2 Sheets—Sheet 1.

C. HEISTER.

Double-Acting Pump.

No. 202,725. Patented April 23, 1878.

Fig. I.

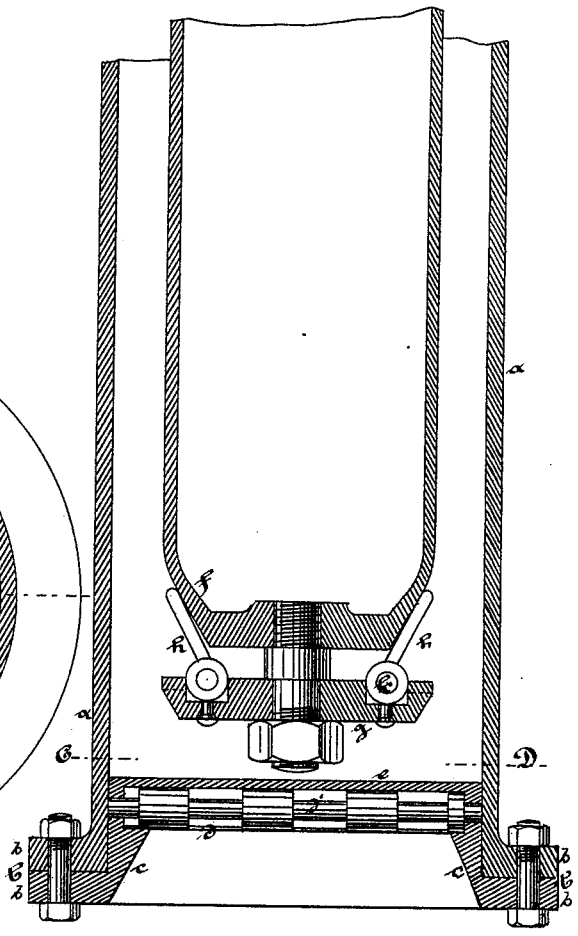
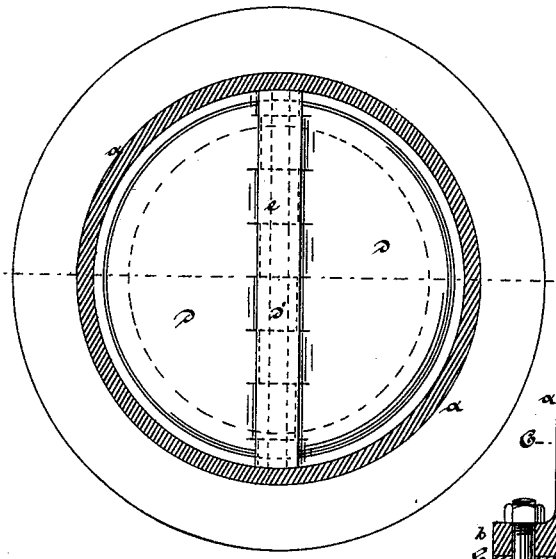


Fig. V



Witnesses

Martin Tanner

M Gardner

Inventor

Christian Heister

per Schieckley

Attorney

2 Sheets—Sheet 2.

C. HEISTER.

Double-Acting Pump.

