

(No Model.)

2 Sheets—Sheet 1.

H. C. LANGREHR.

LIFT PUMP.

No. 280,834.

Patented July 10, 1883.

FIG. 1.

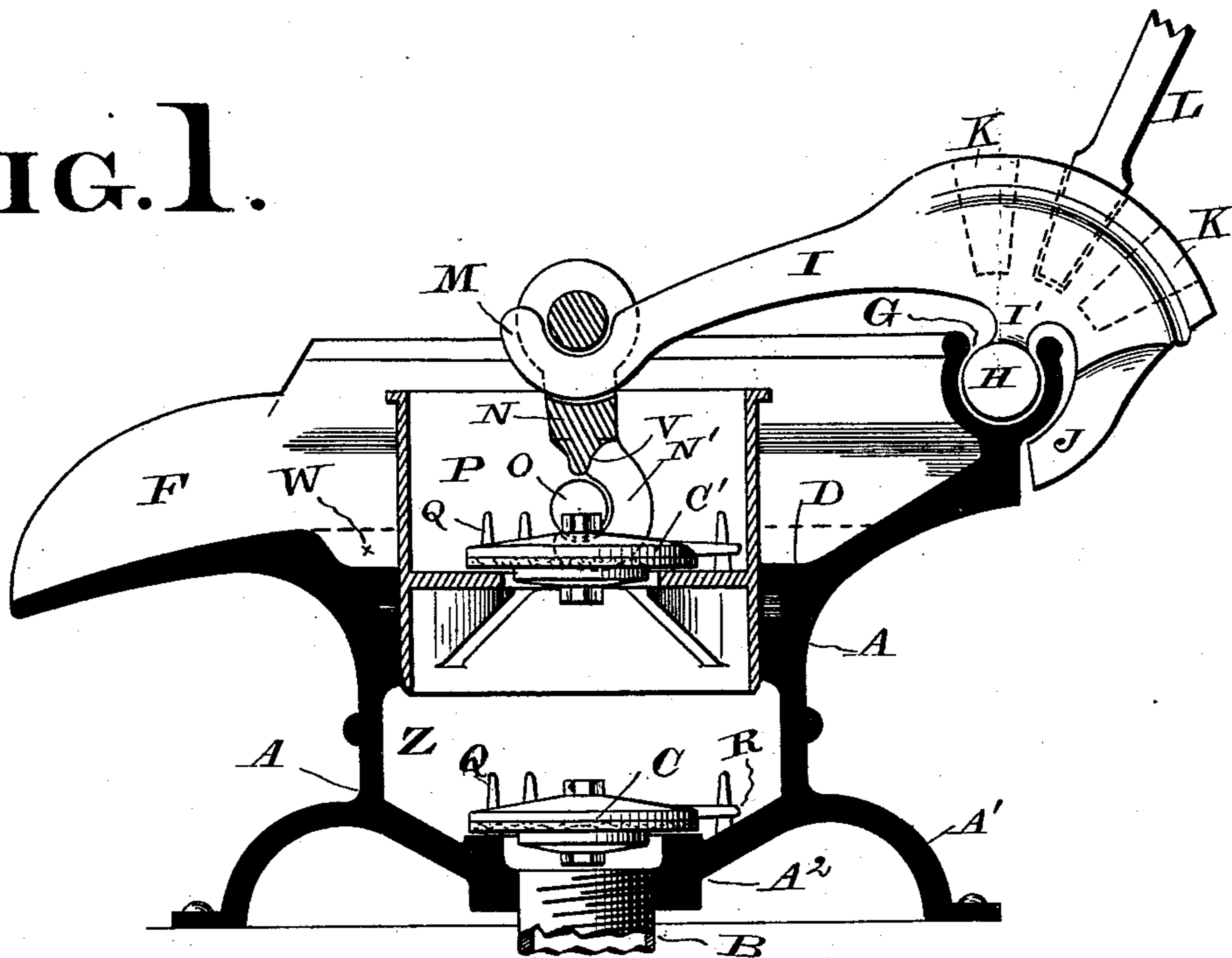
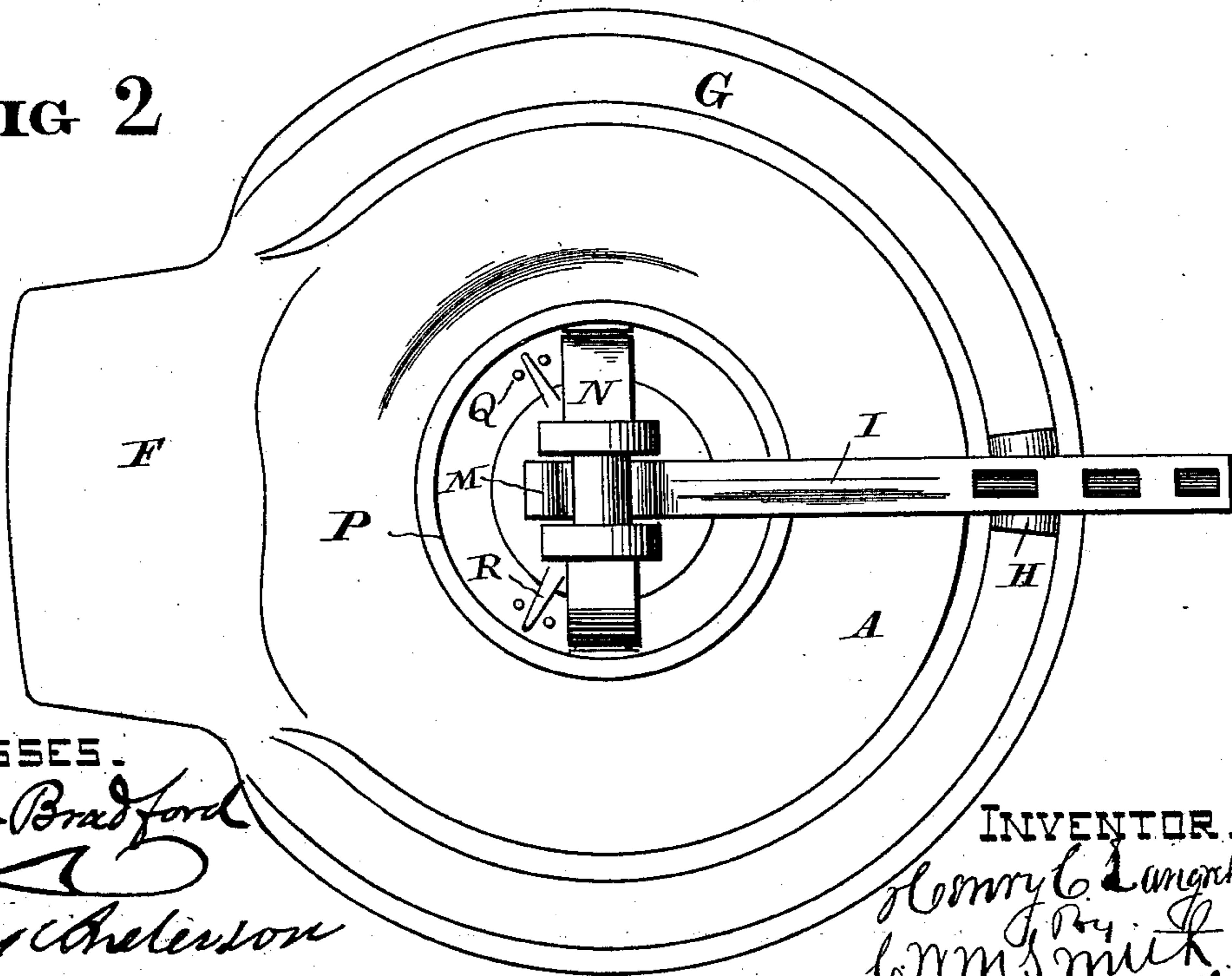


