

(No Model.)

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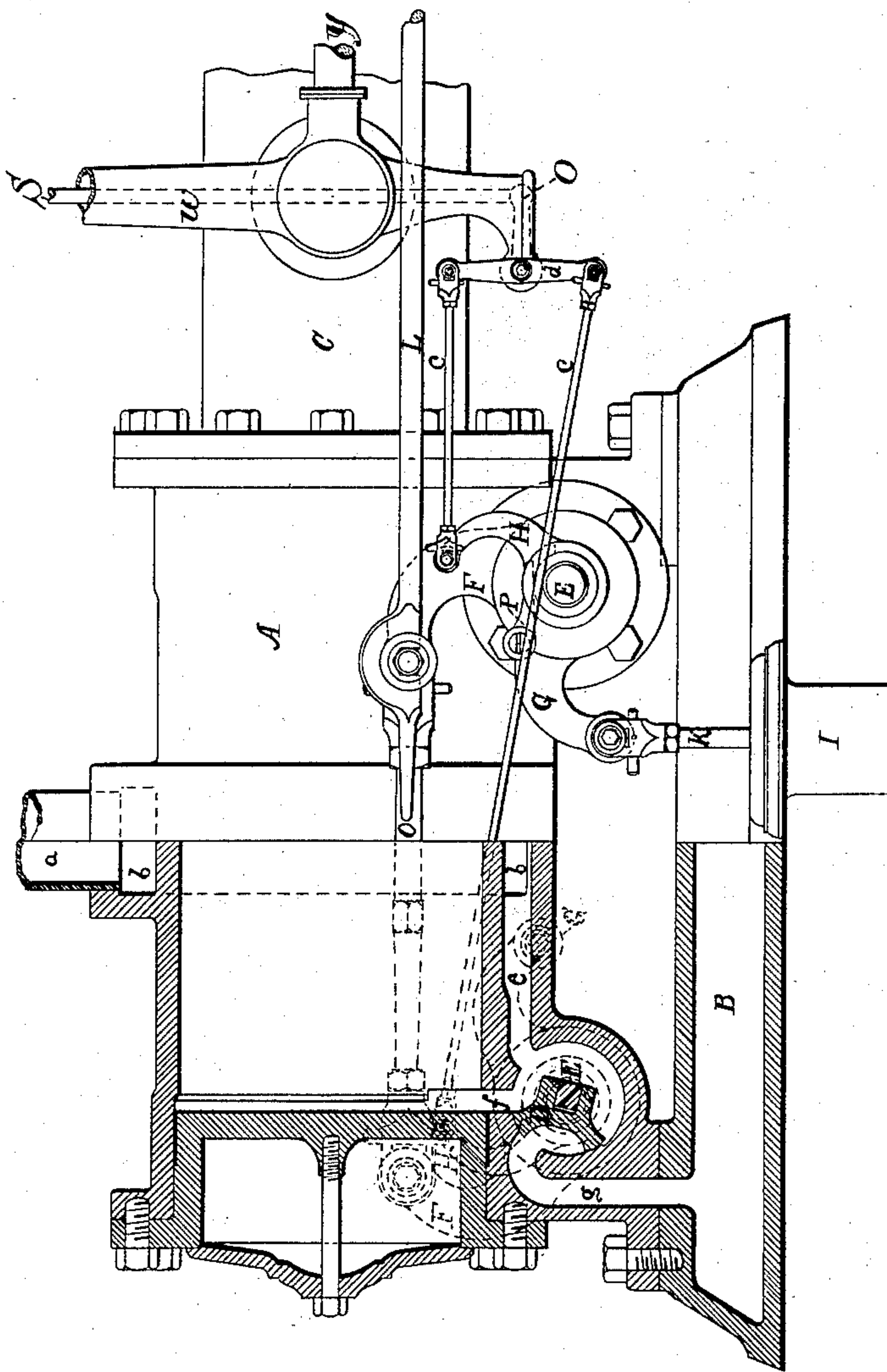
H. F. GASKILL.

VALVE GEAR.

No. 374,298.

Patented Dec. 6, 1887.

Fig. 1.



WITNESSES=  
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C. C. Linthicum,

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Harvey F. Gaskill  
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(No Model.)

