

(No Model.)

A. J. CHAUSSE.
STEAM ENGINE GOVERNOR.

No. 506,977.

Patented Oct. 17, 1893.

Fig. 1.

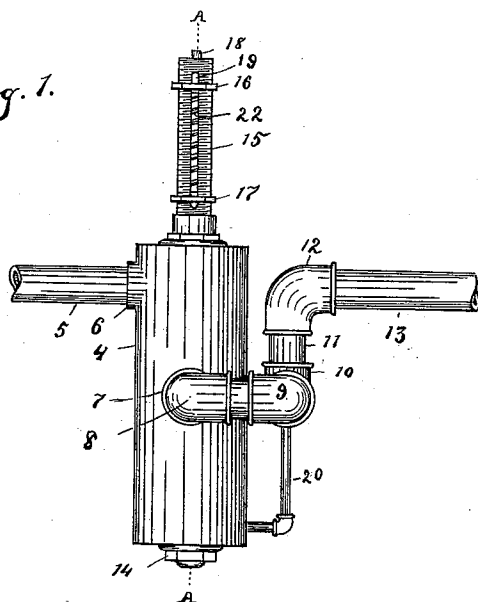


Fig. 2.

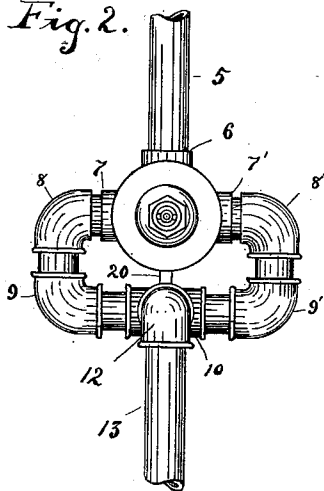
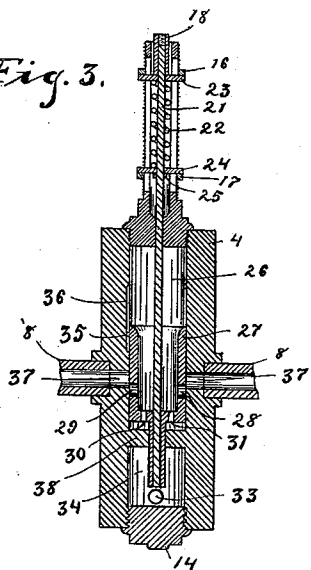


Fig. 3.



WITNESSES:

Walt. G. Burns.
Emmett N. Harris

Alfred J. Chausse INVENTOR:

BY Chapin & Denny

his ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALFRED J. CHAUSSE, OF MONROEVILLE, INDIANA, ASSIGNOR OF ONE-HALF
TO JOHN L. TILLMAN, OF SAME PLACE.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 506,977, dated October 17, 1893.

Application filed June 29, 1893. Serial No. 479,127. (No model.)

To all whom it may concern:

Be it known that I, ALFRED J. CHAUSSE, a citizen of the United States, residing at Monroeville, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Steam-Engine Governors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in governors for steam engines.

The object of my improvement is to provide a governor for steam engines so constructed and arranged that when properly set for light running, will automatically adjust itself to the work required of the engine by the back pressure of the steam, is adapted to avoid the unsteadiness and irregularity in the speed of the engine when the burden or work is suddenly taken from the engine, and also avoids all danger of "racing;" is so constructed as to be free from gears of all kinds, presents no constantly wearing surfaces, has no centrifugal forces to overcome in changing the load, and is designed and adapted to produce a perfectly isochronous movement of the engine under extreme changes of load by the automatic action of the back pressure of the steam.

My invention consists of a cylindrical valve-chest having inlet and outlet ports into which are secured proper pipes from the boiler and to the engine, and also a smaller back-pressure pipe communicating with a lower chamber in said valve-chest; an externally threaded vertical standard secured in the top of said valve chest by a threaded connection, having diametrically opposite vertical slots, and provided with internally threaded adjustable nuts adapted to regulate the tension of the coil spring hereinafter described; a valve rigidly mounted on a valve stem, open at its top and having diametrically opposite out-let ports adapted to register with the outlet ports of said valve chest; and a valve stem extending up through the threaded standard having a coil spring mounted thereon whose tension is regulated by threaded adjustable nuts on

said standard, and provided with loosely mounted annular disks having horizontal lugs adapted to slide in the slots of said standard and thereby engage the said adjustable nuts. 55

The novel feature of my invention consists in the construction and combination of the several parts for the purposes hereinafter described.

The object of my invention is accomplished by the mechanism illustrated in the accompanying drawings in which similar figures of reference indicate corresponding parts in the several views. 6c

Figure 1 is a side elevation of my invention showing the relative arrangement of the various parts. Fig. 2 is a plan of the same showing the manner of connecting the outlet ports of the valve chest with the pipe to the engine. Fig. 3 is a vertical section of my improvement on the line A—A of Fig. 1, showing the internal structure of the valve case and the relative arrangement of the coil-spring and adjusting devices in the threaded standard. 75

The valve-chest 4 of suitable size, strength and material, has a proper sized central bore divided into two chambers 26 and 34 by a partition 37 which is perforated at its center for the admission of the dependent portion 32 of the operating valve 27. The said valve-chest is also provided with an out-let port 6 in which one end of the steam pipe 5 from the boiler is properly secured, and out let ports 37 and 37', preferably arranged diametrically opposite, and in which one end of the elbow pipes 8 and 8' are respectively secured. 85

The top of the chamber 26 is closed by the standard 15 having a screw threaded base adapted to fit tightly in said chamber by a threaded connection, as seen in Fig. 3. 90