FIG 2



WITNESSES.

Wilmer Bradford

Henry Anderson

INVENTOR.

Henry C. Langreh.
By
C. M. Smith
Attorney.

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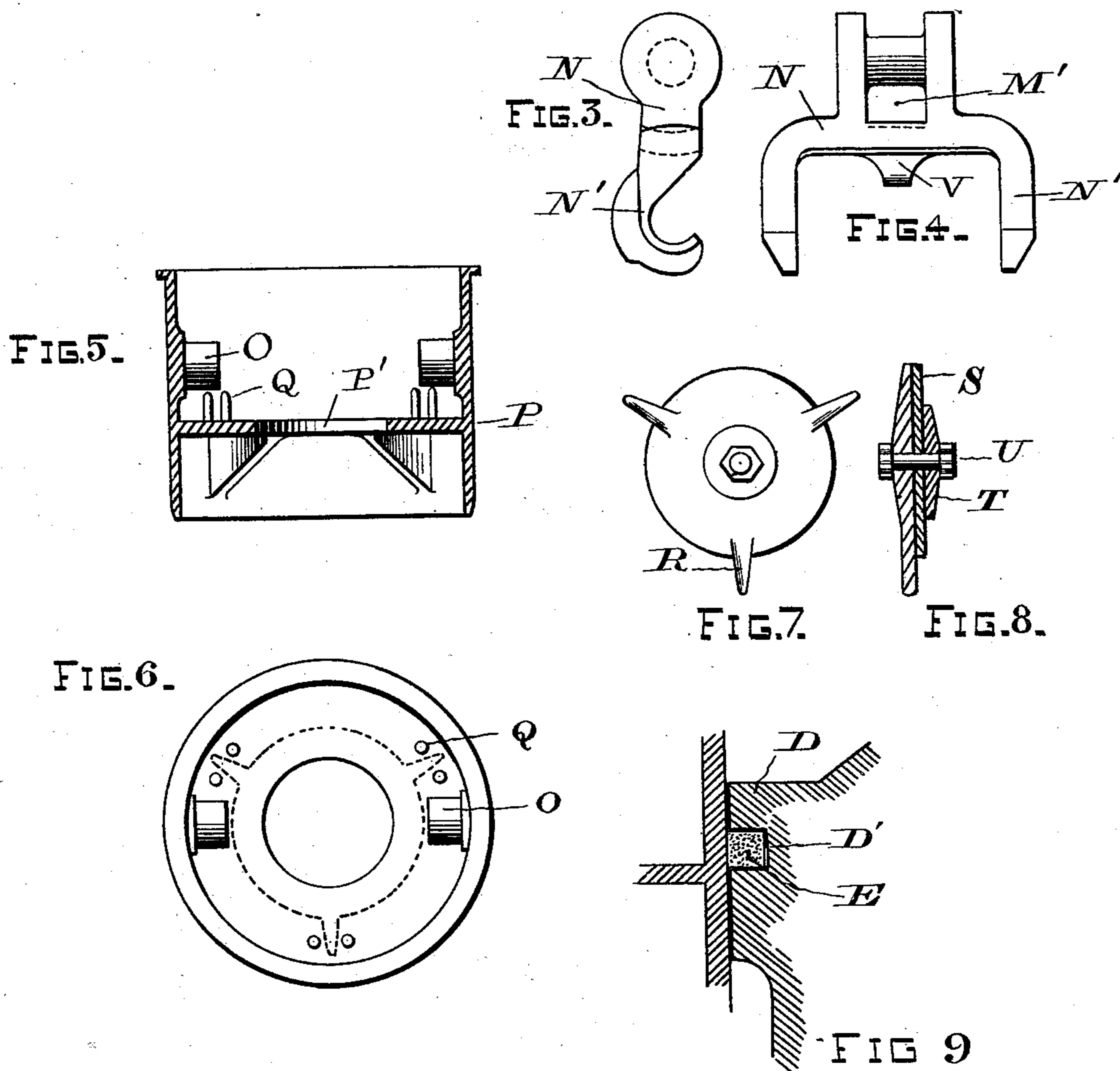
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By
Chas. M. Smith
Attorney.

UNITED STATES PATENT OFFICE.

HENRY C. LANGREHR, OF SAN FRANCISCO, CALIFORNIA.

LIFT-PUMP.

SPECIFICATION forming part of Letters Patent No. 280,834, dated July 10, 1883.

Application filed September 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. LANGREHR, a citizen of the United States, and residing at San Francisco, in the county of San Francisco and State of California, have invented a certain new and Improved Lift-Pump, of which the following is a specification.

My invention relates to certain new and useful improvements in lift-pumps; and the object of my invention is to provide an improved lifting-pump which shall be extremely simple in its construction, easy in its mode of operation, of great power, and one which may be produced at a very low cost of manufacture. This object I accomplish by means of the mechanism, form of construction, and arrangement of parts composing the pump illustrated in the accompanying drawings, in which—

Figure 1 is a sectional side elevation of the complete pump. Fig. 2 is a top view. Fig. 3 is a side view of the hooked connecting-link, and Fig. 4 is a front view of the same. Fig. 5 is a vertical sectional view of the reciprocating cylinder or lift-valve seat, and Fig. 6 is a plan view of the same. Fig. 7 is a top view of a valve, and Fig. 8 is a cross-section of the same. Fig. 9 is a detail view, showing the pump-case, packing-ring, and reciprocating-cylinder.

Similar letters of reference are used to designate like parts throughout these several views.

