

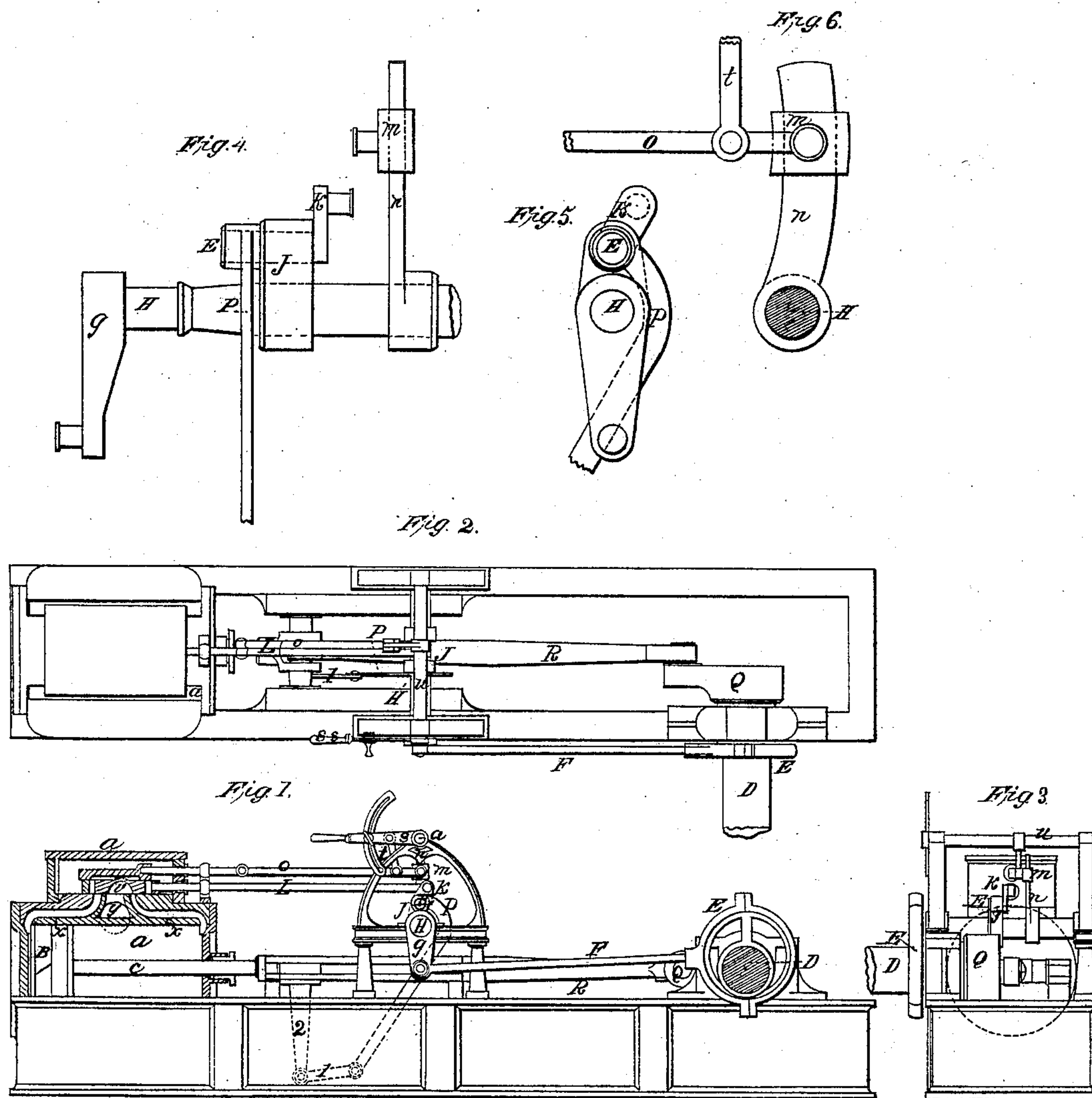
M. W. Wheeler,

2 Sheets-Sheet 1.

Steam-Engine Valve-Gear.

