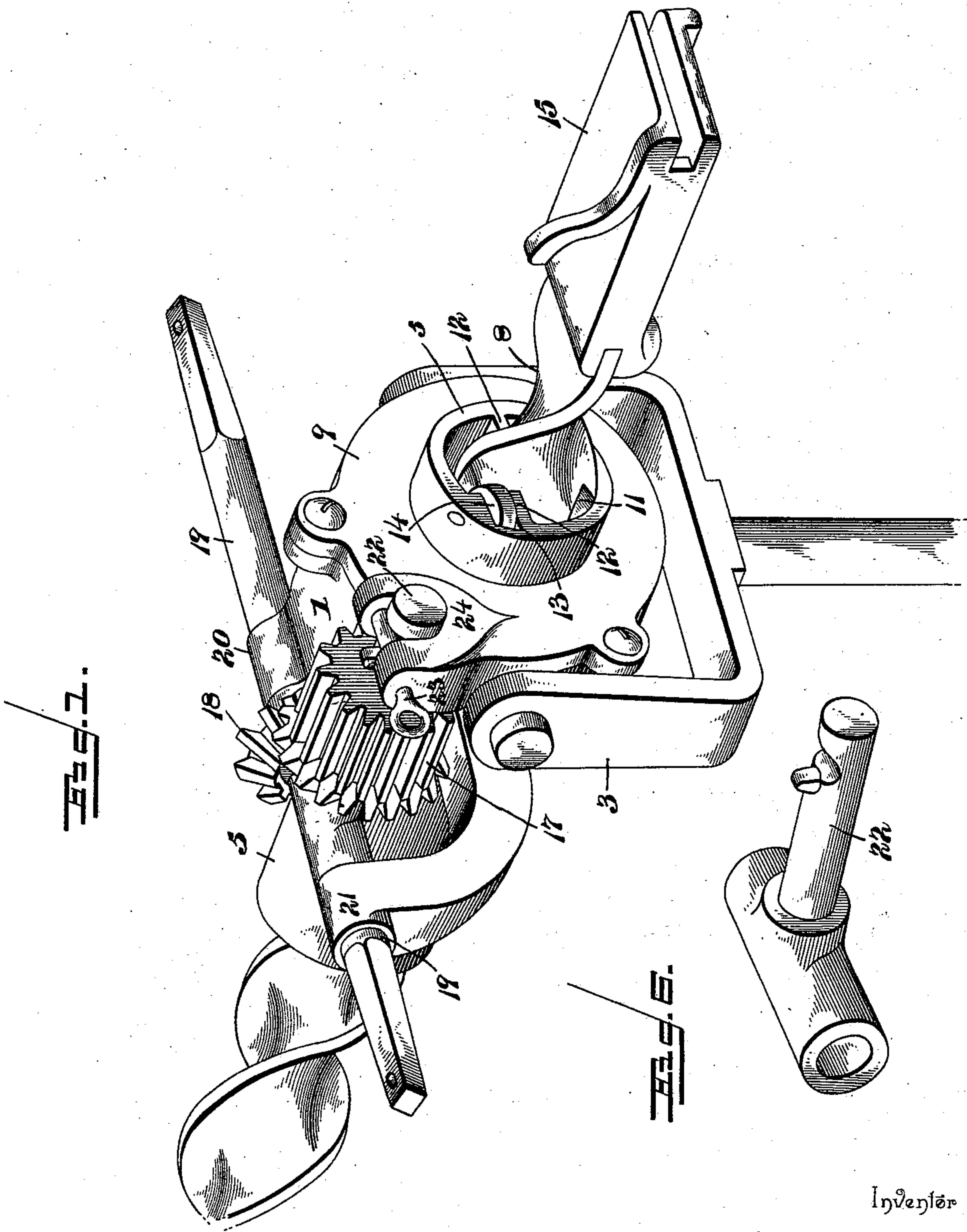
(No Model.)

2 Sheets—Sheet 1.

J. T. SNYDER.  
DRILLING MACHINE.

No. 539,491.

Patented May 21, 1895.



Inventor

*John T. Snyder*

Witnesses

*E. K. Stewart*  
*J. H. Pity*

By *his* Attorneys.

