E. B. ZOOK.

GEARING.

APPLICATION FILED JUNE 17, 1908.

916,521.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.

Fig 1

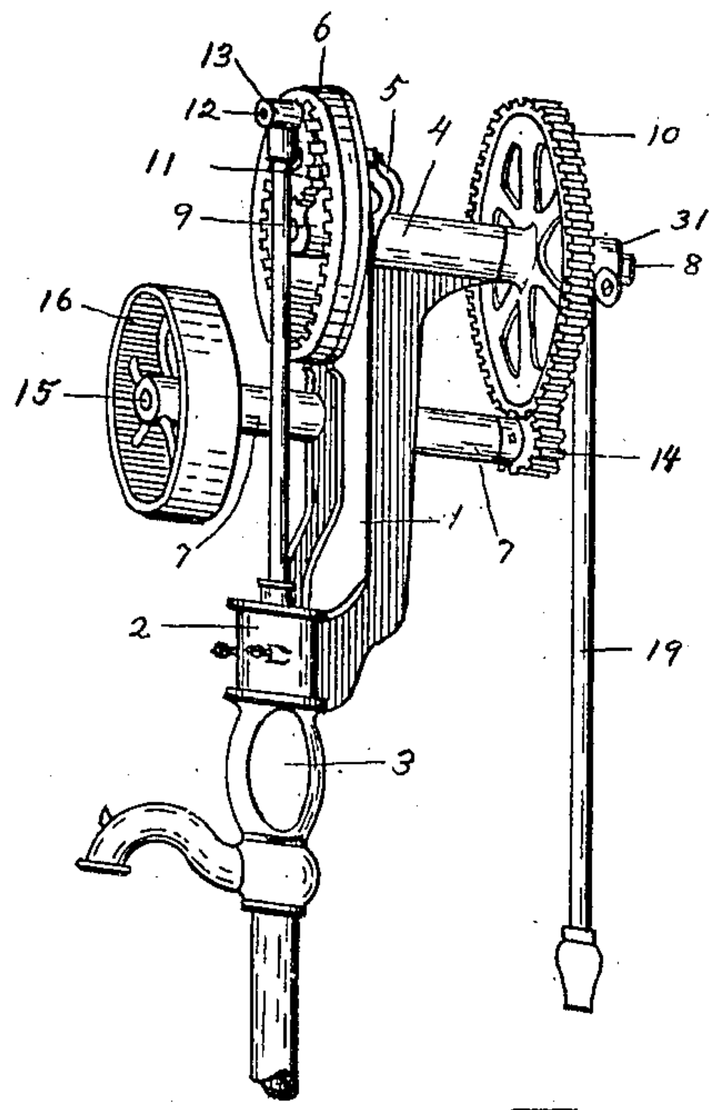

Fig 2

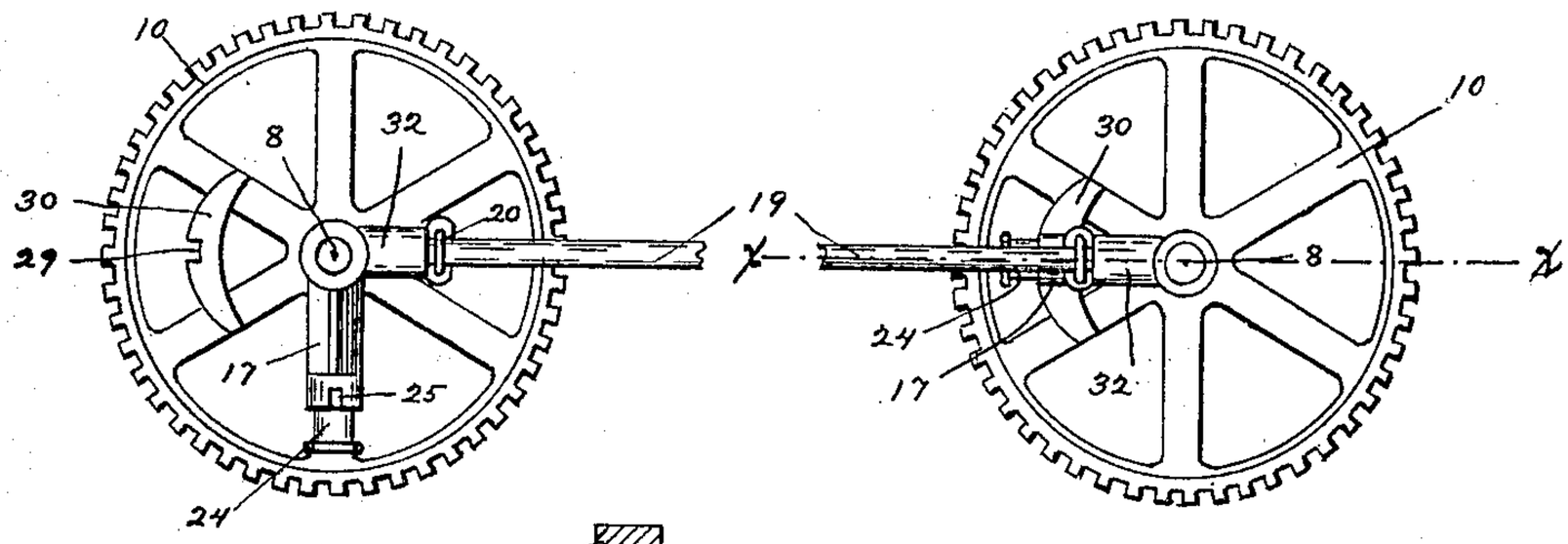

Fig 3

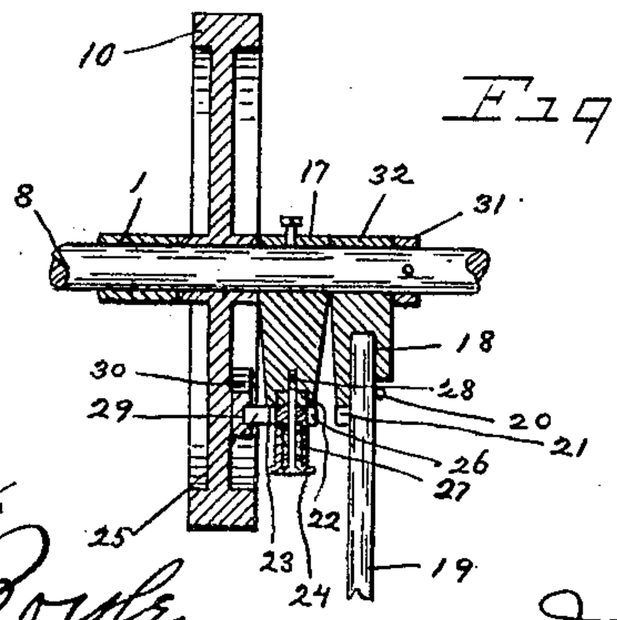

Fig 4

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2 SHEETS—SHEET 2.

