(No Model.)

J. V. HOGAN & D. McGRATH.

MEANS FOR OPERATING PUMPS.

No. 525,148. Patented Aug. 28, 1894.

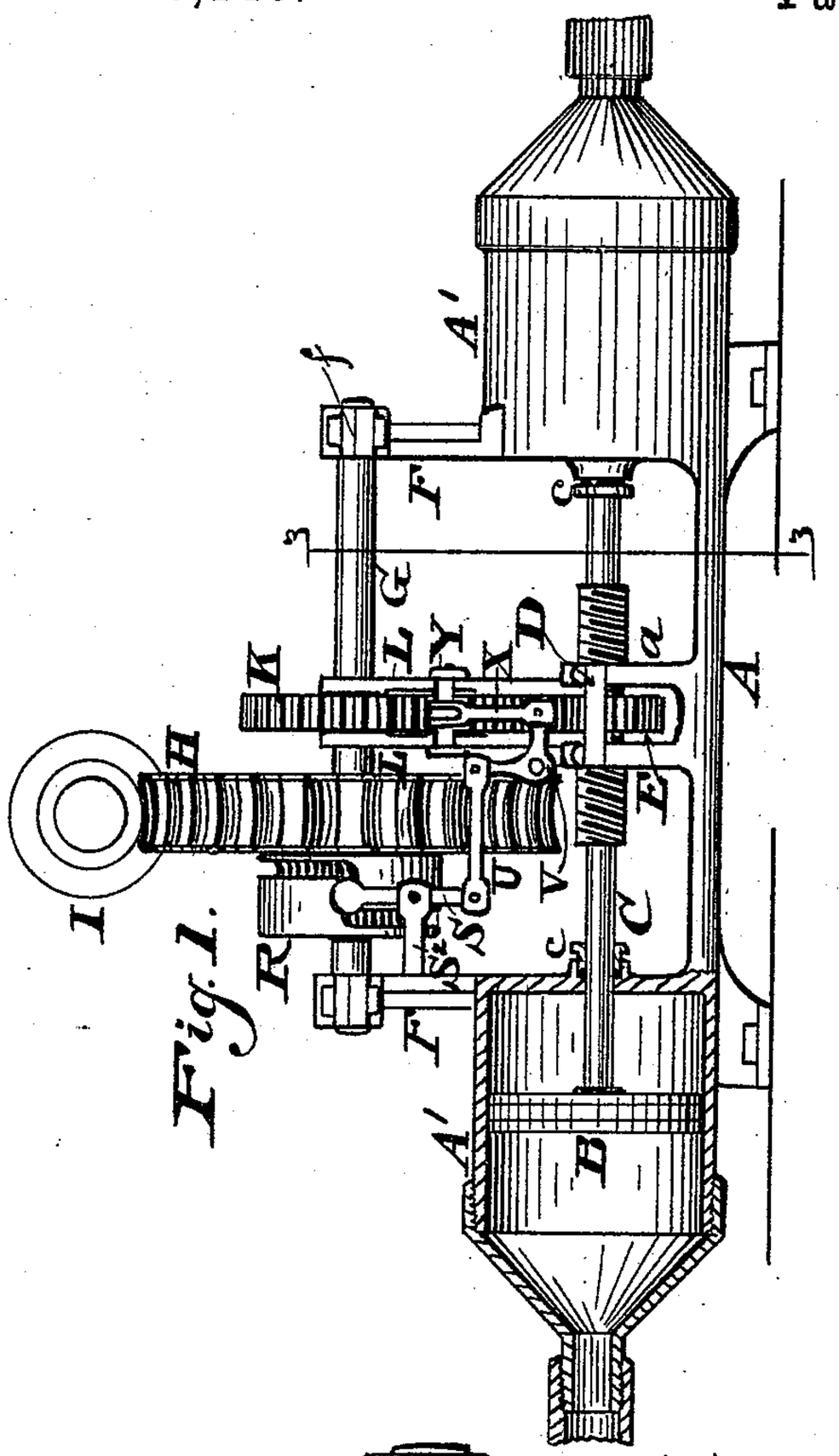

Fig. 1.

