

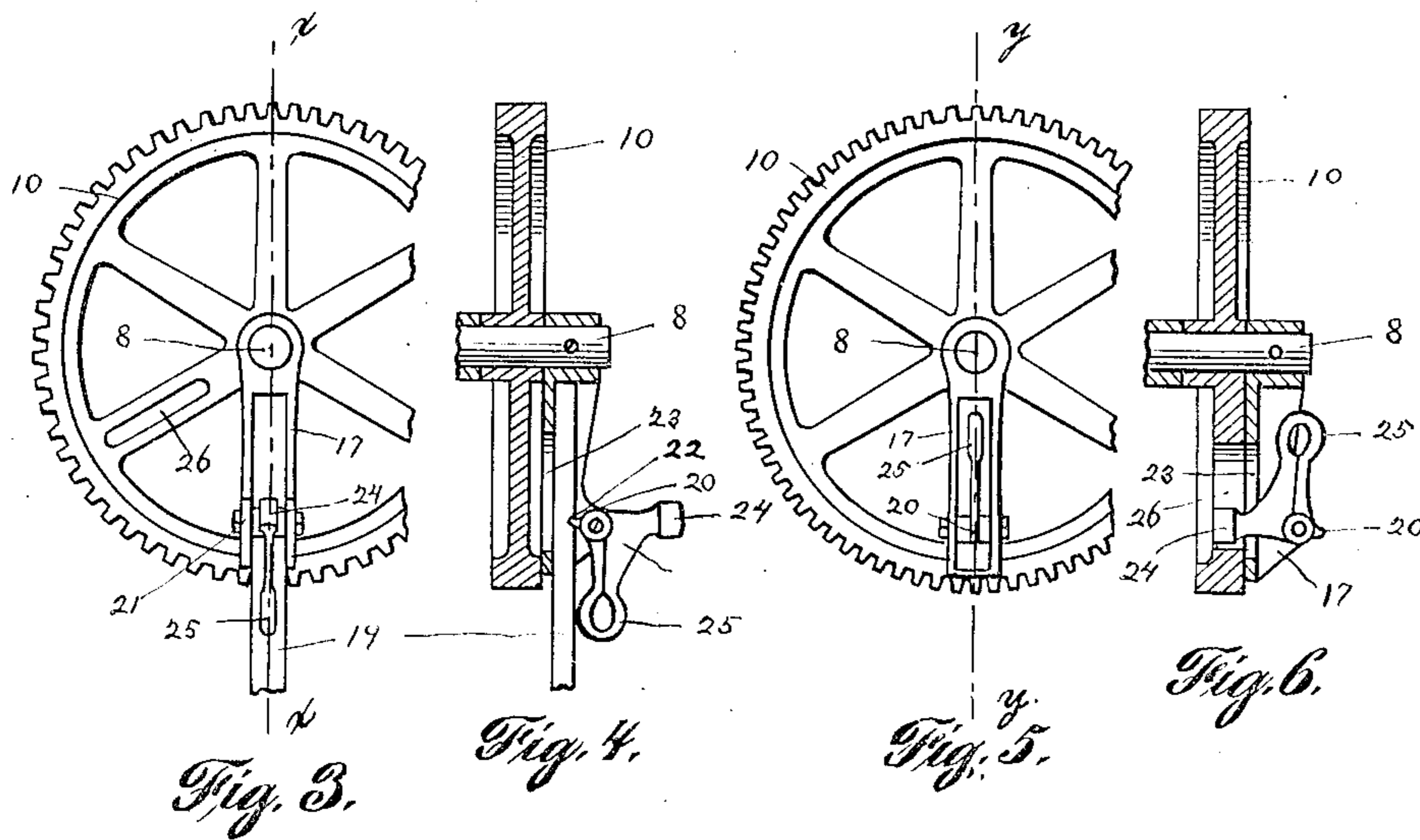
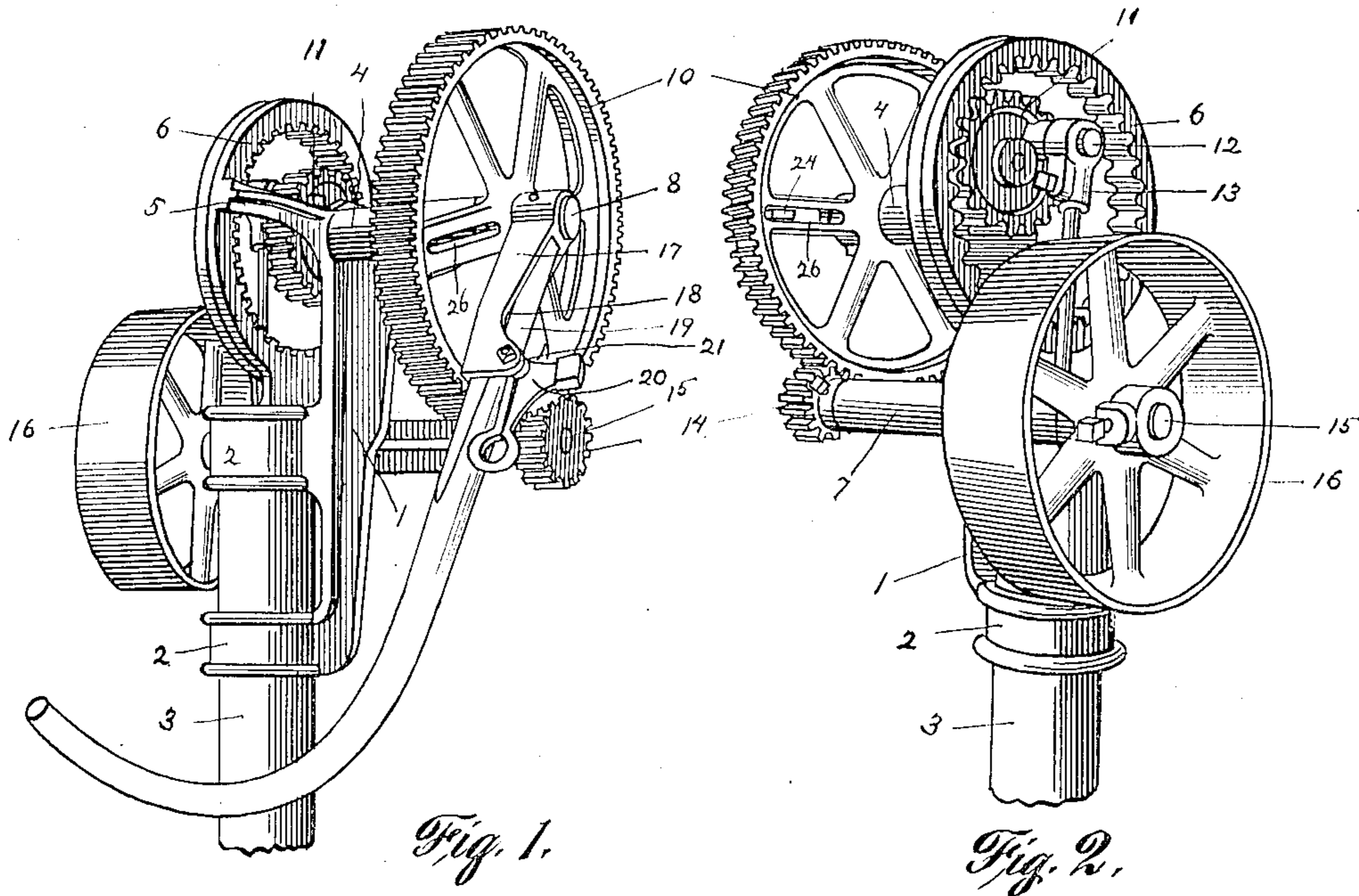
E. B. ZOOK.

