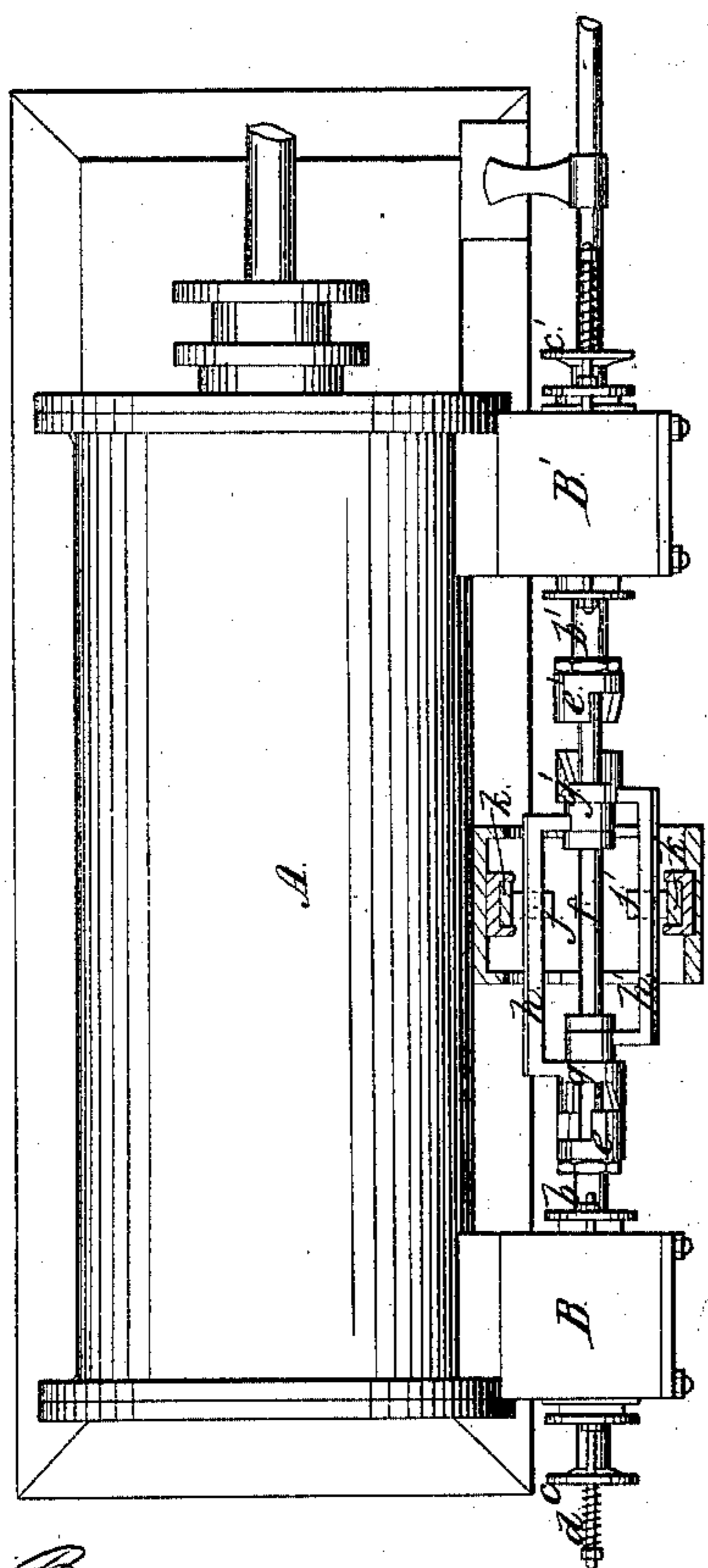
