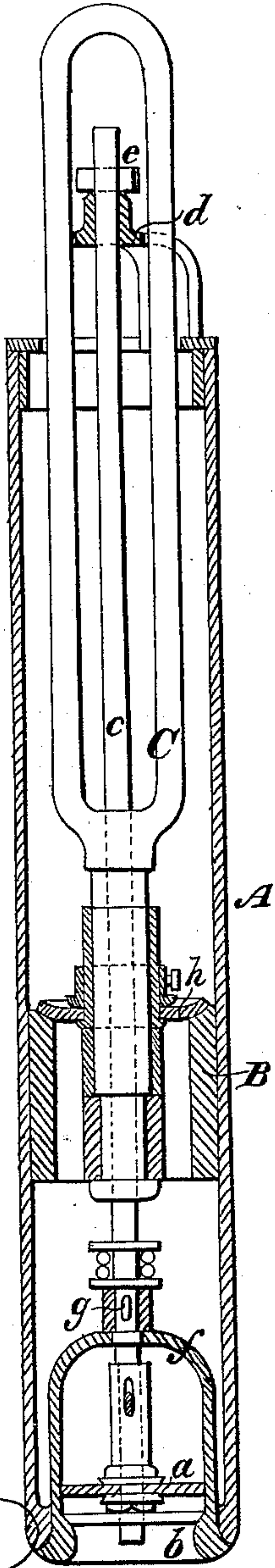


C. Mather,

Sand Pump.

N^o 57,830.

Patented Sep. 4, 1866.



WITNESSES:

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COLIN MATHER, OF MANCHESTER, ENGLAND, ASSIGNOR TO CHARLES P. BUTTON, OF NEW YORK CITY.

IMPROVEMENT IN SAND-PUMPS.

Specification forming part of Letters Patent No. 57,830, dated September 4, 1866.

To all whom it may concern:

Be it known that I, COLIN MATHER, of Manchester, England, have invented a new and Improved Sand-Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing represents a longitudinal central section of this invention.

This invention relates to a sand or shell pump, which is provided with a cylindrical barrel similar to that of an ordinary pump, and provided at its lower end or bottom with a valve or clack opening upward, somewhat similar to that in ordinary pumps; but instead of being fastened to the cylinders its seating is in an annular frame, which is drawn up against the end of the cylinder by a rod passing up to a wrought-iron guide or bridge at the top, where it is finally secured by a cotter or key. Above the clack there is a bucket also, similar to that of a common lift-pump, with a suitable valve on the top side. The rod of the bottom clack passes freely through this bucket to be secured at the top, and the rod of the bucket itself is formed like a long link in a chain, the bow or half-circle at the top end serving as a means of suspending the whole. A suitable guide is secured to the top of the cylinder to prevent the bucket being drawn out. The bottom clack is capable of rising to a certain distance from its seat, affording ample space for large pieces of rock to have free access into the cylinder, when, by the upstroke of the bucket, a partial vacuum is formed there, and a sand-pump is obtained which operates easily and without fail.

A represents a barrel or cylinder, made of cast-iron or any other suitable material of any suitable length and a little less in diameter than the size of the well-hole. This cylinder is provided with a valve or clack, *a*, at its bottom, and the seat *b* of this clack, instead of being rigidly secured to the cylinder, is made in a frame which is drawn up against the end of the cylinder by a rod, *c*, passing up to a guide or bridge, *d*, at the top, where it is finally secured by a cotter or key, *e*. The lower end of the rod *c* extends through a bridge, *f*, rising from the seat *b*, and it is se-

cured to said bridge by a pin, *g*, or by any other suitable fastening. Its bottom end forms a tubular guide for the stem of the valve or clack *a*, so that said clack is free to rise and fall within certain limits. By removing the cotter or key *e* the seat *a* is released and the bottom end of the cylinder is thrown open.

Above the clack *b* there is a bucket, *B*, similar to that of a common lift-pump, and provided with a valve, *h*, on its top, which may be made of leather, india-rubber, or any other suitable material, and which opens upward. The rod *c* of the bottom clack, *b*, passes freely through this bucket, and the rod *c* of the bucket itself is formed like a long link in a chain, the bow or half-circle at the top end serving as a means of suspending the whole. A suitable guide, *i*, secured in the top of the cylinder, prevents the bucket being drawn out.

When the sand-pump is passing down the hole the piston or bucket *B* will be at the top of the cylinder *A*, and the whole suspended by the rod *C*; but when the pump reaches the bottom the bucket will descend by its own gravity till it comes to the position shown in the drawing. When the motion of the winding-engine is reversed the bucket will be raised and a partial vacuum formed below it, when a portion of the rock which has been removed and broken up by the cutters will be carried by the flow of the water past the bottom clack or valve, *b*, into the space between it and the bucket.

When the pump is raised to the surface and placed on the stand provided for it, and the key *e* is knocked out, the bottom clack or valve, *a*, with its seat, will descend and the contents be washed out by the flush of water contained in the lifting-cylinder. By these means the operation of removing the sand and debris from the well-hole is simplified and facilitated.

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

The movable seat *b*, clack *a*, and rod *c*, in combination with the barrel *A* and bucket *B*, constructed and operating substantially as and for the purpose described.

COLIN MATHER.

Witnesses:

W. MATHER,
JNO. B. PAYNE.