

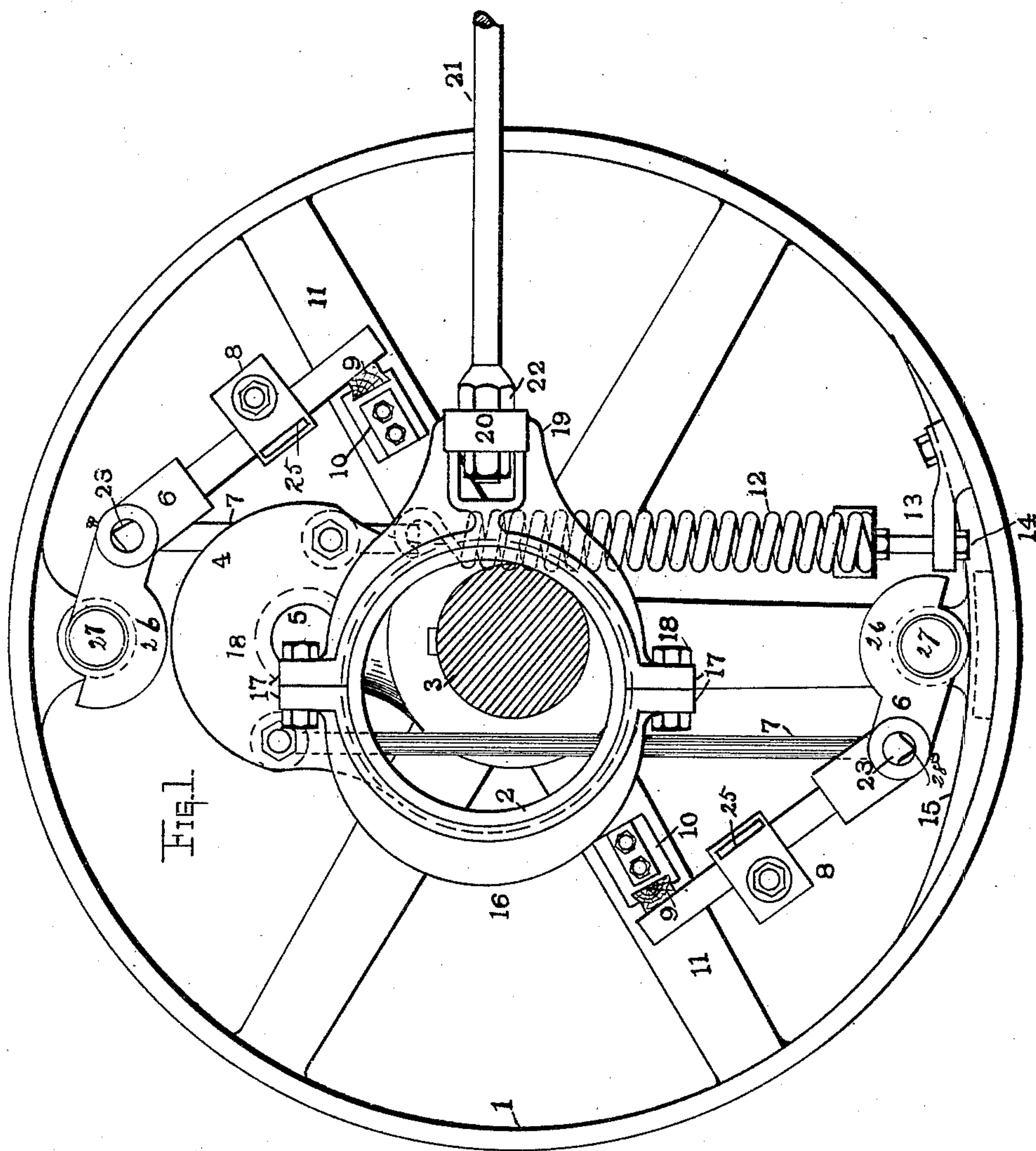
(No Model.)

2 Sheets—Sheet 1.

S. S. BABBITT.
STEAM ENGINE GOVERNOR.

No. 436,394.

Patented Sept. 16, 1890



Witnesses.