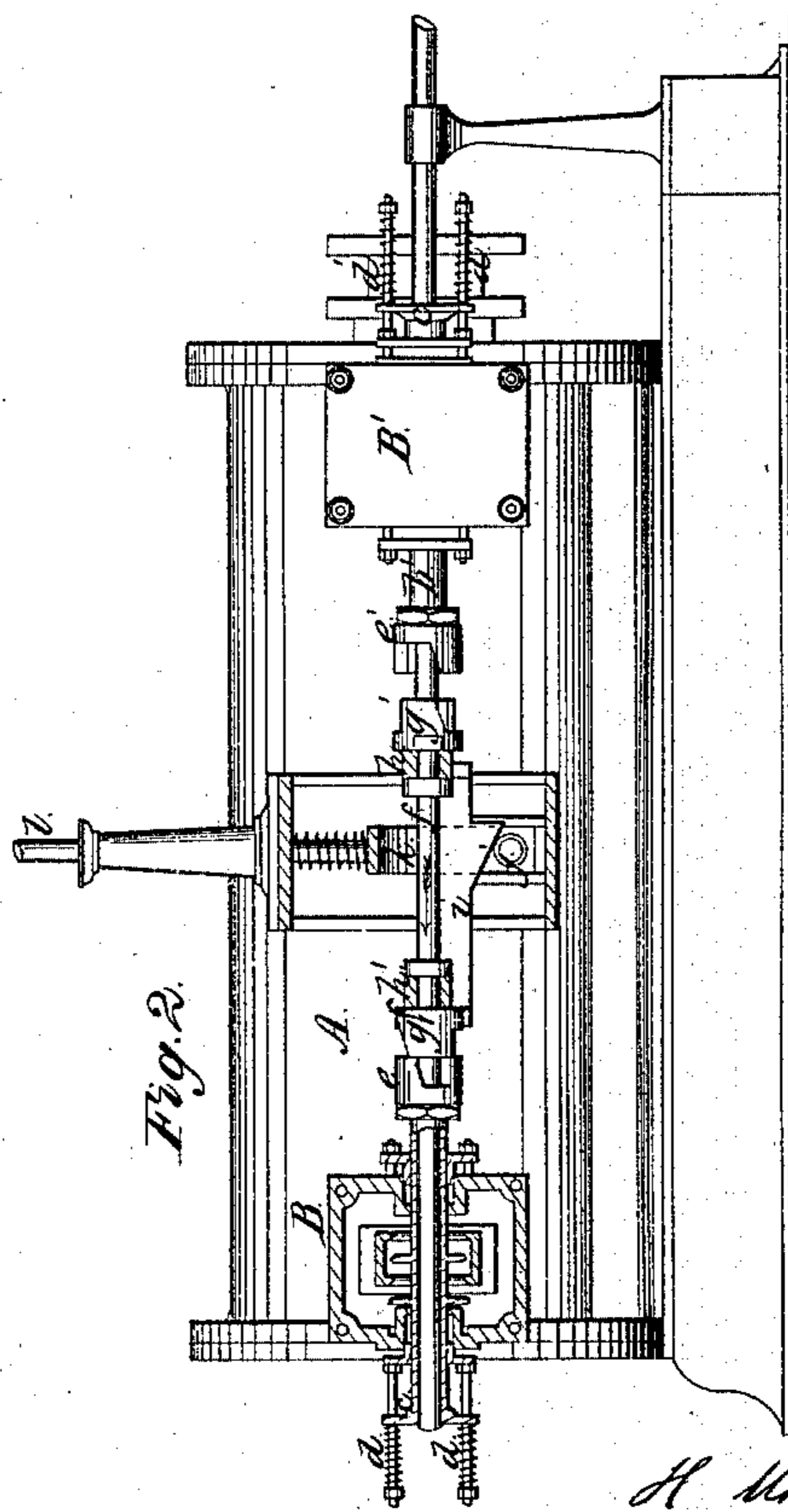


