

*W.E. Banta,*

*Stop Cock.*

*No. 107,852.*

*Patented Oct. 4, 1870.*

Fig. 1.

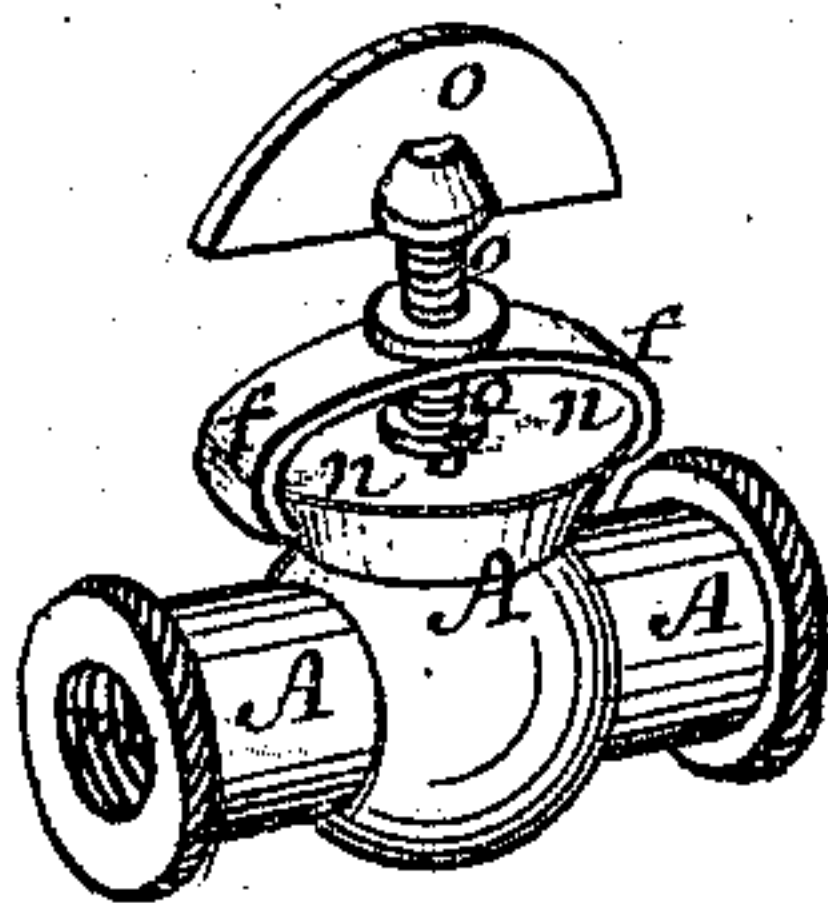
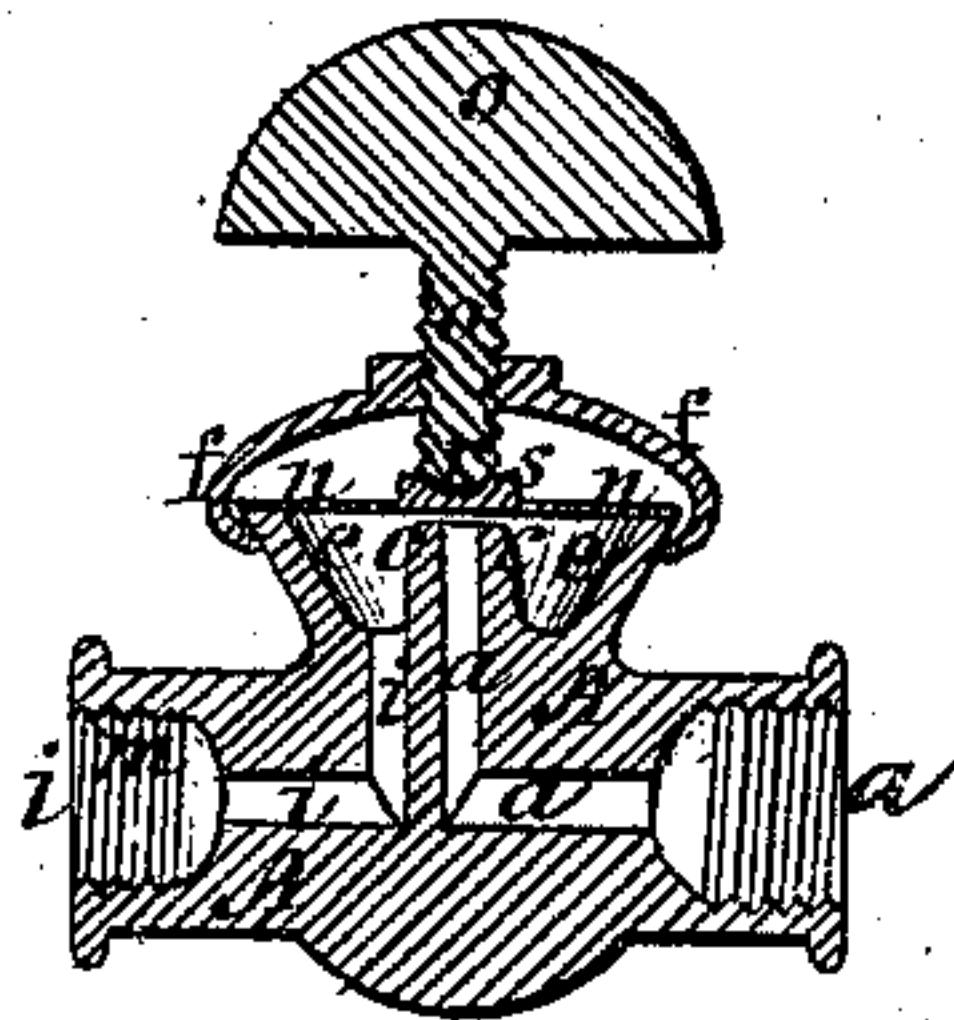


