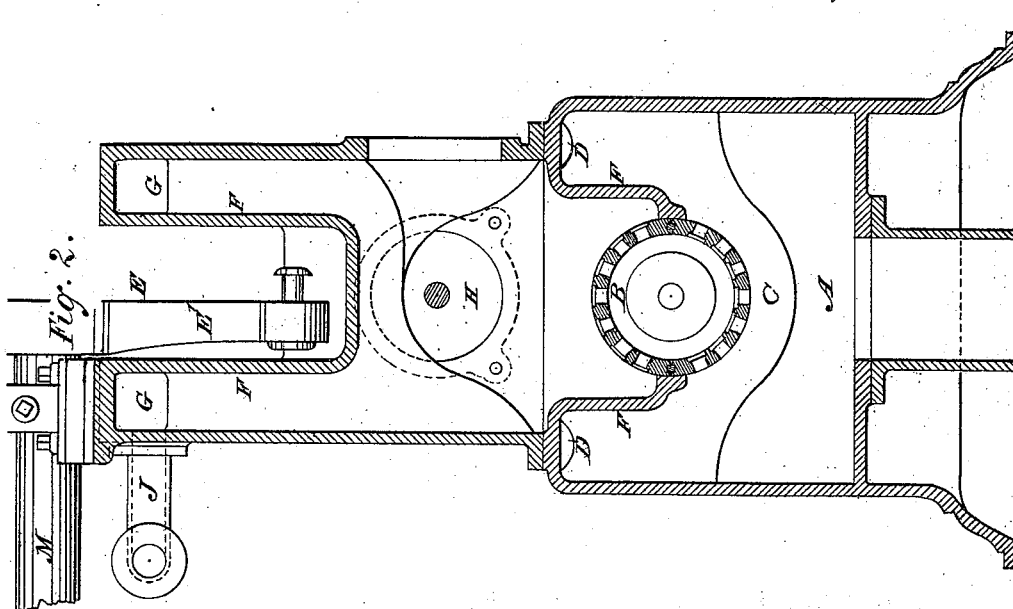
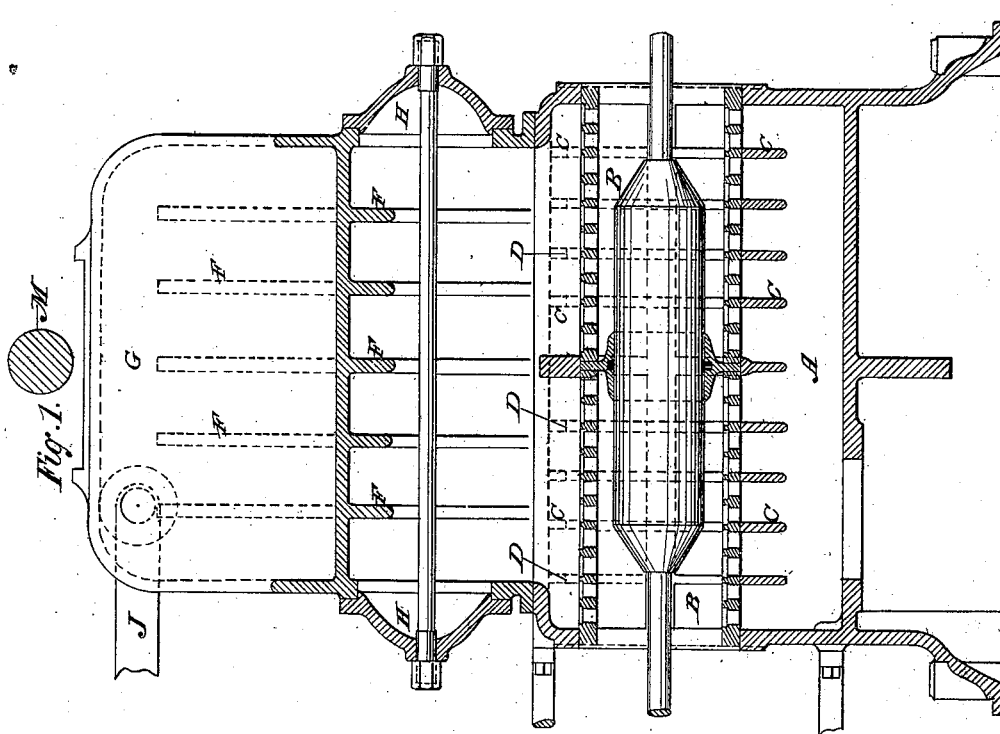


G. H. CORLISS.
Pumping-Engine.

No. 215,804.