Geo. H. Harvey
C. S. Johnston

Inventor

Seward S. Babbitt
By A. C. Johnston
attorney

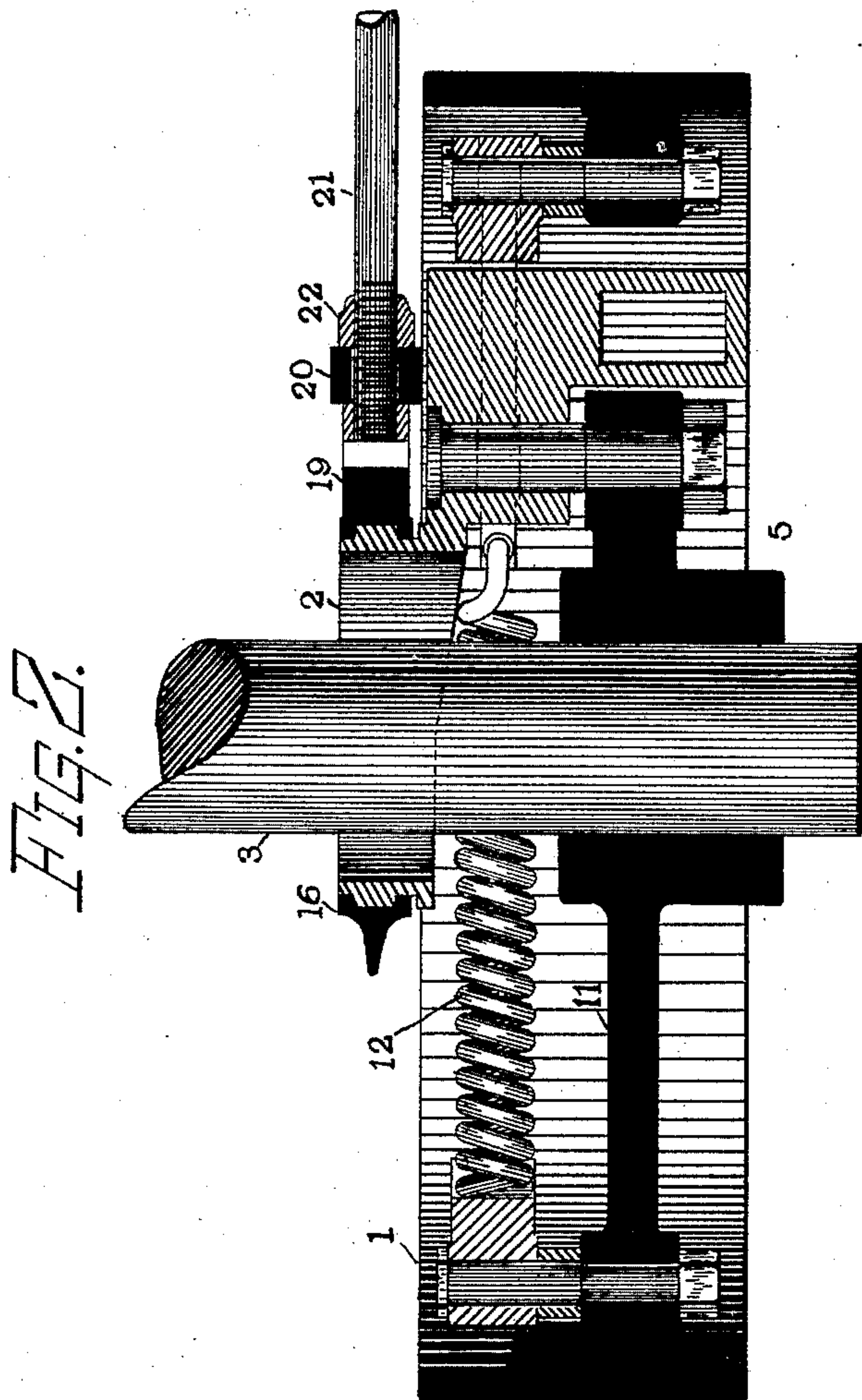
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UNITED STATES PATENT OFFICE.

SEWARD S. BABBITT, OF PITTSBURG, PENNSYLVANIA.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 436,394, dated September 16, 1890.

Application filed August 17, 1889. Serial No. 321,176. (No model.)

To all whom it may concern:

Be it known that I, SEWARD S. BABBITT, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
5 and useful Improvement in Steam-Engine
Governors; and I do hereby declare the fol-
lowing to be a full, clear, and exact descrip-
tion thereof.

My invention relates to an improvement in
10 steam-engine governors of that class wherein
the several parts of the governor are attached
to and revolve with the fly-wheel or pulley se-
cured to the main shaft of the engine and
operate to vary and adjust the position of the
15 eccentric, so as to control the movements of
the engine-valve.

My improvement consists in such construc-
tion and relative combination of parts, which
will be hereinafter described and claimed,
20 and which operate so that the centrifugal
force of swinging weights is caused to act
upon an eccentric and change its position
with relation to the main shaft, and thereby
affect the movements of the valve.

My invention also comprises swinging
25 weights provided with receptacles or pockets
for the introduction of heavy matter or filling
to increase the centrifugal force, and also
making such pocketed weights adjustable,
30 whereby their action shall be properly pro-
portioned to the speed of the engine.

In my improved governor the radius of the
swing of the eccentric bears the same rela-
tion to the length of the eccentric-rod as the
35 crank does to the length of the connecting-
rod of the engine, causing the valve to have
the same relative variable travel as the pis-
ton of the engine on which it operates, and
the distance from the center of the eccentric
40 to its pin is maintained, whereby the variable
lead due to its arch of rotation is obviated,
and instead thereof a movement known as
the "link principle" adopted, so that the
variable speed and travel of the valve is the
45 same relatively as the piston of the engine.

