A. N. BLAZER.

WELL PUMP.

APPLICATION FILED FEB. 10, 1909.

951,627.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

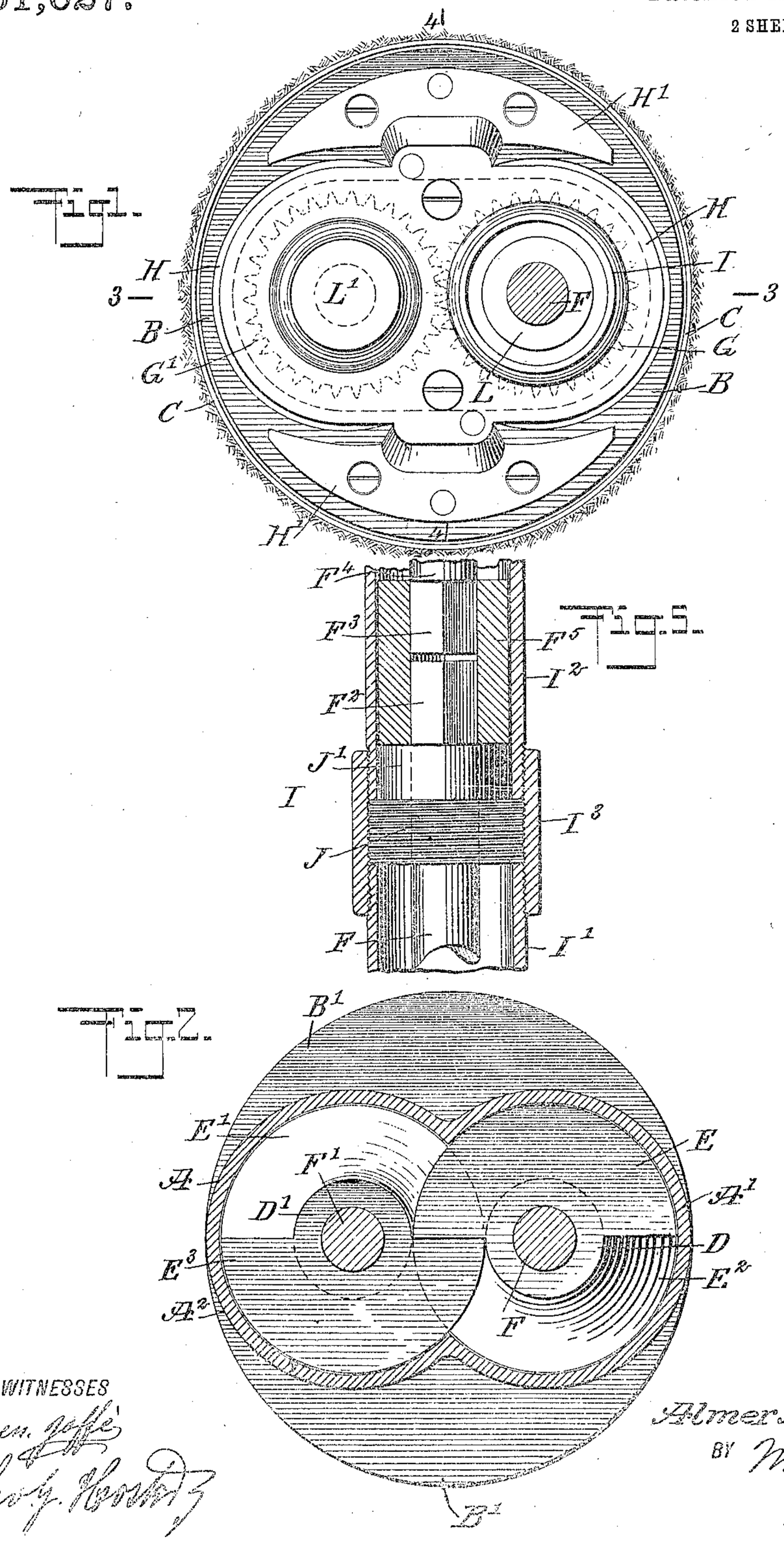

FIG. 1.

FIG. 5.