The lower chamber 34 has an inlet port 33 in which one end of the back pressure pipe 20 is secured, and the said chamber is closed at the bottom by the screw threaded plug 14. The said out-let ports are connected with the steam pipe 13 in any proper manner, preferably by a series of elbow joints 8, 8'; 9, 9'; 10, 11 and 12, seen in Figs. 1 and 2; and the pipe 20 connects the interior of the elbow joint 10 with the chamber 34 through port 33. 100

The hollow valve 27 is adapted to fit snugly

in the chamber 26 and has a circular dependent portion 32 in which the lower end of the valve stem is rigidly secured in any proper manner; against this portion 32 the lifting force of the back pressure steam is exerted when in operation. The said valve is provided with the diametrically opposite outlet ports 28 and 29 adapted for engagement with the outlet ports 37 and 37', and is also provided with a suitable number of vertical perforations 30 and 31 communicating with the lower part of the chamber 26 and thus equalizing the pressure of the contained steam or other motive fluid upon the said valve. Valve 27 is also provided with a lug 35 adapted to slide in the vertical slot 36 and thereby secure said valve against lateral motion.

The standard 15 rigidly and firmly secured in the top of the chamber 26, has a central bore extending from its upper extremity through its entire length, that portion of the bore which penetrates the base being much smaller than the remaining portion and only large enough for the valve stem 21 which is adapted for vertical play therein, and said standard is provided with the vertical slots 19 preferably diametrically opposite each other. Upon the upper portion of the said valve stem is properly adjusted a coil spring 22 of any proper strength, held in position by the annular disks 23 and 24 loosely mounted on said valve stem, and provided with horizontally projecting lugs adapted to slide in the diametrically opposite vertical slots 19 of the standard 15. The said valve stem is also provided with a rigid collar 25 adapted to support the annular disk 24. The upper end of the valve stem is preferably externally threaded and is provided with an internally threaded sleeve 18 adjustable thereon and adapted to secure the valve normally in any desired position in which it is set by the operator. The said standard 15 is externally threaded and is provided with the threaded adjustable nuts 16 and 17, having a bearing on the said lugs of the disks 23 and 24 respectively. The said nut 17 is adapted to raise or lower the said valve and valve stem when setting the same for the desired speed at which the engine is to run; and the nut 16 is adapted to regulate the tension of the spring 22 when the valve is operated by the back pressure steam in the chamber 34.

The operation and manner of using my improved governor for steam engines thus described are, briefly stated, as follows: The operator opens the throttle and permits the steam from the boiler to enter the valve chamber 26 through the boiler pipe 5 and the inlet port 6. The steam thence passes into the valve 27 and through the perforations 30 and 31 into the lower end of the chamber 26, thus equalizing the boiler pressure on said valve. The operator then elevates the said valve by means of the threaded adjustable nuts 16 and 17, until the valve is opened sufficiently to give the engine the required or desired speed.

The sleeve 18 is then screwed down in contact with the upper surface of the disk 23, and the nut 16 is adjusted to a position in contact with the lugs of the said disk as seen in Fig. 3. The said valve is secured against lateral movement by the engagement of the lug 35 with the vertical slot 36. When the said valve is thus arranged the movement of opening and closing the same for the outgoing steam is entirely automatic, for as the load or burden of the engine is increased the said valve is gradually elevated and opened by the back pressure of the steam from the engine exerted upon the projection 32 of said valve through the return pipe 20 and the lower chamber 34, and against the tension of the coil-spring 22. When the load of the engine is lightened, the back pressure of the steam will be proportionately less upon the projection 32 and the said valve will be promptly lowered and proportionately closed under the recoil of the said coil-spring. It is, of course, obvious that my improved governor is equally well adapted for any other motive fluid besides steam. It is also evident that in the use of my invention for steam engines the action is more prompt and there is less variation under extreme changes of load than in the form of governors now in use.

Having thus described my invention and the manner in which the same is to be applied, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a governor for steam engines, the combination of a valve chest 4 having a valve chamber 26, a lower chamber 34 inlet ports 6 and 33, and outlet ports 37 and 37' and a threaded plug 14 adapted to close said lower chamber, and a valve 27 adapted for movement in chamber 26, rigidly secured to a valve stem 21, provided with the perforations 30 and 31 the outlet ports 28 and 29 adapted to register with the outlet ports of said valve chest, and means for preventing lateral motion of said valve, with a valve stem 21 provided with a rigid collar 25, annular disks 23 and 24, and adjustable sleeve on the end thereof, and a coil spring loosely mounted thereon between said disks, and an externally threaded standard 15 adjustably secured in the top of said valve chest, having a central bore adapted to contain the upper end of the said valve stem and provided with the adjustable nuts 16 and 17 or their equivalent, all substantially as described.

2. The combination, in a governor for steam engines, of a valve-chest having a valve chamber 26 a lower chamber 34, inlet ports 6 and 33, outlet ports from the valve chamber, a valve 27 adapted to play in said valve chamber, rigidly secured to a suitable valve stem, having proper perforations in the bottom thereof and outlet ports adapted to register with the outlet ports of said valve chest, and provided with means for preventing lateral motion thereof, and also with a dependent projection 32 against which the back

pressure of the steam is exerted, and a valve stem having the said valve rigidly secured thereto, a coil-spring mounted thereon, provided with a rigid collar 25, loosely mounted
5 disks adapted to compress said spring, and a threaded sleeve 18, with an externally threaded standard adapted to close the top of said valve chamber, having a central bore or perforation for the said valve stem and provided
10 with adjustable nuts 16 and 17, and the steam

pipes 5, 13 and 20 having proper connecting joints, all substantially as set forth and described.

Signed by me, at Fort Wayne, Indiana, this 17th day of June, 1893.

ALFRED J. CHAUSSE.

Witnesses:

W. C. McCOWAN,

W. P. DENNY.