

# THE GOVERNOR.

**THE THEORY OF THIS GOVERNOR** is based on the logical principle, that if a varying load requires a change of steam supply, this change should be the direct result of the load and should exactly correspond with it. In other words, the Governor of a Steam Engine should not depend upon the very variations of speed, which it is intended to obviate, for its motive power to act, but should recognize the variations of load, thereby becoming a weighing machine, the result of this weighing being a corresponding change in the steam supply, thus making it possible to maintain absolutely uniform speed. Comparing the two systems, we see that with the old system the supply of steam is in proportion to the speed, but with the new system the supply is in proportion to the load, and the speed is constant.

Suppose the Engine to be started without any load. As the speed approaches the desired point the weights of the Governor acquire centrifugal force sufficient to overcome the springs and they move outward, cutting off the steam and restraining the Engine within the prescribed limits of speed. Now if work be put upon the Engine, the usual process is for the momentum of the Engine to be overcome, reducing its speed until the loss of centrifugal force on the weights allows the springs to draw them into a position that will admit the necessary amount of steam to meet the load, and if still more load be added the speed is reduced still further, etc. **In the case of our Governor** the addition of load does not overcome the momentum of Engine but acts directly on the weights, drawing them into a position that admits the necessary steam. When load is thrown off



the weights are immediately released just in proportion to the change of load. In this way the conditions of load are communicated directly to the steam valve without going through the Engine and the change of load on the belt is met by a corresponding change of steam in the Cylinder, the two being simultaneous. The successful application of this new force, producing as it does, a result so long sought and never before obtained, is a matter of no small importance in the development of the Steam Engine, and particularly so, since the demand in this particular has of late been so exacting.

All parts of the Governor, although revolving with the shaft, are practically motionless in regard to each other. They only move in relation to each other when some change of load or pressure requires a different steam supply, and therefore as there is practically no motion there is necessarily little or no wear.

Nearly every point in the Governor is acted upon by a spring which takes up the lost motion, should any appear. Those points not so arranged have large wearing surfaces of steel and ought not to show wear in a lifetime with the slight motion they have.

# THE VALVE.

(OPPOSITE PAGE.)

**ANOTHER FEATURE** is the opportunity to inspect the Valve when in operation under Boiler pressure by removing the Steam Chest Cover, thus enabling us to detect any leakage and scrape the surfaces until absolutely tight. As the Valve admits steam through it, exhaust steam only escapes when Steam Chest Cover is removed, thereby making this operation easy.

**FIG. 1** is a Vertical Longitudinal Section through centre of Steam Chest and Valve, and shows the Valve in position to admit steam to one end of Cylinder and exhaust from the other.

**FIG. 2** is a Horizontal Section through centre of Cylinder and Steam Chest, and also shows Valve in the same position as Fig. 1. It will be seen that steam is admitted to the inside of Valve through the middle port of Steam Chest. The Valve consists of two flat valves placed with their backs toward each other, and having on their backs circular sleeves nicely fitted to each other, the inside sleeve being provided with suitable packing rings to maintain a steam tight joint. The telescopic motion of these sleeves allows each valve to adjust itself to its seat.

**FIG. 3** shows the Valve in position and also shows the arrangements of ports in Steam Chest. The two faces of Steam Chest correspond to the two Valves and are each provided with Steam Ports. As indicated by arrows, (see Fig. 1) steam is being admitted simultaneously to these Ports, and at the same time exhausted from both Ports at the other end. The Steam Chest is therefore filled with exhaust steam which passes down through exhaust pipe at lower side of Steam Chest.

We think any mechanic who understands the subject cannot deny that this Valve is much better suited to the requirements of this class of Engines than anything else made.

As there are nearly 2,000 Engines now in use with this Valve, running through a period of ten years, we think we have a right to speak from experience, and we know whereof we speak when we say that this Valve, in our opinion, has no equal.



Side view of Valve as it appears in the engine without nut.



Side view of Valve with telescopic sleeve drawn apart.



View of Valve resting on its side showing its upper face and interior.