

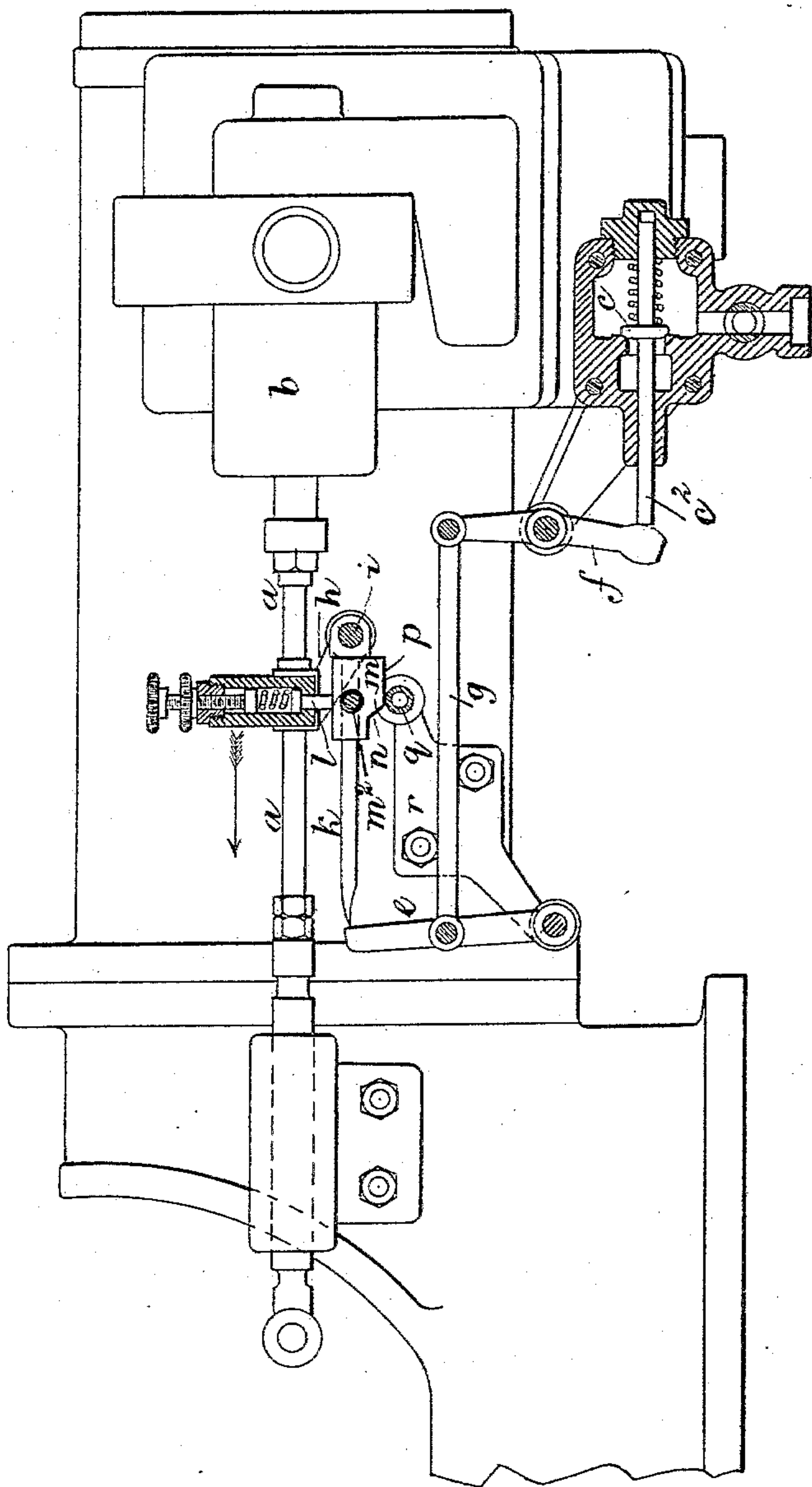
(No Model.)

C. W. PINKNEY.

GOVERNOR FOR STEAM AND OTHER ENGINES.

No. 339,461.

Patented Apr. 6, 1886.



Witnesses,

Richard Skennett

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UNITED STATES PATENT OFFICE.

CHARLES WILLIAM PINKNEY, OF SMETHWICK, COUNTY OF STAFFORD,
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GOVERNOR FOR STEAM AND OTHER ENGINES.

SPECIFICATION forming part of Letters Patent No. 339,461, dated April 6, 1886.

Application filed October 26, 1885. Serial No. 180,991. (No model.) Patented in England January 28, 1885, No. 1,218, and in France October 9, 1885, No. 171,566.

To all whom it may concern:

Be it known that I, CHARLES WILLIAM PINKNEY, of Smethwick, in the county of Stafford, England, a subject of the Queen of Great Britain, have invented Improvements in Governors for Gas-Engines, Steam-Engines, and Compressed-Air Engines, (for which I have made application for Letters Patent in Great Britain, No. 1,218, dated January 28, 1885,) of which the following is a specification.

My invention consists in constructing governors for regulating the speed of gas-engines, steam-engines, and compressed-air engines in the manner hereinafter explained, whereby the regulation of the speed of the engine is effected by mechanism much simpler than that ordinarily employed.