No. 202,725. **Patented April 23, 1878.**

Fig. II

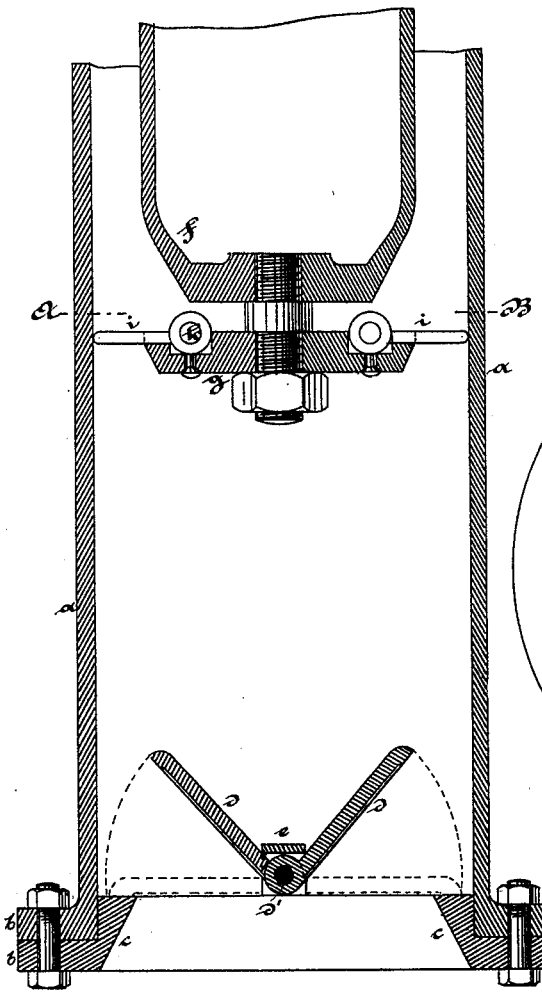
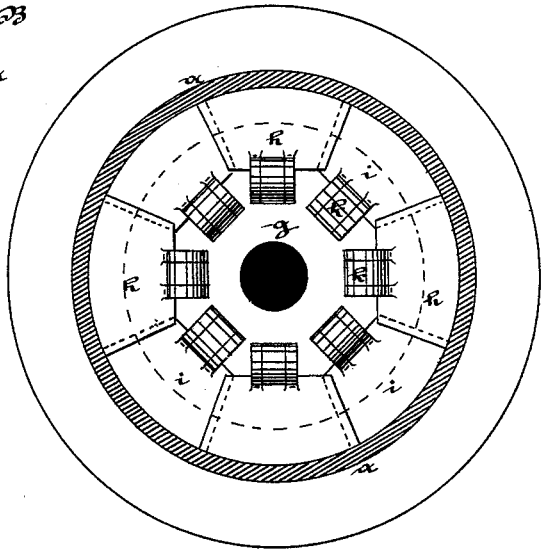


Fig. III



Witnesses

Martin Tanner

M. Gardner

Inventor

Christian Heister

per A. Schaadberg

Attorney

UNITED STATES PATENT OFFICE.

CHRISTIAN HEISTER, OF HANOVER, PRUSSIA.

IMPROVEMENT IN DOUBLE-ACTING PUMPS.

Specification forming part of Letters Patent No. **202,725**, dated April 23, 1878; application filed February 13, 1878.

To all whom it may concern:

Be it known that I, CHRISTIAN HEISTER, of Hanover, Prussia, have invented certain new and useful Improvements in Double-Acting Pumps, of which the following is a specification:

The invention relates to a double-acting pump which is designed to operate continuously. In its construction there is embodied a pressure-valve applied directly to the piston or plunger, said pressure-valve consisting of a series of hinged segmental plates overlapping each other, as will be hereinafter more fully described.

In the accompanying drawing, forming part of this specification, Figure 1 is a vertical section of the pump cylinder and piston, showing the latter when it is descending. Fig. 2 is a similar view, showing the piston when it is ascending. Fig. 3 is a transverse section taken on the line A B. Fig. 4 is a section taken on the line C D.

To the lower end of the pump-cylinder *a* is applied, by means of flanges *b* and screw-bolts, the valve-seat *c*. The suction-valve consists of two semicircular flaps or plates, *d*, which turn on the central axis *d'*, the upward movement of said flaps being determined or arrested by the bridge *e*, arranged directly above the hinge-point of the flaps, as is shown in Fig. 2.

The pressure-valve is formed of a series of flaps or segmental plates, *h i*, the flaps *h* being arranged above the flaps *i* and overlapping the same, as shown in Fig. 3. The flaps forming the pressure-valve are connected to the valve-seat plate *g* of the piston by means of hinges *k*. Said plate *g* is provided with seats for the lower flaps of the valve, and the hinges of both sets of flaps, forming the valve, are located at the same height, so that a tight joint is produced between the different flaps. As the piston descends the flaps of its valve open uniformly, the lower end of the piston *f* limiting the upward movement of the flaps, as is shown in Fig. 1.

Any well-known and appropriate mechanism may be employed for operating the piston, and the water may be conveyed to the pump-cylinder by the ordinary suction-tube.

A pump constructed according to the present invention will operate continuously and be subject to comparatively little wear.

It will be understood that the pressure or piston valve may be constructed of a larger or smaller number of flaps than is shown in the present instance.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The plate *g* and the upper and lower series of pivoted flaps or plates *h i*, having the hinge-joints thereof located in the same horizontal plane, and their edges made to overlap each other, in combination with the piston *f* and the pump-cylinder, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTIAN HEISTER.

Witnesses:

ALBERT MEYERSHEIN,

OSKAR ROTHE.