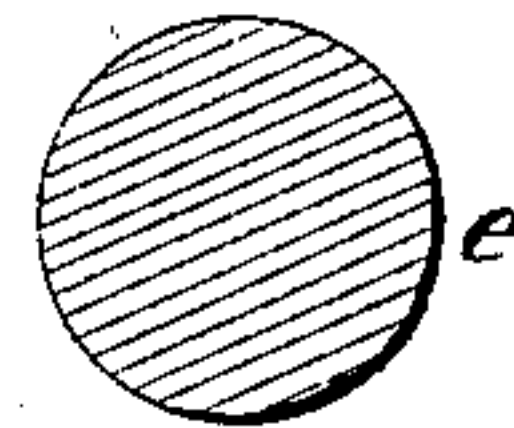
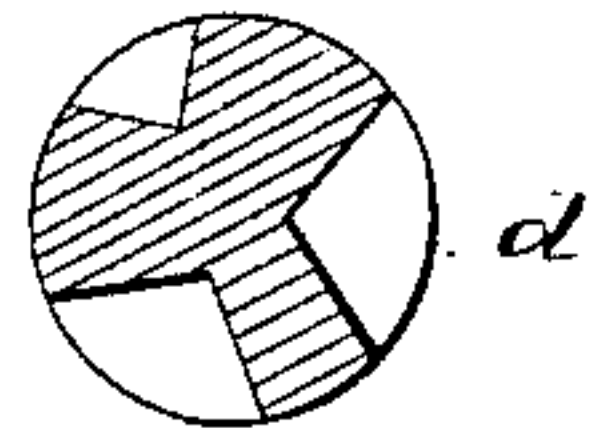
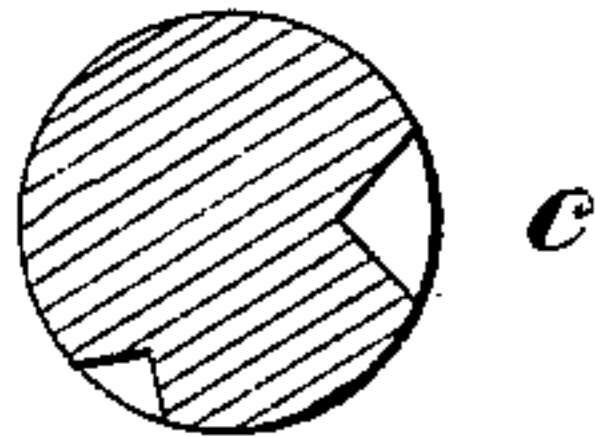