*C. A. Snow & Co.*

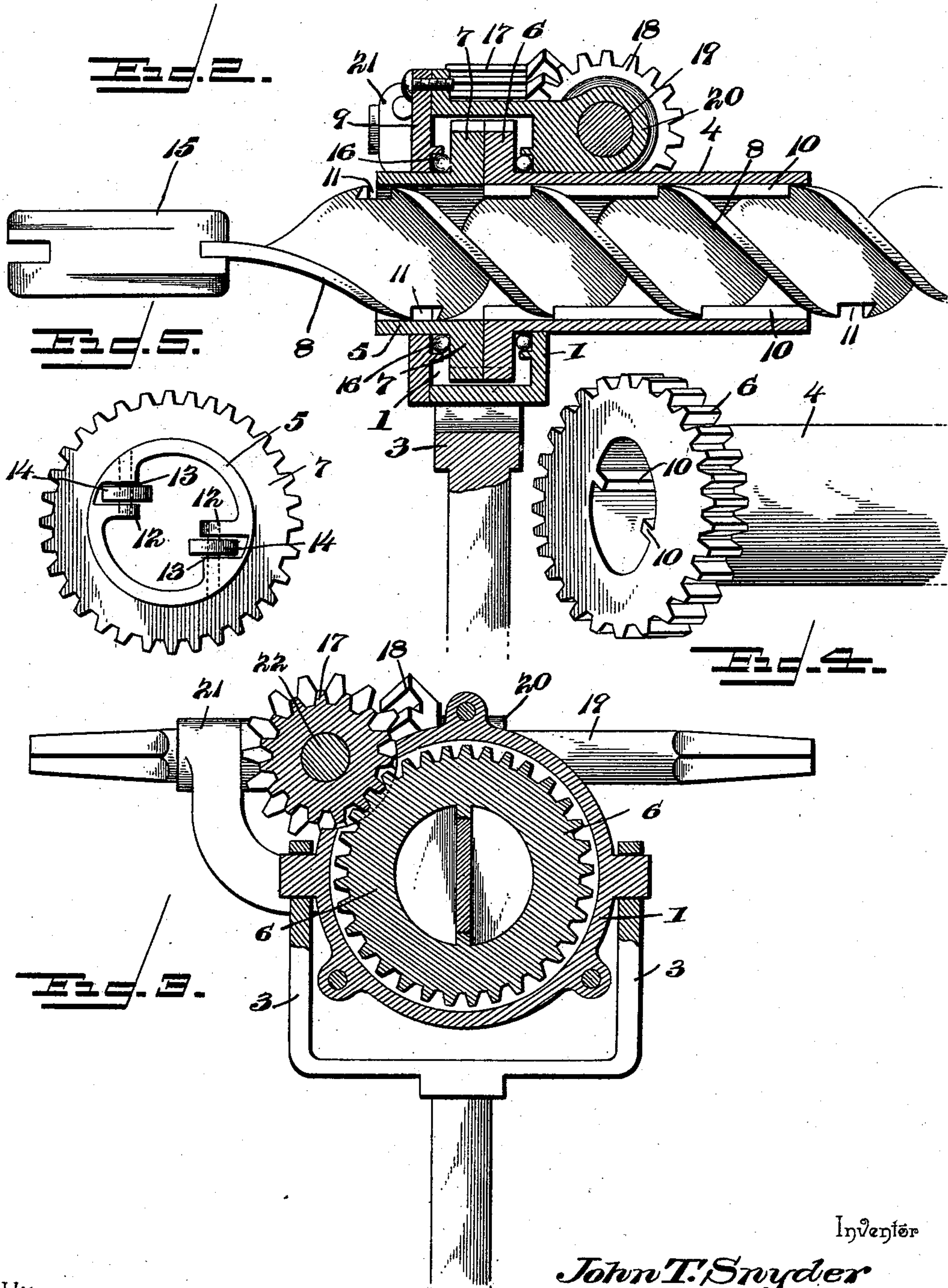
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# UNITED STATES PATENT OFFICE.

JOHN T. SNYDER, OF LUZERNE, PENNSYLVANIA.

## DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 539,491, dated May 21, 1895.

Application filed June 15, 1894. Serial No. 514,681. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. SNYDER, a citizen of the United States, residing at Luzerne, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Drilling-Machine, of which the following is a specification.

The invention relates to improvements in drilling machines.

10 The object of the present invention is to simplify and improve the construction of coal drilling machines, to dispense with the ordinary threaded feed bar usually required, and to enable the auger to serve and operate as a  
15 feed bar.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed  
20 out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a mining-machine constructed in accordance with this invention. Fig. 2 is a vertical longitudinal sectional view, the auger  
25 being shown in elevation. Fig. 3 is a transverse sectional view. Figs. 4 and 5 are detail perspective views of the gear-wheels for rotating and feeding the auger. Fig. 6 is a detail perspective view of the stub-shaft.

30 Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a cylindrical casing provided with opposite trunnions, which are journaled  
35 in suitable bearings of a yoke 3. The cylindrical casing is provided at its front and rear with circular openings, receiving the hubs 4 and 5 of gear wheels 6 and 7, operating respectively on an auger 8 for rotating and feed-  
40 ing the same. The casing is provided with a removable front plate 9, which is detachably secured by screws, or similar fastening device, passing through registering openings or perforated lugs of the body of the casing and the  
45 front plate thereof.

The hub of the gear wheel 6, which rotates the auger, is provided at diametrically opposite points on its interior with longitudinal ribs or splines 10, engaging longitudinal grooves  
50 11 of the auger, the grooves being formed by rectangular transverse peripheral notches or recesses formed in each twist of the twisted

blade of the auger. The hub 4 is of sufficient length to enable the ribs or splines thereof to engage a sufficient number of the recesses or  
55 notches of the auger to obtain the requisite strength, and to prevent any liability of injuring the auger by straining a portion of it.

