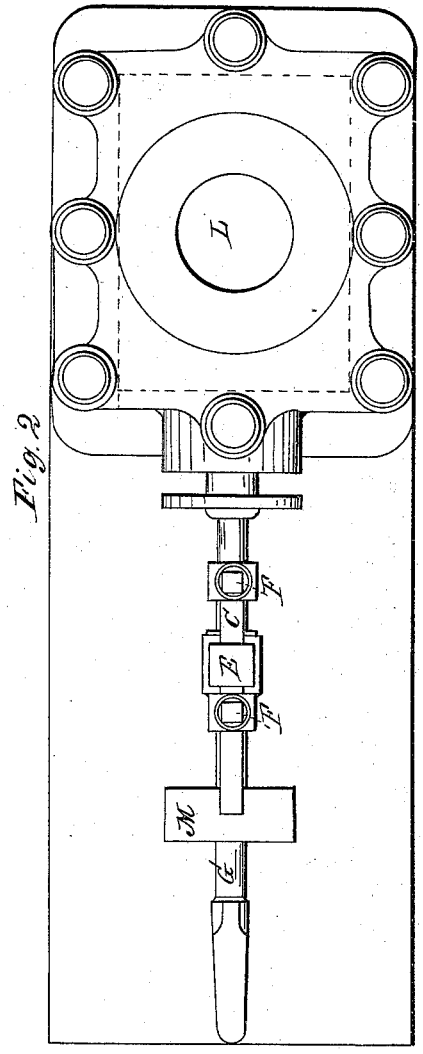
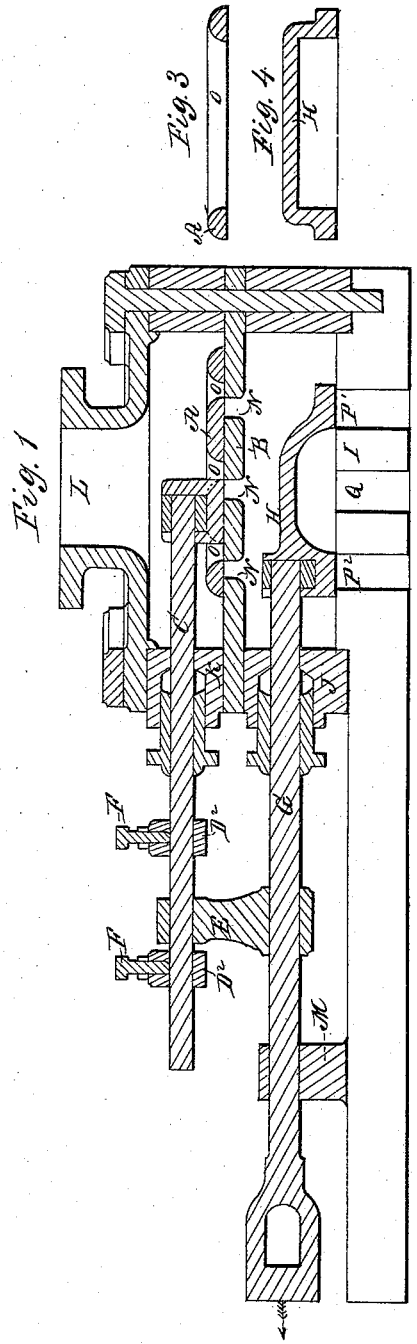
B. H. Bartol,

Steam Cut-Off.

No. 3,755. Patented Sep. 20, 1844.





UNITED STATES PATENT OFFICE.

B. H. BARTOL, OF COLD SPRING, NEW YORK.

METHOD OF CONNECTING THE ACTION OF CUT-OFF AND STEAM VALVES.

Specification of Letters Patent No. 3,755, dated September 20, 1844; Antedated March 20, 1844.

To all whom it may concern:

Be it known that I, BARNABAS H. BARTOL, of Cold Spring, in the county of Putnam and State of New York, have invented a new and useful improvement in methods of regulating the admission of steam into the cylinders of steam-engines, commonly known as a "cut-off valve"; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section. Fig. 2 is a top view. Figs. 3 and 4 transverse sections of cut off and steam valves.

Description.—Fig. 1: L is a passage for the admission of steam into that part of the steam chest marked K containing the cut off valve A. A, is the cut off valve having three steam passages through it *o o o* which when directly over N N N allow the steam free passage into the lower part of the steam chest marked J. B is a plate secured between K and J the upper and lower steam chests having three passages N N N through it. (It is not necessary that this plate should be separate it may be a part of K or J). H is the steam valve. I is the seat or face on which it works P^{x1} P^{x2} steam passages leading to cylinder. Q the passage for the exhaust steam. G the stem or spindle by which the valve H is moved. M is a guide for supporting G. E is an arm which is firmly attached to G. The upper end of E is arranged so as to allow C the stem of the cut off valve A, to pass through it freely. D^{x1} D^{x2} are sliding cams or stops which on being put in particular position cause the cut off valve A to open and shut as may be desired. F F are set screws for securing D^{x1} D^{x2} in place.

Fig. 2, is a top view of steam chest valve stems, etc. The letters marked in this figure refer to the parts in Fig. 1 having the same letters.

Fig. 3, is a transverse section of cut off valve.

Fig. 4, is a transverse section of steam valve.

The method of constructing the cut off valve and seat is to make the steam passages in them one half the width of the steam passages leading to the cylinder, or one fourth of the whole throw, or movement of the eccentric of the steam engine.

The operation of the cut off valve is as follows. The valve stem G is shown in the drawing on its passage out as indicated by the arrow. When the edge of the steam valve H has advanced to the edge of the opening P^{x1}, the arm E will have reached the cam D^{x1} when the cut off valve A will move at the same velocity as the steam valve H the two valves A and H then open together, when the steam passage P^{x1} is half open, the passages *o o o* are directly over N N N, and as the valves proceed on, when the passage P^{x1} is full open those in A have just closed, cutting off the steam from the cylinder at about one half the stroke. The valve H now moves back, and when the arm E reaches the cam D^{x2} the same effect is produced on the opposite side, by moving D^{x1} D^{x2} nearer together, steam may be cut off at any desired point, less than one half the stroke of the piston, and by moving them farther apart the passages *o o o* may be brought directly over N N N and kept in that position as the arm E will move between D^{x1} D^{x2} without touching.

What I claim as constituting my invention and desire to secure by Letters Patent, is—

The manner in which I have combined the action of the cut-off and steam valves, by means of the arm E attached to the stem of the steam valve, and the movable, or sliding cams, or stops, made adjustable on the stem C, of the cut off valve, for the purpose of regulating the cutting off of the steam, by the action of the respective parts as herein described and made known.

BARNABAS H. BARTOL.

Witnesses:
S. F. BARROWS,
D. NELSON.