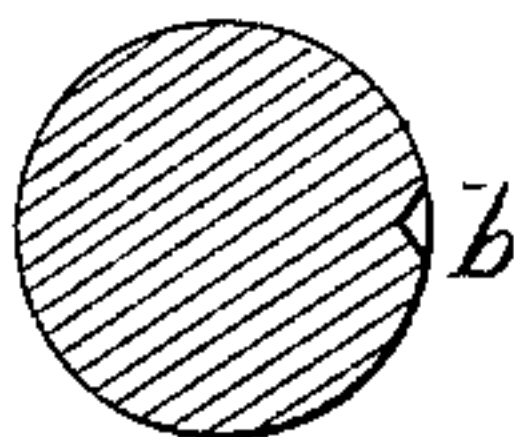
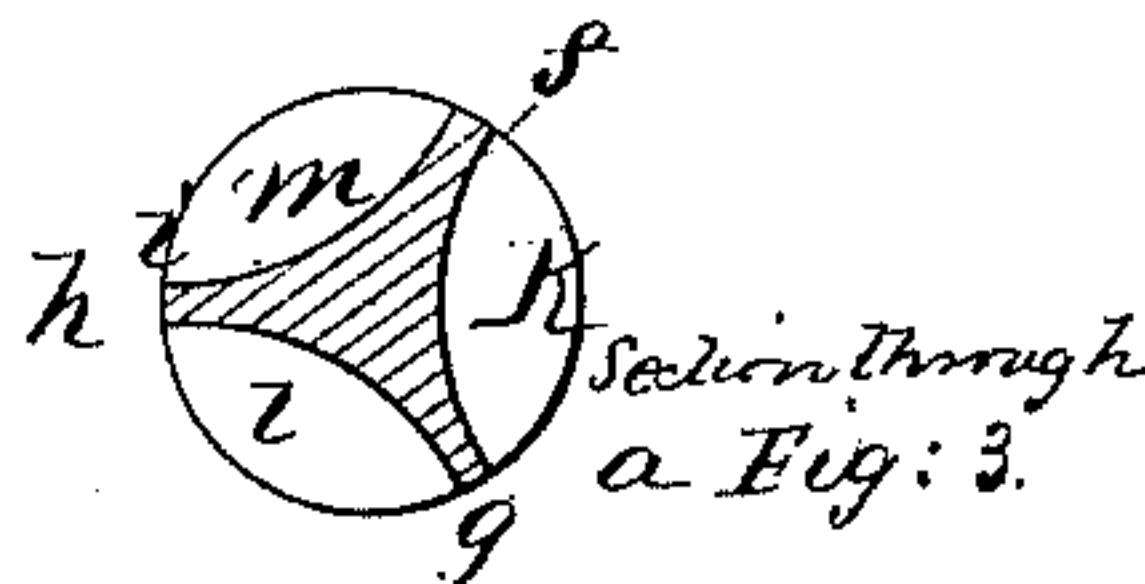
