

J. D. Lynde,

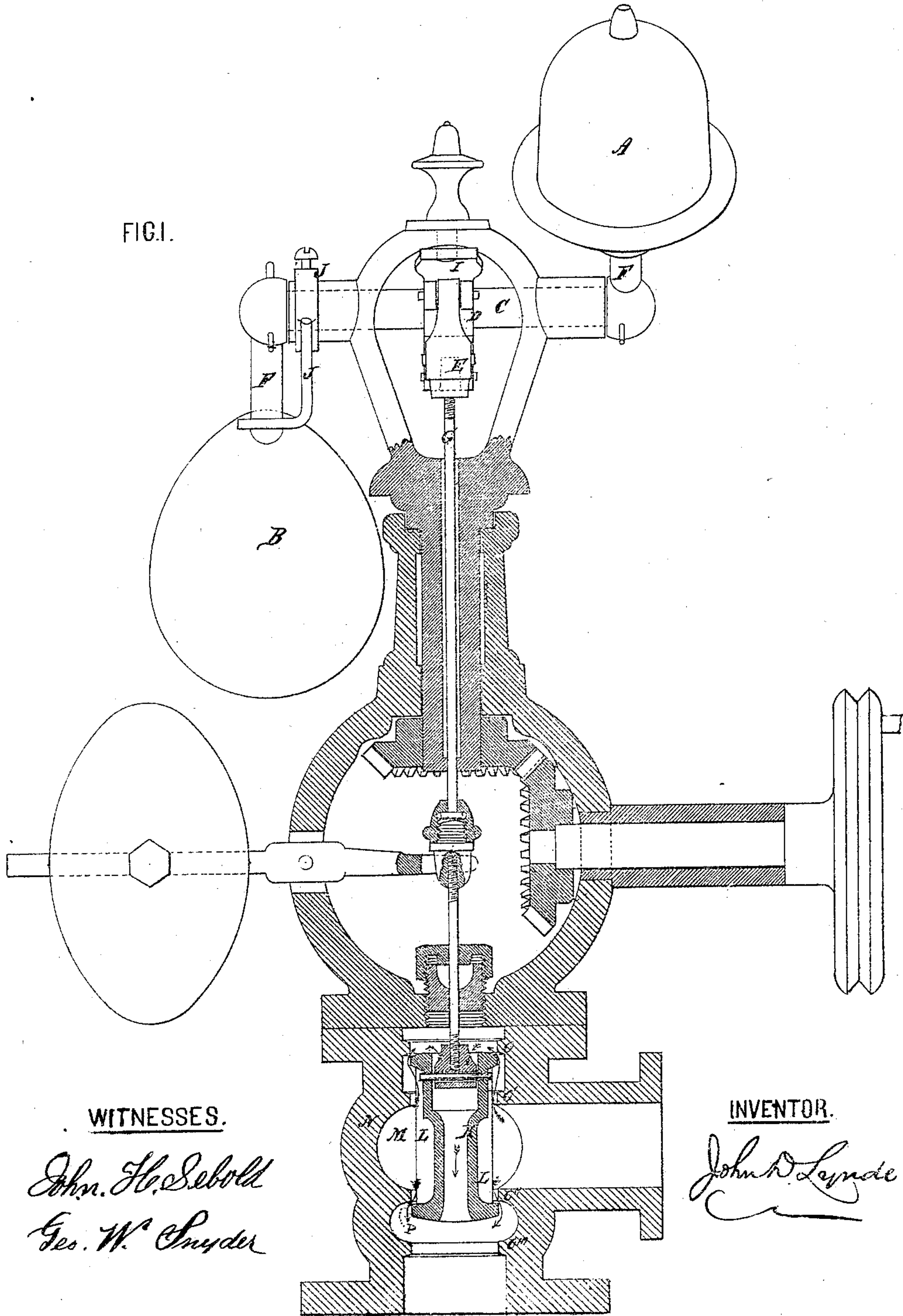
2. Sheets. Sheet. 1.

Governor.

No. 108,162.

Patented Oct. 11. 1870.

FIG. 1.



WITNESSES.

John H. Sebold
Geo. W. Snyder

INVENTOR.

John D. Lynde

J. D. Lynde,

2. Sheets. Sheet. 2.

Governor.

No. 108,162.

Patented Oct. 11. 1870.

FIG. 2.

