

F. Ransom,

Pump Lift,

Nº 7,198.

Patented Mar 19, 1850.

Fig. 1

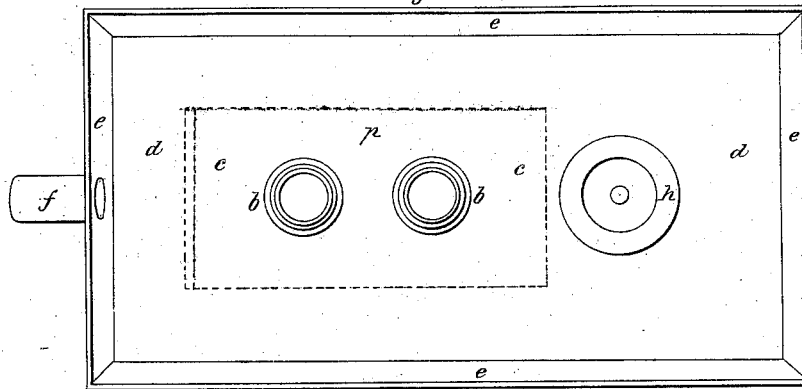


Fig. 2

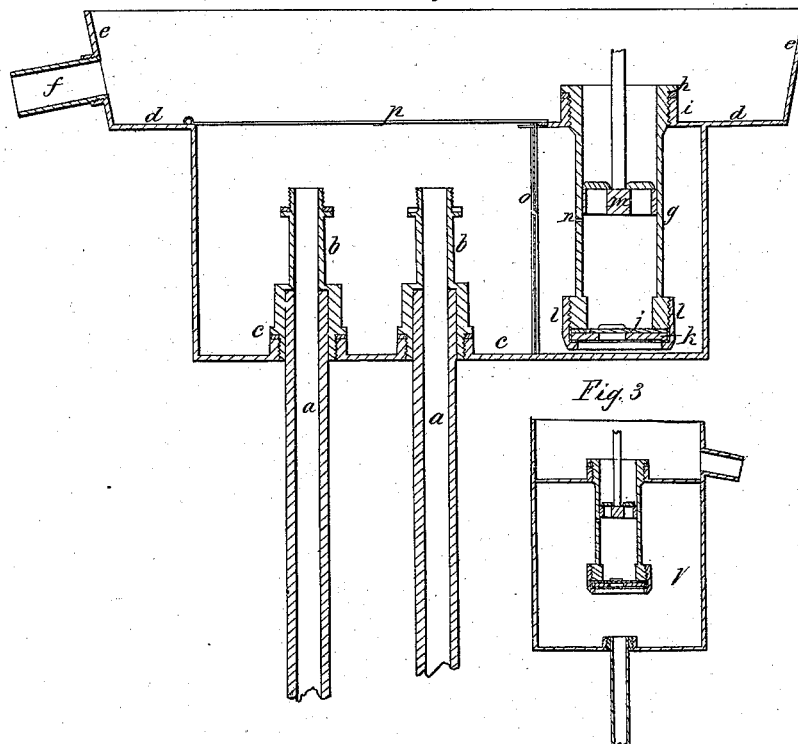
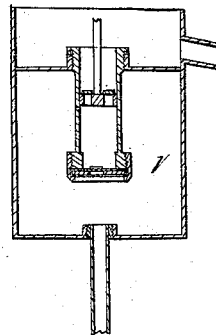


Fig. 3



UNITED STATES PATENT OFFICE.

FRANKLIN RANSOM, OF NEW YORK, N. Y.

PUMP FOR SHIPS, &c.

Specification of Letters Patent No. 7,198, dated March 19, 1850.

To all whom it may concern:

Be it known that I, FRANKLIN RANSOM, of the city, county, and State of New York, have invented certain new and useful Improvements in Suction-Pumps Principally Applicable to Pumping Ships and other Vessels, and that the following is a full, clear, and exact description of the principle or character of my improvements, which distinguishes them from all other things before known, and of the method of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification in which—

Figure 1, is a plan, Fig. 2 a vertical section, and Fig. 3 a vertical section, representing a modified mode of applying the principle of my invention.

The same letters indicate like parts in all the figures.

In all suction pumps as heretofore made, the pump barrel in which the piston works, and which contains the check or arrest valve, is continuous with the supply pipe which extends down to the reservoir of water. The leading objection to this arrangement are; the waste of power arising from the fact that after the column of water has been started by the upward stroke, the piston must be forced down against the upward motion of this rising column of water, all that portion of the surface of the piston around the valve being resisted, or the motion of the piston must be so slow that it shall not be moving down until the upward movement of the column of water is stopped; hence it follows as a necessary consequence that there must be a loss of power, or the motion of the pump must be very limited. Again, all that enters the supply-pipe with the water at the bottom must pass through the valves and the pump band in which the piston works; and, in consequence of this, pumps frequently choke, particularly on board of ships and require to be taken to pieces for cleaning, and, as such pumps are not readily accessible, taking them out for cleaning and repairing is a matter of great difficulty.

The object of my invention is to avoid the difficulties and objections above pointed out, and at the same time to produce a pump which shall be cheap, light, and easy of access for repairs.

The first part of my invention consists in making the pump-barrel and supply pipe or

pipes separate, and combining them by means of an exhaust chamber in which the water shall be forced by atmospheric pressure, and from which it shall flow by its gravity into the pump barrel, whereby the water moves in the supply pipe by a continuous motion, without any check from, and without presenting any resistance to, the downward motion of the piston.

