J. B. Siverson,

Ships Pump.

No. 109,955. Patented Dec. 6. 1870.

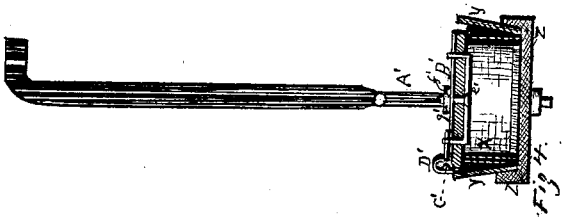

Fig 4.

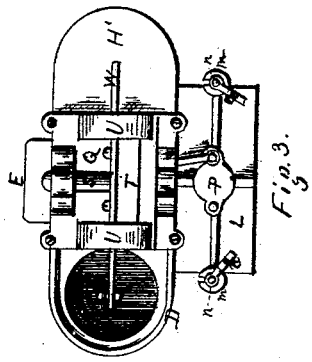

Fig. 3.

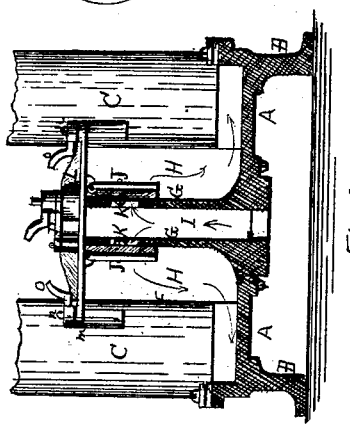

Fig 2

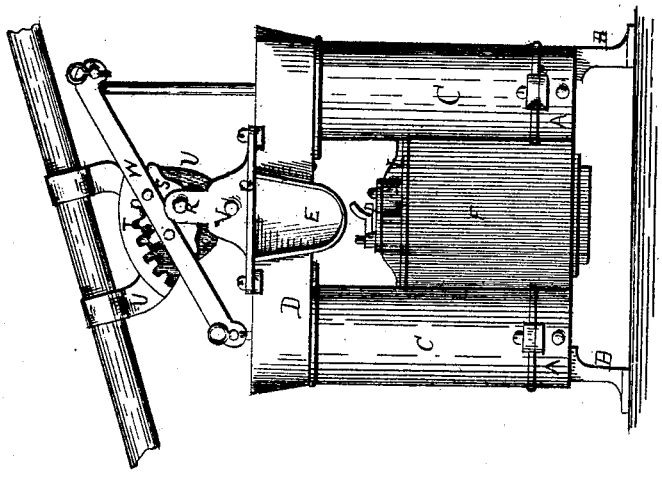

Fig 1.

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JOHN B. SIVERTSON, OF CHICAGO, ILLINOIS.

Letters Patent No. 109,955, dated December 6, 1870.

IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN B. SIVERTSON, of Chicago, in the county of Cook and State of Illinois, have invented a new and improved Ship's Pump; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a side elevation of my improved pump.

Figure 2 is a sectional side elevation, showing the construction of the valves and valve-chambers.

Figure 3 is a top plan view of the pump, with the pistons removed and one of the cylinders closed by a cover.

Figure 4 is a transverse vertical section of the plunger or piston.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

My invention has for its object to improve the construction and operation of ship's pumps; and to this end,

It consists in the construction and combination of parts hereinafter described.

In the accompanying drawing—

A is the base of the pump, mounted upon supports B, and supporting two vertical cylinders C secured thereto by bolts and nuts.

The cylinders are connected, at their upper ends, by a trough, D, having a lateral discharge-spout, E.

The base A is cast hollow, to communicate with the cylinders, and extends laterally to the rear of the latter, where it rises centrally, to form the vertical case, F, for the valves.

G G are two vertical partitions, extending transversely of the valve-case, near the center, to divide the same into two valve-chambers, H H, one upon each side of the central water-way I.

Within the chambers the valves J are hung, by their upper edges, from the case F, in such a manner as to close the ports K in the upper ends of the partitions, as shown in fig. 2.

The water-way I is connected, at its bottom, by a suitable pipe, with the well of the ship, and the water enters the pump-cylinders through the base A and valve-chambers, as indicated by the arrows in fig. 2.

The cover L for the case F is provided, at opposite ends, with lugs *m*, adapted to fit upon the screw-bolts *n*, affixed to the case by means of lateral slots formed in said lugs.

The cover is held in place by the screw-nuts *o*, as shown.

By loosening the nuts, the cover L is readily removed from the case, to permit access to the valves and valve-chambers.

Pumps of this class, as heretofore constructed, have the valves arranged in the lower ends of the cylinders, beneath the pistons, and are accessible only by removing the pistons or other portions of the pump. By my invention this difficulty is entirely avoided, as the valves are reached under all circumstances by simply removing the cover L.