FIG. 2.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

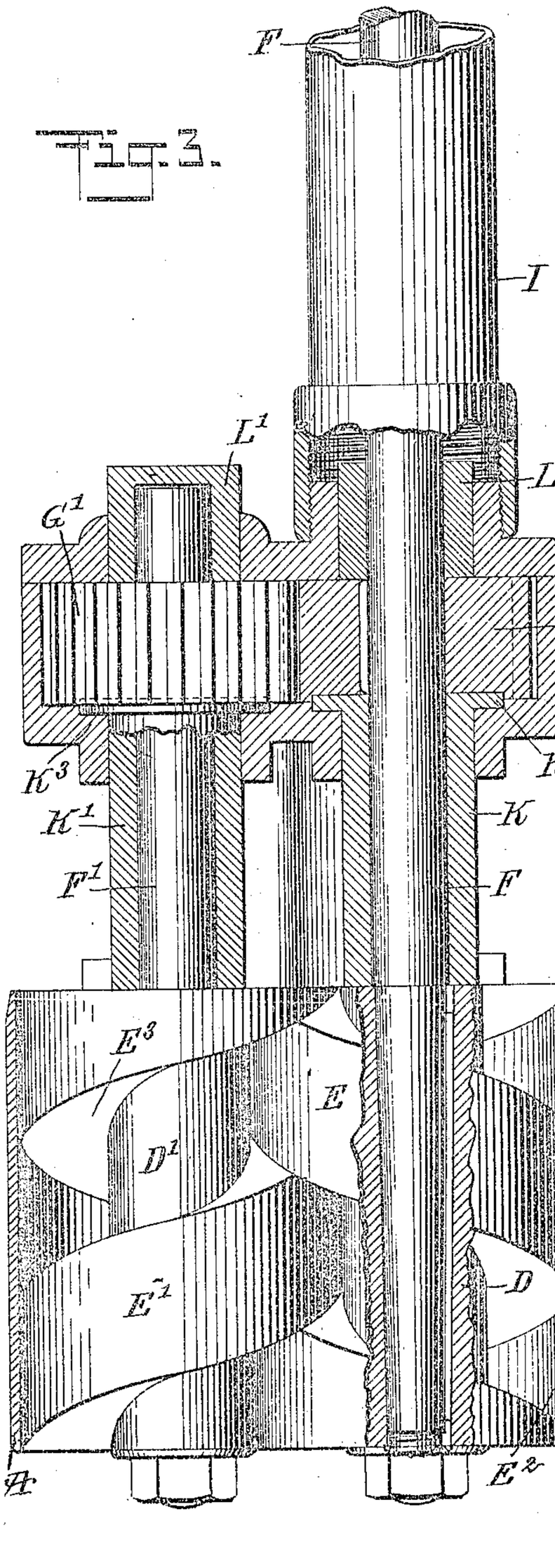
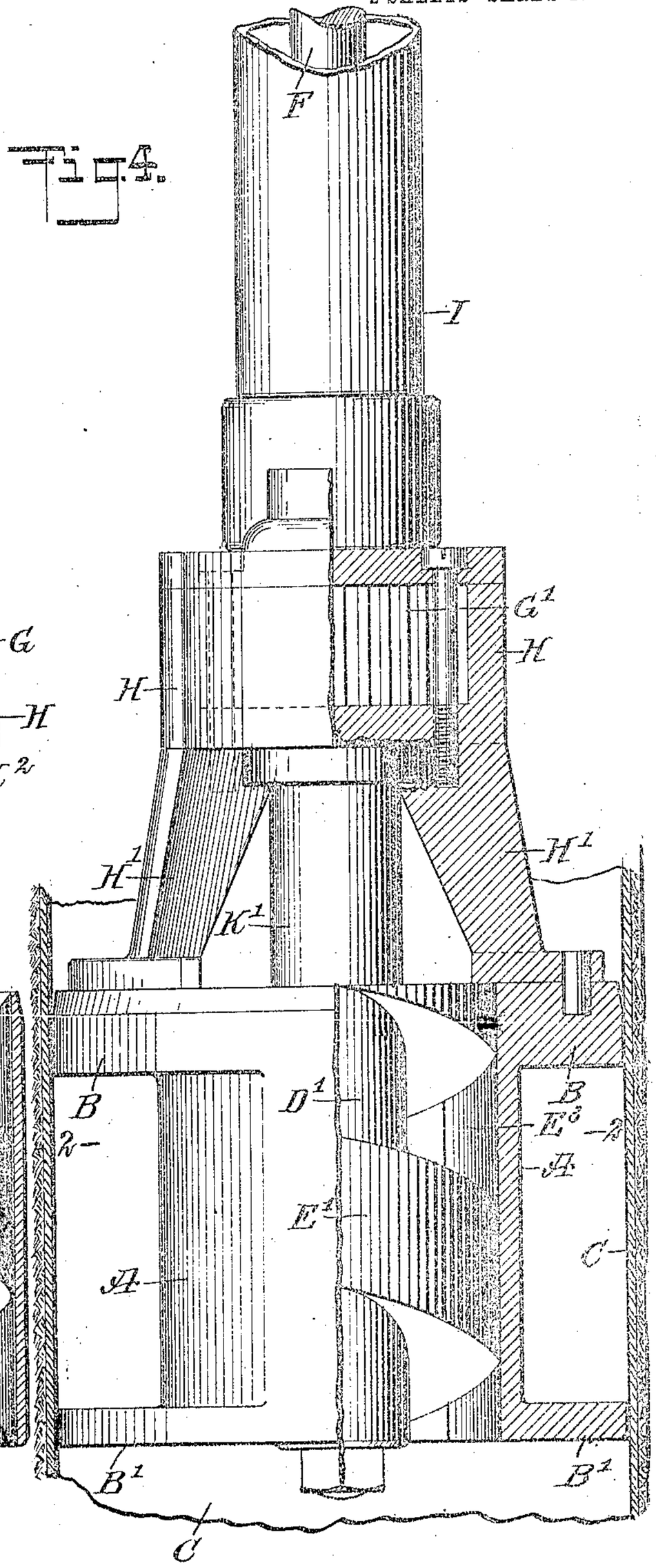


