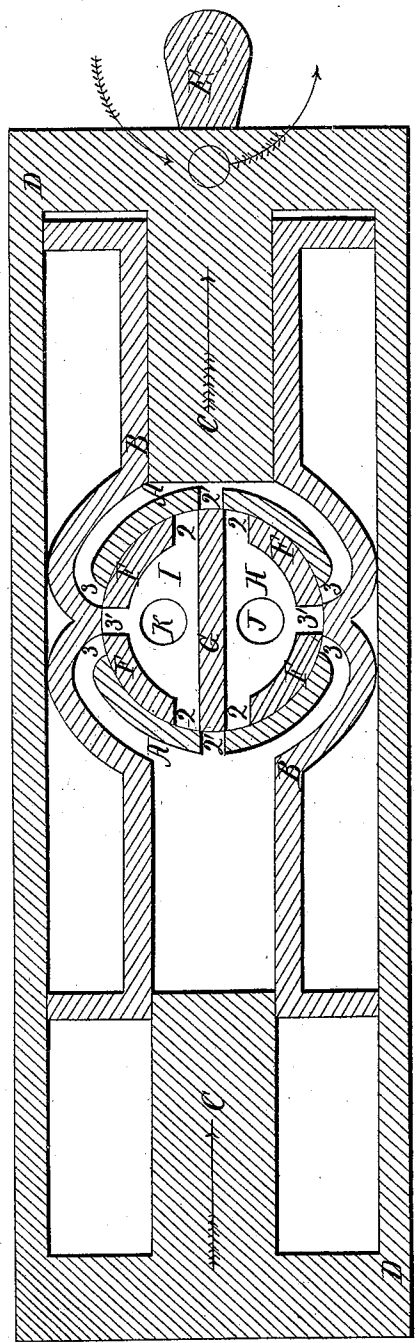


*Cone & Bragg,*  
*Oscillating Pump,*

*N<sup>o</sup> 19,680.*

*Patented Mar. 23, 1858.*



# UNITED STATES PATENT OFFICE.

EZRA COPE AND ISAAC W. BRAGG, OF CINCINNATI, OHIO.

## OSCILLATING PUMP.

Specification of Letters Patent No. 19,680, dated March 23, 1858.

*To all whom it may concern:*

Be it known that we, EZRA COPE and ISAAC W. BRAGG, of Cincinnati, in the county of Hamilton and State of Ohio, have invented and assigned to ourselves and John C. Morris, of the same place, a new and useful Improvement in Oscillating Pumps.

The nature of our improvement consists in the arrangement of single acting oscillating plunger-pumps, to overcome some of the most prominent if not the only remaining obstacles to the construction and use of sure acting and reliable pumps.

It is well known that pumps having to draw liquids any height approximating to the limit that liquids can be drawn by vacuum, are liable to give trouble when being first started after having stood but a little time, owing to trifling leaks incident to the most perfect workmanship allowing the liquid to escape and air to take its place; when from the amount of space required for valve chambers, and passages from which the piston or plunger cannot expel the air, on account of its elasticity. The same difficulty from similar causes is had when pumping hot liquids owing to the accumulation of vapor or steam in the valve chambers and passages. Our arrangement requiring no amount of space for valve chambers, and by reducing the amount of space in the passages, together with the speed attainable, and the certainty of opening and closing the valves, we overcome the foregoing difficulties to a great extent. Another difficulty has been in the very limited speed at which piston or plunger-pumps could be worked on account of the time required for opening and closing the valves. In our arrangement the only limit of speed is that at which liquid can be made to flow into the vacuum produced by displacement of the plunger and this limit we enlarge by arranging the openings and passages as direct and as nearly equal in area to the cylinder as possible. Again in pumping liquids containing foreign substances and matter; the valves of ordinary pumps are liable to become clogged or hindered in their motion from particles getting under them and keeping them from seating perfectly, in other cases adhesive matter cause them to stick, and at times stop the action of the pump when its efficiency is most required, our arrangement insures ef-

fective and certain action under any circumstances and duty required of pumps.

To enable others skilled in the art to make and use our improvement we will proceed to describe its construction and operation by referring direct to the accompanying drawing:

The drawing represents the longitudinal section of the working parts; and the transverse section of the trunnion.

A, A, represents the interior of cylinder, B, B, the shell of cylinders, C, C, the plungers, D, D, the yoke or connections, E the crank attachment to receive or transmit motion and control the amount of throw or oscillation.

F, F, F, F, represent trunnion shell, G the partition which divides the interior of the trunnion longitudinally into two chambers H, and I.

J and K represent pipes attached and in communication with the chambers H and I, respectively either of which may be used for the supply or delivery.

Figures 2 2' 2, 3 3' 3, 2 2' 2, 3 3' 3, represent openings in the trunnion and the surrounding parts grouped as widely asunder as the limit of size will admit of in order to get the best disposition of weaving surface and the greatest amount of area of opening for duty, from a limited number of openings.

When desired to operate for pumping with the crank to move in the direction shown by the arrows, during the operation, the pipe J, is put in communication with the reservoir or other means of supply then the crank being moved in the direction stated all other movements necessary to successful operation ensue; vacuum is produced by the movement of the plunger and the fluid to be passed flows through pipe J, chamber H, openings 2, 2', and 3', 3, into the cylinder until the stroke of the plunger in that direction is completed and the openings are closed. The return stroke of the plunger expels and discharges the fluid contents of the cylinder through the openings 2', 2, and 3, 3', chambers I, pipe K, to delivery. In this arrangement the certainty of action, and successful operation following the movement of the crank, and the rapidity at which it can be made to operate makes, this arrangement for pumps, superior in point of reliability and in point of effectiveness.

We do not claim the movement, nor the arrangement of any part of our pump separately considered; but

5 What we claim as our invention and desire to secure by Letters Patent is—

10 The herein described arrangement of two single acting oscillating plunger pumps to oscillate upon a single trunnion placed between them as shown; in combination with the employment and use, of two or more induction ports in the one chamber of the

trunnion and two or more induction parts in the other chamber of the trunnion, arranged, to alternately communicate with corresponding ports or openings and passages in each cylinder, substantially as, and for the purposes set forth in the foregoing specification. 15

EZRA COPE. [L. S.]

ISAAC W. BRAGG. [L. S.]

In presence of—

J. A. BAKER,

W. B. DENNIS.