The center of the cover L is provided with an opening directly over the water-way I, which opening is closed by a swinging cover, P.

By this arrangement a sounding-rod can be introduced within the well of the ship to ascertain the depth of water without removing the handle or the pistons from the cylinders, as is commonly the case.

To effect this result it is only necessary to swing off the cover P and insert the sounding-rod through the water-way I.

Q is a metal plate, securely bolted to the top of the trough D, between the cylinders, and is formed with two uprights, which furnish bearings for the rock-shaft R.

Upon this shaft is cast, or to it is attached, a segmental gear, S, which is adapted to engage with the internally-toothed rim T, affixed to the arms U, through which the pump-handle or brake passes.

The arms U are supported upon a rock-shaft, V, also having its bearings in the uprights beneath the shaft R.

To one face of the segmental gear S is attached, centrally, the working-beam W, to which the piston-rods are pivoted in the usual manner.

By operating the handle or brake the arms U are vibrated and communicate motion, through the gearing and working-beam, to the piston-rods.

As the toothed rim and segmental gear describe arcs of different radii, the former being the longest, it is evident that a short stroke of the handle or brake will communicate a longer stroke to the ends of the working-beam, and, consequently, a long stroke to the pump-pistons; that is to say, when the working-beam stands at an angle of about forty-five degrees, the pump-handle would stand at about twenty-two degrees.

The object of this connection is to avoid the long stroke of the pump-handle necessary to operate the pistons in pumps having the piston-rods connected directly to the handle. By my invention in this respect, therefore, the operation of pumping is rendered less laborious and fatiguing.

The pistons are each formed of a block, X, having

exterior beveled edges, and with a central opening for the passage of water.

Y is the piston-packing, formed of a straight strip of leather or other suitable material; and

Z is a metal ring, having an interior bevel adapted to fit over and conform to the bevel of the block X.

The packing is placed around the beveled edge of the block, and the ring Z placed over the lower edge of the packing, and is clasped firmly in position by means of nuts upon the arms A′ of the piston-rod, which pass through both the block X and ring Z, as shown in fig. 4.

By these means the packing is readily applied and removed from the piston.

Strips of ordinary leather are employed for packing, instead of the pressed material now in use, whereby pumps can be repaired upon shipboard with ease and expedition, instead of the labor and skill now required by the use of pressed material.

By this arrangement, also, the packing is made adjustable upon the block X to fit the cylinders snugly.

B′ is the piston-valve, formed of a flat piece of metal, packed upon the under side with leather or other suitable material.

The valve is hinged to the block X by means of a lateral pin, C′, in the former entering a vertical link, D′, affixed to the latter, as shown.

This method of attachment permits the vertical play of the valve at the hinge to accommodate different thicknesses of packing, as the latter is liable to vary in thickness when replaced by repairs.

Without this connection or hinge the valve would not at all times fit closely upon its seat without great care being exercised in repairing the packing.

The latter is held upon the under side of valve by means of a plate, *e′*, which is provided with a screw, *f′*, passing through the valve and packing, to receive the nut *g′*.

The packing is also prevented from lateral displacement by passing the bent ends of the plate through the packing and valve, as shown in fig. 4.

My improved pump does not require priming, as the base A is, at all times, filled with water.

When the pump is not in operation, as in port, or to exclude snow and ice, the pistons are removed by detaching the piston-rods from the working-beam, and the cylinders closed by the detachable covers H′.

These covers, in connection with the plate Q, effectually close the top of the cylinders and trough D, as will be seen by reference to fig. 3 of the drawing.

A cover may be also applied to the spout E, if desired.

If the movement of the valves should be found unsteady in the practical operation of my improved pump, a pendulum may be attached to the rock-shaft or fulcrum of the lever operating the valves, thus producing a steady motion and an easy operation of the moving parts.

Having thus described my invention,

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

1. The arrangement upon the plate Q, with relation to each other, of the segmental gear S, internally-toothed rim T, beam W, and the pump-brake, substantially as described.

2. The water-base A, constructed as described, to support the cylinders, and form the case F, containing the valve-chamber H and water-way I, in rear or upon one side of said cylinders, substantially as and for the purpose specified.

3. The valve B′, having its packing secured in place by means of the plate *e′*, screw *f′*, and nut *g′*, and hinged to the piston in such a manner as to permit vertical play at the hinge, substantially as described, for the purpose specified.

4. In combination with the case F, the cover L, having the central covered opening, and adapted for removal, in the manner described, to permit access to the valve-chambers H and water-way I, as and for the purpose specified.

JOHN B. SIVERTSON.

Witnesses:

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