The hub 5 is provided at opposite sides of its interior with lugs 12, having bearing recesses 13 which are located eccentrically with  
60 relation to the auger, and in which continuously are journaled anti-friction rollers 14, which engage the opposite faces of the twisted blade of the auger, whereby the latter is fed  
65 forward. The anti-friction rollers 14 are parallel with each other, and with the line of the longitudinal movement of the auger, and by locating the anti-friction rollers at the outer  
70 end of the hub of the gear-wheel, they are readily accessible. The outer end of the same is provided with a suitable bit socket 15; and ball bearings 16 are provided between the  
75 outer faces of the cogs 6 and 7 and the sides, or the front and back of the casing to enable the rotation of the cog wheels to be frictionless.

The inner faces of the front and rear walls of the cylindrical casing are provided adjacent to the circular openings for the hubs of  
80 the gear wheels 6 and 7 with annular grooves or recesses for the reception of the balls 16, and the latter engage the adjacent faces of the gear wheels and the outer faces of the  
85 hubs thereof.

The cog wheels 5 and 6 cause the rotation and feeding of the auger, and by varying the size of the wheels the number of rotations of the auger to a given distance of feed may be  
90 readily regulated. The cog wheels are connected by gear wheels 17 and 18 with a drive shaft 19 journaled in suitable bearings 20 and 21 of a casing, and provided with square or polygonal ends located at opposite sides of  
95 the machine, whereby a crank handle may be arranged at either or both sides of the drilling machine.

The gear wheel 17 is elongated and meshes with both of the cog wheels 6 and 7, the casing being provided with an opening for this  
100 purpose, and the said gear wheel 17 is provided at its rear end with bevel cogs, which mesh with the bevel gear wheel 18 fixed to the drive shaft. The gear wheel 17 is loosely



mounted on a stub shaft 22, provided at its rear end with a sleeve, arranged on the drive shaft and located between the bevel gear wheel and the outer bearing of the drive shaft; and the front end of the stub shaft is detachably secured in an open bearing by a removable pin 23, which is adapted to be withdrawn from perforations of the bearing 24 to permit the stub shaft to be swung rearward to throw the elongated cog wheel out of gear, in order that the auger may be readily adjusted and returned to its initial position.

It will be seen that the drilling machine is simple and comparatively inexpensive in construction, and that the rotation and feeding of the auger may be readily maintained and controlled without employing an additional feed shaft.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In a drilling machine, the combination of a frame, an auger having a twisted blade, a gear-wheel connected by a spline with the auger, and adapted to rotate the same, a feed gear wheel provided on the interior of its hub at the outer end of the same, at diametrically opposite points, with lugs having bearing recesses, the parallel eccentrically arranged anti-friction rollers mounted in the bearing recesses and arranged parallel with the line of longitudinal movement of the auger and engaging the opposite faces thereof at opposite sides of the longitudinal axis, and gearing for rotating the gear-wheels, substantially as described.

2. In a drilling machine, the combination of a frame, an auger provided at its twisted blade with notches forming grooves or ways, a gear wheel mounted on the frame and provided on the interior of its hub with ribs or splines engaging the grooves or ways, a feed gear wheel journaled in the frame and provided on its interior with anti-friction wheels engaging the faces of the twisted blade of the auger, and mechanism for rotating the gear wheels, substantially as described.

3. In a drilling machine, the combination of a frame or casing of cylindrical shape provided with opposite openings, a gear wheel mounted in the casing and having a hub extended through one of the openings of the casing and provided with ribs or splines, a feed

gear wheel arranged in the frame or casing and having its hub extending through the other hub thereof and provided with anti-friction wheels, an auger extending through the hubs of said gear wheels and having its faces engaged by the anti-friction wheels and provided with notches to receive the ribs or splines, a transverse drive shaft journaled in suitable bearings of the frame or casing and carrying a beveled gear wheel, a stub shaft hingedly connected with the drive shaft and arranged at right angles to the same and extending forward therefrom and having its front end detachably secured to the frame or casing, and a gear wheel mounted on the stub shaft and meshing with the beveled gear wheel of the drive shaft and the gear wheels of the frame or casing, substantially as described.

4. In a drilling machine, the combination of a casing having front and rear walls provided with circular openings, an auger, the gear wheel 6 arranged within the casing and having an extended hub arranged in one of the circular openings of the casing and interlocked with the auger, the feed gear wheel arranged within the casing and having its inner face bearing flat against the inner face of the gear wheel 6, said feed gear wheel having an extended hub arranged in the other circular opening of the casing and engaging the auger, and a gear wheel mounted on the casing and meshing with both of the said gear wheels and rotating them, substantially as described.

5. In a drilling machine, the combination of a casing having front and rear walls provided with circular openings and having at their inner faces adjacent to the circular openings annular recesses, an auger, the gear wheels 6 and 7 arranged face to face in the casing and having oppositely extended hubs arranged in the circular openings of the casing and engaging the auger, the anti-friction balls located in the annular recesses of the casing and engaging the outer faces of the gear wheels and the exterior of their hubs, and gearing for rotating said gear wheels at different speeds, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN T. SNYDER.

Witnesses:

SAMUEL SNYDER,

C. W. HONEYWELL.