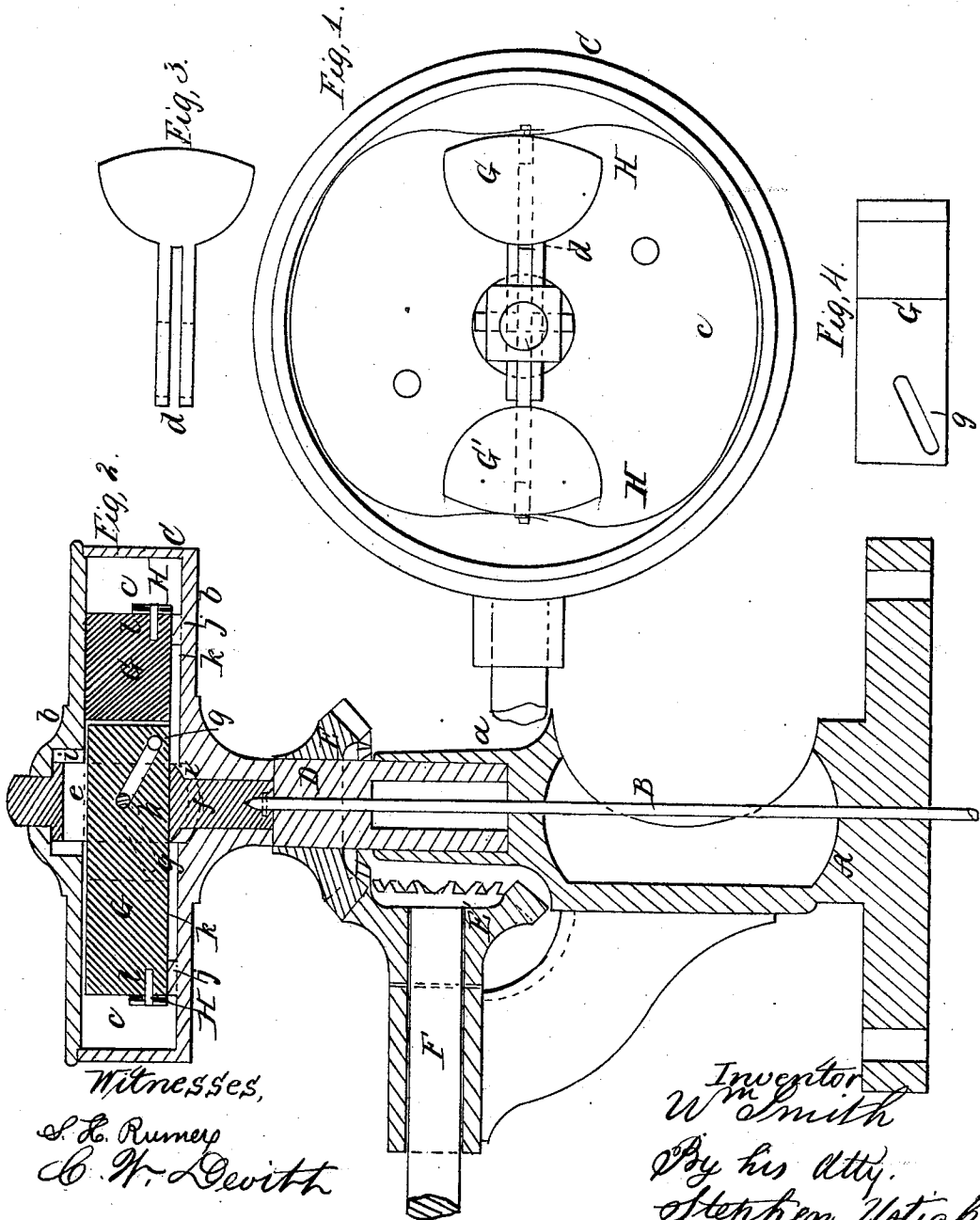


W. Smith.

Steam Governor.

N^o 90,696.

Patented Jun. 1, 1869.



United States Patent Office.

WILLIAM SMITH, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 90,696, dated June 1, 1869.

IMPROVEMENT IN STEAM-ENGINE GOVERNORS.

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, WILLIAM SMITH, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Spring-Governors for Steam-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the combination of horizontal arms with the valve-rod of the governor, by means of inclines of said arms, and a pin which connects the arms with the valve-rod, in such a manner, that as the arms are carried around in their plane of motion by the revolutions of the rod, the variations in their outward and inward movements, as the said inclines slide against the pin, change the vertical position of the rod, whereby the valve is closed or opened, to regulate the supply of steam to the cylinder.

In the accompanying drawings, which make a part of this specification—

Figure 1 is a plan of the improved governor, with the cap-plate *b* removed.

Figure 2 is a vertical section of the same.

Figures 3 and 4 are a plan and side elevation of the arm *G*.

Like letters in all the figures indicate the same parts.

A represents the governor-pedestal.

B is the valve-rod which passes through it.

C is a circular-box, which has projecting from its under side a vertical stem, or shaft D, whose lower end turns freely in the socket *a* of the pedestal.

On said shaft there is a mitre-wheel, E, which gears into the wheel E' on the driving-shaft F, which has connection with the driving-shaft of the engine in the ordinary manner.

The box C is provided with a cap, *b*, whose under side is parallel with the upper surface of the bottom plate *b'*, so that the expanding arms *G* and *G'* may vibrate freely and accurately between the plates in the chamber *c*.

The said arms are connected together, as represented in fig. 1, there being a slot, *d*, in the arm *G*, in which

the inner end of the arm *G'* slides freely in the expanding and contracting movements of the arms. The arms in said movements slide freely in the slot *e* of the enlargement *f*, on the upper end of the rod B, and as the inclined surfaces of the slots *g g* of the arms *G* and *G'* slide against the pin *h*, which connects the arms with the slot *e* of the said enlargement *f*, the rod receives a downward or upward movement, whereby a valve on its lower end, not shown in the drawings, is operated to regulate the supply of steam to the cylinder.

The enlargement *f* in the up-and-down movements of the rod B slides freely in the central openings *i* and *i'* of the box C and cap *b*, as seen in fig. 2.

The arms are guided, so as to be kept in line with each other, by means of the lugs *j j*, which project from the upper surface of the bottom *b'* of the box C into the longitudinal grooves *k k* in the under side of the arms.

The incline slots of the arms *G* and *G'* run downward, as represented, when the valve is arranged above its seat, so as to give a closing motion to the valve in the expansion of the arms; but when the valve is below the seat, the direction of the inclines is reversed.

Instead of incline-grooves there may be simply incline-edges or cams on the upper or lower edges of the arms *G* and *G'*. The arm *G* is represented in detail in figs. 3 and 4.

There are curved springs H confined in the box C, whose resilient parts, which are confined to the outer ends of the arms *G* and *G'* by means of the pins *l*, bear against the ends of the arms, to give the requisite counteracting resistance to the centrifugal force imparted to the arms by the revolutions of the valve-rod B.

What I claim as my invention, and wish to secure by Letters Patent, is—

The combination of the weights *G G'*, having inclines *g* and the springs H H arranged substantially in the manner and for the purpose set forth.

In testimony that the above is my invention, I have hereunto set my hand and seal, this 22d day of March, 1869.

Witnesses:

STEPHEN USTICK,
JOHN WHITE.

WM. SMITH. [L. S.]