No. 674,266. Patented May 14, 1901.

J. F. HALL.

VALVE GEAR.

(Application filed Oct. 25, 1900.)

(No Model.)

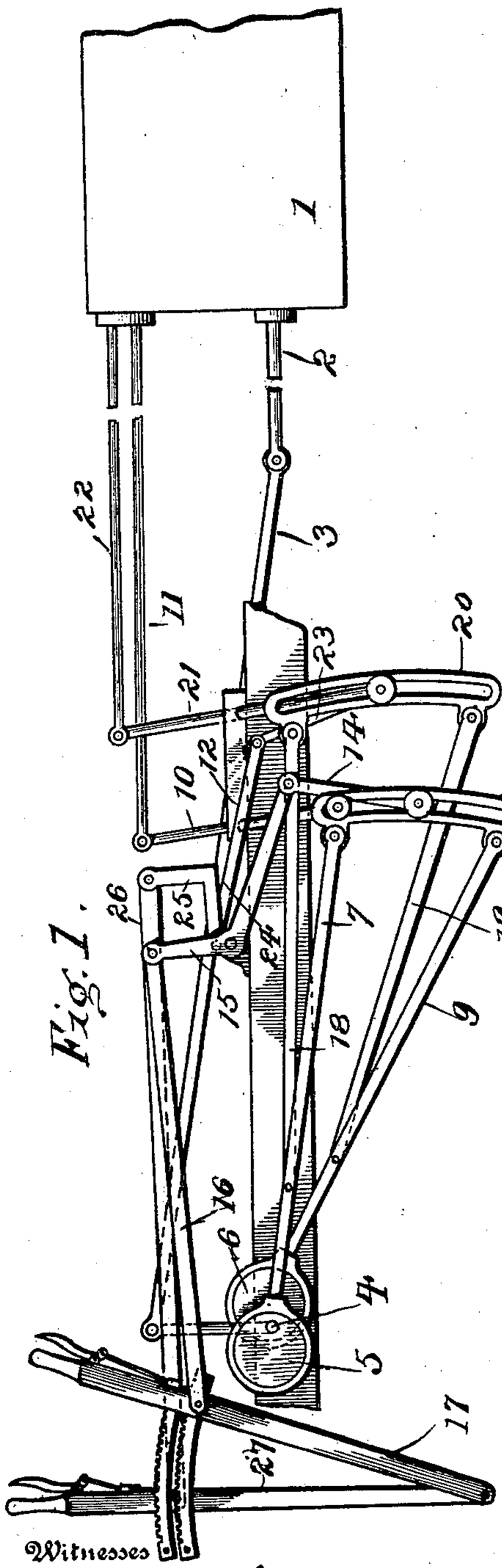

Fig. 1.

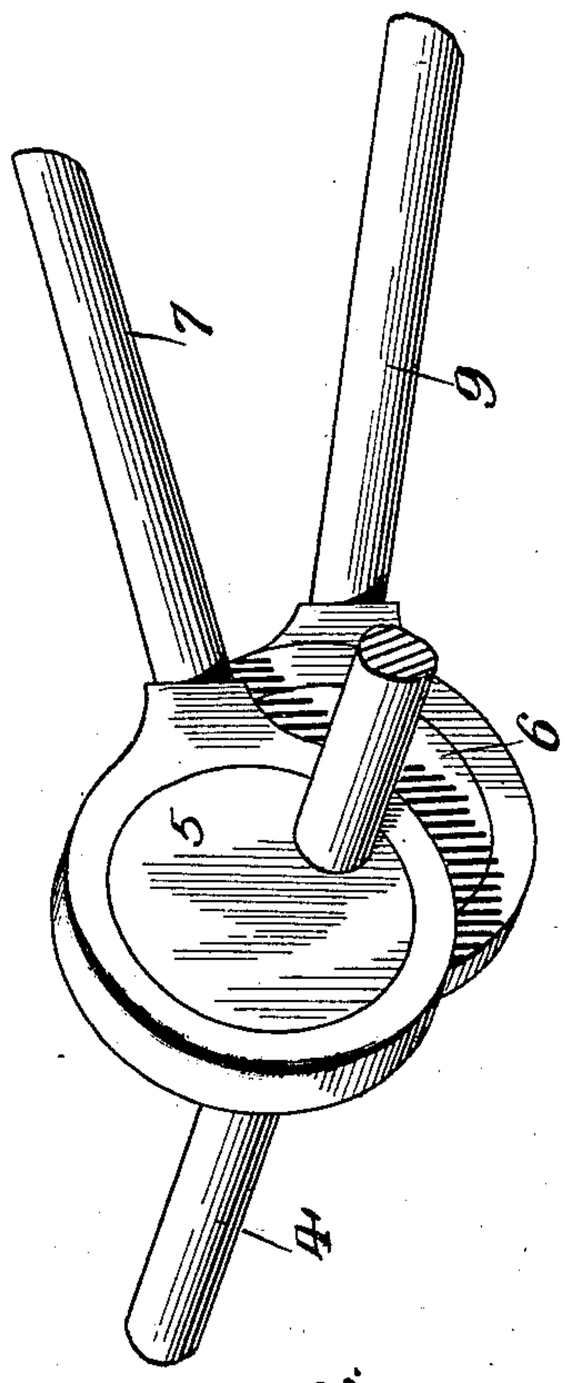

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN F. HALL, OF SMITH CENTER, KANSAS.

VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 674,266, dated May 14, 1901.

Application filed October 25, 1900. Serial No. 34,360. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. HALL, a citizen of the United States of America, residing at Smith Center, in the county of Smith and State of Kansas, have invented certain new and useful Improvements in Valve-Gear, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in valve-gear for portable engines, locomotives, and other such engines as it becomes necessary to frequently reverse and wherein it is desirable at the same time to make it possible to graduate the cut-off, so as to use the highest steam-pressure possible at the first end of the stroke, and thereby obtain the greatest amount of expansion that may be had and give the amount of power required.

The above is therefore briefly the objects of my invention, and in describing the same in detail reference will be had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference will be employed to designate like parts throughout both views, in which—

Figure 1 is a side elevation of my improved valve-gear connected to the valve. Fig. 2 is a detail perspective view of the double eccentric.

In the accompanying drawings, 1 indicates the cylinder of an engine; 2, the piston-rod, the latter connected by a rod 3 to the eccentric-shaft 4. This shaft 4 carries the double eccentric 5 6, the former connected by rod or lever 7 to the upper end of a link 8 and the latter connected by a like rod or lever to the lower end of said link, this rod or lever being indicated by the reference-numeral 9. This link 8 is connected by a rock-shaft 10 and rod 11 to the main valve, (not shown,) the rock-shaft being suitably supported, as shown at 12. The position at which the link 8 engages the rock-shaft is regulated by means of a link 14, connected to the link 8 and attached to the lower end of a bell-crank 15, the latter journaled in a bearing on the support of the rock-shaft, with its upper end connected by a rod or lever 16, connected to the controlling-lever 17.

Connected to the rods or levers 7 9 near the eccentrics are rods or levers 18 19, the former attached to a link 20 at the upper end thereof and the latter to the same link at the lower end thereof. This link 20 engages a rock-shaft 21, which is of slightly greater length than the rock-shaft 10 and is connected by a rod 22 to the auxiliary or cut-off valve. (Not shown.)

The engagement or position of this link 20 with the rock-shaft is regulated by means of a link 23, connected to the link 20, with its upper end attached to a rod or lever 24, that connects with a bell-crank 25, having its upper end connected by a rod 26 to the operating-lever 27. These operating-levers 17 and 27 are provided with the usual lock-levers and pawls for engagement with the usual racks for holding the levers at the positions to which they have been moved.

The eccentrics 5 6 being as one eccentric, the links 8 20 operate in unison, and the throw given by each link to its rocker-shaft is dependent upon the position of the link in engaging the shaft, and it will be observed that either link may be set independently of the other, so as to give the desired throw to the main valve or to the cut-off valve, and by the movement of the lever controlling the cut-off valve this valve may be caused to cut off the steam to the cylinder at any desired stroke of the piston.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the valve-gear, the combination with the eccentric-shaft and a pair of eccentrics mounted thereon, of a main-valve-controlling link, a rod connecting said link at its upper end to one eccentric, the like rod connecting the link at its lower end to the other eccentric, the cut-off-valve-controlling link, rods connecting said link to the rods of the main-valve-controlling link, and means for adjusting the position of said links, substantially as described.

2. In a valve-gear, the combination with the eccentric-shaft and a pair of eccentrics mounted thereon, of a main-valve-controlling link, a rock-shaft engaging said link and connected to the main valve, a rod connecting said link at its upper end to one of the eccentrics, a like rod connecting said link at its

lower end to the other of said eccentrics, a cut-off-valve-controlling link, connections between said last-mentioned link and the rods which connect the main-valve-controlling link to the eccentrics, a rock-shaft engaging the cut-off-valve-controlling link and connected to the cut-off valve, and means for adjusting the position of said links, substantially as described.

3. In a valve-gear, the combination with the eccentric-shaft and a pair of eccentrics mounted thereon, of a main-valve-controlling link, a cut-off-valve-controlling link, a pair of rods connecting the main-valve-controlling link with the eccentrics, a pair of rods connecting the cut-off-valve-controlling link with the first-mentioned pair of rods, separate connections between the links and their respective valves, and means for independently adjusting the position of said links whereby the throw of the valves may be controlled, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN F. HALL.

Witnesses:
JAMES F. CHELF,
GEO. H. MARTY.