N^o 22,320.

Patented Dec. 14, 1858.



Witnesses:
Wheeler & Co.

Inventor:
M. W. Wheeler

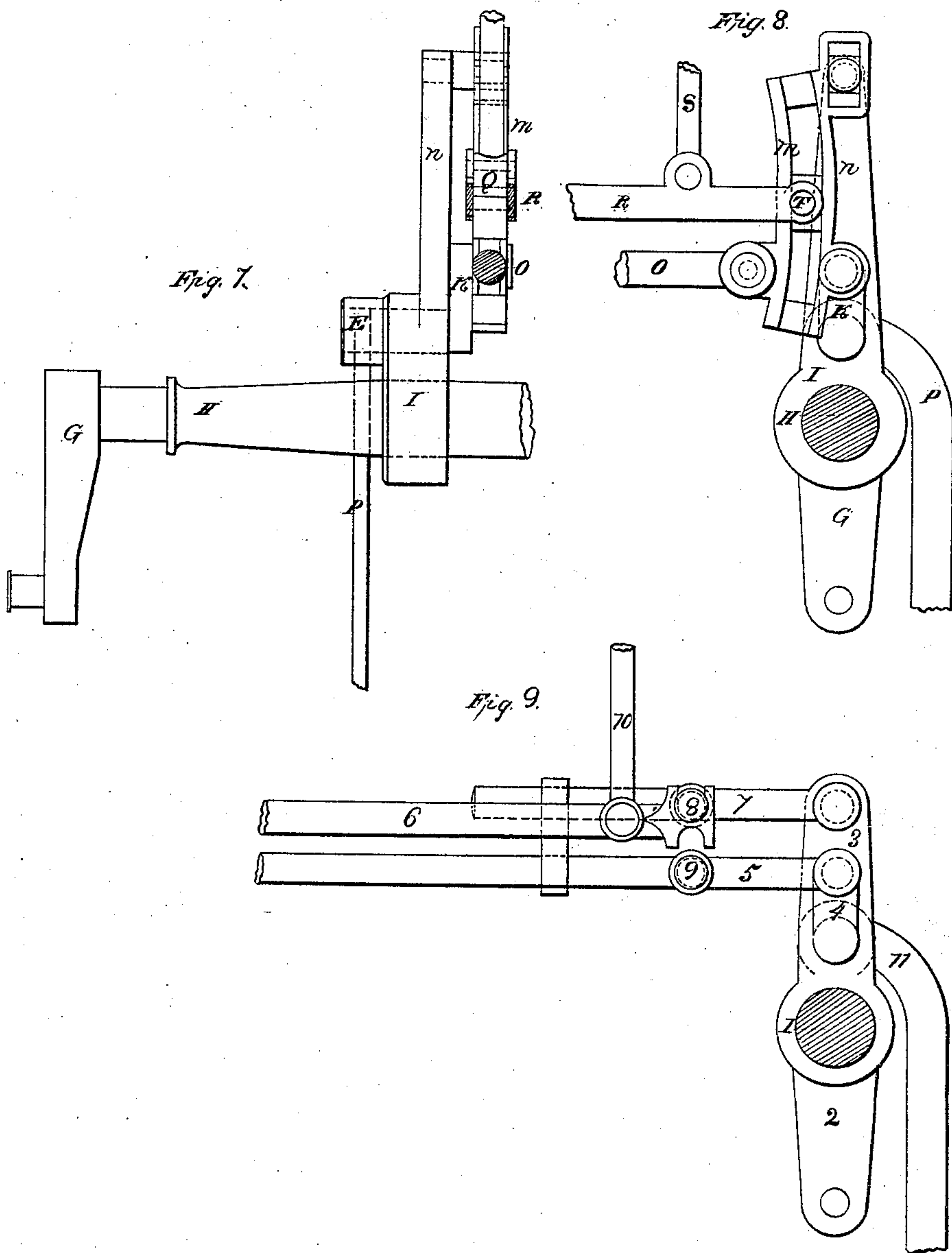
W. W. Wheeler,

2 Sheets-Sheet 2.

Steam-Engine Valve-Gear.

