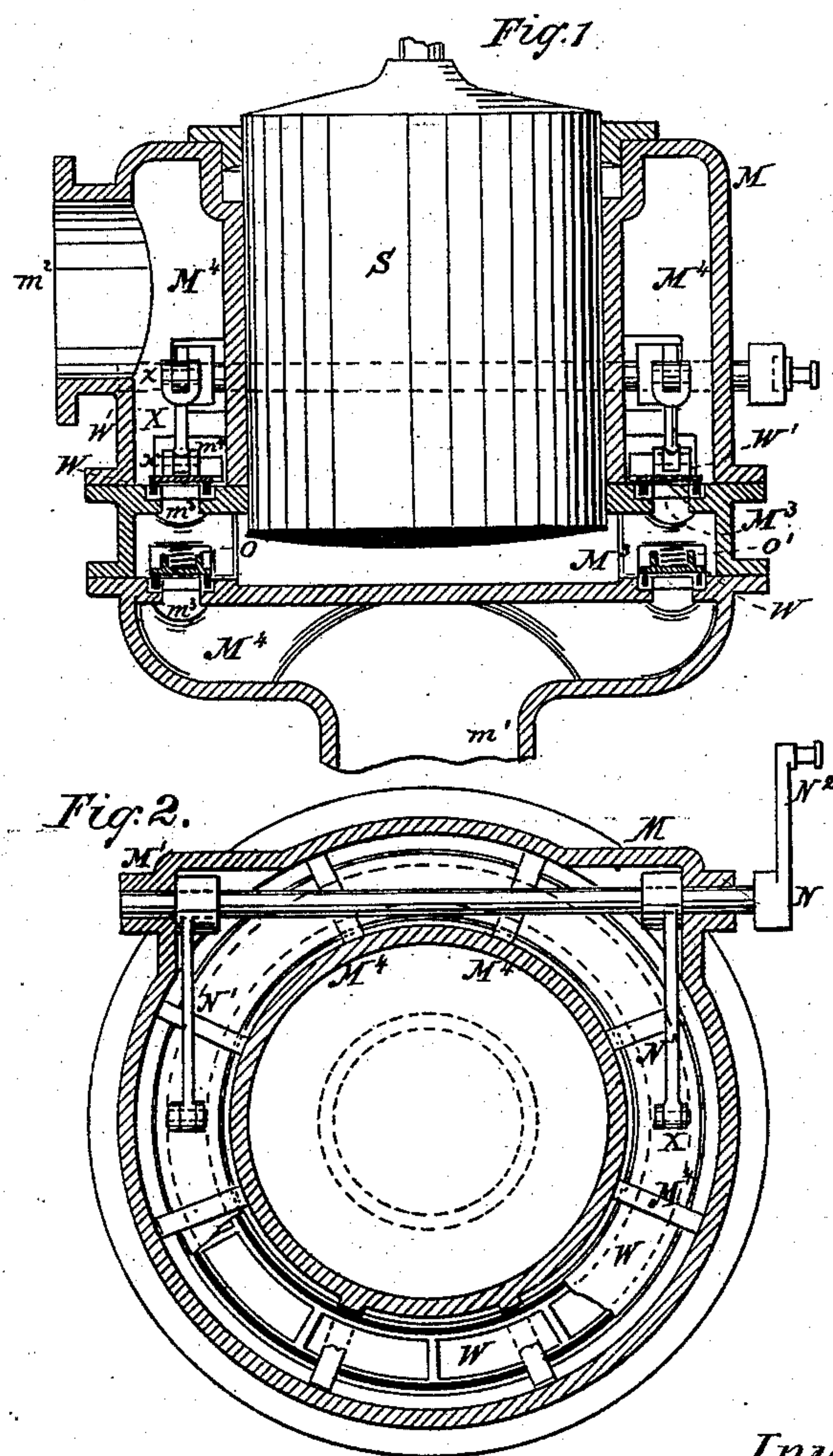


(No Model.)

G. H. CORLISS.
Pump.

No. 235,742.

Patented Dec. 21, 1880.



Witnesses:

W. Colborne Brooks
Charles C. Stetson

Inventor.

George H. Corliss.
By his attorney, F. A. Nelson

UNITED STATES PATENT OFFICE.

GEORGE H. CORLISS, OF PROVIDENCE, RHODE ISLAND.

PUMP.

SPECIFICATION forming part of Letters Patent No. 235,742, dated December 21, 1880.

Application filed June 14, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. CORLISS, a citizen of the United States, residing at Providence, in the county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Pumps, of which the following is a full and exact description.

The invention is intended mainly for large pumps, and relates to the valves and adjacent parts.

