C. P. Buckingham,

Steam-Engine Valve-Gear.

No. 25,174. Patented Aug. 23, 1859.

Fig: 1.

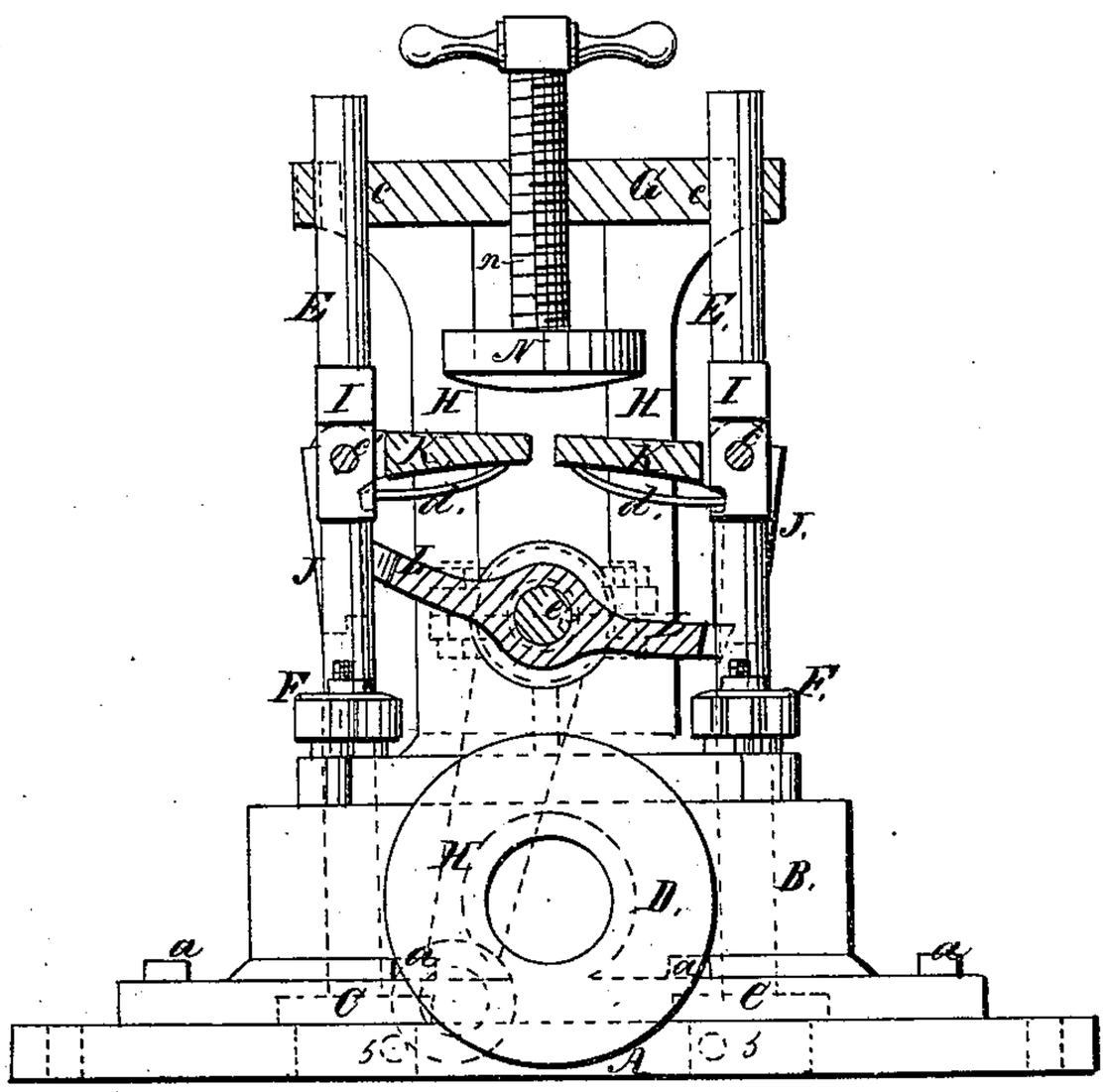
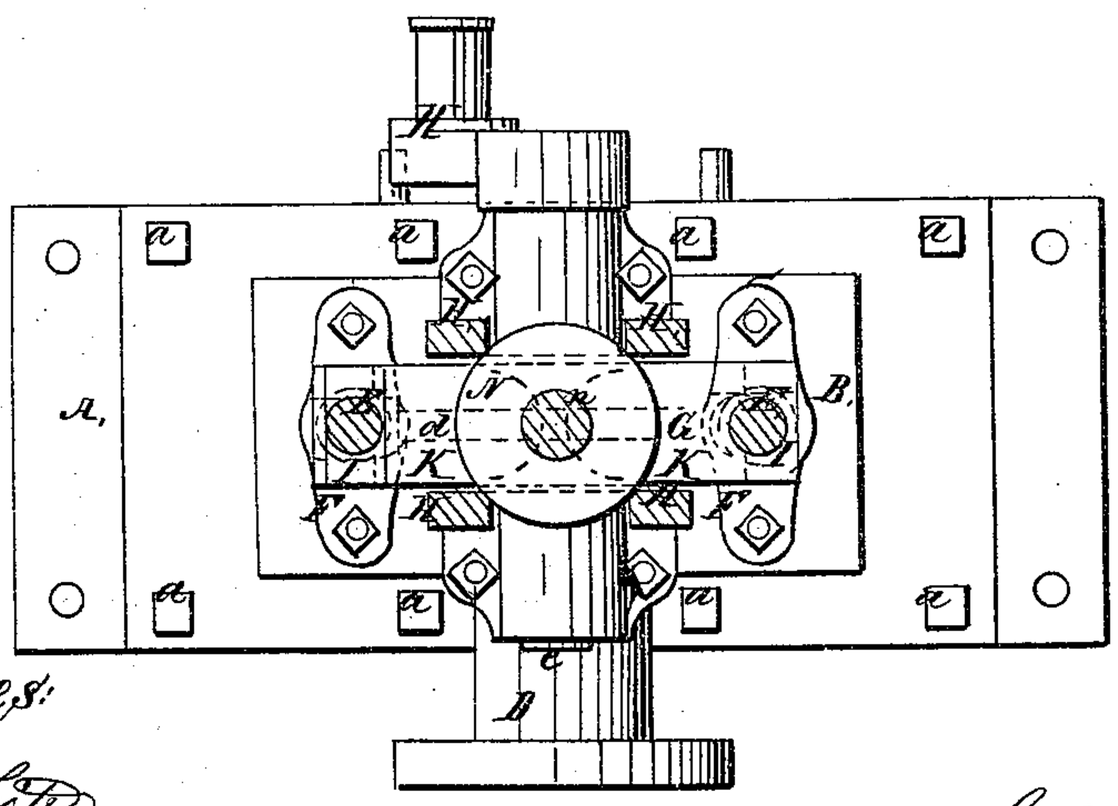