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALMER N. BLAZER, OF MESCALERO, TERRITORY OF NEW MEXICO, ASSIGNOR TO BLAZER SPIRAL ENGINE CO., OF MESCALERO, TERRITORY OF NEW MEXICO.

WELL-PUMP.

951,627. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed February 10, 1909. Serial No. 477,069.

To all whom it may concern:

Be it known that I, ALMER N. BLAZER, a citizen of the United States, and a resident of Mescalero, in the county of Otero and Territory of New Mexico, have invented a new and Improved Well-Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved well pump adapted to be lowered into the well to any desired depth, and having spiral intersecting pistons rotating in unison in the intersecting bores of a pump casing, the casing being open at the top and bottom and fitting the well, one of the pistons being driven from above ground so that the intersecting pistons cause the water to be lifted to any desired height, the water passing through the pump freely, and without spraying, whirling or abrupt deflection, thereby reducing the friction of the water to a minimum.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improved pump; Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 4; Fig. 3 is a sectional side elevation of the same on the line 3—3 of Fig. 1; Fig. 4 is a cross section of the same on the line 4—4 of Fig. 1; and Fig. 5 is a sectional side elevation of the suspending tube and guide for the sectional driving shaft.

The casing A of the pump is provided at the top and bottom with outwardly-extending annular flanges B, B′ fitting the inside of the well C, the flange B being tapered upward to hold sediment or other filling to seal the well around the pump. The said casing A is provided with vertically disposed intersecting bores A′, A², open at the top and bottom for the entrance and exit of the water, as hereinafter more fully described. In the bores A′, A² are mounted to turn the pistons D, D′, provided on their peripheral faces with spiral piston heads E, E′, forming corresponding grooves E², E³. The spiral piston head E of the piston D fits into the spiral groove E³ of the piston D′, and the spiral piston head E′ fits into the spiral groove E² of the piston D, it being understood that the piston heads run or wind in opposite directions, as will be readily understood by reference to Fig. 3.

The pistons D and D′ are keyed or otherwise secured to the lower ends of the shafts F and F′, provided with gear wheels G and G′ in mesh with each other and contained in a housing H having legs H′ bolted to the top of the upper flange B of the pump casing A. The shaft F is the driving shaft and extends upward through a tube I screwed or otherwise secured to the top of the gear housing H and extending to the top of the well C, to be connected with a suitable supporting means for suspending the pump the desired distance down in the well C.

The driving shaft F is preferably made in sections and likewise the tube I, that is, the sections I′ and I² of the tube I are connected with each other by an interiorly threaded coupling I³ in which screw the ends of the sections I′, I² (see Fig. 5), and in which also fits a guide bearing J through which extends the shaft F, terminating above the round top portion J′ of the guide J in a polygonal terminal F², engaging the correspondingly-shaped portion of a coupling F⁵ resting on top of the guide J. The polygonal end F³ of the next following shaft section F⁴ also engages the coupling F⁵, so that when the section F⁴ is rotated by suitable machinery located on the top of the well C, then a rotary motion is transmitted to the shaft F to rotate the piston D. Now by having the shafts F and F′ connected with each other by the gear wheels G and G′, it is evident that the piston D′ is rotated in unison with the piston D, to cause the water in which the pump is submerged to enter the lower end of the casing A and be forced upward in the grooves E², E³ by the spiral piston heads E and E′, so that the water finally passes out of the top of the casing A to accumulate in the well C on top of the flange B, so that the well is finally filled and the water overflows the well at the top thereof.

