

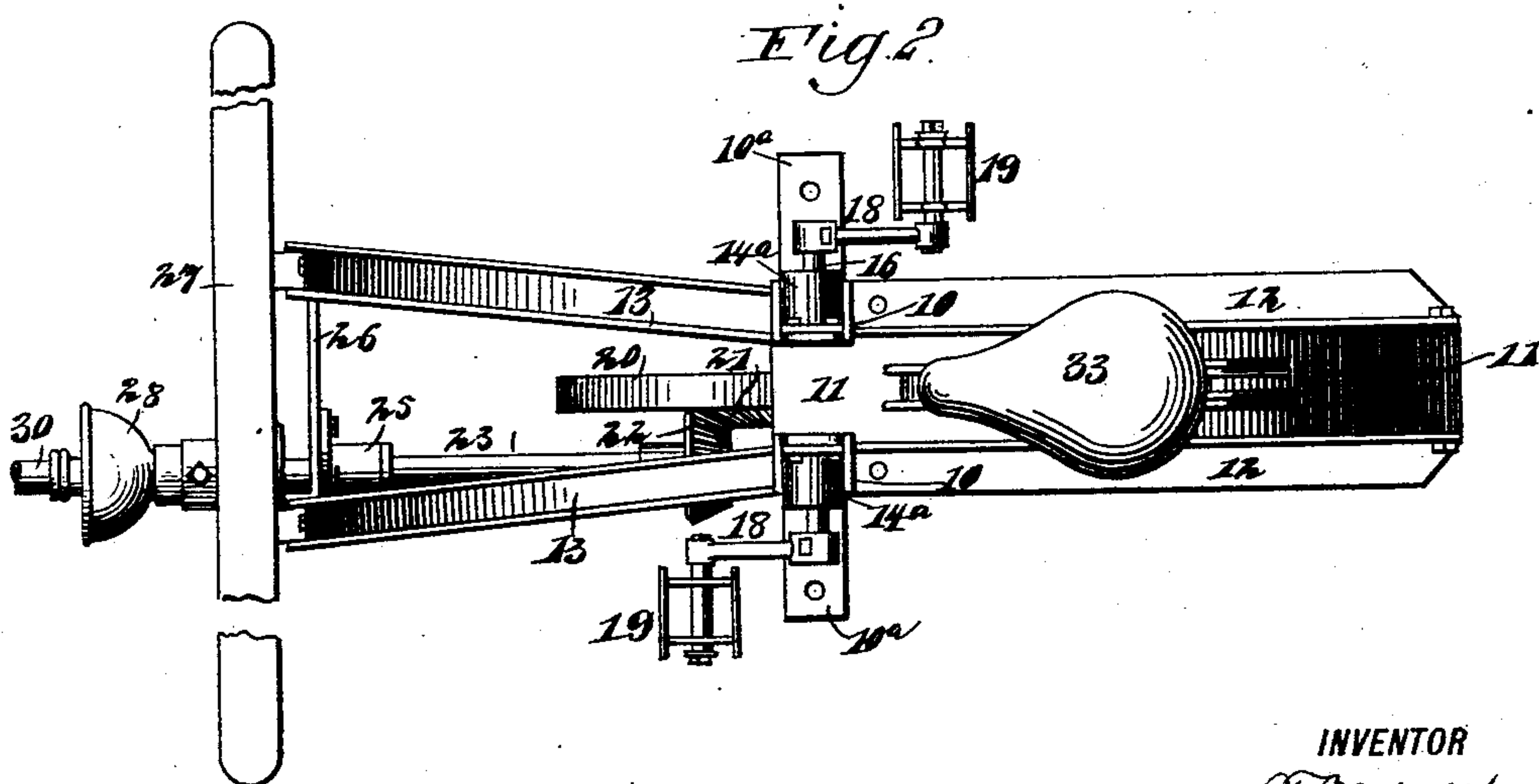