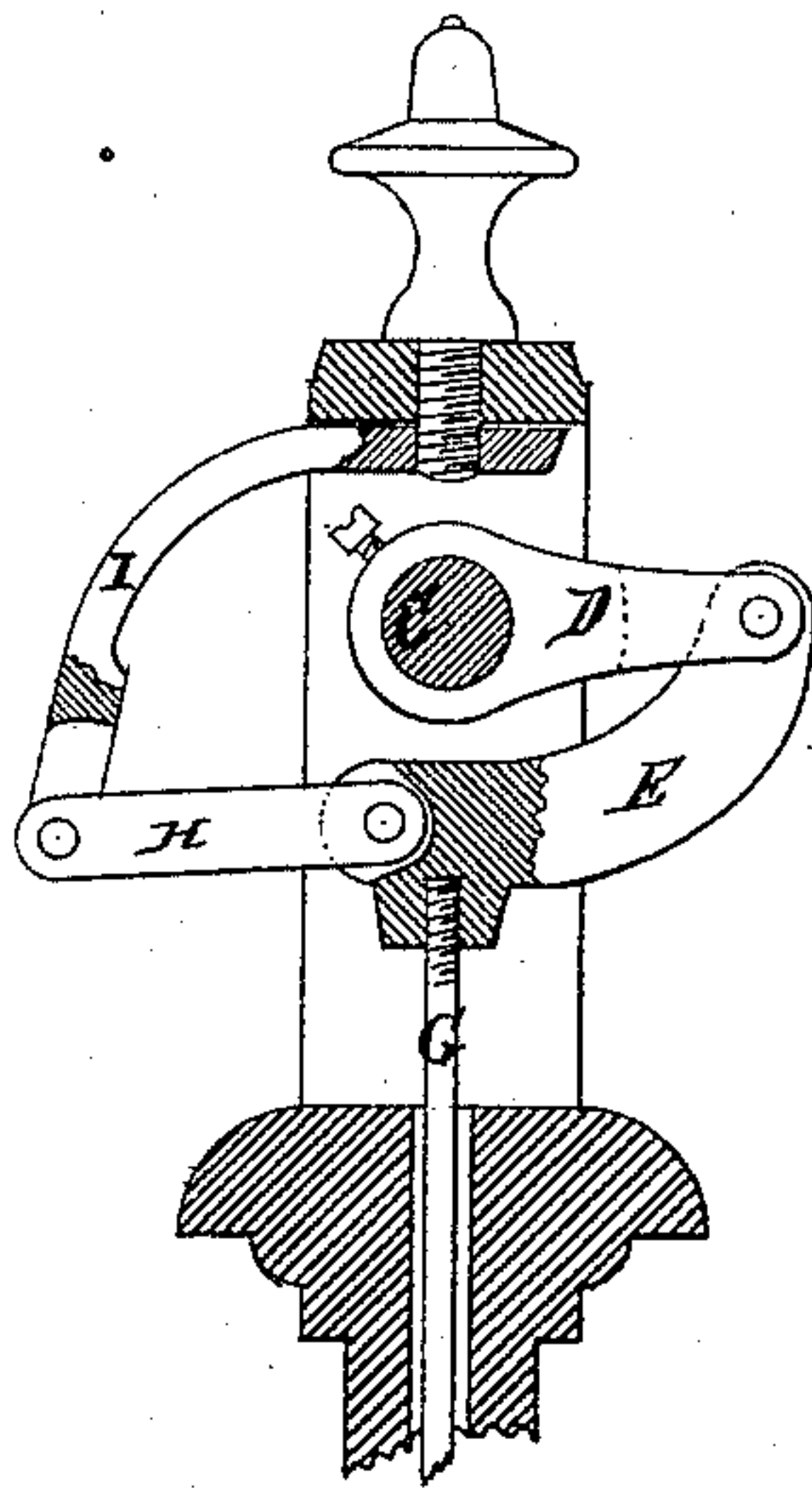


FIG. 4.