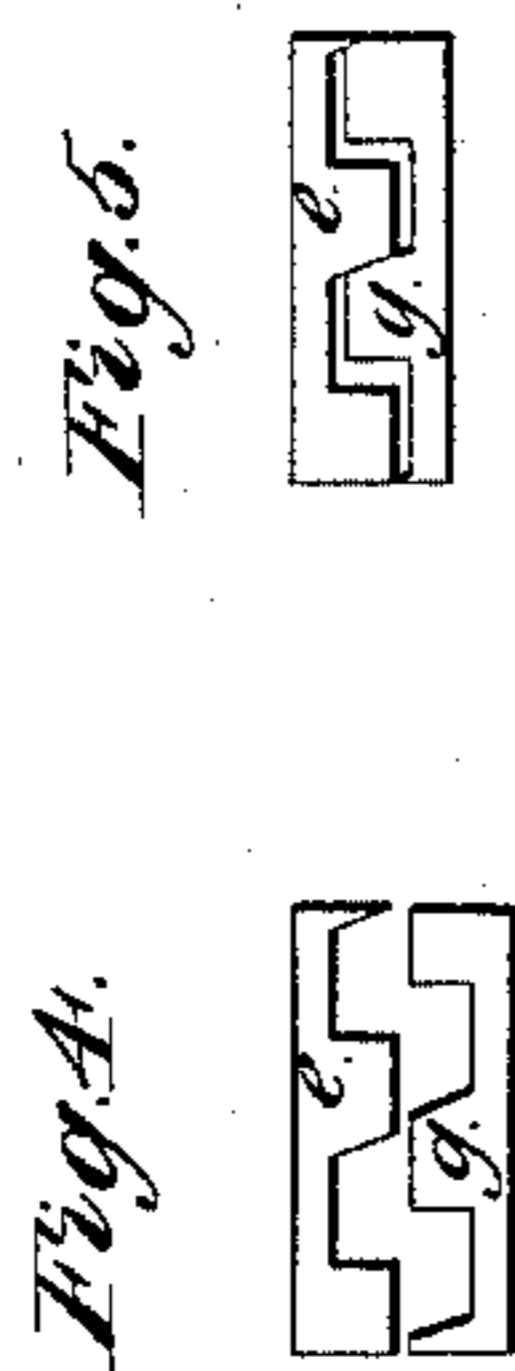
*H. Uhry,*  
*Steam-Engine Valve-Gear.*  
*N<sup>o</sup> 68,672.                      Patented Sep. 10, 1867.*