GEARING.

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904,744.

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GEARING.

No. 904,744.

Specification of Letters Patent.

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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 pumping-jack or convertible hand or power-operated power-head for deep well pumps, or other mechanical operation requiring a movement of like nature.

The objects of my invention are to produce a simple, durable and efficient device, and also to provide a novel means whereby the jack cannot be operated by power when the hand-lever is attached, thus eliminating all danger of accident caused by applying the power while the hand-lever is in use; and further by the mode of gearing which I employ, I impart a great efficiency of operation with a small amount of power applied.

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

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

In the drawings:—Figure 1, is a perspective view of the jack in position, showing the rear. Fig. 2, is a perspective view of the jack in position, showing the front. Fig. 3, is an elevation of the spur gear, and lever case, showing the hand-lever attached and power detached. Fig. 4, is a sectional view of Fig. 3, on the line $x-x$. Fig. 5, is an elevation of the spur gear, and lever-case, showing the hand-lever detached and removed and the lever-case attached to the spur gear to operate the jack by power. Fig. 6, is a sectional view of Fig. 5, on the line $y-y$.

In said drawings, 1, indicates the main frame, which is provided with the bands 2, which embrace and are secured to the suction or well pipe 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, on a line with the upper band 2, and extending rearwardly at right angles thereto, and parallel with the bearing 4, and integral with said frame, is the bearing sleeve 7.