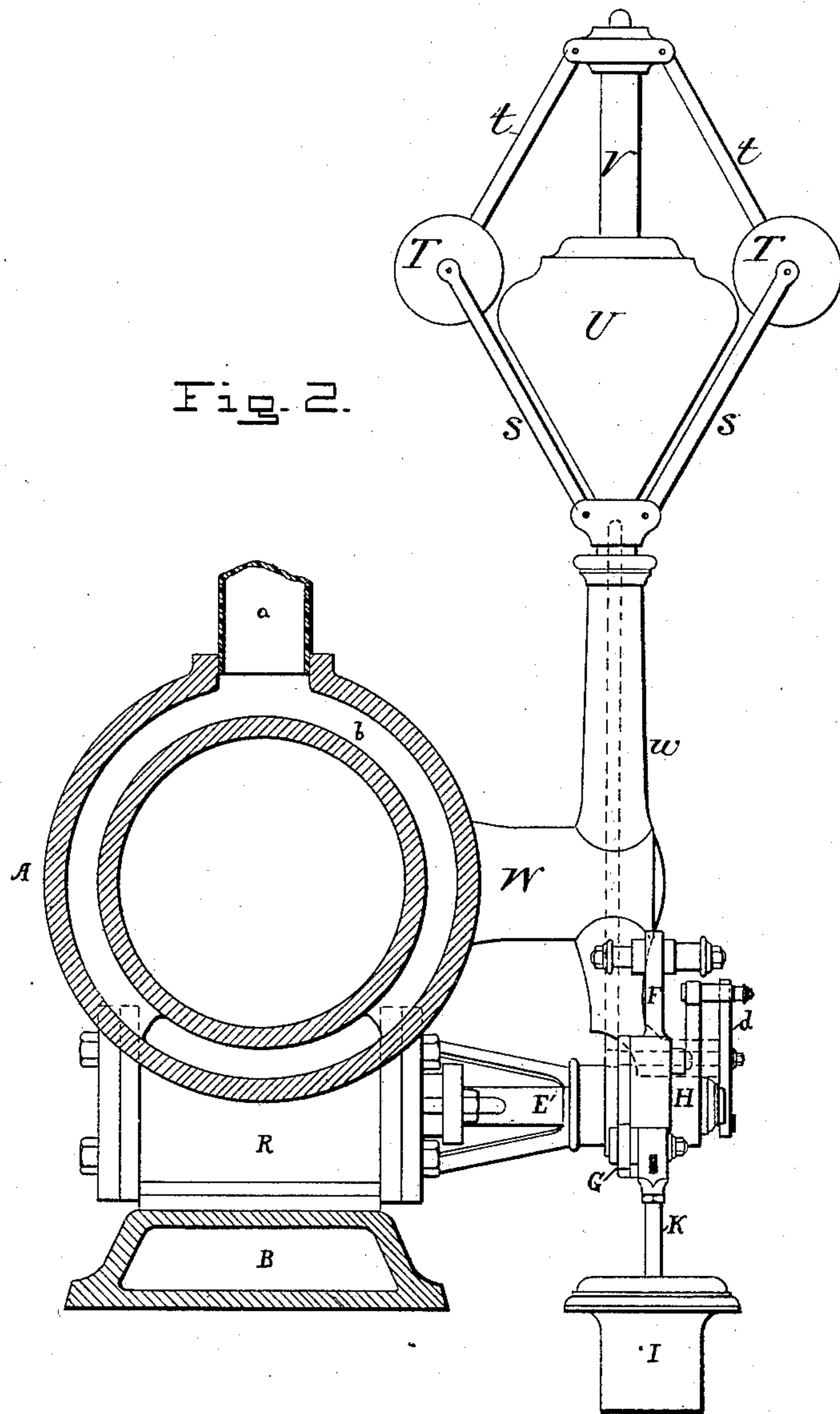
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