Fig. 2.



Witnesses.  
*W. H. Wilson*  
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# United States Patent Office.

WILLIAM E. BANTA, OF SPRINGFIELD, OHIO.\*

Letters Patent No. 107,852, dated October 4, 1870.

## IMPROVEMENT IN DIAPHRAGM STOP-COCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM E. BANTA, of Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Diaphragm Stop-Cocks; and I do hereby declare the following to be a full, clear and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents, in perspective, an exterior view of one of the diaphragm cocks, and

Figure 2 represents a vertical section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts of the stop-cock in both of them.

I am aware that diaphragm-cocks have been made and used, but the diaphragms, so far as I know or can learn, were made of rubber, canvas, or leather, and were, moreover, placed inside of and under the cap of the stop-cock; and these diaphragms were either auxiliary to the metal plug or valve used, or else, when operating as a valve or cut-off, required the use of an auxiliary spring to make them work efficiently. Such diaphragm-cocks I lay no claim to. They are too expensive, complicated, and difficult to keep in good working order, and not, from the nature of the material used, suitable for such liquids or gases as contained acids, by which they were rotted, decomposed, or destroyed.

My invention consists in a flexible or elastic metallic diaphragm, applied externally, so as to be easily and cheaply made or repaired, and exempt from leakage, as the diaphragm is or may be soldered to the body of the cock, or have such metallic connection as to leave no joint where leakage could possibly occur, as it would with rubber, canvas, leather, and such like diaphragms that are pinched down at the edges by a screw-cap.

To enable others skilled in the art to make and use my invention I will proceed to describe the same with reference to the drawing.

The body of the stop-cock is represented at A, and the inlet-passage into said body at a.

This inlet-passage *a* is first horizontal, and then rises vertically and issues through a nozzle or projection, *c*, which terminates in a chamber, *e*.

From this chamber *e* the exit or escape-passage *i* descends, first vertically, then horizontally, to its issue or connection with a pipe screwed into the body at *m*.

Over the chamber *e* there is soldered, or otherwise securely fastened, a thin and flexible diaphragm, *n*, of steel, or other elastic or springy metal, that completely incloses said chamber, so that it has no connection with any but the inlet and exit-passages of the cock.

On the body of the cock there is cast, or otherwise made and fastened, a bail, bracket, or arm, *f*, through which a set-screw, *o*, passes, and the point *r* of which may bear upon or in a seat, *s*, on said diaphragm *n*, so that, by turning said screw *o*, the diaphragm may be pressed down upon the nozzle or projection *c*, and tightly close the inlet-passage *a*. When the screw is turned the other way, the elasticity of the metal diaphragm springs it away from said projection and inlet-passage, and allows the liquid or gas to pass through. The chamber *e*, communicating only with the inlet and exit-issues, cannot leak, as there is no joint through which there could be any leak.

The inner side of the diaphragm, and that portion of it which presses upon the projection *c*, may be coated with some softer metal or alloy than that of the diaphragm itself, so as to form a metallic packing over the passage through the cock.

Having thus fully described my invention.

What I claim, is—

In combination with the body of a stop-cock, a spring metal diaphragm, externally applied thereto, forming a cover to the interior parts, and secured to the periphery of the body, or exterior, so that, by the action of the thumb-screw, it may be made to close and open the passage through the cock, substantially as and for the purpose described.

WM. E. BANTA.

Witnesses:

SALEM T. LAMB,  
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