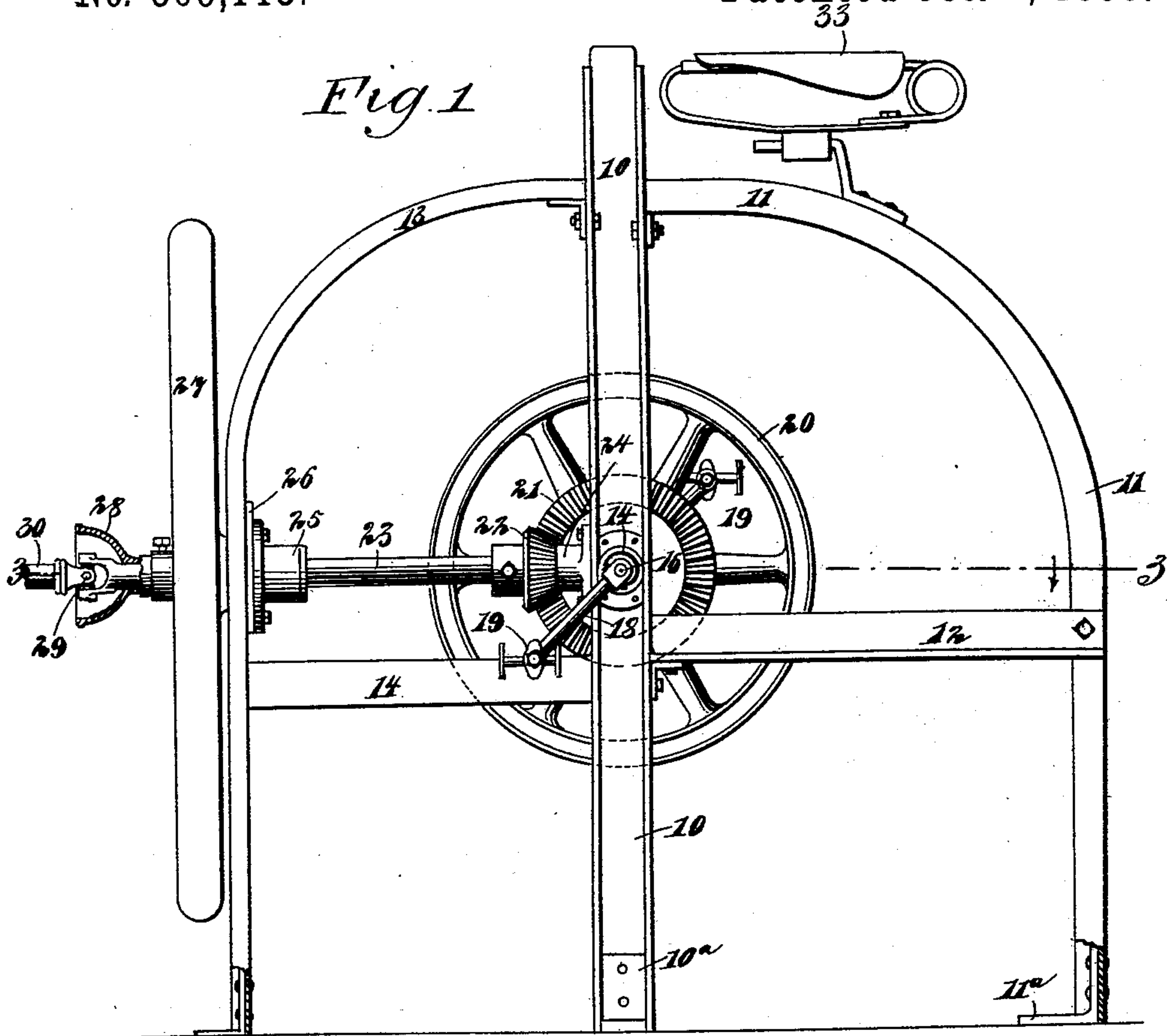
(No Model.)