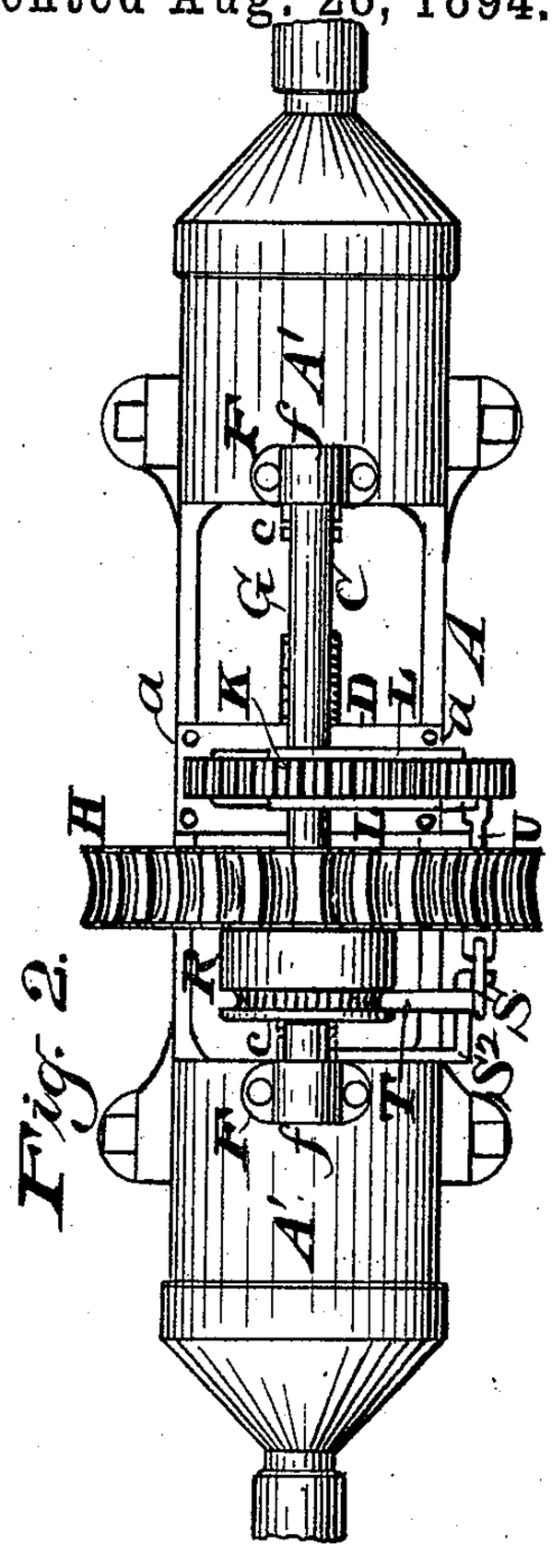

Fig. 2.

