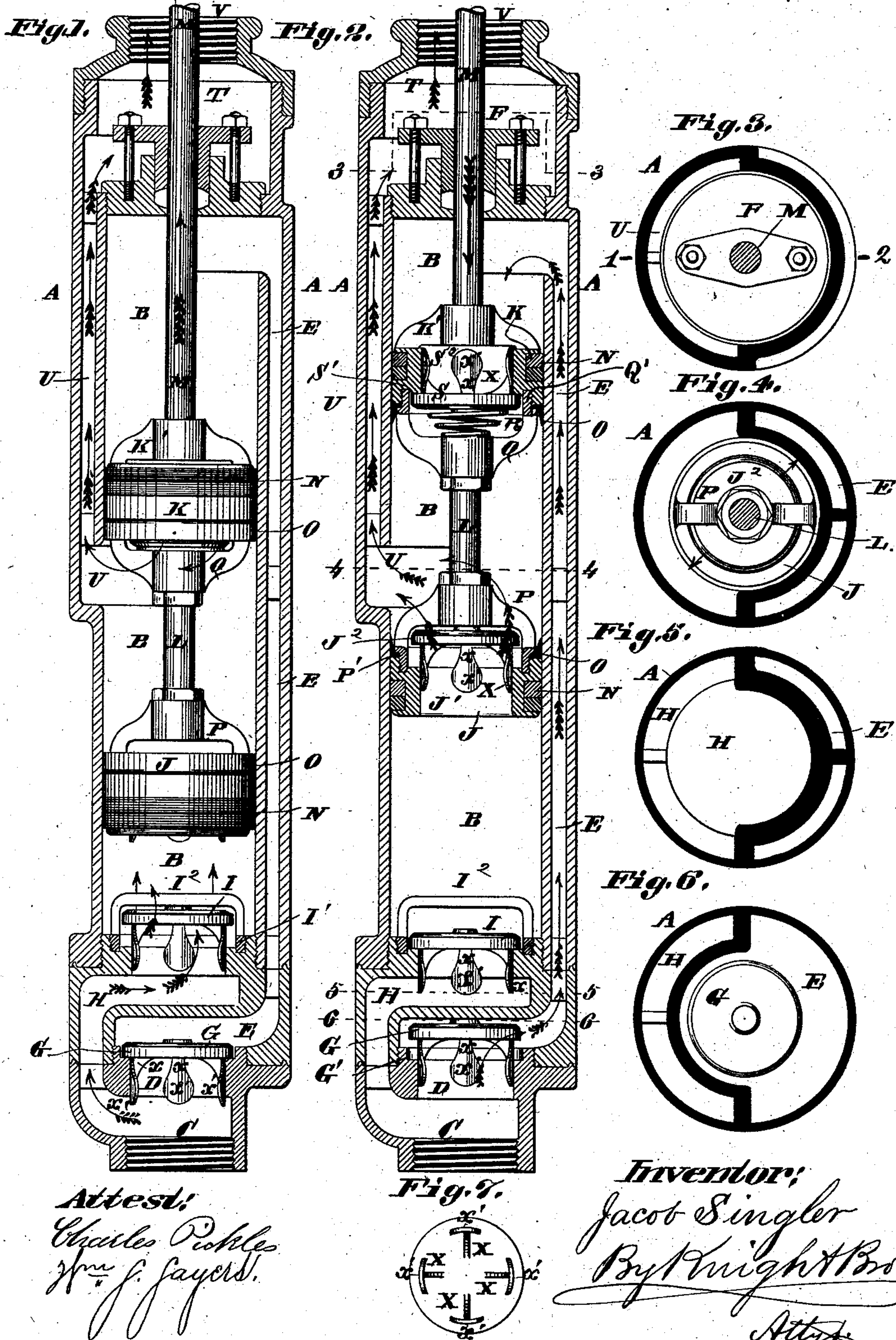


(No Model.)

J. SINGLER.
DOUBLE ACTING PUMP.

No. 290,125.

Patented Dec. 11, 1883.



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UNITED STATES PATENT OFFICE.

JACOB SINGLER, OF ST. LOUIS, MISSOURI.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 290,125, dated December 11, 1883.

Application filed May 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, JACOB SINGLER, of the city of St. Louis and State of Missouri, have invented a certain new and useful Improvement in Double-Acting Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This pump is intended for use in bored wells and other situations.