2 Sheets—Sheet 1.

F. MILLIKEN.
DRIVING MECHANISM FOR DRILLS.

No. 569,115.

Patented Oct. 6, 1896.



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(No Model.)

2 Sheets—Sheet 2.

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Fig 3.

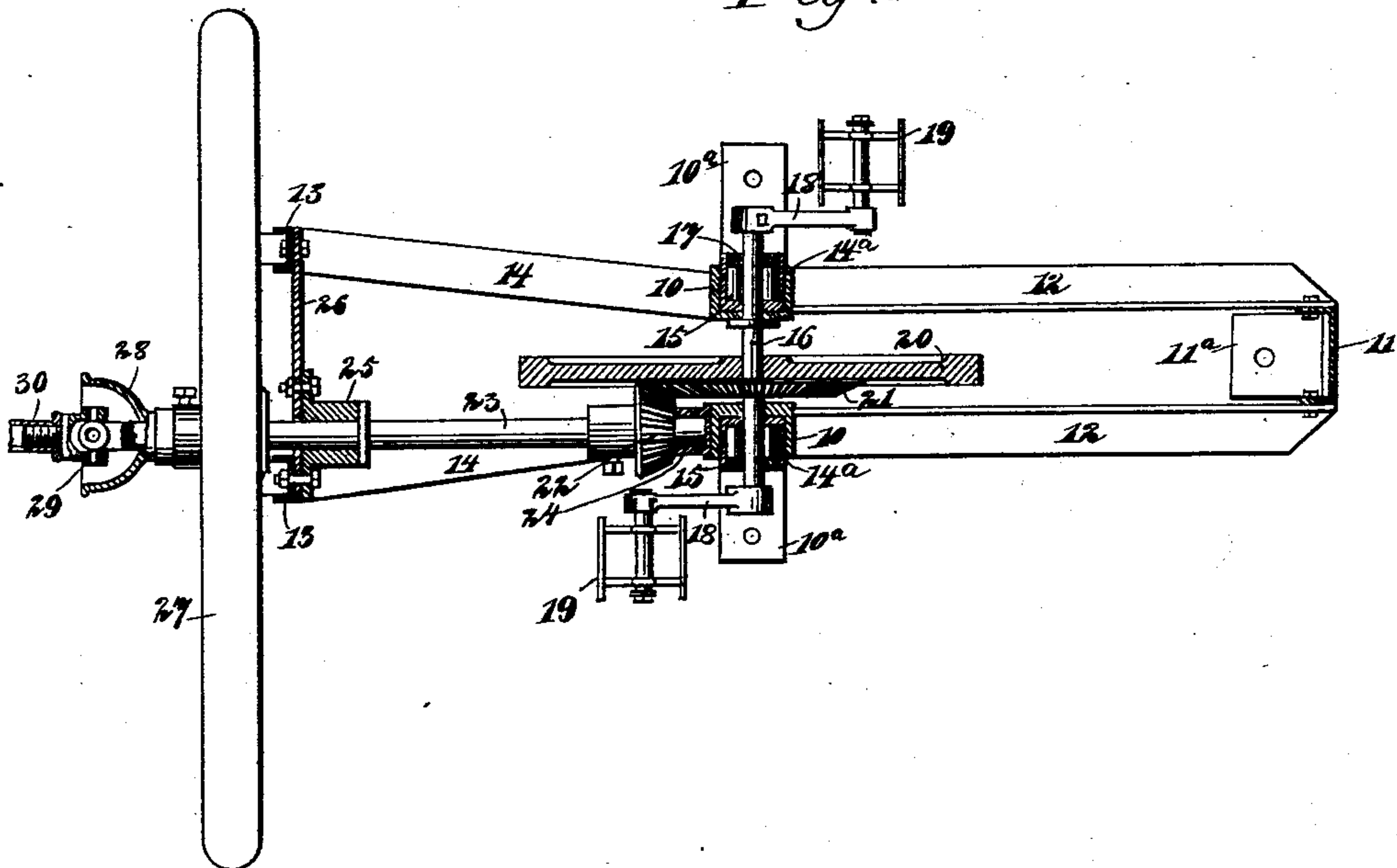


Fig 4.