*Fig. 1.*

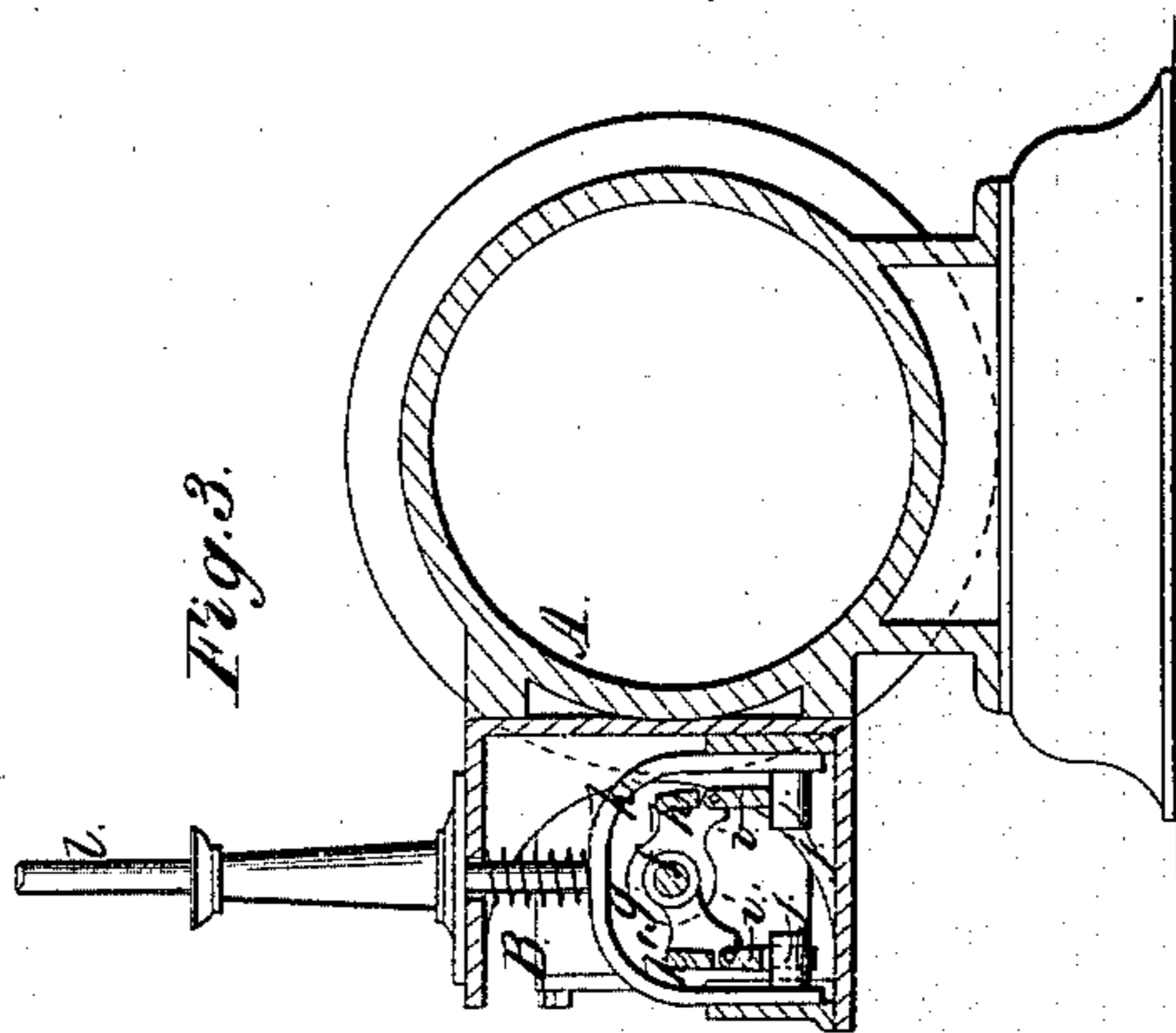


*Fig. 2.*



*Fig. 4.*

*Fig. 5.*



*Fig. 3.*

*Witnesses.*

*Gustav Berg*  
*H. H. Dryburgh.*

*Inventor.*

*H. Uhry*  
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# United States Patent Office.

H. UHRY, OF NEW YORK, N. Y.

Letters Patent No. 68,672, dated September 10, 1867.

## IMPROVEMENT IN VALVE-GEAR FOR STEAM ENGINES.

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, H. UHRY, of the city, county, and State of New York, have invented a new and useful improved Valve-Gear for Steam Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a sectional plan of this invention.

Figure 2 is a sectional side elevation of the same.

Figure 3 is a transverse section of the same.

Figures 4 and 5 are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention consists in passing the elongation of the eccentric-rod, or a rod connecting with the eccentric-rod, through the valve-stem of a single or double steam-chest in such a manner that said rod receives a continuous motion from the eccentric independent of the movement of the valve or valves, and that by this movement the position of the valve or valves can be governed. On this elongated eccentric-rod, and also on the valve-stem or stems, I mount collars, each provided with one or more teeth or projections, facing towards each other, in combination with springs, which have a tendency to close the valve or valves, and with a mechanism for turning the collar or collars on the elongated eccentric-rod automatically by the action of the governor, in such a manner that, by the action of the collar or collars secured to the elongated eccentric-rod, upon the collars or collar secured to the tubular valve-stem or stems, the valve or valves are kept open for a longer or shorter period, according to the position of the governor. The teeth or projections on the collars are made spiral, in such a manner that the closing of the valve or valves is rendered easy, and sudden blows are avoided.