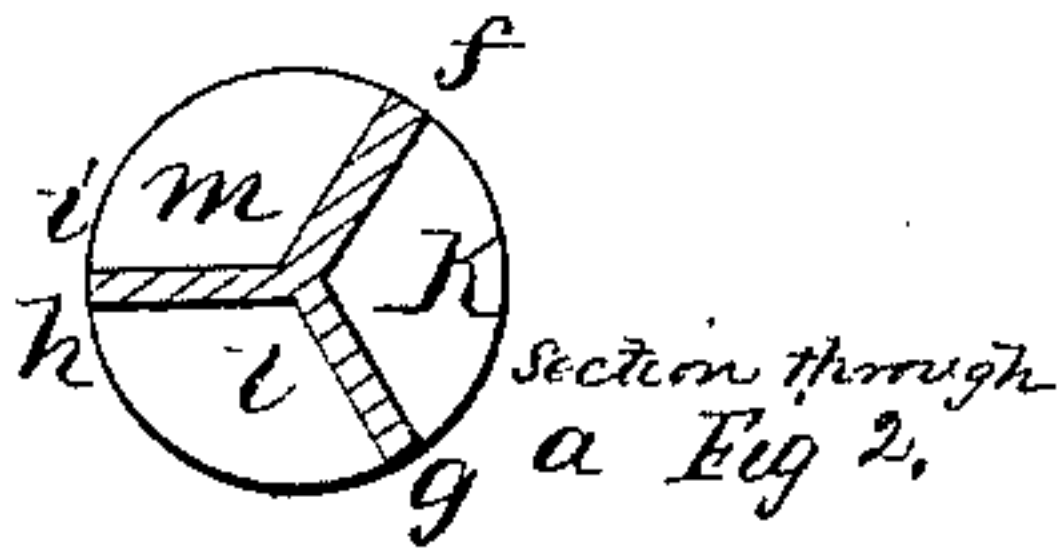
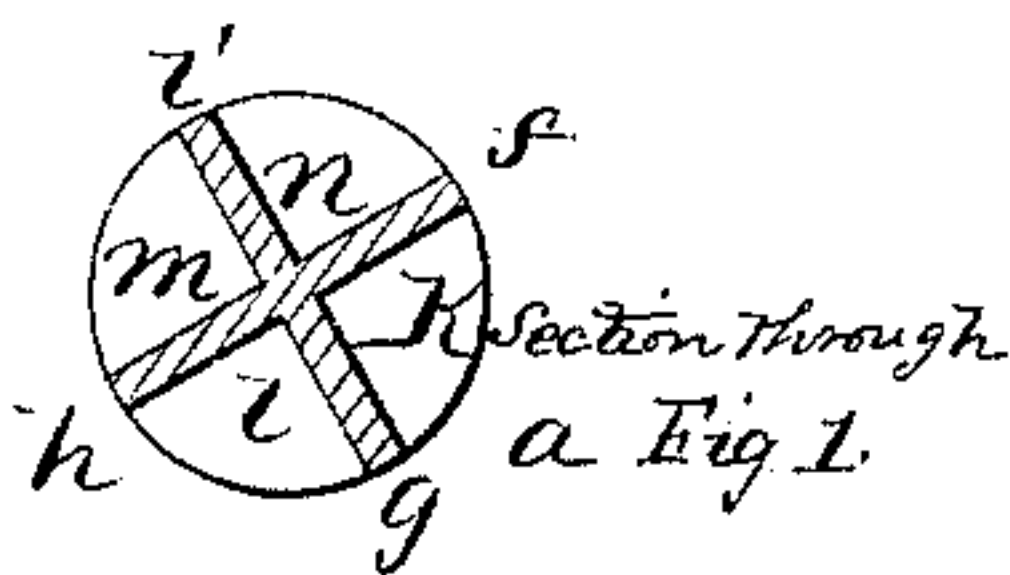
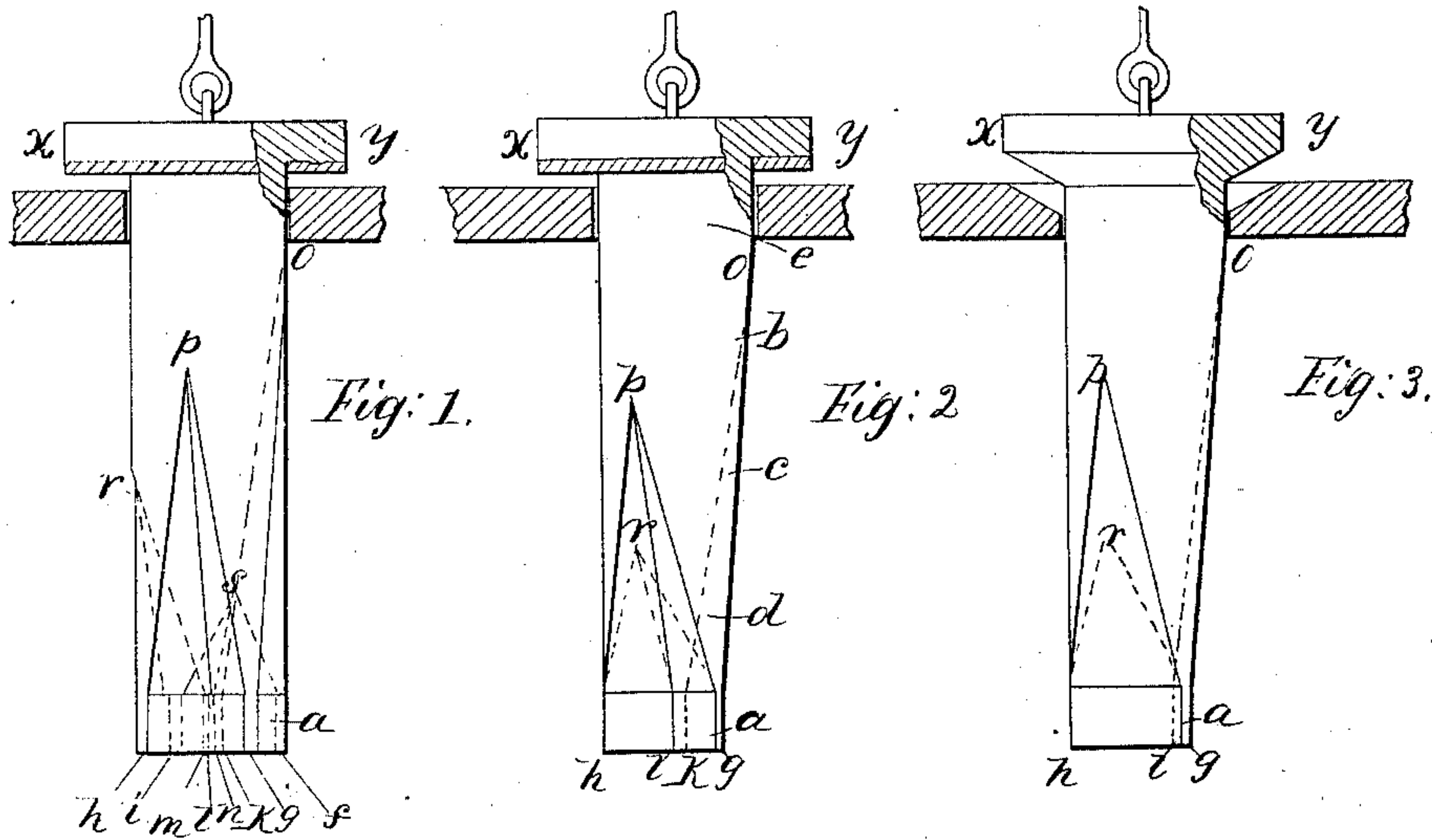