In order to protect the shafts F and F′ against grit, sediment and the like and provide ample journal bearings, use is made of bushings K and K′ fitting the shafts F and F′ between the gear wheels G and G′ and the pistons D, D′, the said bushings K and K′ being provided at their upper ends with annular flanges K², K³ seated in the gear housing H and forming step bearings

for the gear wheels G and G′. A bushing L also surrounds the shaft F in the top of the gear housing H, and a bushing L′ in the form of a cap incloses the upper end of the shaft F′ in the top of the housing H, forming additional bearings for piston shafts as plainly indicated in Fig. 3.

From the foregoing it will be seen that the wearing parts are completely protected against sediment, and consequently the pump is not liable to clog up, and by providing deep spiral grooves E^2, E^3 it is evident that water bearing sediment can be readily elevated, as the sediment can freely pass through the spiral grooves with the water.

It will also be noticed that the water passes through the pump freely and at slow speed, without spraying, whirling or abrupt deflection, thereby reducing the friction of the water to a minimum. As the pump is always submerged it prevents slip of water and avoids vacuum.

The pump shown and described is exceedingly light in construction and combines great strength with durability, and the pump is very compact and can be readily installed or taken out in a few minutes. All the bearings and gear wheels are submerged in oil supplied through the suspending tube I from the top of the well. The driving shaft and bearings are protected against injury by the inclosing suspending tube I, and hence the pump is not liable easily to get out of order.

As all the working parts, not submerged in oil, have a clearance, the wear and friction of the whole pump are reduced to a minimum, thereby increasing its durability and efficiency, and enabling the pump to be very cheaply manufactured and installed.

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

1. In a pump, the combination with a casing having intersecting bores, each of which is freely open at both ends, of a support, a connection carrying said support from one end of the casing and constructed to permit passage of fluid freely through it, intermeshing spiral piston heads in said bores, shafts for said piston heads having bearing in said support, and intermeshing gears upon said shafts held in said support.

2. A well pump, comprising a casing having intersecting bores open at top and bottom and adapted to fit in a well, a housing secured upon the casing, a suspension pipe secured to the housing, spiral piston heads in the bores of the casing and in mesh with each other, shafts secured to the piston heads, one of the shafts extending through the housing and the suspension pipe, and gears on the shafts in the said housing.

3. A well pump, comprising a pump casing having intersecting bores open at the top and bottom, annular flanges on the said upper and lower ends of casing and fitting the wall of the well, pistons rotating in unison in the said bores, and spiral piston heads on the peripheral faces of the said pistons and in mesh with each other.

4. A well pump, comprising a pump casing having intersecting bores open at the top and bottom, annular flanges on the upper and lower ends of said casing and fitting the wall of well, the upper flange being beveled upwardly and inwardly, pistons rotating in unison in the said bores, spiral piston heads on the peripheral faces of the said pistons and in mesh with each other, shafts for the said pistons, one of the shafts extending to the top of the well to connect with driving machinery, gear wheels on the said shafts and in mesh with each other, a housing supported from the said pump casing and containing the said gear wheels, and a suspension tube secured to the housing and through which the driving shaft extends.

5. A well pump, comprising a pump casing having annular flanges and provided with intersecting bores open at the top and bottom, pistons mounted to turn in the said bores and having spiral piston heads in mesh with each other, shafts on which the said pistons are secured, one of the shafts being made in sections and extending to the top of the well for connection with driving machinery, gear wheels secured on the said shafts and in mesh with each other, a gear housing containing the said gear wheels and mounted on the said pump casing and spaced therefrom, bushings for the shafts between the casing and housing, and a suspension tube attached to the said gear housing and inclosing the said driving shaft.

6. A well pump, comprising a pump casing having annular flanges and provided with intersecting bores open at the top and bottom, pistons mounted to turn in the said bores and having spiral piston heads in mesh with each other, shafts on which the said pistons are secured, one of the shafts being made in sections and extending to the top of the well for connection with driving machinery, gear wheels secured on the said shafts and in mesh with each other, a gear housing containing the said gear wheels and mounted on the said pump casing, a sectional suspension tube attached to the said gear housing and inclosing the said driving shaft, and bushings fitting the said shafts and provided with flanges supported on the said gear housing for the gear wheels to rest on, thus forming a support for the pistons.

7. In a well pump, a casing having intersecting bores and open at top and bottom, spiral piston heads in the bores and meshing with each other, shafts secured to the

piston heads and geared together, one of the shafts being sectional and extending to the top of the well, and a suspension pipe through which the shaft which extends to the top of the well passes, the pipe being made in sections coupled together and containing guide bearings for the shaft in the couplings thereof.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALMER N. BLAZER.

Witnesses:
WILLIAM L. CAHILL,
JOHN R. CALLAWAY.