

No. 739,262.

PATENTED SEPT. 15, 1903.

H. F. JAMES & E. R. INMAN.
DEVICE FOR PUMPING OIL WELLS.

APPLICATION FILED JUNE 7, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

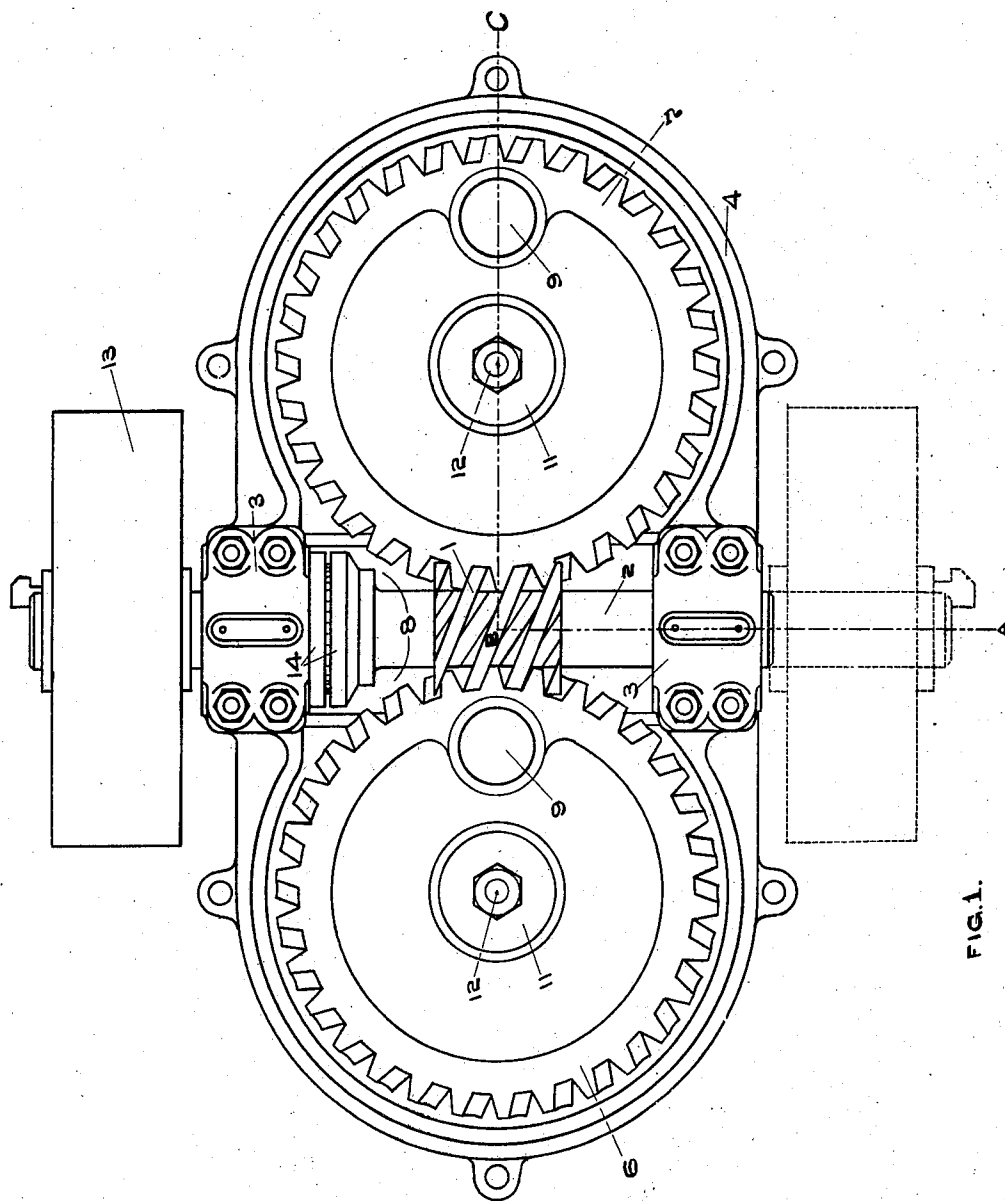


FIG. 1.