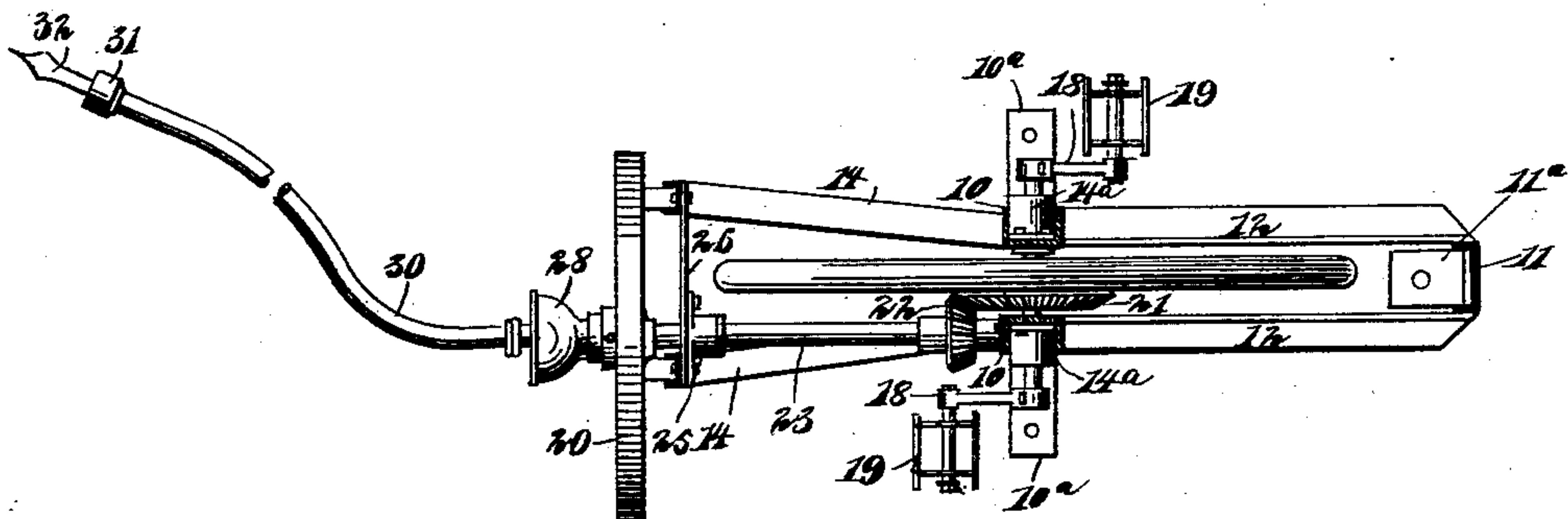
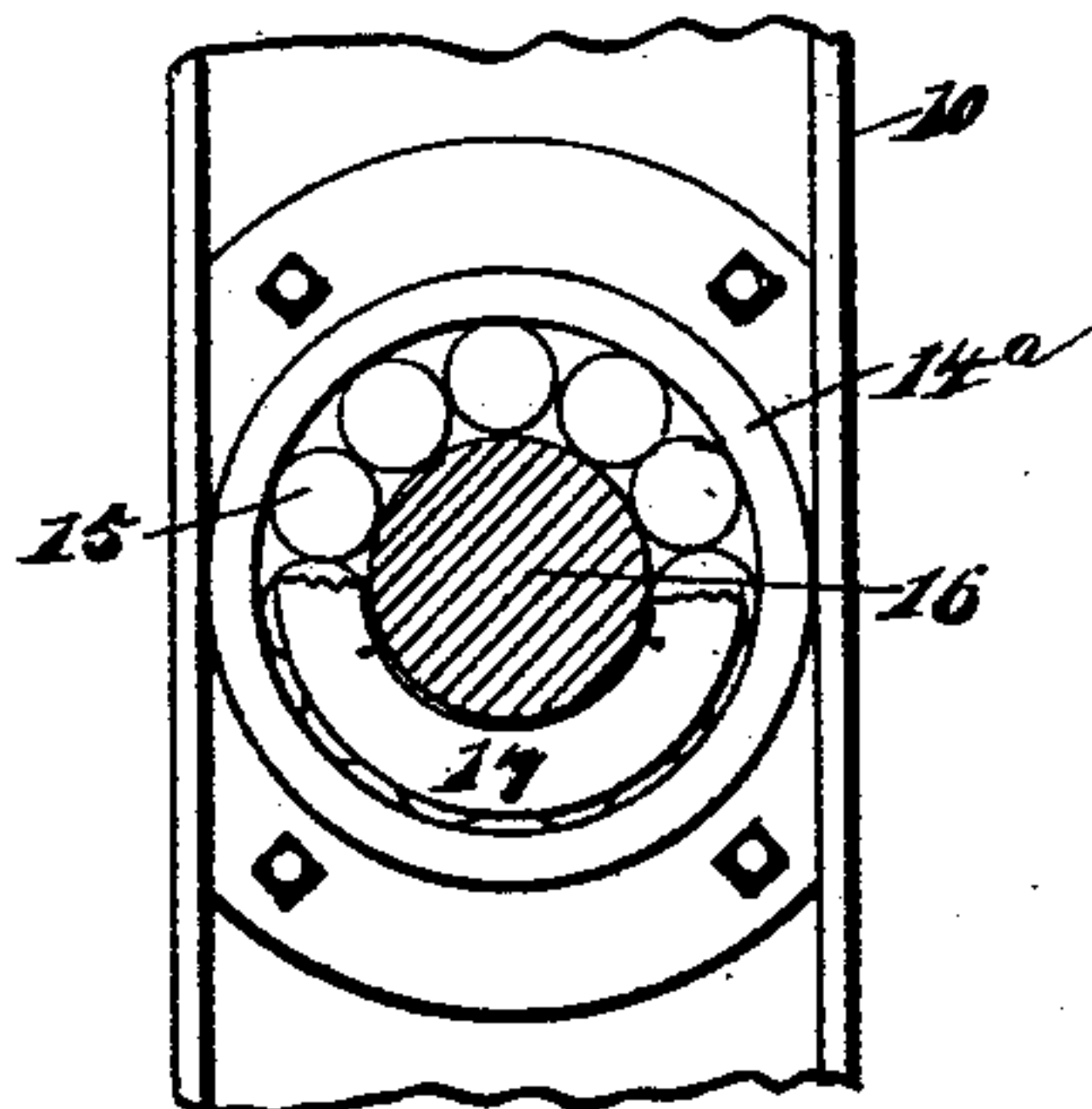