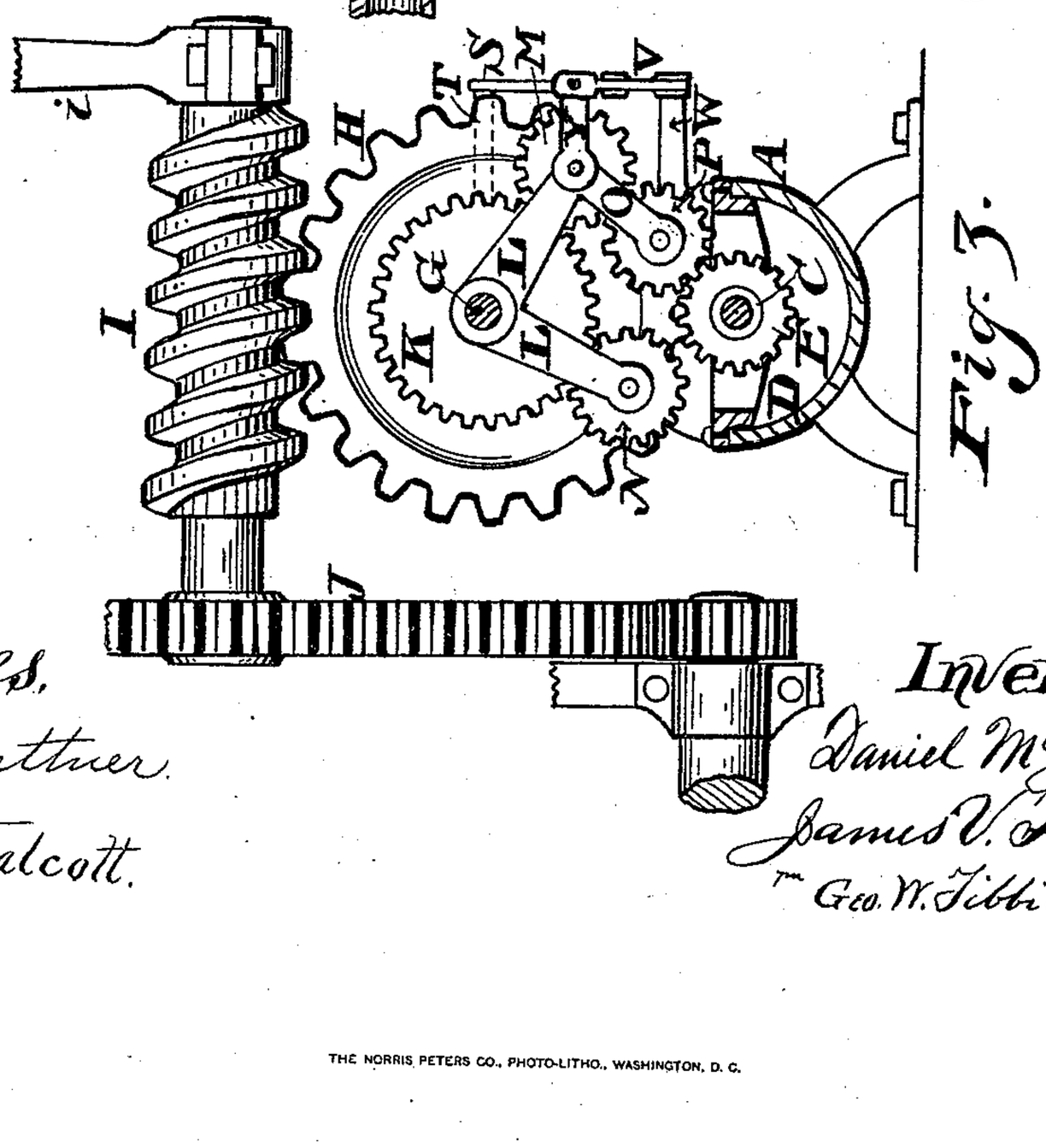

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES V. HOGAN AND DANIEL McGRATH, OF CLEVELAND, OHIO.

MEANS FOR OPERATING PUMPS.

SPECIFICATION forming part of Letters Patent No. 525,148, dated August 28, 1894.

Application filed August 25, 1893. Serial No. 484,048. (No model.)

To all whom it may concern:

Be it known that we, JAMES V. HOGAN and DANIEL MCGRATH, citizens of the United States, and residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Means for Operating Pumps, of which the following is a specification.

This invention relates to pumps, and consists in a new and novel means for operating them, constructed and combined substantially as hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of our new pump operating mechanism. Fig. 2 is a top or plan view of the same. Fig. 3 is a cross-section on line 3, 3, of Fig. 1.