Fig: 2



Witnesses:

J. W. White

H. P. Upton

Inventor:

C. P. Buckingham

UNITED STATES PATENT OFFICE.

C. P. BUCKINGHAM, OF MOUNT VERNON, OHIO.

CUT-OFF GEAR FOR STEAM-ENGINES.

Specification of Letters Patent No. 25,174, dated August 23, 1859.

To all whom it may concern:

Be it known that I, C. P. BUCKINGHAM, of Mount Vernon, in the county of Knox and State of Ohio, have invented a new and Improved Cut-Off for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of my invention. Fig. 2 is a horizontal section of the same.

Similar letters of reference in both views indicate corresponding parts.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A represents the top of an ordinary valve chest to which a chamber, B, is secured by screws, *a*, and this chamber communicates with the interior of the valve chest by openings, *b*, which are closed by valves, C.

D represents the steam pipe which communicates with the chamber, B, above the valves, C, so that no steam is admitted to the valve chest before one of the valves, C, is opened. The stems, E, of the valves extend through stuffing boxes, F, in the top of the chamber, B, and their upper ends are guided in sockets, *c*, in the top plate, G, of a framing, H, which is firmly attached to the chamber, B. The central parts, I, of the stems, E, are square, and secured to those parts by means of pivots, *c'*, are the drops, J, the upper ends of which are bent over at right angles so as to form arms, K, which rest on flat springs, *d*, which are secured to the square parts, I, of the stems, E. In order to prevent the stems binding as they are lifted up, the drops are arranged so as to form two distinct parts, one on either side of each of the stems and these two parts unite in the arms, K.

L is the lifter, which is attached to a rock shaft, *e*, which has its bearings in the lower part of the framing, H, and which receives motion by means of a crank, M, which connects with a separate eccentric on the main shaft of the engine. The ends of the lifter, L, are forked so that it acts on both parts of each of the drops, J, at one and the same time, and the springs, *d*, are so adjusted that by their action the lower ends of the drops are brought in such a position, that they can be reached by the forked ends of the lifter. When the stems, E, are raised by the action of the lifter, L, the arms, K, which extend near to the center of the framing, H, strike against the tripper, N, which is adjustable in the top plate, G, of the framing, H, so that the arms, K, strike the same sooner or later.

The operation is as follows:—The eccentric which gives motion to the crank, M, is so arranged on the main shaft that it is on its extreme point of motion just as the slide valve in the chest below has closed the steam-port, and before the slide valve opens the steam-port on the other side, the lifter, L, will have been moved far enough to lift the valve stem so that steam is admitted into the valve chest before the slide valve opens, and as the eccentric has thus to be placed coincident with, or a little in advance of the crank of the engine, the lifter, L, will continue to rise during almost the whole stroke of the piston, or at least until the slide valve closes the steam-port. If, therefore, the drops, J, are not disengaged from the lifter, steam will be admitted during the whole of the stroke, and the full force of the steam will be given to the piston when the slide valve opens either one of the steam-ports. If the tripper, N, is depressed, however, the arms, K, will strike against it sooner or later, and as these arms are depressed, the drops, J, are disengaged from the lifter, and the valves, C, are closed so that the steam is cut off sooner or later. It will be noticed that, in order to gain this object, it is necessary to have two valves, C, which communicate with the same valve chest, and which are operated upon alternately by the same eccentric. The tripper may be attached directly to the governor, as, after the valve has risen so as to admit steam under it, the pressure on the lifter will be so light as not to disturb the motion of the governor balls by the arms, K, striking the tripper.

What I claim as new, and desire to secure by Letters Patent, is:—

The employment of the tripper N, when constructed and arranged as shown so as to be adjusted and to trip both valves, in combination with drops J, arms K, and lifters L, as herein set forth.

C. P. BUCKINGHAM.

Witnesses:

J. W. WHITE,

H. P. UPTON.