

UNITED STATES PATENT OFFICE.

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PUMP.

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Application filed June 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. HANSON, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

Although certain features of the invention are applicable to hand-pumps generally, the invention is particularly intended for combined lift and force pumps; and its object is to provide a simple and compact pump, the parts of which are so connected that they may be easily put together, and are so arranged that they are readily accessible for examination and repairs.

The invention consists in the combination, in a pump, of an upright cylinder and a piston, a chamber above the cylinder containing mechanism for imparting motion to the piston, suction and discharge chests containing suction and discharge valves arranged immediately above said chamber, and passages leading from said valve-chests to said cylinder above and below the piston. This arrangement renders the valves readily accessible for examination or repair, and the discharge-chest with which the discharge-pipe communicates may be constructed to serve as an air-chamber.

The invention also consists in the combination, in a pump, of a piston, an arm or lever and a link for operating said piston, a rock-shaft, and a novel means of locking said lever or arm upon said rock-shaft, whereby I provide for placing the lever or arm within the casing or body of the pump, and then inserting the rock-shaft through the side of the pump and said lever or arm, after which said lever or arm may be conveniently locked to the shaft.

The invention also consists in the combination, with said piston, lever or arm, link, and rock-shaft, of stops upon the interior of the pump casing or body, and projections upon said lever or arm which engage with said stops and properly limit the movement of said lever or arm and the stroke of the piston.

In the accompanying drawings, Figure 1 represents a central vertical section of a pump embodying my invention. Fig. 2 represents a similar section upon the dotted line *xx*, Fig. 1; and Fig. 3 represents a horizontal section upon the irregular dotted line *yy*, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates the barrel or cylinder of the pump, which is secured in an upright position upon a base-piece, *A'*, and has fitted within it a piston, B. This piston is here represented as composed of a hollow casting, the lower part of which is of reduced diameter and has fitted upon it two cup-leather packings, *a a*, which are secured by a nut, *b*, and prevent the leakage of liquid past the piston in either direction. The piston B might, however, be otherwise constructed and provided with any suitable packing.

The barrel or cylinder A is surmounted by a chamber, C, which contains the devices for imparting motion to the piston, hereinafter described, and above the said chamber are arranged a suction-chest, D, and a discharge-chest, E. The barrel or cylinder A, the chamber C, and the two chests D and E are all represented as constructed with flanges through which bolts may be inserted for securing the several parts together, and packing or gaskets of rubber or other packing material may be placed between the flanges to make tight joints.

Upon the side of the chamber C is a nozzle, *c*, (shown in Fig. 2,) to which the suction-pipe may be connected, and the liquid passes therefrom through a passage, *d*, to the suction-chest D. The entrance of liquid from the suction-chest D is controlled by valves *f*, which may be hinged, as here shown, or of any other suitable character, and from the suction-chest the liquid passes through a passage, *g*, to the cylinder A upon the under side of the piston B, and through a passage, *g'*, to the chamber C, and thence to the cylinder upon the upper side of said piston. The passages *g g'* are separated from each other by a partition, *g²*, and serve alternately as suction and discharge passages as the piston is reciprocated, and liquid is discharged from them through valves *h*, similar to the valves *f*, into the discharge-chest E.

In the discharge-chest E is a downwardly-projecting nozzle, *i*, to which the discharge-pipe may be connected, and when said nozzle projects within the chest the latter is made to serve as an air-chamber for giving a continuous discharge.

F designates a link, by which the piston B

is connected with one end of a lever or arm, G, which is fixed upon a rock-shaft, H, (best shown in Fig. 3,) and which may be oscillated by means of a handle or lever, H', outside the pump.

The eye or hub G' of the lever or arm G, through which the rock-shaft H is inserted, fits within a narrow extension, C', of the chamber C, and is thereby prevented from lateral movement.

The portion of the rock-shaft H upon which the eye or hub G' of the lever or arm G is secured is of reduced diameter, and upon each side of said eye or hub are shoulders *j j'*, of square or polygonal form, which fit in corresponding seats in opposite sides of the eye or hub. The shoulder *j* is formed upon the rock-shaft itself; but the shoulder *j'* is formed by one end of a sleeve, I, fitting upon the portion of the rock-shaft which is of reduced diameter, and the said sleeve may be forced inward to clamp the eye or hub G' tightly by means of a cap-nut, *k*, screwed upon the end of the rock-shaft. In this way the lever or arm G is locked so as to turn with the rock-shaft. The rock-shaft fits in bearings *l*, formed in hubs or bosses projecting from the sides of the pump, and one of which is closed by a screw-plug, *m*, to prevent leakage, while the other is constructed with a stuffing-box, *n*, for the same purpose.

In securing the lever or arm G upon the rock-shaft H the former is placed in position within the pump and the shaft. The sleeve I, being removed, is inserted from the outside through its bearings *l* and the eye or hub G'. The sleeve I is then secured in place by the nut *k*, thus locking the lever or arm securely to the rock-shaft, and still affording provision for its ready detachment therefrom, if necessary.

Upon the interior of the chamber C are shoulders *o*, and the hub or eye G' of the lever or arm G has projections *p*, which engage with said shoulders, and thus form stops for limiting the oscillation of the lever or arm and fixing the stroke of the piston.

By my invention I provide a pump of simple construction and compact form, and the several parts of which are readily accessible, if necessary, for examination and repairs.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pump, the combination of an upright cylinder and a piston, a chamber above the

cylinder containing mechanism for imparting motion to said piston, suction and discharge chests containing suction and discharge valves arranged immediately above said chamber, and passages leading from said chests to said cylinder above and below the piston, substantially as specified.

2. The combination of the cylinder A and piston B, the chamber C, arranged above and supported by said cylinder, mechanism for operating the piston, contained in said chamber, the suction and discharge chests B and E, containing valves *f h*, the passages *g g'*, and the partition *g''*, separating said passages, all substantially as specified.

3. The combination of the cylinder A and piston B, the chamber C, arranged above and supported by said cylinder, mechanism for operating said piston, arranged in said chamber, the suction and discharge chests D and E, containing valves *f h*, the passages *g g'*, and the inwardly-projecting nozzle *i* in the chest E, whereby the latter is made to serve as an air-chamber, substantially as specified.

4. In a pump, the combination of a cylinder and piston, a lever or arm and a link for operating said piston, and a rock-shaft inserted through said lever or arm, and comprising square or polygonal shoulders, between which said lever or arm is held, and which enter corresponding seats in opposite sides thereof, one of said shoulders being formed by a sleeve fitting upon said shaft, substantially as specified.

5. The combination of the lever or arm G, the rock-shaft H, having a shoulder, *j*, the sleeve I, forming the shoulder *j'*, and the nut *k* for securing said sleeve I upon the rock-shaft, substantially as specified.

6. In a pump, the combination of a cylinder and piston, a link and a lever or arm for imparting motion to said piston, a rock-shaft to which said lever or arm is secured, stops upon the interior of the pump, and projections upon said lever or arm, which are adapted to engage with said stops for limiting the movement of said lever or arm, substantially as specified.

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Witnesses:

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