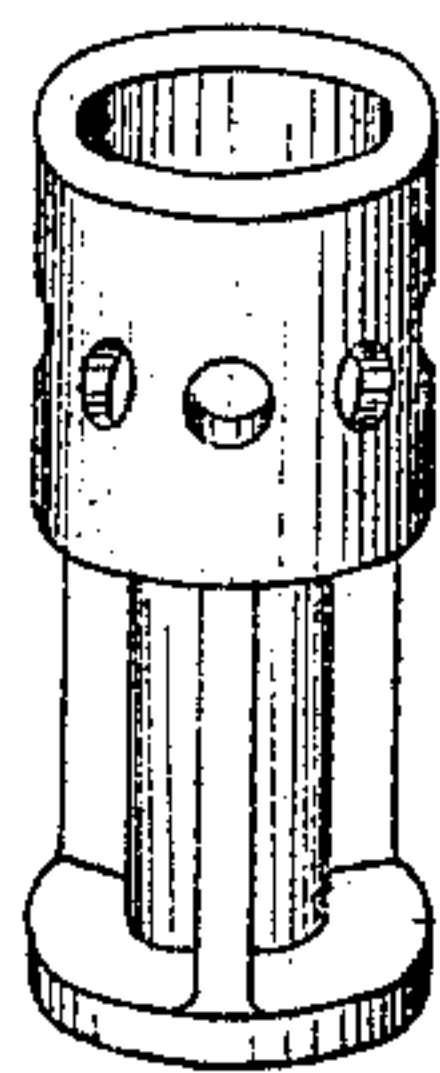
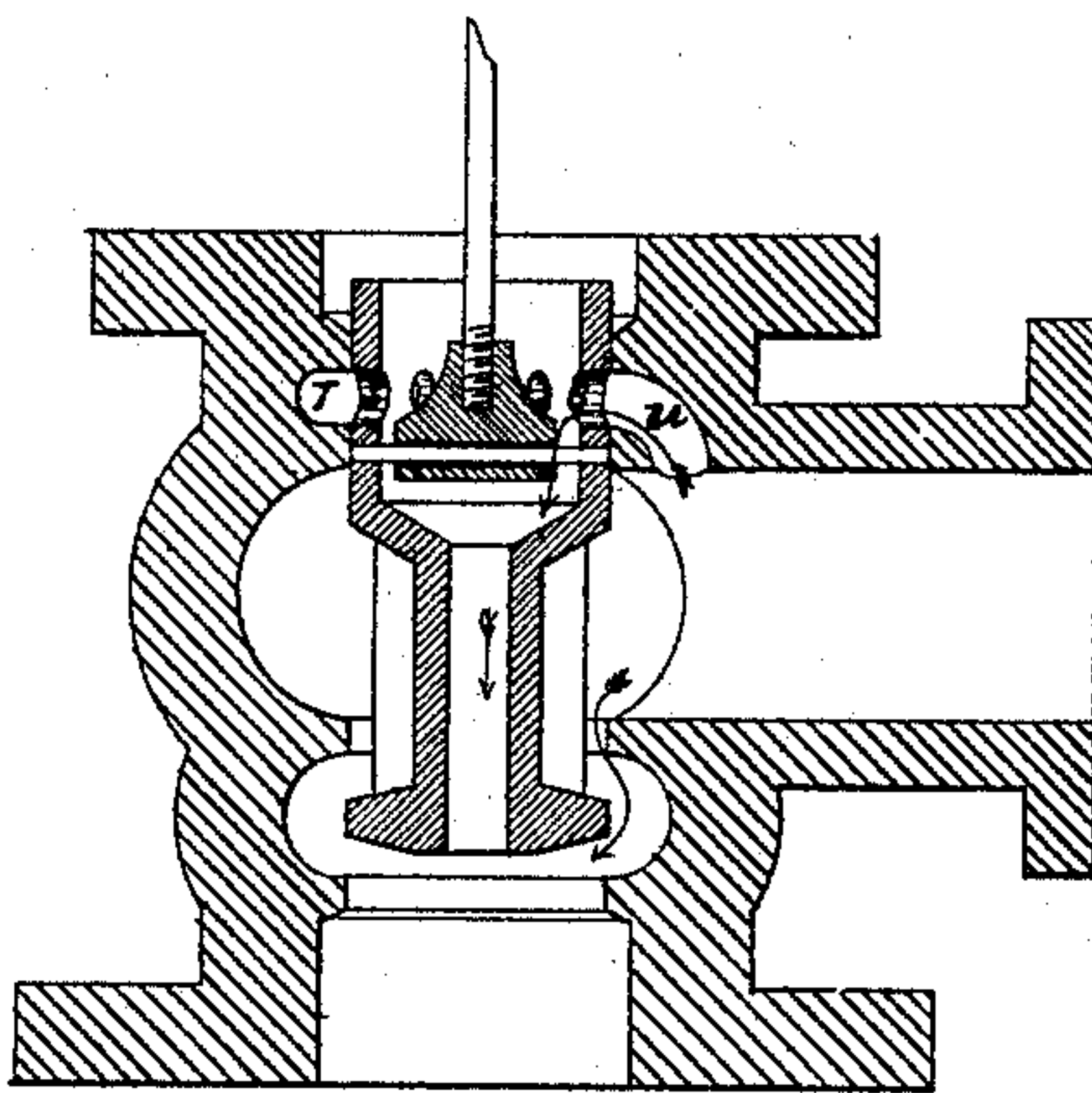


FIG. 3.



WITNESSES

John H. Sebold
Geo. W. Snyder

INVENTOR

John D. Lynde

United States Patent Office.

JOHN D. LYNDE, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 108,162, dated October 11, 1870.

