

New Inventions.

Elliot's Compound Governor.

This invention consists of a combination governor, which is composed of a speed of a governor and a resistance governor, so combined to act upon a throttle valve or its equivalent, by which the steam or other motive agent is supplied to an engine or other motor, that each shall exert its proper effect without interfering with the action of the other.

Fig. 1 is a projection of the resistance governor. Fig. 2 is a perpendicular section between the two disks. Fig. 3 is an elevation of the compound valve and speed governor. Fig. 4 is a plan of the compound valve. Similar letters of reference indicate the same parts in the several figures.

This governor was invented by General Poncelet, 1830, and published in his *Lecons de Mecanique Professees a l'ecole d'application*, but it was not then, as now, combined with the speed governor.

The resistance governor may be applied directly to the main shaft of the engine or motor, or to any intermediate shaft between it and the machinery, but preferably to a shaft of the last named kind, when such is used. This shaft is represented by A. The principal parts of the governor are two disk wheels or heads, B and B', of equal size, and a slide, C. The disk, B, is firmly secured to the shaft, A, and the disk, B', forms a part of the main driving pulley or gear wheel, which receives the power from the engine, as represented in fig. 1. The disk, B' is capable of turning, to some extent, on the shaft, A. The two disks are placed close together, and their opposite faces are furnished with similar or corresponding projections of those which on disk B are marked *a a*, and those on disk B' are marked *a' a'*; attached to either disks are a series of springs, *b b b*, which act between the projections of the two disks in opposition to the driving power applied to disk B', so that when power is applied to drive the machinery it is transmitted to disk B by the springs. The disk, B', is cut away at two opposite parts of its periphery to receive two plates, D, which are secured to it, and contain grooves, *c*, which run obliquely or spirally to the shaft; these grooves are for the purpose of receiving stud, *d*, formed upon the ends of the bolts, *e e*, which are firmly secured to the arms, E, on the slide, C, and which slide freely through holes bored through disk, B, to receive them. The slide, C, consists of a hub fitted to slide freely along the shaft, A, at the back of the disk, B, and furnished with two arms, E, for carrying the bolts, *e*. The hub is grooved to receive the fork of the lever, F, which is attached to the valve gate or cut-off by means of rod, *g*, upon which the governor acts to control the speed.

Fig. 2 represents the face of disk B, and also the projections of disk B', with the springs in their position between the disks. The broken projections, *a a*, belong to disk B, and the projections *a' a'* belong, as they are represented, to disk B'.

The resistance governor operates in the following manner:—When the motive power is applied through disk B', the springs, *b b b*, yield more or less, in proportion as the resistance increases or diminishes; thus the disks are caused to advance or recede relatively to each other. These changes in the relative position of the disks cause the spiral grooves, *c*, on disk B', to act upon the bolts, *e*, which slide through the disk, B, and move the slide, C, along the shaft, and thus, through the agency of lever F and rod *g*, to operate upon the throttle valve, gate, or cut-off, in the required manner and degree to govern the speed.