Patented May 27, 1879.



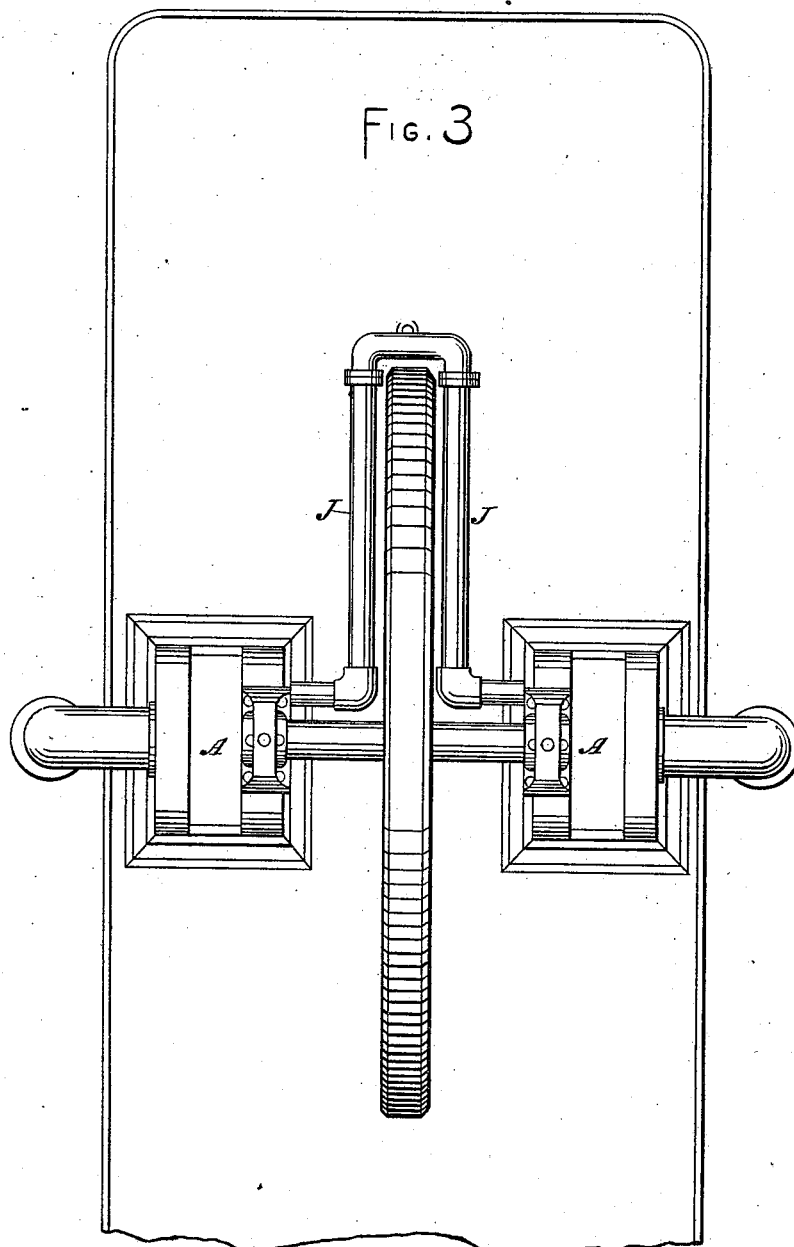
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—WITNESSES:—

W. Colburn Brooks
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—INVENTOR:—

George H. Corliss
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UNITED STATES PATENT OFFICE.