*C. M. Cresson,*

*Stop Cock,*

*No. 45,390,*

*Patented Dec. 13, 1864.*



*Witnesses;*

*Geo. L. Gay*  
*Wm. E. Hildreth*

*Inventor;*

*Chas. M. Cresson*

# UNITED STATES PATENT OFFICE.

CHARLES M. CRESSON, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN GAS-REGULATING VALVES.

Specification forming part of Letters Patent No. 45,390, dated December 13, 1864; antedated December 3, 1864.

*To all whom it may concern:*

Be it known that I, CHARLES M. CRESSON, M. D., of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Regulating-Valves; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of a valve having a stem or tail in which are formed two or more excavations or depressions of different lengths and arranged substantially as described hereinafter, so that on removing the valve from its seat the longest excavation may form the communication for the passage of fluid prior to the fluid escaping along the shorter excavation. My improved valve, which is especially adapted to gas-regulators, will thus present, for the escape of the fluid, openings increasing in number and area as it is removed from the seat.

In the accompanying drawings, Figures 1, 2, and 3 represent my improved valves with their stems having excavations of different lengths, the remaining figures representing transverse sections of the stems at the different points indicated.

My improved valve is most easily formed from a cylinder, Figs. 1, 2, 3, 4, by cutting from or forming upon its exterior surface at the base two or more pyramidal, conoidal, or wedge-shaped pieces or depressions, *o f k g, p h l g, r i m h, s i n f*, of different lengths, so that while the excavation of or depression upon the periphery of the cylinder takes out a large segment or sector at its base *h l g, g k f, f n i, i m h*, the cuts or depressions shall gradually taper out to the circumference at some point above the base *o p r s*, and by allowing one of these tapering excavations or depressions, *o*, to extend nearly the whole length of the cylinder and the others to run out at points *p r s*, less and less distant from the base *f g h i*, I ob-

tain a valve which, as it moves from its seat, exposes a more and more rapidly increasing area of opening without causing the opening at any time to include the entire circumference of the seat. By this arrangement, when the greatest delicacy of adjustment is required, the smallest area of opening is exposed for the passage of the fluid, and as the quantity of fluid required to be passed is increased the area of opening is rapidly augmented by the presentation, successively, of the several wedge-shaped excavations or depressions in the body or tail of the valve.

By making the cylinder of a size that will exactly fill the opening through the valve-seat, but will not bind nor resist longitudinal motion, and by giving to the seat a proper thickness, the valve may be entirely closed, and will so continue until the apex of one or more of the excavated or depressed portions *o p r s* shall pass through the valve-seat. The closure can be rendered still more certain by giving to the head of the valve a flange-like projection, *x y*, Figs. 1, 2, 3, 4, which shall rest upon the seat when the valve is closed.

The advantage of this arrangement and form of valve is that I can produce with one valve successive increments to the area of opening in the valve-seat, as may be desired, in the same manner as that end is obtained by the employment of several conical valves.

I do not claim any particular form of head to the valve or any particular form of valve-seat.

I claim as my invention and desire to secure by Letters Patent—

A valve having a stem or tail in which are two or more excavations or depressions of different lengths, arranged substantially as and for the purpose described.

CHAS. M. CRESSON.

Witnesses:

GEO. L. GAY,

WM. E. HITCHCOCK.