Fig 5.



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UNITED STATES PATENT OFFICE.

FOSTER MILLIKEN, OF NEW YORK, N. Y.

DRIVING MECHANISM FOR DRILLS.

SPECIFICATION forming part of Letters Patent No. 569,115, dated October 6, 1896.

Application filed May 13, 1896. Serial No. 591,379. (No model.)

To all whom it may concern:

Be it known that I, FOSTER MILLIKEN, of New York city, in the county and State of New York, have invented a new and Improved Driving Mechanism for Drills, of which the following is a full, clear, and exact description.

The object of the invention is to provide a bicycle driving mechanism for drills, reamers, &c., the drills being used in producing holes in iron or wooden structures, especially iron structures, and the main object sought to be attained is to provide a mechanism operated by a pedal motion in the most advantageous manner and with the least possible exertion on the part of the operator, the construction of the machine being such as to enable the drill or other tool employed to be carried within a certain radius to any desired point on a structure.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 1. Fig. 4 is a plan view of a slightly-modified form of the machine; and Fig. 5 is a section through the pedal-shaft, illustrating the roller-bearings for the same.

In carrying out the invention the frame, as shown, consists of two uprights 10, the said uprights being in parallel arrangement and made of channel-iron. These uprights are attached at their upper ends to an inverted channel-iron 11, which is curved at its top and is straight at its lower portion, the said channel-irons 10 having suitable feet 10^a and the rear channel-iron a foot 11^a, the feet being adapted to be secured to any suitable support. In the further construction of the frame of the machine two front channel-irons 13 are shown, which are also in parallel arrangement, but are spaced wider apart than the central channel-irons 10. The front channel-irons 13 are arched at their

upper ends and extend inwardly to an engagement with the central or main channel-irons 10. The central channel-irons 10 and the rear channel-iron 11 are connected at or near their centers by bars 12, of angle-iron, and the forward channel-irons 13 are in like manner attached to the central channel-irons 10 by cross-bars 14, which are also shown as made of angle-iron. It will, however, be understood that all parts of the frame may be made of plain material or of piping or tubes, but such latter construction is preferable.