IMPROVEMENT IN GOVERNORS 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, JOHN D. LYNDE, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Governors; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawing forming part hereof.

The object of this invention is to obtain the greatest possible sensitiveness of action, whereby the least change of the engine's speed shall be instantly responded to, and a uniform motion, or nearly so, maintained, irrespective of the sudden change of load or resistance.

Also, to provide a passage for steam through the governor-valve, with the least possible obstruction to the passage of the steam or friction of the moving mechanism; and

Also, to provide a safety-governor, which, if arrested in its motion, the speed of the engine will still be limited by it.

The first object of my invention is accomplished by the combination and arrangement of the three weights or balls and the cam mechanism in the head of the governor.

The second and third objects are accomplished by the construction and arrangement of the valve and its case, and the devices for setting the balls in the desired position for efficient action of the co-ordinate devices.

Referring to the drawing—

Figure 1 is a sectional front elevation.

Figure 2 is a side elevation, in section, of the governor-head.

A and B represent weights, which are attached, by arms F F, to the ends of shaft C, which shaft is actuated by them.

To the center of shaft C is securely attached the cam D, which raises and depresses the arm E, to which the valve-rod G is firmly secured.

The guide-hinge H is the same length as the cam D between centers of motion, and the hinge H is hung to the bracket I, in a parallel line to cam D, so that there shall be no bind in the motion, but, on the contrary, the movement must be harmonious.

The hole in the arm E is elongated, so that the connecting-pin between D and E is allowed a little horizontal motion, if required.

The ring and arm J are made adjustable, and perform the function of stopping the weight B at the proper place in its descent, and thus prevent any strain which would injure the immediate mechanism.

The valve-rod, driving-gear, and weighted lever are about the same as those in common use in many governors.

K is a double disk hollow valve, with enlarged hole at the top, to admit the coupling for the valve-rod.

The hole through the valve is as small as practicable, so that the center of the valve shall occupy the least possible room.

The guide-wings L extend the whole length of the space between the disks.

The body N has four seats, O O' O'' O''', situated at proper distances from each other, so that the upper disk of the valve can move from the bottom of O to the top of O', while the lower disk will act in the same manner with reference to the seats O'' O'''.

This construction allows all the steam, to the full capacity of the steam-pipe, to pass through freely.

The space around the upper disk, between O and O', is only sufficient to allow as much steam as can freely pass down through the valve, and thereby preventing a downward steam-pressure on the valve.

The drawing represents the governor motionless.

When power is applied to the pulley, giving the proper motion, the rotating movement will cause weight B to rise, while weight A will fall in like proportion. The shaft C is turned, and the valve is depressed in due proportion to the speed given. If the speed is too great, the aperture will be entirely closed, by the disks coming in contact with seats O' and O''. If the motion ceases, the aperture will again be closed by the disks coming in contact with seats O and O', which, in practice, would avoid accidents incident to the full steam-pressure being let on at once.

As the weights or balls A and B are of unequal weight, it may be found, in practice, necessary to balance them, by hanging a small ball or weight opposite to weight A.

Figures 3 and 4 show another construction of valve and valve-case, which may be preferred in governors of very large capacity.

The lower end of this valve and case are of the same construction as shown in fig. 1. The upper end of the valve, shown in figs. 3 and 4, is cylindrical, and is provided with a series of holes.

When the governor is in full operation, these holes are opposite to and receive steam from the annular passage T, which is connected to the steam-chamber by the hole U.

When the valve is pushed down, the holes will be covered by the lower of the two upper seats. When the valve is raised, the holes will be covered by the upper seat. Thus will the valve-openings be closed when the valve is at its lowest and highest point.

It is not necessary that the governor-valve should entirely close the steam-passage, but, on the contrary, such practice is productive of delay and inconvenience. The ring and arm J J obviate this difficulty, by being adjusted so that the weights or balls are limited in

the range of their descent, whereby the engine may be allowed to continue its maximum speed even though the governor-belt should break, or in otherwise the governor-mechanism become deranged.

Having thus described the nature of my invention, What I claim as new, and desire to secure by Letters Patent, is—

1. The adjusting-ring and arm J J.
2. The combination and arrangement of the unequal weights A and B and shaft C, whereby the motion of the weights shall act in harmony on the shaft C, substantially as herein described.

3. The combination of the cam D, arm E, hinge H, bracket I, and valve-rod G, substantially as set forth.

4. The construction of the valve K, case N, arranged with reference to each other, and their respective openings and seats, substantially as herein made known.

5. The annular passage P, when constructed with reference to the immediate co-ordinate parts, substantially as described.

Witnesses:

JOHN D. LYNDE.

JAS. H. OLIVER,
SAMUEL C. OGLE.