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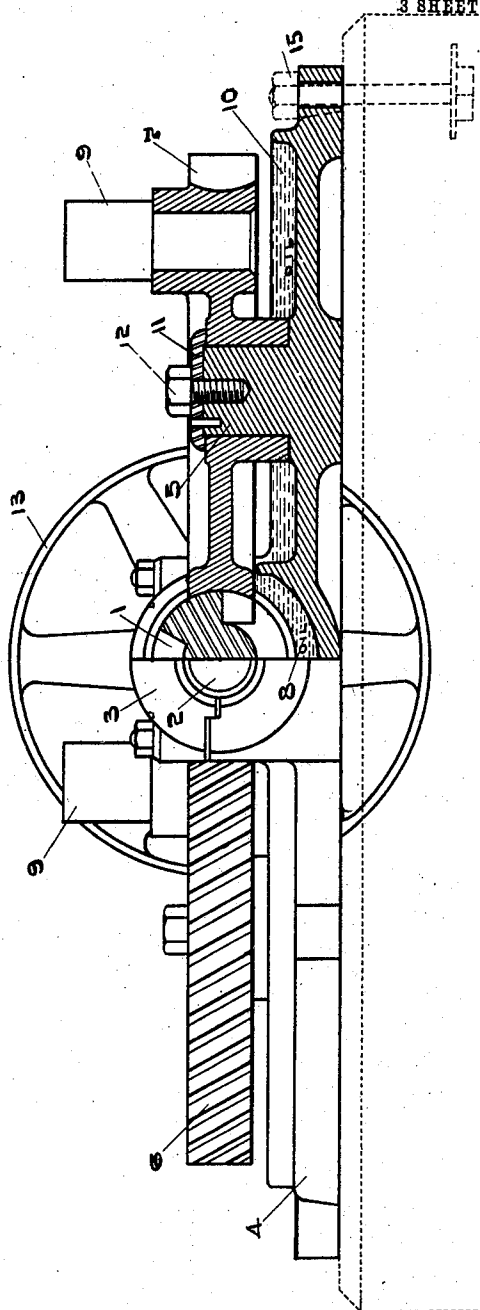
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

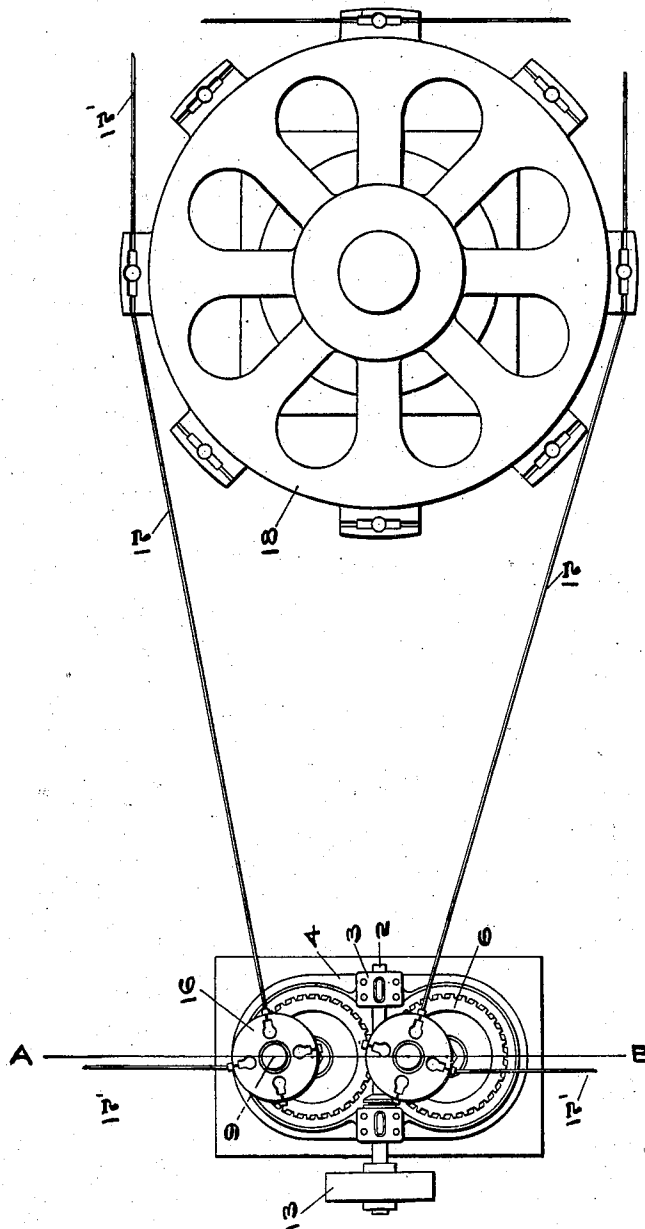


FIG. 3.

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UNITED STATES PATENT OFFICE.

HENRY F. JAMES AND EDWARD RAY INMAN, OF FRANKLIN, PENNSYLVANIA; SAID INMAN ASSIGNOR TO SAID JAMES.

DEVICE FOR PUMPING OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 739,262, dated September 15, 1903.

Application filed June 7, 1902. Serial No. 110,622. (No model.)

To all whom it may concern:

Be it known that we, HENRY F. JAMES and EDWARD RAY INMAN, of the city of Franklin, in the county of Venango and State of Pennsylvania, have invented new and useful Improvements in Devices for Pumping Oil-Wells; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in pumping-powers for pumping deep wells, especially oil-wells; and the construction and operation of our device will be understood from the following description, reference being made to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation, with one end in section, on line A B C of Fig. 1. Fig. 3 is a plan view showing our device attached to a "pull-wheel."

