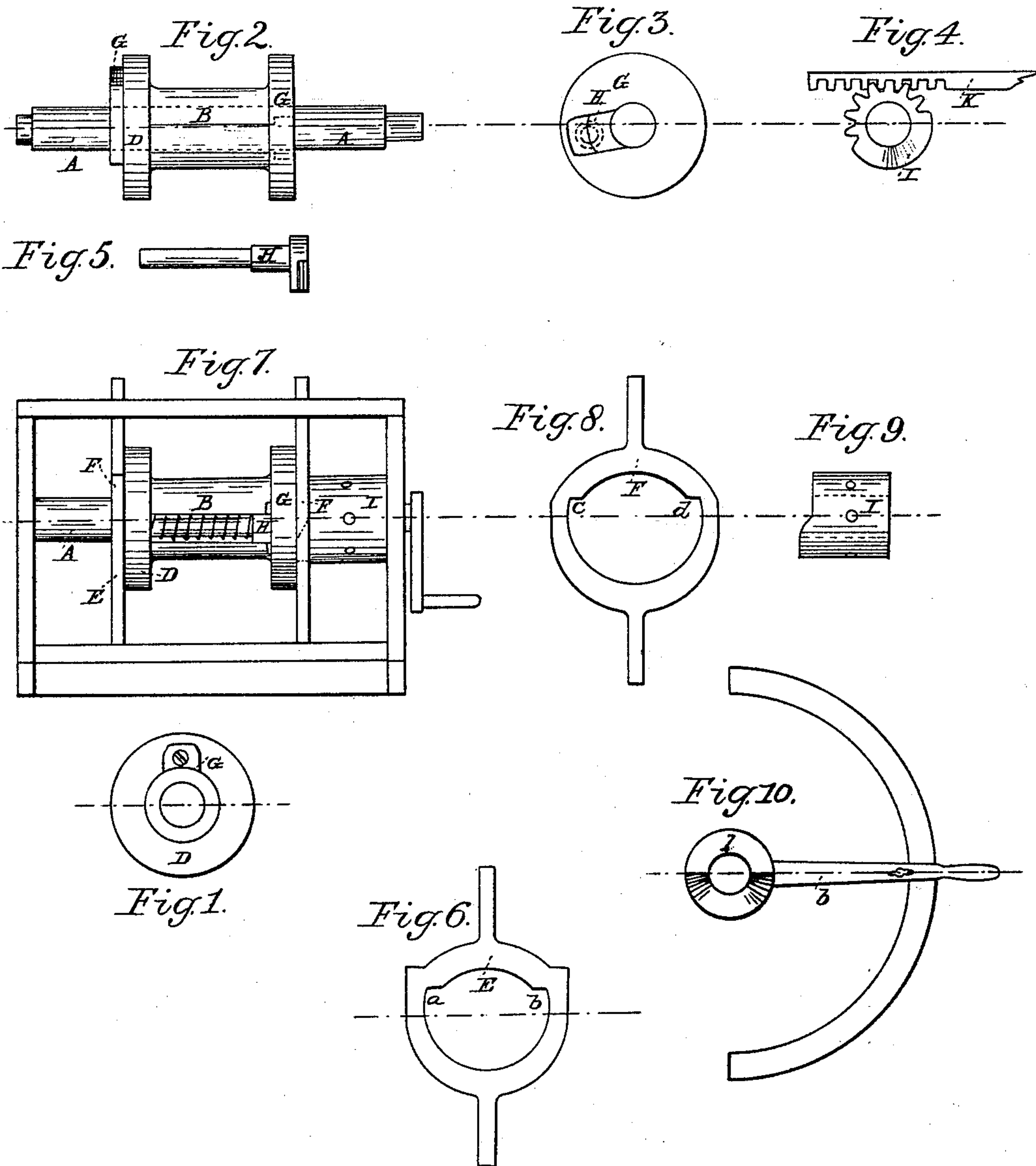


S. Dunbar.

Steam Engine Cut-Off.

N^o 90,643.

Patented Jun. 1, 1869.



Witnesses.
Gaspeth.
E. R. Brown.

Inventor.
Sam^l Dunbar

United States Patent Office.

SAMUEL DUNBAR, OF NEW YORK, N. Y.

Letters Patent No. 90,643, dated June 1, 1869.

IMPROVEMENT IN STEAM-ENGINE CUT-OFFS.

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, SAMUEL DUNBAR, of New York, in the county of New York, and State of New York, have invented a new and useful Valve-Gear for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of parts, hereinafter fully described, for operating the valves of steam-engines, which may be so adjusted as to admit any desired quantity of steam to the cylinder, at the will of the attendant.

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

In the drawings—

Figure 1 is an end view of the flange D of the sleeve B, showing the steel toe G, attached thereto.

Figure 2 is an elevation of the sleeve B, with its flanges D and C, and driving-shaft A.

Figure 3 is a view of the flange C of the sleeve B, showing the end of the movable toe H.

Figure 4 shows a device for operating the cam I, by means of a governor.

Figure 5 shows the movable toe H.

Figure 6 is a side view of the yoke E.

Figure 7 is a side elevation of the improvement as it would appear when put together.

Figure 8 is a side view of the yoke F.

Figure 9 is a view of the cam I.

Figure 10 shows the device for operating the cam I by hand.

The driving-shaft A, as shown in figs. 2 and 7, is placed directly under or over the valves, and is driven from the main shaft of the engine, by means of gearing, and makes the same number of revolutions as the engine.

On the shaft A, I secure the sleeve B, with its flanges D and C, and on the flange D, I secure the steel toe G, by means of a screw, or otherwise, as shown in fig. 1.

In the flange C, I make a cavity, sufficiently deep to receive, flush with its face, the steel toe H, as shown in figs. 2 and 3.

The toe H has a shank forged upon it, the end of which rests in the flange D.

On this shank I place a spiral spring, as shown in fig. 7, the effect of which is to keep the toe H in contact with the face of the cam I, which is placed on the shaft A.

The yokes E and F are made of steel, and are placed in a vertical position, the shaft A passing through them, as shown in fig. 7. The yoke E is attached to the exhaust-valve, and the yoke F to the inlet-valve.

When the engine is in motion, the exhaust-valve is raised and dropped by means of the toe G, on the flange D, coming in contact with that part of the yoke E marked *a b*, and it is kept open as long as it is in contact with said surface.

The inlet-valve is raised by means of the movable toe H coming in contact with that part of the yoke F marked *c d*, and the time it is kept open depends on the position of the cam I, said cam being loose on the shaft A, and is actuated by means of the lever J, as shown in fig. 10, or by means of the segment-gear and rack K, as shown in fig. 4, which may be attached to and actuated by a governor.

The advantage of my improvement is, that it may be entirely under the control of the attendant, who may, at his option, cause the steam to follow the entire length of the stroke, or to cut it off at any desired point. The motion of the engine can also be reversed at the will of the operator, or it can be made automatic by means of the governor.

Having thus described my invention,

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

1. The yokes E and F, when constructed substantially as shown and described.

2. The combination of the yokes E and F with the toes G and H, when constructed substantially as shown and described.

3. The cam I and yoke F, when constructed as shown and described.

4. The cam I and lever J, when constructed and arranged to operate as shown and described.

SAML. DUNBAR.

Witnesses:

E. R. BROWN,

G. A. C. SMITH.