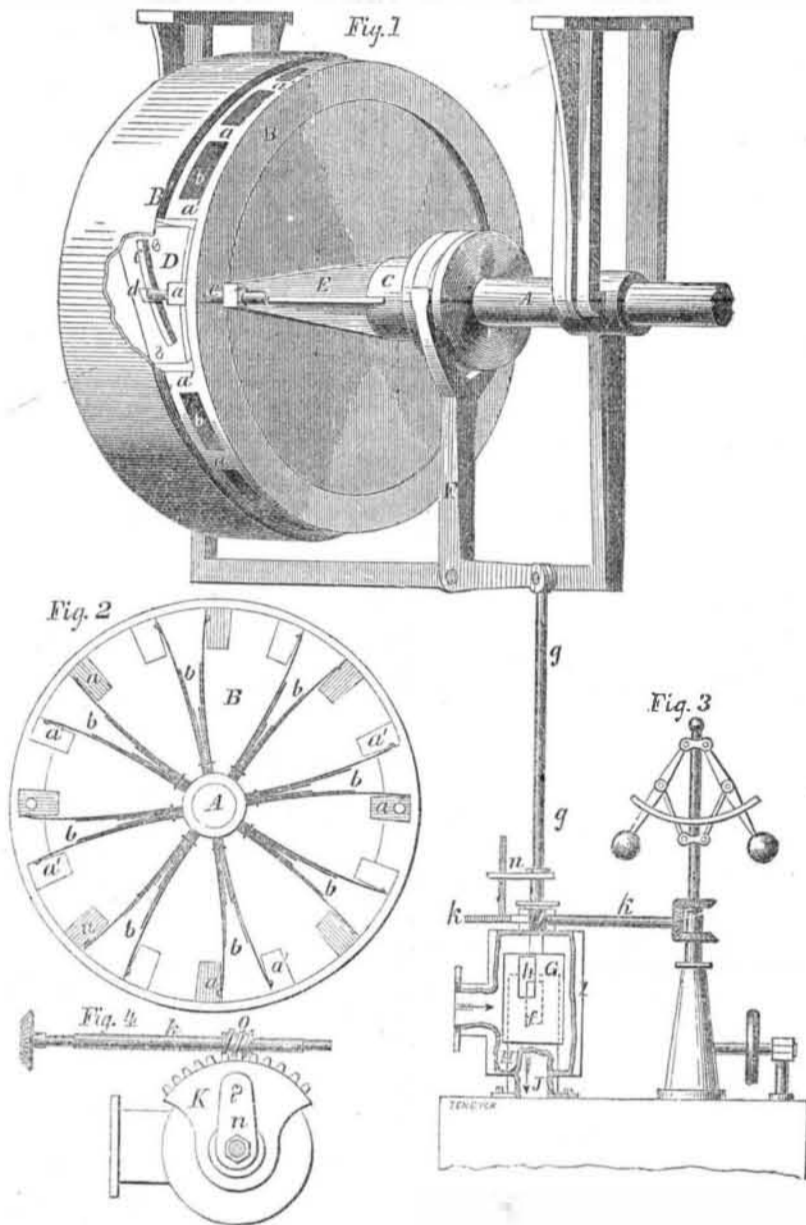
The compound valve, G, represented in figs. 3 and 4, is in the form of a hollow cylinder, open at one end and closed at the other. It fits over the end of the steam pipe, H, which brings the steam from the boiler, and is enclosed in a valve box, I, (a portion of which is broken away to show the valve) in which it is entirely surrounded by steam, the said valve box having an outlet, J, for the passage of the steam to the cylinder of the engine. The end of steam pipe, H, is closed, but there are

slotted openings, *f*, on opposite sides, which correspond with openings, *h*, in the valve. The lever, F, is connected with the valve rod, *g*, so as to move it longitudinally upon the pipe, and in that way by changing the longitudinal relations of the openings in the valve and pipe, to vary the effective opening in proportion as the resistance of the machinery varies.

The speed governor is connected with the rod, *g*, but in such a way as to turn the valve on the pipe, and thus to change the relation of the openings in a circular direction.

Fig. 4 shows the manner in which the speed governor opens and closes the valve. The toothed segment, K, is attached to, and turns to some extent upon the valve box, I, and is connected with the speed governor by means of shaft *k*, and endless or worm gear, *o*; rod *i* is firmly fastened in the segment, K, and passes freely through the small arm, *n*. This arm is secured to valve rod, *g*, so that when the segment is turned by the shaft, *k*, the valve rod, *g*, is also turned by means of rod, *i*, and arm, *n*, so as to operate the valve in a circular direction. By this arrangement the two

IMPROVED COMPOUND GOVERNOR.