The scope of the invention is set forth in the claims.

Figure 1 is a vertical axial section at 1 2, Fig. 3, showing the buckets down and ascending. Fig. 2 is a similar section with the buckets up and descending. Fig. 3 is a transverse section on the jogged line 3 3, Fig. 2. Fig. 4 is a transverse section at 4 4, Fig. 2. Fig. 5 is a transverse section at 5 5, Fig. 2. Fig. 6 is a transverse section at 6 6, Fig. 2. Fig. 7 is a bottom view of a valve.

The cylinder-casting A has a central cylindrical bore, B, and certain semi-annular passages for the liquid outside the said bore.

C is the induction-opening of the cylinder. A screw-thread is shown for the attachment of a suction-pipe.

D is a valve-port leading to a semi-annular or segmental passage, E, that extends up in the wall of the cylinder to the upper part of the bore B, beneath the stuffing-box F. Thus through port D and passage E the liquid enters the bore above the buckets. The port D is closed by a downwardly-closing valve, G, having a seat, G'.

H is a passage for liquid leading from the induction to the port of a valve, I, said port communicating with the lower end of the bore B. The valve I, like that G, closes downward, so as to prevent the escape of water downward from the interior of the cylinder. The valve I closes on a seat, I'. Its upward movement is limited by a bar, I².

J and K are two buckets working in the cylinder-bore B. These buckets are connected by a rod, L, so that they are moved simultaneously by means of the pitman M, that is connected to the upper bucket. Both buckets are shown packed in the cylinder-bore by ring-packing N and leather or rubber packing O. The bucket J has a port, J', extending through it, that is closed during the ascent of the bucket by a

downwardly-closing valve, J². The upward movement of the valve is limited by a bridge-bar, P, to whose lower end is cast a screw-ring screwing into the bucket J, and whose flange P' serves to hold the soft packing O in place.

To the arch or bar P the rod L is attached, and the upper end of said rod is attached to a similar arched bar, Q, connected to the bucket K by a screw-ring, Q', that serves to hold the packing O in place, and also forms a bearing for the lower end of a spring, R, whose upper end bears against the under side of a valve, S, closing upwardly against a seat, S', and thus preventing the passage of water through the port S² of the bucket K when the bucket is descending. The pitman M is attached to a cross-bar, K', of the bucket, and works in a stuffing-box, F, separating the upper end of the cylinder-bore B from the discharge-chamber T.

U is a semi-annular passage connecting the discharge-chamber T with the central part of the bore B, and which forms the way through which all the liquid escapes from the cylinder to the discharge-pipe that is screwed into the induction-opening V.

The valves all are of similar and novel construction, being guided by fingers X, set in a circular series and fitting against the sides of the valve-ports. The guide-fingers are made narrow at *x*, so as to allow free or easy passage to the liquid outwardly between the valve and seat, but are extended at *x'* in broad curved faces fitting the sides of the port. Thus it will be seen that the liquid will pass readily beneath the valve while the fingers will have an extended bearing-surface, *x'*, against the sides of the port.

The operation of the pump is as follows: When the buckets are moving upward, as shown in Fig. 1, the valves I and S are open and the valves G and J² closed, and water enters the cylinder-bore through passage H and port of valve I, and escapes from the cylinder through passage U T V. When the buckets J K are descending, the valves G and J² are open, and the valves I S closed. The liquid in this case enters the upper part of the bore B through valve-port D and passage E, and escapes, as before, through the passage U T V.

I claim—

1. The combination of a pump-cylinder hav-

ing interior bore, B, and side passages, E U, the passage E communicating with the induction-opening and top of the bore, and the passage U with the eduction-opening and middle of the bore, buckets J and K, connected together, working in the bore, and having valves opening toward the middle of the bore, and the check-valves G and I at the lower ends of the passage E and bore B, respectively.

2. The combination, in a pump, of the pitman working centrally in the eduction-opening, and a stuffing-box through which the pitman works, and which is interposed between the bore or barrel in which the buckets work, two buckets secured to the pitman having in-

wardly-opening valves, and the barrel having eduction passage from the middle of the bore, and induction-passages E H, having check-valves G and I, and communicating, respectively, with the upper and lower ends of the bore B.

3. A puppet-valve having guide-fingers X, adapted to work against the sides of the valve-port, and having narrow part x in proximity to the valve and broad part x' , substantially as set forth.

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Witnesses:

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