My invention also consists in the applica-
tion of a weight to one side of the governor-case
and a receptacle or pocket therein, permit-
ting an increased quantity of ponderable mat-
50 ter to be added as required and in proper
position to correctly balance the eccentric and

other parts, whereby a balance is at all times
maintained.

To enable others skilled in the art to fully
understand the mechanical structure of my 55
improved governor, I will proceed to describe
the same by reference to the accompanying
drawings, in which—

Figure 1 represents a steam-engine gov-
ernor embodying my invention. Fig. 2 is a 60
transverse vertical section of the same.

In the practice of my invention I make use
of a spider, on which the operative parts of the
governor are mounted, and this spider is sur-
rounded by circular case 1, which may serve 65
either as a belt-pulley or fly-wheel, as re-
quired. Within this circular case 1 and on
the spider within the same is pivoted an ec-
centric 2, so as to swing in an arc and move
in a vertical plane. This eccentric is in the 70
form of a ring with an open center, in order
that its movements may not be interfered
with by the main shaft 3 or any part thereof.
A double-ended lever 4 is attached to the ec-
centric and projects outward from opposite 75
sides of a pivot 5. Weighted arms 6 are
pivoted to the spider of the circular case 1
upon opposite sides of its axis and near its
rim. Links 7 connect these arms 6 with the
extremities of the double-ended lever 4. Each 80
pivoted arm 6 is provided with an adjustable
weight 8, provided with receptacles or pock-
ets 25, whereby additional matter may be in-
troduced to increase their ponderosity, if re-
quired. A bracket 10, firmly attached to the 85
arms 11 of the spider forming a part of the
circular case 1, is provided with a cushion or
elastic pad 9, that reclines against the arm 6
when the governor is at rest, and thus pre-
vents the free end of the arms from being 90
carried too far in that direction. A quantity
of metal is added to the levers 6 at the point
26, so that the action of its centrifugal
force will neutralize the friction on the up-
per side of the pin 27, caused by the action 95
of the weights and springs. A knife-edge
joint 28 reduces the friction at that point and
dispenses with lubrication. A long spiral
spring 12 has one end attached to the lever
4 and its other end connected to the in- 100
ner rim of the circular case 1 or a project-
ing eye-piece 13, secured thereto by means of

a bolt, and this end of the spring 12 is fitted with a screw-nut 14, whereby its tension may be diminished or increased, and this spring is used to furnish such centrepetal force or resistance as is necessary to a proper action of the parts.

A counterbalancing-weight 15 is secured to the rim of the circular case 1, and is provided with receptacles or pockets, as shown by dotted lines in Fig. 1, for the introduction of such substances as will increase its weight and equipoise the eccentric and its immediate attachments.

The yoke 16 of the eccentric 2 is made in two halves joined and held together by means of lugs 17 and suitable bolts 18, whereby it may be readily adjusted and fixed in place or removed, as desired; and this yoke 16 is also provided, in addition to its other parts, with a projecting boss 19, fitted with a cross-bar 20, through which one end of the valve-rod 21 passes, and is made adjustable therein by a screw-nut 22 in opposite sides of said bar.

The drawings represent the moving parts of this governor as all located on one side of its eccentric; but they may be disposed partly on one side and partly on the other side without detracting from my invention. The counterbalance-weight 15 may also be located upon either side of the circular case, as desired, to prevent improper motion of the eccentric naturally due to the action of gravity upon it. The links 7 hold to the arms 6 by pivots 23, each an equal distance from the center oscillation, the length of the links and specified relation of parts being such as to produce a parallel motion and balance the action of the weighted levers upon the eccentric when the governor is in operation. The spring serves to apply the requisite centrip-

etal force to the pivoted levers 4 and cause their mechanism to act quickly upon the eccentric and keep it steady while in action. If desirable, the several parts may be adapted for rotating with the circular case 1 in either direction.

Having thus described my improvement, what I claim is—

1. In a governor, the combination of a spider which is weighted at a point in the rim thereof, an eccentric, a double-armed lever pivoted to the spider and eccentric at a point on the opposite side of the eccentric from the side on which the rim of the spider is weighted, the weighted levers pivoted on the spider near the rim thereof, a long link intermediate of one arm of the lever and one of the weighted levers, a short link between the other arm of the lever and the weighted lever, and a single spring connected to the same arm of the double-armed lever as the short link and to the rim of the spider, as described.

2. In a governor substantially as described, the combination of a spider weighted at one side of the rim thereof, an eccentric, a double-armed lever pivoted to the spider and eccentric, the weighted levers pivoted on the spider, the long and short links intermediate of the arms of the lever and the levers, said links being connected to the levers by the knife-edge joints 28, and a single spring connected to one of the arms of the double-armed lever, substantially as described.

In testimony whereof I have hereunto set my hand this 8th day of May, A. D. 1889.

SEWARD S. BABBITT.

Witnesses:

A. C. JOHNSTON,
C. S. JOHNSTON.