I will describe my invention in connection with a horizontal gas-engine.

On the horizontal valve-rod of the ignition-valve I fix a bracket carrying a pin, on which a lever turns. The short arm of the said lever, which short arm is turned toward the ignition-valve, is pressed upward by a light spring. The other or longer arm of the said lever consequently is pressed downward. The said longer arm carries on its underside an incline capable of adjustment. The valve-rod, traveling backward and forward, carries the said lever with it, and when the engine is working at its normal speed each time the said rod moves from the ignition-valve the incline on the under side of the long arm of the lever comes against a roller working on a fixed axis, and the incline traveling over the roller raises the long arm of the lever to a horizontal position, in which position it is maintained during the completion of the stroke of the ignition-valve rod. This is effected by the lower end of the incline terminating in a horizontal surface. When the long arm of the lever is in the position last described, its free end is situated just below the level of the top of the vertical lever which operates the gas-valve, and on the motion of the ignition-valve rod the free end of the long arm of the lever presses upon the gas-valve lever and opens the gas-valve. When, however, the engine acquires a speed higher than the arranged nor-

mal speed, the incline travels so fast over the roller that the end of the free arm of the lever is thrown higher than its normal position, and passing over the top of the gas-valve lever the gas-valve is not operated upon and the speed of the engine slackens. The diminished speed of the engine causes the slower passage of the incline over the roller, and the free end of the lever, not being thrown higher than the top of the gas-valve lever, acts on the said lever and maintains the working of the engine.

The accompanying drawing represents in side elevation, partly in vertical section, a portion of a gas-engine to which a governor constructed according to my invention is applied.

a is the horizontal rod by which the ignition-valve of the gas-engine, situated in the chamber *b*, is worked, and *c* is the gas-admission valve of the engine, worked by the levers *e* and *f* and connecting-rod *g*, in the manner hereinafter described.

On the horizontal valve rod *a* is a bracket, *h*, carrying the pin *i*, on which the lever *k* turns, the said lever *k* being pressed downward by the spring-bolt *l* on the said valve-rod *a*. On the lever *k* is a block, *m*, capable of adjustment thereon by the cross-pin at *m*², and on the under side of the said block is an incline, *n*, the lower end of which terminates in the horizontal bearing-surface *p*. The said block *m* is pressed by the spring-bolt *l* against a roller, *q*, working on a fixed axis carried by the support *r*. As the valve-rod *a* travels backward and forward, it carries the lever *k* with it, and when the engine is working at its normal speed each time the said rod moves from the ignition-valve in the chamber *b*, or in the direction indicated by the arrow, the incline *n* on the block *m* travels up the roller *q* and raises the said lever *k* into the horizontal position represented, in which position it is maintained during the completion of the stroke of the ignition-valve rod *a* by the horizontal bearing-surface *p* of the block working upon the said roller, as represented in the drawing.

When the lever *k* is in the position represented in the drawing, its free end is situated

just below the level of the top of the vertical lever *e*, the said vertical lever being connected through the rod *g* to the lever *f*, the lower arm of which operates upon the spindle *c*² of the gas-valve *c*. As the gas-ignition-valve rod *a* continues its motion in the direction of the arrow, after the moving parts have reached the positions represented in the drawing, the free end of the lever *k* presses upon the lever *e*, and through the rod *g* and lever *f* opens the gas-valve *c*. The gas-valve *c* is in this way automatically opened at the termination of each stroke of the gas-ignition-valve rod *a* in the direction of the arrow so long as the engine is working at its normal speed. When, however, the engine acquires a speed higher than the arranged normal speed, the incline *n* on the lever-block *m* travels so fast over the roller *q* that the end of the free arm of the said lever *k* is thrown higher than the normal position represented in the drawing, and hence, the said end of the lever passing over the top of the gas-valve lever *e*, the gas-valve *c* is not operated upon, and as no gas is supplied to the engine the speed slackens. The diminished speed of the engine causes the slower passage of the incline *n* over the roller *q*, and the free end of the lever *k*, not being thrown higher than the top of the gas-valve lever *e*, acts on the said lever in the manner already described, and, readmitting gas through the valve *c*, maintains the working of the engine.

Although I have described and represented

my invention in its application to a horizontal gas-engine, yet my said invention is equally applicable to vertical gas-engines as well as to horizontal and vertical steam-engines and compressed-air engines.

In applying my invention to a steam-engine or compressed-air engine the parts are arranged essentially in the manner hereinbefore described and represented with respect to a gas-engine, the bracket *h* on the rod *a* of the ignition-valve being in the case of a steam or compressed-air engine fixed on the rod of the slide-valve, and the lever *f* made to operate upon the throttle-valve.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that I claim as my invention—

In a governor for gas and other engines, the combination, with the reciprocating rod *a* of the gas-ignition valve, of the adjustable block *m*, supported by and moving with said rod, and having the incline *n*, horizontal portion *p*, and cross-pin *m*², the spring-bolt *l*, roller *q*, lever *k*, and levers *e* and *f*, connected with the gas-valve, the construction being such that the movement of the lever *k* automatically opens the gas-admission valve at the proper times, substantially as described.

CHARLES WILLIAM PINKNEY. [L. s.]

Witnesses:

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