In the main bearing 4, is journaled the shaft 8, to the forward end of which is rigidly secured the crank arm, and near the rear end of which is rotatably secured the spur 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, near its periphery, is secured a wrist pin 12, upon which is rotatably mounted the end of the suction rod 13, and by the arrangement of said pinion and crank, said rod 13, will have a vertical movement imparted to it as the pinion 11, is rotated within said internal gear 6.

The spur gear 10, meshes with and is rotated by a pinion 14, which is rigidly secured to the rear end of a counter-shaft 15, journaled within the bearing sleeve 7, while to the forward end of said counter-shaft 15, is rigidly secured the power pulley 16, for the purpose of transmitting power to said train of gears.

To the rear end of the shaft 8, is rigidly secured the handle casing 17, at right angles to said shaft and which is formed at one end with the orifice to receive the end of said shaft, and on its side with the hand-lever socket 18, adapted to receive the squared end of the hand-lever 19, which is detachably secured therein by the action of the bell-crank catch 20, which is pinioned between the ears 21, of said socket 19, and while in the position shown in Fig. 3, has its end in engagement with a transverse groove 22, provided in the surface of said hand-lever, thus securely retaining said hand-lever within said socket. In the bottom of said socket 18, and extending therethrough is the orifice 23, placed in such a position that the arm 24, of the bell-crank 20, will enter it and extend there-through when the hand-lever 19, is removed and the bell-crank 20, placed in position as shown in Fig. 5, and into engagement with the slot 26, in the spoke of the gear 10; which will lock said case and gear together.

The other arm of said crank is provided with the finger grip 25. By this novel method it will be readily seen that when the hand-lever is attached and operated, the lever-case 17, being attached to the shaft 8, in proper relation to the wrist pin 12, the suction rod 13, will be operated in the usual way, and the gear wheel 10, which is connected to the power pulley by the pinion 14, and counter-shaft 15, will be at rest, while if the hand-lever 19, is removed and the lever-casing 17, secured to the gear 10, by the bell-crank catch 20, the power will be communicated to the suction rod by said train of gears.

The operation of the device will be so readily understood that it will only be necessary to further say that when the hand-lever is removed by releasing the bell-crank catch, and the bell-crank catch turned to bring the engaging lug into engagement with the slot in the spoke of the spur-gear through the registering slot in the lever-case, this action will lock said spur-gear to said lever-case, thus connecting the main shaft to the counter-shaft for operating the mechanism by the belt power.

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, comprising a gear supporting frame adapted to be attached to the pump standard, and formed with parallel horizontal shaft bearings, an internal gear secured to said frame near its upper end, by arms radiating from the upper shaft bearing, integral therewith and with said internal gear near the periphery thereof, a main shaft journaled in said upper bearing, a crank-arm secured upon one end of said shaft and provided with a wrist-pin, a pinion rotatably mounted upon said wrist-pin and adapted to mesh with and rotate within said internal gear, a suction rod head rotatably mounted upon said wrist-pin, and adapted to be raised and lowered by the rotation of said pinion.

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 said main shaft bearing and secured to said frame, a pinion meshing with and rotating within said internal gear, said main shaft journaled in said bearing with its ends projecting therefrom, a pinion secured to one end thereof, a spur-gear rotatably mounted upon the other end of said main shaft and provided with a slotted spoke, a catch secured to said main shaft and adapted to engage said slotted spoke, said counter-shaft journaled in said counter-shaft bearing with its ends projecting therefrom, a pinion rigidly secured to one end of said counter-shaft and meshing with said spur-gear, and a power pulley rigidly secured to the other end of said counter shaft.

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 spur-gear rotatably mounted upon the other end of said main shaft, and provided with a slotted spoke, a hand-lever casing rigidly secured to said main shaft and formed with a handle-securing socket, having a slot formed in the bottom thereof and adapted to register with the slot in the spoke of said spur-gear, and having lugs formed near the outer end thereof, a bell-crank catch pivoted between said lugs, and formed with a finger-grip upon the end of one arm, and a lug formed upon the other arm of said lever and adapted to project through the slot in said case and into engagement with the slot in said spur-gear, a lug formed adjacent to the pivot socket of said lever, a hand-lever detachably mounted within said handle-socket, and a recess formed in the side of said handle-lever and adapted to be engaged by said eccentric lug.

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

EZRA B. ZOOK.

Witnesses:

J. F. BRUBAKER,
DANIEL EABY.