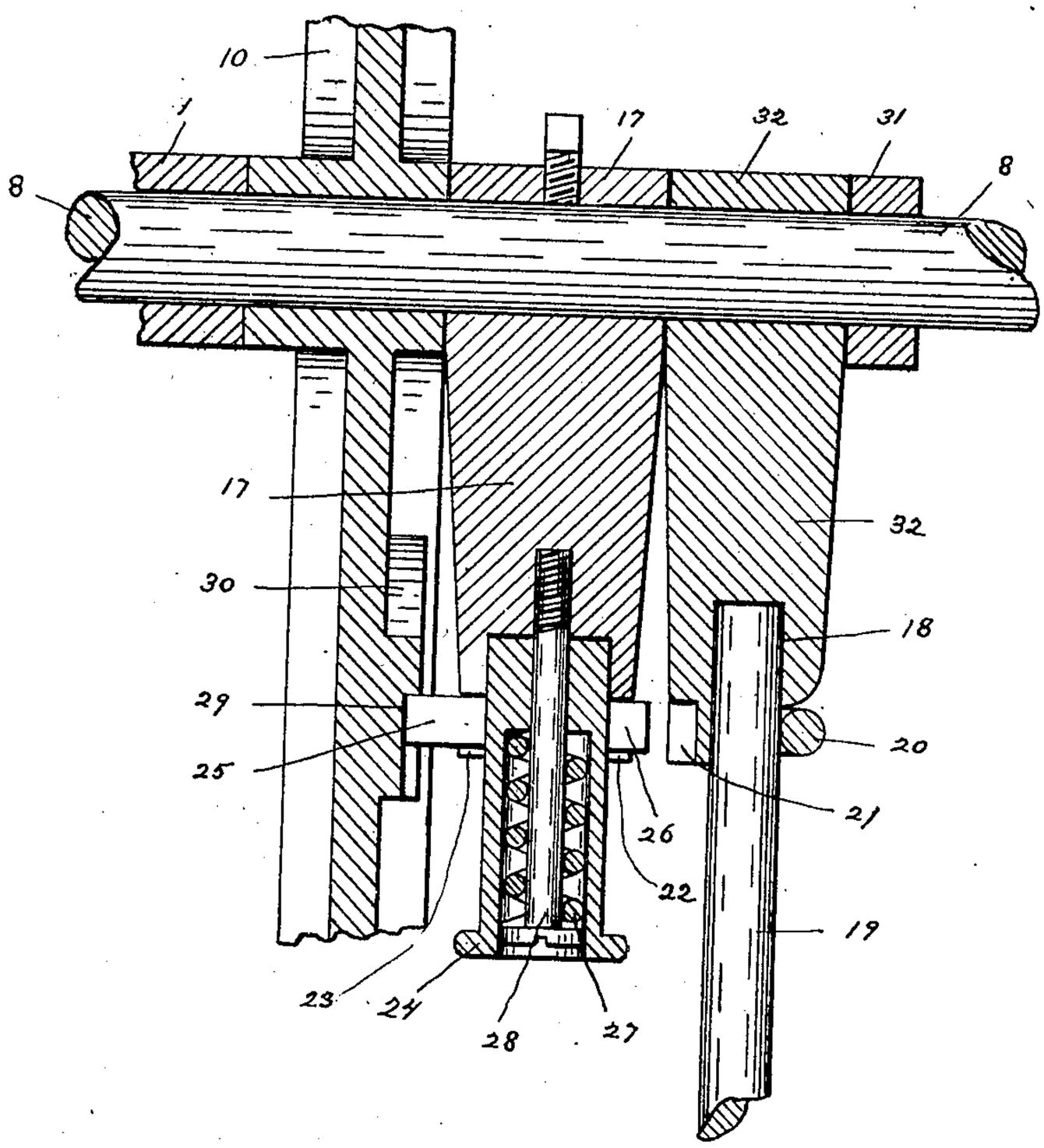

Fig 5

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UNITED STATES PATENT OFFICE.

EZRA B. ZOOK, OF LEOLA, PENNSYLVANIA.

GEARING.

No. 916,521. Specification of Letters Patent. Patented March 30, 1909.

Application filed June 17, 1908. Serial No. 438,891.

To all whom it may concern:

Be it known that I, EZRA B. ZOOK, a citizen of the United States, residing at Leola, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Gearing, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to an improved form of gearing or convertible hand or power-operated pump-head for deep well pumps, or other mechanical operations requiring a gearing of like nature.

The objects of my invention are to produce a durable, efficient and simple device of this class, and also to provide a novel means of operation, whereby motion may be imparted to the device either by hand-power or from a motor or engine, and further by a novel device the mechanism may be operated by motor-power, or hand-power, at will without danger of both being used at the same time, and further by my novel construction I impart a great efficiency of operation with the use of a small amount of applied motive power.

To this end my invention consists in certain novel features of construction and combination of parts, which are fully described and claimed in the annexed specification, but it is fully understood that I do not confine myself to the exact design as shown, as slight changes may be made in its construction without departing from the spirit of the invention.

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