The second part of my invention consists in making a small lateral hole in the barrel of the pump, and at about the middle of the range of motion of the piston, and communicating with the exhaust chamber, so that after the chamber has been exhausted by the working of the piston, and the water begins to flow into the pump barrel, the action of the piston shall still continue to exhaust the chamber above the water therein through the said hole; the water in the pump barrel and above the piston acting as a valve to prevent atmospheric air from entering the exhaust chamber.

The third part of my invention consists in combining with the exhaust chamber, which combines the pump barrel and supply pipe, a strainer, sieve, or filter, interposed between the pump barrel and supply pipe, so that the water discharged in the exhaust chamber, by the supply pipe, shall flow through the said strainer, sieve, or filter, before it enters the pump barrel thereby effectually protecting the valves and piston against the evil effects of solid foreign matter. And the last part of my invention consists in inserting the supply pipe from above, and securing it to the bottom of the exhaust chamber, when this is combined with a large valve on the top of the exhaust chamber which covers an aperture made therein of sufficient capacity to give access to the inside for inserting the supply pipe and for repairing and cleaning, whereby the apparatus is rendered light, occupies but little space, and can be cleaned and repaired with facility.

In Figures 1 and 2 of the accompanying drawings (a) represents a supply pipe or hose which extends down to the reservoir of water below, or into the ship's hold. The upper end of this pipe or hose is properly secured to a metal tube (b) the lower end of which is threaded and provided with a packed flange, so that after the pipe has been let down through a hole, it can be screwed with a water-tight joint into the bot-

tom of an exhaust chamber (*c*) which is a metal case, the top of which, as at (*d*), is enlarged and surrounded with a rim (*e*) provided with a discharge spout (*f*). The upper end of the metal tube (*b*) is provided with a metal screw to receive a cap, which may be put on for protection when the pump is not in use. The drawings represent two such pipes, but one or more than two may be used at discretion.

The pump barrel (*g*) is made at top with a packed flange (*h*) and a screw-thread below by means of which it is secured to a threaded flange (*i*) on the top of the exhaust chamber.

The check valve (*j*) is properly hinged to a plate (*k*) let into the lower end of the pump barrel with packing, and there secured by a screw flange (*l*) tapped onto the lower end of the barrel. And the inside of the barrel is properly fitted, with a single acting suction piston (*m*) of the usual construction; a small lateral hole (*n*) is made in the pump barrel at about the middle of its length, and communicating with the exhaust chamber, through which the chamber is exhausted above the water therein.

Between the pump barrel and the supply pipes, there is a vertical strainer, sieve, or filter (*o*), which may be made of fine wire gauze, attached to a metal frame fitted to slide between ways attached to the sides of the exhaust chamber, that it may be inserted and removed with facility. This strainer or filter may be made of any other substance which will permit water to flow through and arrest the solid impurities, which it may be desired to retain. There is a large hole made in the top of the exhaust chamber of sufficient capacity, to give free access to the inside of the chamber, for removing and inserting the supply pipe or pipes, for cleaning and repairing and to this hole is fitted a hinged valve (*p*) which, when the chamber is exhausted, will be kept closed tight by atmospheric pressure. When the piston is first started, the air is exhausted from the exhaust chamber, and then the water will be forced up into it by atmospheric pressure from the reservoir below and flows through the meshes of the strainer, leaving all the solid impurities behind, and so soon as it has reached a level in the said chamber above the lower end of the pump barrel, it will flow by gravity into the pump barrel and be discharged at top by the piston. The action of the piston will however continue to exhaust the chamber through the small lateral hole until the

water in the chamber rises above it; still, air cannot enter the exhaust chamber through this hole, because the water in the pump barrel above the piston acts as a valve to exclude it. In this way it will be seen that the upward motion of the column of water in the supply pipe or pipes is not in any manner checked by the downward motion of the piston, as the piston simply acts to exhaust the chamber and to discharge the water from the chamber after it has been carried up by atmospheric pressure. The exhaust chamber should be made of sufficient capacity to permit the water to flow into it from the supply pipe during the down strokes of the piston, that the rising column may not be checked in its upward motion.

I generally prefer to extend the upper end of the supply pipe above the bottom of the exhaust chamber and nearly up to the top thereof, as this will prevent any solid substances, once discharged, from again entering the supply pipe, but this is not indispensable. Instead of placing the pump barrel in one end of the exhaust chamber (as in Figs. 1 and 2) I sometimes make the exhaust chamber an enlargement of the supply pipe as at (*q*) in Fig. 3, of the required capacity and extend it up around the pump barrel to such a height that the water may rise therein, and supply the pump-barrel by gravity.

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

1. Combining the pump barrel of section pumps, in which are placed the check or stop valve and the piston, with the supply pipe or pipes by means of an exhaust chamber into which the water flows by atmospheric pressure and from which it runs by gravity into the pump barrel, substantially as and for the purpose specified.

2. I also claim in the combination next above specified, making a lateral hole through the pump barrel, and communicating with the exhaust chamber, substantially in the manner and for the purpose specified.

3. I also claim, combining with the exhaust chamber, which unites the pump barrel and the supply pipes, and interposes between these, a strainer, sieve or filter, substantially as described and for the purpose specified.

FRANKLIN RANSOM.

Witnesses:

ROBERT W. LOWBER,
CHAS. BROWNE.