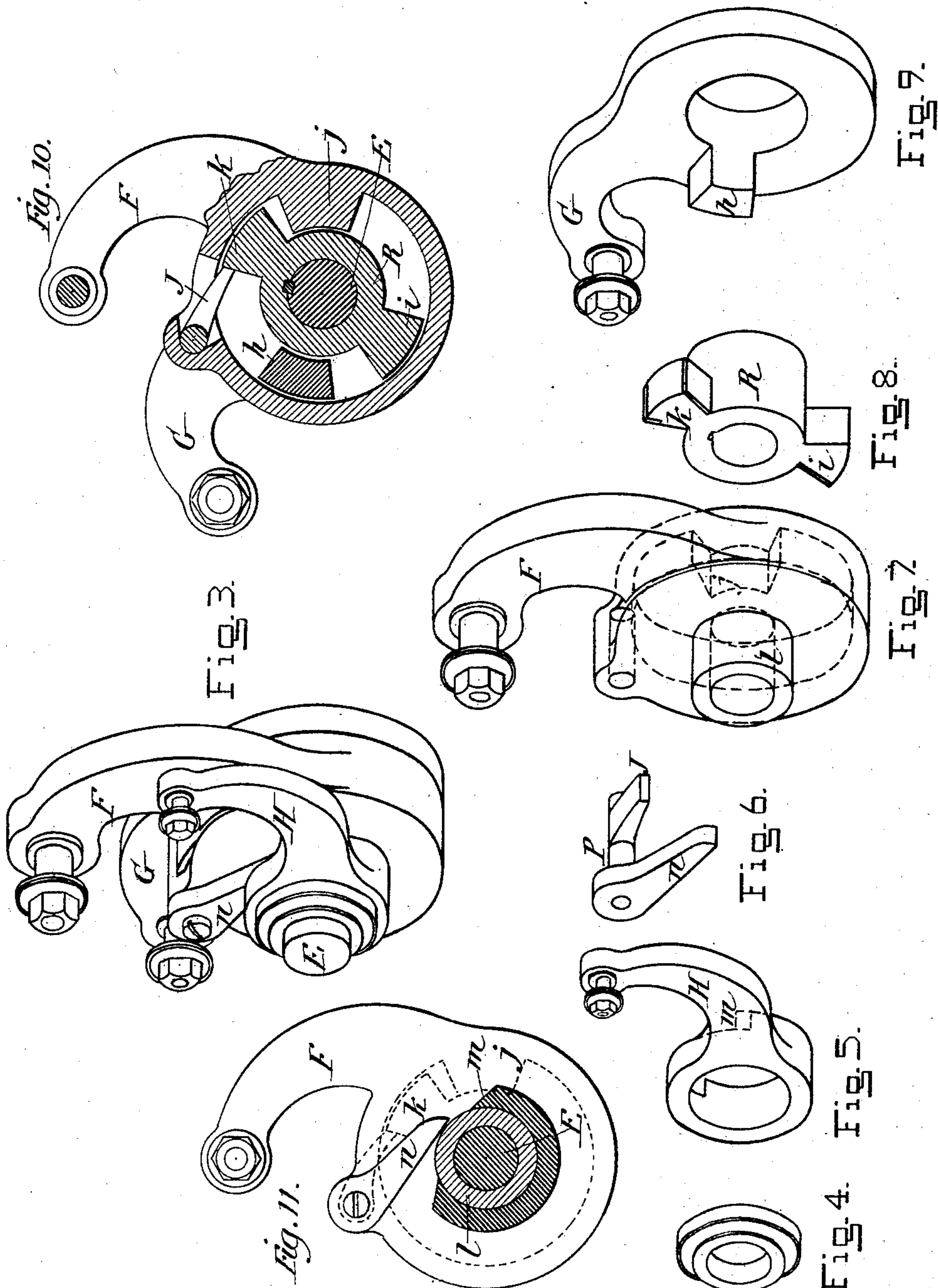
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# UNITED STATES PATENT OFFICE.