GEORGE H. CORLISS, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN PUMPING-ENGINES.

Specification forming part of Letters Patent No. **215,804**, dated May 27, 1879; application filed January 2, 1879.

To all whom it may concern:

Be it known that I, GEORGE H. CORLISS, of Providence, in the State of Rhode Island, have invented certain new and useful Improvements relating to Pumping-Engines; and I do hereby declare that the following is a full and exact description thereof.

My improvements are exhibited by drawings hereto annexed, which form part of this specification, in which—

Figure 1 is a longitudinal section of a pump-box containing these improvements. Fig. 2 is a transverse section of the same, and Fig. 3 is a plan of a portion of a pumping-engine in which I have introduced this improved pump-box.

Similar letters in all the figures refer to similar parts.

The water to be pumped is first received into an ample horizontal chamber, A, in the lower part of the pump-box.

At regular intervals along the exterior of the pump-barrel B partitions C C, &c., are formed, extending across the pump-box. These partitions, being a part of the pump-box casting, serve the purpose of braces in strengthening the box and give support to the pump-barrel, which is formed separately, so that it may be removed, when required, and is strongly supported, as indicated by B. Numerous lateral chambers are thereby formed, extending vertically above and below the pump-barrel B.

As the inlet-valves are all placed in the lower half of the pump-barrel B, there is left a space in these lateral chambers above the level of the highest inlet-valves to form an ample vacuum-chamber, which is made continuous by openings D D, &c., through the partitions at the top.

Each section of the inlet-valves is placed in close and nearly equal proximity to a source of water-supply, whatever may be the length of the pump-barrel.

The upper portion of the pump-box is formed to serve the double purpose of an air-chamber and a support for the crank-shaft M. To this end it is formed with an exterior recess, E, extending lengthwise, of sufficient depth to accommodate the sweep of the crank E'. The

bottom of this recess and its vertical walls impart great strength to the ends of the pump-box for resisting internal pressures.

The sides of the pump-box are strengthened by vertical transverse partitions F F, &c., which divide it internally into separate cells. Continuous passages G G, for the circulation of air, are provided near the top of the box by dropping the partitions an inch or two below the top or roof, and the partitions are arched below, so as to leave an ample space above the pump-barrel for making the delivery-valves accessible through man-holes H H at each end of the pump-box.

By means of this system of construction each section of the delivery-valves is placed in close and nearly equal proximity to the air-chambers, whatever may be the length of the pump-barrel.

The man-hole covers are held in position by a rod passing through the box, and this rod is made of sufficient strength not only to resist the pressure upon the covers, but also to support the ends of pump-box contiguous to them.

Two pumps are used. By bringing the air-chambers into communication through a connecting-pipe, J, which is of sufficient length and properly bent to extend horizontally past the intervening fly-wheel, I secure a continuous chamber, which (the cranks E' being placed at right angles) receives four impulses from the two strokes of each plunger during each revolution of the engine, whereas, if disconnected, the two chambers would each receive but two impulses. By this subdivision of the impulses from the plungers I increase the efficiency of the air-cushion in approximately the same ratio.

I claim as my invention—

1. The removable pump-barrel supported in a pump-box by partitions which brace the sides of the box, and which bring each section of the inlet-valves into close and nearly equal proximity to the water-supply, and at the same time form the vacuum-chambers.

2. The combination of the crank-shaft with a pump-box recessed externally for the sweep of the crank, and strengthened longitudinally

by the bottom and vertical walls of said recess, while internally it is strengthened transversely by the several partitions, which also serve to secure for each section of the delivery-valves close and nearly equal proximity to the air-chambers.

3. The two pump-boxes, in combination with an air-pipe connecting their air-chambers, arranged in the manner and for the purpose herein described.

In testimony whereof I have hereunto set my hand this 12th day of December, 1878, in the presence of two subscribing witnesses.

GEO. H. CORLISS.

Witnesses:

GEO. A. DODGE,
JESSE WALRATH.