The pump-case A is cast in one solid piece of metal in the form shown in section in Fig. 1. The outer portion of the base A' is made flaring or bell-shaped, as shown, and is to be provided with the usual lugs for the reception of the bolts or screws which fasten the pump in place. The central portion, A², of the base is cast sufficiently thick to receive the upper end of the suction-pipe B, and sufficiently wide to form a seat for the suction-valve C. At a point about midway of the height of the pump, but below the discharge-line of the spout, I contract the casting, so as to form a guide-bearing, D, within which plays the cylinder which carries the lift-valve C'. Upon the inner face of the bearing D, I cut a circular groove or channel, D', which receives the packing-ring E, and which is securely held to place therein. Upon one side of the upper part of the shell or casing I form the spout or

discharge-opening F. The upper rim or edge of the pump-case is bifurcated, or provided with a groove or channel, G, which is somewhat more than the half of a circle in cross-section, as is clearly shown in Fig. 1. As this channel approaches the spout it spreads and dies away, its lines being merged into the adjacent parts, so that a free and unobstructed passage may be had for the entrance of the downwardly-projecting lug H, which forms the pivotal point or fulcrum of the lever I. The lug H should be made of a diameter somewhat less than the diameter of the channel within which it rests, and yet be sufficiently large to prevent its being withdrawn vertically from said channel, the upper converging edges of which prevent such retraction. The web I', which connects the lug with the lever proper, is just narrow enough to permit of the requisite amount of oscillation being given to the lever without impinging upon the top edges of the channel G.

The lever I is provided with a downwardly-projecting web, J, upon its short arm, which strikes against the pump-casing A and prevents the long arm of the lever from being raised above the proper point. The upper surface of the lever is provided with inwardly-tapering sockets K K K, which radiate from the pivotal point or fulcrum, as shown by dotted lines in Fig. 1, and are adapted to receive the handle or handspike L, by which the pump is operated. The long arm of the lever extends inwardly and is provided with an upwardly-curved hook, M, which enters a slot, M', formed in the connecting-link N. The lower portion of this link is forked, or provided with two downwardly-projecting hooked arms, N' N', Figs. 3 and 4, which hook under the lugs O O, cast upon the inner surface of the cylinder P, and which project horizontally therefrom above the seat P' of the lift-valve C'. Upwardly-projecting pins Q Q are placed in pairs at stated intervals around the seats of both the suction and lift valves, and these pins serve as guides for the prongs R R R, which project radially from the upper rim of the valves C and C', and thus serve to keep the said valves in their proper position as they rise and fall during the operation of pumping. These valves are very simple in their construc-

tion, as will be readily seen upon reference to Figs. 7 and 8. They are formed of a disk of metal having prongs R, as above stated. Upon the under side of the disk is placed a disk, 5 S, of rubber or leather, of a like diameter, and which is held in place by a metallic washer, T, and bolt U.

The cylinder P may be made any desired length, so as to conform to the capacity of the 10 pump, and the seat for the lift-valve may be placed at any desired elevation within such cylinder.

A lug, V, is formed on the under side of the connecting-link N, which prevents the lift- 15 valve from rising out of or above its guide-pins; or a wire or rod may be extended diametrically across and above the valves from one pin to an opposite one for the purpose of accomplishing the same object. A wire or rod 20 may also be stretched across and above the lower valve to hold it in place or prevent it from jumping from within the guide-pins. When there are four sets of guide-pins, the wire may be extended diametrically across 25 from pin to pin by having a small hole bored in the top of each pin and inserting one end of the wire in the hole and securing it. When there are three sets of pins, the wire can be stretched from pin to pin to form a triangle. 30 In practice, however, the lower valve is in no danger of leaving the guide-pins, as before it could clear them the lower compartment is full of water, the upper cylinder has commenced to descend, and the lower valve has fallen back 35 to its seat.

The annular trough or recess W, formed by the upper part of the cylinder-bearing and the discharge-line of the spout F, serves to re- 40 tain water, and thus form a perfectly air-tight packing for the cylinder P as it is reciprocated up and down by the lever I and connecting-hook N.

It will be seen from the above that the cylinder P may be freely revolved within its bearing or casing, and that the lever may be shifted 45 so as to be operated by a person standing at the rear or upon either the right or left hand side of the pump, or nearly in front; and, also, that as the cylinder ascends the lift-valve is closed and the suction-valve is opened and ad- 50 mits a supply of water to the well or chamber Z, and that as the cylinder P descends the suction-valve will close and the lift-valve will rise and admit water to the upper part of the cylinder, from which it is forced outward by a 55 new supply entering through the valveway upon the next downstroke of the cylinder.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, 60 is—

1. In a lift-pump, the casing A, cast in one piece, and provided with an internal cylinder-bearing, D, and upper channeled rim, G, which forms a continuous bearing for the operating- 65 lever I, and provided at its base with a suction-valve, C, substantially as and for the purpose set forth.

2. In a lift-pump, the combination of the casing A, suction-valve C, reciprocating cylinder P, having lugs O, lift-valve C', connect- 70 ing-link N, and lever I, all when constructed, arranged, and operating substantially in the manner and for the purpose herein shown and set forth.

In testimony that I claim the foregoing I have 75 hereunto set my hand this 24th day of August, 1882.

HENRY C. LANGREHR.

Witnesses:

WILMER BRADFORD.
C. W. M. SMITH.