I employ a ring of relatively thin metal for the valve, of such size as to extend quite around the body of the pump. I can use this valve with my peculiar guiding and operating means for the induction alone or for the eduction alone; but I can use the fullest form of the invention for the eduction and a less complete development of the invention for the induction, or vice versa, thus using the invention in one or both places in the same pump, and will so describe it.

But that my invention may be fully understood, I will proceed to describe by the aid of the accompanying drawings, which form part of this specification, the means which I prefer to employ in carrying out the various details of my invention.

Figure 1 is a central vertical section through a portion of the pump, and Fig. 2 is a horizontal section through the same parts.

Similar letters of reference indicate like parts in both the figures.

The drawings represent the novel parts with so much of the ordinary parts as will show their relation thereto.

M is the case or main body of the pump. S is a plunger worked up and down through a stuffing-box around the top, and M^2 M^3 are respectively the horizontal plates in which are the apertures to be controlled by valves. The water, it will be understood, is received through liberal pipes, the suction or receiving pipe being connected to the nozzle m^1 and the forcing or delivery pipe being connected to the nozzle m^2 .

The apertures for the flow of the water up through the plates M^2 and M^3 are alike. Each is an annular aperture extending continuously around. I will indicate each by m^3 . The metal is strongly supported by webs M^4 below, cast in one therewith. The upper and lower edges of the webs are sharpened.

The casting M above the uppermost or delivery, which I have termed the "eduction" aperture, is also formed with webs across, marked with similar marks M^4 . Over the aperture m^3 each web M^4 is cut away, as shown by m^4 , to a width and height to allow the free rising and sinking of the ring-valve W. These ring-valves are continuous annular forms of sheet-iron or other material, as light as consistent with proper strength. For a pump of thirty-six inches (ninety-five centimeters) diameter of plunger, the annular apertures m^3 may be two inches (five centimeters) wide, and the valves W nearly four inches (ten centimeters) wide and three-eighths of an inch (one centimeter) thick. The spaces cut out or otherwise produced in the webs M^4 may be a little more than four inches (ten centimeters) wide and three inches (seven centimeters) high.

An elastic seat is provided both on the outer and inner edge of each aperture m^3 . A brass double ring is formed by casting or otherwise with cross braces or bridges to hold them stiffly apart. Each is recessed on its upper face, and the recess made to receive the body of a ring of vulcanized rubber or other elastic and suitable material, with its upper edge projecting up above the metal. The valve at each descent rests on the noiseless and tight-fitting support.

In the most complete development of the invention I aid the rising or the falling, or both, by mechanical connections—that is to say, each annular valve W is partly self-acting, controlled by the tendency of the water first to open it and then to close it; but the motion thus impelled is further insured and modified by a set of connections for aiding the lifting or dropping, or both, these ends. I have shown such on the upper valve, W, alone. W' W' are lugs joined or bolted thereon, and X X are links connected thereto by transverse pins x . The links X are connected, by similar pins x at their tops, to arms N' N' , extending inward from a rocking shaft, N. The latter extends out through a stuffing-box and carries an arm, N^2 , which is operated by any suitable connections of the working parts of the machine. (Not shown.) This rocking shaft and its arm outside may be similar to but longer than corresponding parts for the main pump. Like those,

it may aid greatly in depressing the valve promptly to its seat just before the termination of the movement of the plunger, without waiting for the current of water to be reversed
5 and to begin to flow downward.

Modifications may be made by any good mechanic. Other materials than those mentioned and other dimensions may be successfully used.

One modification I show is to dispense with
10 the connections X and their attachments, and to work both the upper and the lower valves by the force of the water alone or aided by fixed springs. O' O' represent such springs attached to and adapted to serve by promptly
15 depressing the lower valve. Another important modification is to mount the valves with more space between them, and to have links X X and connections for each.

I esteem it important in all cases to provide such spaces m^4 in the webs M^4 as will allow the valve to tilt to its fullest extent without jamming.
20

I claim as my invention—

1. The ring-valve W, in combination with the pump-casing M and radial webs M^4 , having apertures m^4 for the free rising and falling of the valve, and adapted to guide the valve, as herein specified. 25

2. The ring-valve W, pump-casing M, webs M^3 , notched as shown, and springs O' O', combined as specified. 30

3. The ring-valve W, arranged as shown, to control the annular aperture m^3 , in combination with the links X, levers N', and shaft N, as shown and described. 35

In testimony whereof I have hereunto set my hand at Providence, Rhode Island, this 9th day of June, 1880, in the presence of two subscribing witnesses.

GEO. H. CORLISS.

Witnesses:

EDGAR PENNEY,
ED. W. RAYNSFORD.