In the drawings:—Figure 1, is a perspective view of my gearing as applied to a pump-jack and shows the arrangement of the several parts. Fig. 2, is an enlarged view of the main gear, showing the hand-lever and catch-lever out of engagement with each other and with said gear. Fig. 3, is an enlarged view of the main gear, showing the locking-lever attached to the gear for the operation by power, and the hand-lever in a horizontal position. Fig. 4, is a sectional view of the spur-gear and the locking and hand-levers, taken on the line *x x* of Fig. 3. Fig. 5, is a detailed enlarged view of the locking device.

In the drawings, 1, indicates the main frame, which is provided with the band 2, at its lower end which embraces and is secured to the pump 3. To the upper end of said frame 1, and integral therewith is formed the horizontal bearing 4, from the forward end of which radiate the arms 5, to the outer ends of which is secured the internal gear 6, and which is further braced and secured to said frame near its lower edge in any suitable manner, and here shown as integral therewith. At the side of said frame 1, and parallel with the bearing 4, and integral with said frame is the bearing sleeve 7. In the main bearing 4, is journaled the main shaft 8, to the forward end of which is rigidly secured the crank-arm 9, and near the end of said shaft 8, is rotatably secured the main gear 10, while upon the outer end of said crank-arm 9, is rotatably mounted the pinion 11, which meshes with and revolves within the internal gear 6. To the outer side of said pinion 11, near its periphery, is secured a wrist-pin 12, upon which is rotatably mounted the upper end of the suction rod 13, and by the arrangement of said pinion 11, and said crank-arm 9, said rod 13 will have a vertical movement imparted to it as the pinion 11, is rotated within said internal gear 6. The main gear 10, meshes with and is rotated by a pinion 14, which is rigidly secured to the rear end of a counter-shaft 15, which is journaled within the bearing sleeve 7, while to the forward end of said counter-shaft 15, is rigidly secured the power belt pulley 16, for the purpose of transmitting power to said train of gears.