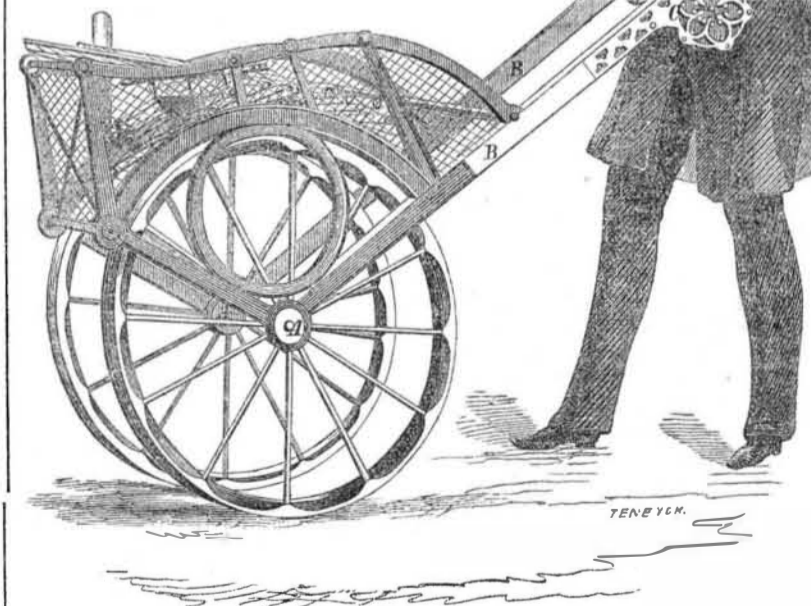
governors act independently of each other upon the motive power, providing equally for any change in the amount of power or change in the resistance, however sudden, producing thereby a perfectly uniform speed under all circumstances.

The compound governor may be applied to the water wheel, by so constructing the gate as to open and close the channel of power by means of two slides moving in a direction at right angles to each other, one still being attached to the speed governor, and the other to the resistance governor.

The compound governor applies with peculiar advantage where the resistance of the machinery driven is subject to great and sudden changes, as the resistance governor opens or closes the valve on the instant the change takes place, without waiting until the speed is changed before the necessary alteration in the motive power is effected. The resistance governor being a sort of spring balance, by which resistance is accurately weighed and its equivalent of power made continually to bear upon said resistance, however much or rapidly it may change. It also applies with equal advantage to those manufactories where irregular speed injures the machinery or its product, particularly where it is necessary to run the machinery considerably below its maximum speed, lest the unavoidable irregularity of the speed governor, when used alone, should occasionally raise it so high as to destroy, or at least injure the article of manufacture, as the throwing off of any heavy piece of machinery

would not occasion any increase in the speed of the rest.

For further information apply to or address the inventor, W. H. Elliot, Plattsburgh, N. Y.



A light gilding of gold may be put on polished iron, by brushing it over with a solution of gold in sulphuric ether. The blades of knives, &c., are often gilded in this manner.

Washing Silver Ware.

It seems that housekeepers who wash their silver ware with soap and water, as the common practice is, do not know what they are about. The Philadelphia *Ledger* states that the proprietor of one of the oldest silver establishments in that city, says that "housekeepers ruin their silver by washing it in soap suds; it makes it look like pewter. Never put a particle of soap about your silver, then it will retain its original luster. When it wants polish, take a piece of soft leather and whiting and rub it hard."

Porpoise Skin Leather.

At a recent meeting of the London Society of Arts, some leather made of the skins of white porpoises was exhibited. Some pairs of boots had been made of it. It was equal in softness to calf-skin, and far more durable.

New Land Measuring Instrument.

In No. 32, present volume, of our paper, we presented engravings of a neat little pocket instrument for measuring surfaces, the invention of Mr. Louis Young, of New York City. We there stated that the same principles of construction were applied, on a larger scale, to the measuring of land, and surveying purposes generally.

Our engraving illustrates the adaptation of the improvement as a land measuring instrument. It consists of a pair of light ornamental wheels and frame, made in the form shown. Within the hubs, A, is an eccentric, the rods of which extend through the hollow side pieces, B, to the registering disks at C. The disks at C are divided into links, chains and fractions of the diameter of the measuring wheels. Every revolution of the wheels moves the disks one cog. In use the surveyor pushes the instrument before him over the surface of the ground, and when a given point has been reached, the disks at C will indicate correctly the precise distance traveled. The use of the chain, with its tediousness, halts and starts, calculations and adjustments, is avoided, much time saved, errors prevented, &c. Above the wheels there is a wicket framing or basket, in which various surveying instruments and other articles may be carried. The method in which this improvement operates

to, register and keep account of the distance traveled will be clearly understood by reference to the former engravings in No. 32.—Their cost is from \$50 to \$75. Patented Nov. 20, 1855. Address the inventor, No. 1 Whitehall St., N. Y., for further information.