At or near the central portion of each central upright or channel-iron 10 a box 14^a is formed, and in each box ball or roller bearings 15 are located, adapted for engagement with the shaft 16, journaled in the said boxes, and the balls or rollers are held in suitable position on the bearings by means of a proper cap 17. A crank-arm 18 is secured upon each outer end of the shaft 16, and each crank-arm carries a pedal 19, whereby the shaft and pedals will correspond to the driving-shaft and pedals of a bicycle or like machine.

A balance-wheel 20 is secured upon the shaft 16 between its bearings, and upon one face of the balance-wheel 20 a beveled gear 21 is formed or secured. The beveled gear 21 is in mesh with a beveled pinion 22, secured upon the shaft 23, extending forwardly beyond the frame of the machine and journaled at its inner end in a box 24, formed upon a side of one of the upright side channel-irons 10, and the said shaft 23 is further journaled in a suitable bearing 25, secured to a cross-bar 26, connecting the front uprights or channel-irons 13, as shown particularly in Fig. 3. A second balance-wheel 27, of larger size than the pedal-shaft wheel 20, is secured upon the driven shaft 23 at the front of the machine-frame.

A cup 28 is preferably secured to the outer end of the shaft 23, serving to protect a universal or swivel joint 29 between the driven shaft 23 and a flexible shaft 30, the flexible shaft having a chuck 31 located at one end, adapted to hold a tool 32, such as a drill. A saddle 33 is located preferably upon the upper arched portion of the rear channel-iron 11, as shown in Fig. 1, the saddle having such a po-

sition that the feet of the person seated thereon may conveniently operate the pedals 19.

If in practice it is found desirable, one of the balance-wheels may be omitted, or, as shown 5 in Fig. 4, the smaller balance-wheel may be located on the driven shaft 23 and the larger balance-wheel be placed upon the pedal-shaft 16. It is also evident that suitable gearing may be employed for driving from the one 10 pedal-shaft any desired number of flexible shafts, enabling a single operator driving the machine to furnish sufficient power to operate two or more drills.

Having thus described my invention, I 15 claim as new and desire to secure by Letters Patent—

1. In a drilling-machine the combination of an inclosing skeleton frame having arched upper members terminating below in rigid 20 supporting legs and feet at their lower ends, a seat or saddle mounted upon the top thereof, a pedal-shaft with driving-cranks and pedals, journaled centrally within said frame below said seat, and a balance-wheel, connecting- 25 gears, and driven shaft for converting the motion to the drill also located centrally within the skeleton frame, substantially as and for the purpose described.

2. In a drilling-machine the combination 30 of an inclosing skeleton frame having arched upper members, a seat or saddle mounted upon the top thereof, a pedal-shaft with driving-cranks and pedals journaled centrally

within said frame below said seat and a balance-wheel, connecting-gears, and driven 35 shaft located within the framework for converting the motion, said driven shaft having also outside the framework a balance-wheel and a universal joint for connecting with a flexible drill-shaft, substantially as and for 40 the purpose described.

3. The combination, with a frame comprising forward uprights, central uprights, a rear upright arched to meet and connect with the central uprights, cross-bars connecting the 45 various uprights at each side of the frame, and a seat mounted upon the upper portion of the rear uprights, of roller-bearings located in the central uprights, a shaft journaled in the said bearings, having crank-arms 50 attached, and pedals carried by the crank-arms, a balance-wheel located on the pedal-shaft, the said balance-wheel being provided with an attached gear, a shaft located at right angles to the pedal-shaft and having a beveled 55 pinion engaging with the said beveled gear, a line-shaft extending outward beyond the front of the machine, a balance-wheel secured upon the line-shaft, and a flexible shaft provided with a tool-holder, connected with 60 and operated from the line-shaft, as and for the purpose specified.

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