

J. P. FLANDERS.
Puppet-Valves.

No. 154,177.

Patented Aug. 18, 1874.

Fig. 1.

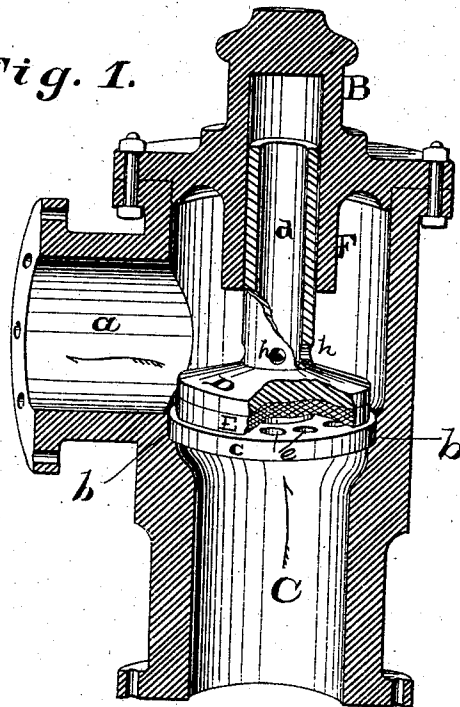


Fig. 2.

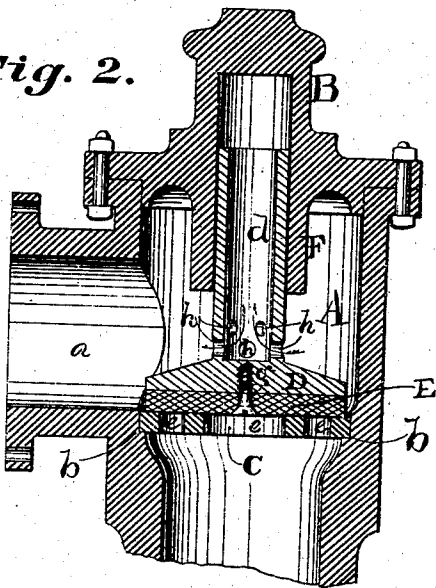
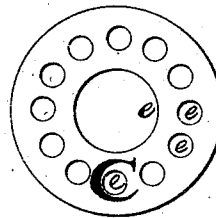


Fig. 3.



Witnesses:~

C.C. Poole.

J. S. Brown.

Inventor:~

John P. Flanders

By his atty R. D. Smith

UNITED STATES PATENT OFFICE.

JOHN P. FLANDERS, OF VERGENNES, VERMONT.

IMPROVEMENT IN PUPPET-VALVES.

Specification forming part of Letters Patent No. **154,177**, dated August 18, 1874; application filed March 13, 1874.

To all whom it may concern:

Be it known that I, JOHN P. FLANDERS, of Vergennes, in the county of Addison and State of Vermont, have invented a new and useful Improvement in Puppet-Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional perspective view of my invention in operative position. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan of the valve-seat.

This invention relates to an improvement in puppet-valves, particularly adapted to pumping-engines similar to that patented to me 15th July, 1873, and numbered 140,819. Its object is to arrange a valve which shall have an easy and free ventage, cheaply and easily fitted, and easily accessible for repairs; and it consists in a hollow stem for said valve, fitting into and guided in a tubular hub to the cap which closes the valve-cell, said stem being provided with lateral perforations, to permit the free passage of the fluid, as hereinafter more fully described.

That others may fully understand my said invention, I will particularly describe it.

A is the cell in which my said valve may be placed. For convenience in fitting, I make the entrance from said cell from below, and the escape laterally from the side of the same at *a*, while the top is closed by a cap, B. By this structure I am not only enabled to insert a boring-tool and cut the shoulder *b* for the seat C with ease and accuracy, but when the valve has been completed and set, the removal of the cap B gives immediate access thereto, if required, for repair or the removal of obstructions. The seat C is a flat disk, in thickness sufficient to resist deflection under the weight of the fluid column resting upon it. It is accurately turned and fitted to the shoulder or rabbet *b*, and may be readily put in place or removed therefrom. The disk C is punctured with a number of holes, *e*, for the passage of fluid, said holes being greater or less in size and number, according to the ca-

capacity of the inlet and outlet ports, the principle of operation depending upon a large ventage and slow motion of the column. The valve D is a flat disk with a central stem, *d*. This valve corresponds with the seat C in size, and it is faced with an elastic packing-disk, E, preferably of india-rubber, to cover and close all the openings *e e*, except when the pressure is upward, and said valve is thereby lifted from its seat. This elastic packing-disk may be secured to the valve-face by a central screw, *g*. The cap B is cast with a hollow or tubular hub, F, a part of which projects downward therefrom within the cell A. The remainder projects upward and forms an ornamental terminal above said cap. This hollow hub F forms the sleeve to receive and guide the stem *d* of the valve D, as shown. The said stem does not require to be very accurately fitted to said sleeve, because the structure of the valve, as described above, does not make it necessary that it should be accurately guided. The space within the sleeve F not occupied by the stem *d* will be filled with fluid, and it is apparent that at every lift of said valve a portion of this water will be displaced, and return again as the valve sinks. It is evident that the action of the valve will be impeded more or less as the relative quantity displaced is reduced or as its flow is accelerated. The relative quantity is largest when the valve-stem *d* is solid, and its flow is most retarded when its only escape is through the space between the stem and its guide.

To obviate any difficulties on account of the impediments above named, I make the valve-stem *d* hollow or tubular, as shown, and make orifices *h* at the lower end, for the ready escape of the inclosed fluid. By these means I not only cheapen the production of the valve, by reducing the weight of metal required, but I also reduce to a minimum the cross-sectional area of the solid portion of said stem, and therefore reduce correspondingly the volume of water to be displaced by the upper end of said stem, and cause the bulk of said displacement to take place at its lower end, where the outlets *h* may be ample to give it vent with

the required rapidity, and the valve be thereby enabled to lift and sink with the least possible impediment.

Having described my invention, what I claim as new is—

1. In combination with a puppet-valve, D, a tubular stem, *d*, provided with lateral perforations *h*, and a tubular sleeve or guide, F, substantially for the purpose set forth.

2. The combination, to form a puppet-valve

for a pumping-engine, of a cell, A, having at its bottom a perforated seat, *c*, a lateral outlet, *a*, and a cap or cover, B, provided with a tubular hub, F, and a flat valve, D, faced with an elastic disk, E, and provided with a hollow stem, *d*, substantially for the purpose set forth.

JOHN P. FLANDERS.

Witnesses:

MOSES S. LEE,

JOHN D. SMITH.