HARVEY F. GASKILL, OF LOCKPORT, NEW YORK.

## VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 374,298, dated December 6, 1887.

Application filed June 23, 1887. Serial No. 242,314. (No model.)

*To all whom it may concern:*

Be it known that I, HARVEY F. GASKILL, of Lockport, New York, have invented certain new and useful Improvements in Valve-Gears, of which the following is a specification.

My invention relates more particularly to engines of the Corliss type with a single controlling-valve at each end of the cylinder, to act for both admission and exhaust; and it consists in certain mechanism for operating the valves, as is designated in the claims at the end hereof.

In the accompanying drawings I have represented so much of an engine containing my invention as is necessary to an understanding of the latter.

Figure 1 of the drawings is a side elevation of the steam end of the engine, the cylinder being partly in section. Fig. 2 is a transverse section through the middle of the cylinder. Fig. 3 is a separate view in perspective of the valve levers or arms. Figs. 4, 5, 6, 7, 8, and 9 show the parts represented in Fig. 3 separated from each other, but maintaining their proper consecutive positions. Figs. 10 and 11 are sectional elevations to show the action of the valve levers or arms.

The principal parts of the mechanism represented in the drawings are as follows: a cylinder; a port at each end of said cylinder; admission and exhaust-steam passages approaching said port; a valve at each end of the cylinder adapted to throw said port into communication with either the admission or the exhaust-steam passage, as desired; a rocking or rotating stem by which the valve is moved; an eccentric or its equivalent; an arm connected to the eccentric-rod and capable of rocking independently of the valve-stem; a spring or its equivalent; an arm connected to the spring and capable of rocking independently of the valve-stem; suitable tongues or their equivalent on said arms, which at times engage other tongues on the valve-stem, thus causing the eccentric or the spring to act on the valve; a governor; an arm acted on by the governor and capable of rocking independently of the valve-stem; a pawl or dog or its equivalent connected to the arm, which is rocked by the eccentric and adapted to connect said arm with the valve-stem to open the valve. The dog is thrown out of engagement

by the action of the governor and permits the spring to close the valve.

In the drawings, A is the cylinder; *a*, the steam-pipe; *b*, a steam-belt connecting pipe with steam-passage *c*.

C is a part of the engine-frame.

D is the valve; E E, the stems of the two valves.

*f* is the port of valve D.

*g* is the exhaust-passage.

R is a collar which is keyed to the valve-stem. *i* and *k* are tongues on said collar.

G is an arm which fits loosely on said collar. *h* is a tongue on said arm adapted to engage tongue *i* on collar R.

I is an air-spring connected with the end of arm G. I prefer an air-spring to any other form, because it may also act as a dash-pot to arrest the motion of arm G.

F is an arm provided with a hub, *l*, which fits loosely on the valve-stem. The base of the arm incloses collar R and has a tongue, *j*, on its interior, which engages tongue *k*. The end of arm F is connected to the eccentric-rod *h*, as shown in Fig. 1.

J is a pawl or dog which is connected to the base of arm F and is adapted to engage tongue *k*.

*n* is an arm connected with pawl J. The end of arm *n* rests normally on hub *l*, as is seen in Fig. 11.

H is an arm which fits loosely on hub *l*, so as to rock thereon. The hub of arm H is partly cut away to accommodate arm *n*. The ends of the cut are sloped, as shown at *m* in Fig. 11, so that as arm H is rocked the end of arm *n* will ride up the slope and throw pawl J up out of engagement with *k*. The end of arm H is connected by a rod, *c*, with a rock-arm, *d*, operated by the governor.

In operation the arm F is rocked to and fro by the eccentric. In its motion one way its tongue *j* engages tongue *k* and moves the valve, opening communication of *g* with *f* and permitting the cylinder to exhaust. As the arm moves in the reverse direction, the dog J engages tongue *k* and moves the valve so as to close the exhaust and open the admission-passage. This motion of the valve brings tongue *i* into engagement with tongue *h*, and thus acts on spring I, putting it under strain. When in the course of this movement the arm

*n* reaches incline *M*, it rides up on the incline and raises dog *J* with it. This frees tongue *k*, and the spring *I*, acting through arm *G* and tongues *h* and *i*, closes the valve, thus cutting  
5 off the steam. The valve remains closed until tongue *j* again engages tongue *k*. The point of cut-off is determined by the position of incline *m*, and this is regulated by the governor acting through rod *S*, bent lever *o*, rod *c*,  
10 and arm *H*.

Having thus described an embodiment of my invention in the form which I at present consider the best, I claim—

1. The combination, substantially as set

forth, of the cylinder, the valve, the tongues 15 secured to the valve-stem, the arm rocked by the engine, the tongue and the dog secured to said arm, the spring, the arm connected to the spring, the tongue on said arm, and the arm operated by the governor. 20

2. The combination, substantially as set forth, of the arm *F*, tongue *j*, dog *J*, tongues *k* and *i*, arm *G*, tongue *h*, arm *H*, trip *m*, and arm *n*.

HARVEY F. GASKILL.

Witnesses:

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F. H. SEYMOUR.