No 22,320.

Patented Dec. 14, 1858.



Witnesses:

Charles L. Lacy

Inventor.

William W. Wheeler

UNITED STATES PATENT OFFICE.

NORMAN W. WHEELER, OF BROOKLYN, NEW YORK.

APPARATUS FOR OPERATING VALVES OF STEAM-ENGINES.

Specification of Letters Patent No. 22,320, dated December 14, 1858.

To all whom it may concern:

Be it known that I, NORMAN W. WHEELER, of Brooklyn, New York, have invented a new and useful Cut-Off Motion for Steam-Engines; 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 accompanying drawings, making a part of this specification, in which—

Figure 1 is a sectional elevation of an engine with the cut-off attached. Fig. 2 a plan. Fig. 3 an end view of the same, and Figs. 4, 5, 6, 7, 8 and 9 views of the separate parts of the devices employed.

In Figs. 1, 2, 3, 4, 5 and 6, *a* is the steam cylinder, B the piston, C the piston-rod, D the main shaft, E the eccentric and strap, F the eccentric rod, G the rock-arm, H the rock-shaft and I the rock-arm, which carries a supplemental rock-shaft 3, and arm K, to which the main-valve rod L is attached. *n* is another rock-arm upon the rock-shaft H, to which the cut-off-valve rod O is attached by the sliding block *m*, which block may be set to different heights by means of the lifting-rod *t*.

P is a lead-lever attached to the supplemental rock-shaft 3, which is vibrated directly by the cross-head or piston rod, or other reciprocating part moving therewith, by means of the stud 2 and link *l*, which vibration gives the rod L and valve *v* a motion equal to its lap and desired lead.

The lap and lead, or idle motion, of the main valve being thus provided for, the eccentric E is set upon the main shaft with its throw quite or nearly at right angles with the crank O, and gives the absolute throw to the main valve, through and by means of G, H and I, carrying with it the rock-shaft 3 and arm K. But the sliding cut-off-valve U derives its motion solely from the eccentric E, through F, G, H, N, M, and P.

Now when the engine moves from the position shown (at dead point) the rock-arms G, I and N move from their first position and give motion to the valves, but the rid-

ing valve has a greater motion during the early position of the stroke than has the main valve by the negative effect of the vibration of the supplementary rock-shaft. Hence the throw of the main valve being equal to the throw of I, minus the throw of K, and the throw of the cut-off valve being equal to the throw of M, it is obvious that the steam will be cut off when the throw of M exceeds the throw of I minus the throw of K, by the breadth of the steam ports through the main valve V—and the vibration or throw of M may be made greater or less by moving it up or down upon *n* by hand or by means of a governor attached to it.

In Figs. 7 and 8 is seen a device consisting of a link *m* which is attached at one end to the arm *n*, while the other is attached to rock-arm K, and the main valve-rod O attached to the link in line with its attachment to K. This link *m* gives motion to the cut-off-valve rod R, which, is more or less great, according to the position of its block T in *m*.

Fig. 9 shows an arrangement whereby the cut-off-valve rod 6 may have the motion of the arm 3, when hooked on to the pin 8, of the rod 7, or the motion of the supplementary rock-arm 4, when hooked on to the pin 9, of the main valve rod 5.

It is plain that the motion derived from the movements of the cylinder, as in the engine known as "N. W. Wheeler's oscillating engine," is, so far as this cut-off motion is concerned, equivalent to the motion derived from the eccentric herein described.

I claim—

Actuating the cut-off valves of steam engines by means of an eccentric, or its equivalent, when the motion of the main valve is derived from the same eccentric, or its equivalent, but modified by a movement derived directly from a reciprocating part, substantially as described.

NORMAN W. WHEELER.

Witnesses:

WM. BAKER,

M. R. QUACKENBUSH.