A represents a steam-cylinder, to which steam is admitted through valve-chests B B'. Each of these valve-chests is fitted with a puppet-valve, or with a valve of any other suitable description; and said valves are secured to stems b b', which are hollow or tubular, as clearly shown in fig. 2 of the drawing. These tubular valve-stems pass through glands or stuffing-boxes at both ends of the valve-chests; and to their outer ends are secured the flanges c c', which are exposed to the action of springs d d', having a tendency to close the valves. On the inner ends of the tubular valve-stems are mounted the collars e e', which are provided with teeth or projections, as shown in the drawing. Through the tubular valve-stems passes the rod f, which forms an elongation of the eccentric, or which partakes of the motion of the eccentric or rock-shaft that serves to transmit the requisite motion to the valves. On the rod f are also mounted two collars g g', which are provided with teeth or projections similar to those of the collars e e'; but the collars g g' are secured to the rod f in such a manner that they can turn thereon without being permitted to slide in the direction of the axis of said rod. Each of the collars g g' connects with a frame, h h', to which is hinged a cam-slide, i i'; and the working edges of these cam-slides act upon rollers j j', which are secured to studs projecting from the inner surfaces of a fork, k, which is attached to the lower end of the governor-spindle l, the connection being of such a nature that, when the balls of the governor fly out, the fork, together with the rollers j j', are raised, and when the governor-balls sink down the rollers j j' are lowered or depressed. The teeth or projections on the collars e e' and g g' are made spiral or oblique, as shown particularly in figs. 4 and 5.

The operation of this valve-gear is as follows: As the rod f moves in the direction of the arrow marked thereon in fig. 2, the ends of the teeth of the collar g strike the teeth of the collar e, and the valve in the steam-chest B is forced open against the action of the springs d. When the inclined portion of the cam-slide i strikes the roller j, the collar g turns gradually in the direction of the arrow marked on it in fig. 2; and as soon as it has turned far enough to throw the teeth of the collar g off from the teeth of the collar e the valve is closed by the action of the springs d. The same operation takes place at the opposite end of the cylinder by the action of the collar g on the collar e'. The several collars are so adjusted that, when the balls of the governor are down, and consequently the rollers j j' occupy their lowest position, the teeth of the collars g g' will not clear those of the collars e e' by the action of the cam-slides i i', and the valves will be kept open during the entire stroke of the piston; but if the balls of the governor fly out, and consequently the rollers j j' are raised, the teeth of the collars g g' will clear those of the collars e e' by the action of the cam-slides, sooner or later,

according to the higher or lower position of the governor-balls, and the valves will close before the piston has completed its whole stroke. When the governor-balls are away up the rollers  $j\ j'$  are raised to such a position that the valves are not opened at all.

In order to avoid sudden blows when the valves close, I have made the teeth or projections on the collars  $e\ e'\ g\ g'$  oblique or spiral, as shown particularly in figs. 4 and 5.

It is obvious that this arrangement is applicable to an engine with a single or to one with two detached steam-chests, and the cylinder may be placed in a horizontal or in a vertical position. By adjusting the collars on the rod  $f$ , or on the valve-stems, towards or from each other the required lead of the valves can be effected.

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

1. The collars  $e\ g$ , in combination with the rod  $f$  and tubular valve-stem  $b$ , substantially as and for the purpose described.

2. The cam-slide  $i$ , in combination with the collars  $g\ e$ , rod  $f$ , and tubular valve-stem  $b$ , substantially as and for the purpose set forth.

3. The roller  $j$ , connected to the governor-spindle  $l$ , in combination with the cam-slide  $i$ , collars  $g\ e$ , rod  $f$ , and tubular valve-stem  $b$ , substantially as and for the purpose set forth.

H. UHRY.

Witnesses:

W. HAUFF,  
G. BERG.