A in the several figures represents a heavy casting, having cylinders A′ on each end, and which forms a suitable base frame for supporting all the working parts of the machine. The cylinders are provided with cone-shaped, (or other suitably formed,) heads, having necks for attaching the other parts of pump mechanism, as valves and air-chambers, &c., not shown, as these form no part of our invention.

B are pistons working in the said cylinders, attached to the ends of one piston rod C playing through stuffing boxes *c c* in the inner solid heads of the cylinders. The middle portion of said piston rod is screw-threaded.

At the middle part of the base frame are provided supports *a a* for a frame or box D, through which the said piston rod traverses in its movements back and forth. Within said box or frame D is contained a pinion E, having its center screw threaded and playing on the screw-threaded portion of the piston-rod B, the rotation of the pinion E imparts reciprocal movement to the pistons as hereinafter shown.

F F are posts either attached to or cast upon the cylinders, provided for supports for a parallel shaft G having its bearings in boxes *f f* on said posts.

H is a worm gear wheel, fixed on shaft G. I is a worm screw located over said gear H and meshing therewith, one end being supported in a hanger *i*, the other end connected with a gear J and receiving motion from any suitable power, whereby movement may be given to the pump operating mechanism.

On the shaft G is provided a gear reversing mechanism, whereby the movements of the pump pistons are made reciprocal, and consists as follows:—K is a gear keyed onto the shaft G by the side of the worm gear H. L L are spider frames hung on the shaft G, on each side of the gear K, and carry pinions M N, which mesh with and are rotated by the gear K. O are branches on the spider frame in which is journaled a pinion P. This intermediate pinion P is designed to give reverse rotary motions to pinion E, on the piston rod. R is a cam grooved wheel mounted on shaft G at the side of gear H. S is a lever fulcrumed at its middle part to a bracket S^2, attached to the post F. To its upper end is attached an arm T the end of which reaches into the groove in said wheel R, by means of which the lever is made to vibrate as said wheel revolves. U is a link connecting the lower end of lever S with one arm of a bell crank V fulcrumed to a bracket W on the frame A, the other arm being connected by a link X with an arm Y on the said spider frame L.

The operation of this mechanism is as follows:—The rotation of the cam grooved wheel R, through the medium of the lever S, link U, bell crank V and link X, acts to shift the spider frame so as to alternately throw the pinions N and P into mesh with the pinion E on the piston rod C, and thus convert the rotary movements of the gear mechanism into a reciprocating movement of the piston rod B, for operating the pump pistons.

Having described our invention, we claim—

1. In a means for operating pumps, the worm-screw I connected with and receiving rotary motion from any suitable power, worm-gear H mounted on shaft G and in mesh with said screw I, posts F F mounted on cylinders A A and supporting said shaft G, gear K also mounted on shaft G spider frames L L also mounted on shaft G, pinions M N journaled in the arms of said spider frame and meshing with gear K, arms O on the spider frame, pinion P journaled in said arms and in mesh with pinion M; in combination with pinion E and screw threaded piston rod C, and means for shifting said spider frames and pinions N P,

for alternately connecting and disconnecting them with said pinion E, whereby reciprocating motion is imparted to said piston substantially as and for the purpose set forth.

2. In a means for operating pumps the worm screw I connected with and receiving rotary motion from any suitable power, worm gear H mounted on shaft G and in mesh with said screw I, posts F F mounted on the cylinder A A and supporting said shaft G, gear K also mounted on shaft G, spider frames L, L also mounted on shaft G, pinions M N journaled in the arms of said spider frame and meshing with gear K, arms O on the spider frame, pinion P journaled in said arms and in mesh with pinion M, cam grooved wheel R mounted on shaft G, lever S fulcrumed to bracket S^2, on post F, stud T on lever S entering the cam groove, link U connecting lever S with bell crank V fulcrumed to bracket W on frame A, link X connecting bell crank with arm Y on spider frame L, L, all constructed and adapted to operate for shifting the pinions N, P, substantially as and for the purpose set forth.

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