Near the rear end of the shaft 8, and in contact with the hub of the main gear 10, is rigidly secured to said shaft the arm 17, which is formed with the end orifice 22, which is provided with the transverse slot or notch 23. Within said orifice 22, is mounted the finger-catch 24, which is provided with a long lug 25, and a short lug 26, which are adapted to engage the notches 23, said catch being retained in place by the action of the spring 27, which is contained within the body of said arm 17, and the pin 28, secures said catch to the arm 17, in such a manner that by pulling out said finger-catch against the action of the spring 27, and revolving said catch, the projecting long lug 25, can be brought into engagement with the notch 29, of the locking segment 30, on the side of the main gear 10, thus locking said gear to the shaft 8; or said lug 25, may be brought into

engagement with the hand-lever casing 32, thus locking said hand-lever casing to said shaft 8.

Rotatably mounted upon the shaft 8, in contact with the head of the arm 17, and retained on said shaft by the collar 31, which is secured to said shaft, is the handle-casing 32, which is formed with the orifice 18, within which is secured the handle 19, by the U-bolt 20, which embraces said handle 19; and said handle socket is further provided with the notch 21, to register with and secure the lug 25, of the catch 24. It will also here be noted that the notched segment 30, of the wheel 10, is curved so that the lug 25, will freely enter said notch, as so also is the hand-lever casing 32. By this novel method it will be readily seen that when the hand-lever casing 32, is secured to the catch-lever 17, and the handle operated, said arm 17, being rigidly attached to the shaft 8, and in proper relation to the wrist-pin 12; the suction rod 13, will be raised and lowered in the usual way, and the gear wheel 10, which is connected to the power pulley by the pinion 14, upon the counter-shaft 15, will be at rest, while if the arm 17, is connected to the gear 10, the power will be communicated to the suction rod by the train of gears.

The operation of the device will be so readily understood that it will not be necessary to further explain the mode of operation.

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

1. In a gearing of the class described, a gear supporting frame, having bearings therein, a ring integral with said frame and adapted to secure said frame to the pump, shafts rotatably mounted within said bearings with their ends extending therefrom, gear wheels mounted upon said shafts, means for connecting said gears to the suction rod of the pump, and means for changing the source of power applied to said gears.

2. In a gearing of the class described, a gear supporting frame, a main shaft and a counter-shaft journaled in horizontal bearings secured in parallel relation to each other and integral with said gear frame, an internal gear concentric with the main shaft bearing and secured to said frame, a pinion meshing with and rotating within said internal gear, said shaft journaled in said bearing with its ends projecting therefrom, and to one of which ends is secured said pinion, a main gear rotatably mounted upon the other end of said shaft, a segment having its ends secured to two adjacent spokes of said gear and provided with a curved and notched edge, said counter-shaft journaled in said counter-shaft bearing with its ends projecting therefrom, a pinion rigidly secured to one end of said shaft and meshing with said main gear, a power pulley rigidly secured to the other end of said shaft, and means for operating said main shaft by manual power.

3. In a gearing of the class described, a gear frame adapted to be secured to the suction pipe, a main shaft and a counter-shaft journaled in said frame, an internal gear concentric with said main shaft, a crank secured to one end of said shaft, a pinion rotatably secured near the end of said crank and meshing with said internal gear, a main gear rotatably mounted upon the other end of said main shaft, a curved and notched segment secured upon one side of said gear, an arm rigidly secured to said main shaft, a slidable and rotatable catch provided with projecting lugs, secured within the body of said catch-lever with said lugs extending through corresponding notches formed in the end of said lever, a pin extending longitudinally through said catches and adapted to secure said catch to said lever, a spring surrounding said pin and contained within said catch, said projecting lug adapted to register with and detachably engage the notched segment of said main gear, a hand-lever casing rotatably mounted upon said shaft and formed with a notched end adapted to register with and be detachably engaged by said projecting lug of said catch.

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

EZRA B. ZOOK.

Witnesses:
CHAS. S. ZWALLY,
JNO. H. MARTIN.