In order that the nature and purpose of our device may be clearly understood, it is deemed advisable to state that the power required in pumping an oil-well is that which is necessary to raise the weight of the "sucker-rod," the depth of the well being so great and the sucker-rods so long, and consequently heavy, that they descend by their own weight. Thus it will be seen that the work or stress upon surface lines is wholly that of tension. Consequently said surface lines may be any flexible line, rope, or cable which is of sufficient strength to sustain the tension aforesaid.

From the foregoing explanation it will be readily understood that it is desirable to so locate the pumping-power that the various wells operated by it shall be equally distributed as to direction from said power, so that they may be "balanced"—that is to say, if lines 17' are attached to individual wells the rods of one well are being raised and those of the other are going down. Hence very much less power is required to pump two wells when thus balanced than to pump one unbalanced well, and this is equally true with any even number of wells that are balanced. It is for the purpose of thus balancing wells that a pull-wheel is used, as said pull-wheel

may be located in the center of a group of wells, all of which would otherwise be in one direction from the power.

The office of a pumping-power is to impart to the surface lines a longitudinal or to-and-fro motion.

Having thus set forth the nature of the work which our device is designed to perform, we now describe the detailed construction of same, which is substantially as follows:

A worm 1 is rigidly mounted upon a shaft 2, said shaft 2 being in turn revolubly mounted in bearings 3, said bearings 3 being a part of a base 4, upon which the various elements of our device are mounted and held in their proper relative positions. Upon base 4 in a line perpendicular to the longitudinal axis of said worm 1 and upon each side thereof is mounted a worm-gear 6, the teeth 7 of which mesh with the thread upon worm 1 and whereby said gears are revolved.

Gears 6 are mounted upon a vertical stub-shaft 5, attached to base 4, and are held or retained upon said shaft by the washer 11, which washer is somewhat larger in diameter than the shaft 5. The lower face of said washer, which projects beyond the circumference of said shaft, impinges upon the upper face of said gear 6. The washer 11 is secured in position by the screw or bolt 12. Projecting vertically upward from the upper face of each gear 6 is a crank-pin 9 for the purpose of attaching a disk 16 or other device commonly employed for attaching surface lines. The device which we expect, however, to employ is that shown in the application of applicant Henry F. James for Letters Patent of the United States for improvements in "Combined pumping-disks and line-terminals," filed September 26, 1902, Serial No. 124,965. Said crank-pins 9 are so disposed or located relative to each other that they travel in opposite directions. Referring to Fig. 3, when said cranks pass the line A B one crank is traveling toward the pull-wheel 18 and the other is traveling away from said pull-wheel, and thus through the medium of the surface lines 17 said pull-wheel is given an oscillating movement. The construction and operation of the pull-wheel 18 herein shown are fully set forth and described in an application of ap-

plicant Henry F. James for Letters Patent of the United States, filed September 26, 1902, Serial No. 124,966. Lines 17', Fig. 3, may be carried to individual wells, if desired.

5 In the base of our pumping-power, beneath worm 1 and between the bearings 3, is formed an oil-reservoir to receive oil for the purpose of effectually lubricating the worm 1. Beneath each gear 6 is also formed an oil-reservoir 10, which is for the purpose of catching and retaining oil which may drip from the teeth of the gears and also for the purpose of keeping the lower portion of the gear-hubs immersed in oil. Shaft 2 may be extended outside of either bearing 3 and a pulley 13 placed upon said shaft 2 for the reception of a driving-belt to operate our power. A thrust-collar 14 may be provided for the purpose of receiving the thrust incidental to the work of worm 1.

Upon the base 4 are formed lugs for the reception of bolts 15, whereby our device may be secured to a foundation.

Having thus described our device, what we claim as new, and desire to secure by Letters Patent, is—

1. In a pumping-power of the class specified, a shaft, one worm rigidly mounted upon said shaft, bearings for said shaft, two worm-gears, one mounted upon each side of said shaft in a line perpendicular to the longitudinal axis of said worm, said gears adapted to be operated by said worm in opposite direc-

tions, a crank-pin in each of said gears, a base adapted to the mounting of said gears and said shaft, substantially as shown and described.

2. In a pumping-power, the combination of two worm-gears, a crank-pin in each of said gears, one worm, a shaft for said worm, bearings for said shaft, the teeth of said gears adapted to mesh with and be operated by said worm in opposite directions, all combined and suitably mounted upon a base, substantially as shown and described.

3. In a pumping-power, a shaft, one worm rigidly mounted thereon, bearings for said shaft, a pulley mounted upon one end of said shaft adapted for the reception of a belt, in combination with two worm-gears, mounted one upon each side of said worm in a line perpendicular to the axis thereof and adapted to be operated thereby in opposite directions, a crank-pin in each of said gears, a base adapted for the mounting of said gears, oil-reservoirs formed in said base beneath said worm and said gears, substantially as shown and described, for the purpose specified.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY F. JAMES.
E. RAY INMAN.

Witnesses:

J. R. DODDS,
A. L. MYERS.