PROFESSOR EDISON'S NEW CARBON RHEOSTAT.

In quadruplex telegraphy it is vital to the working of the system to perfectly balance the electrical current.

The common method of doing this is to employ a rheostat containing a great length of resistance wire, more or less of which may be thrown into or cut out of the electrical circuit by inserting or withdrawing plugs or keys. This operation often requires thirty minutes or more of time that is or might be very valuable.

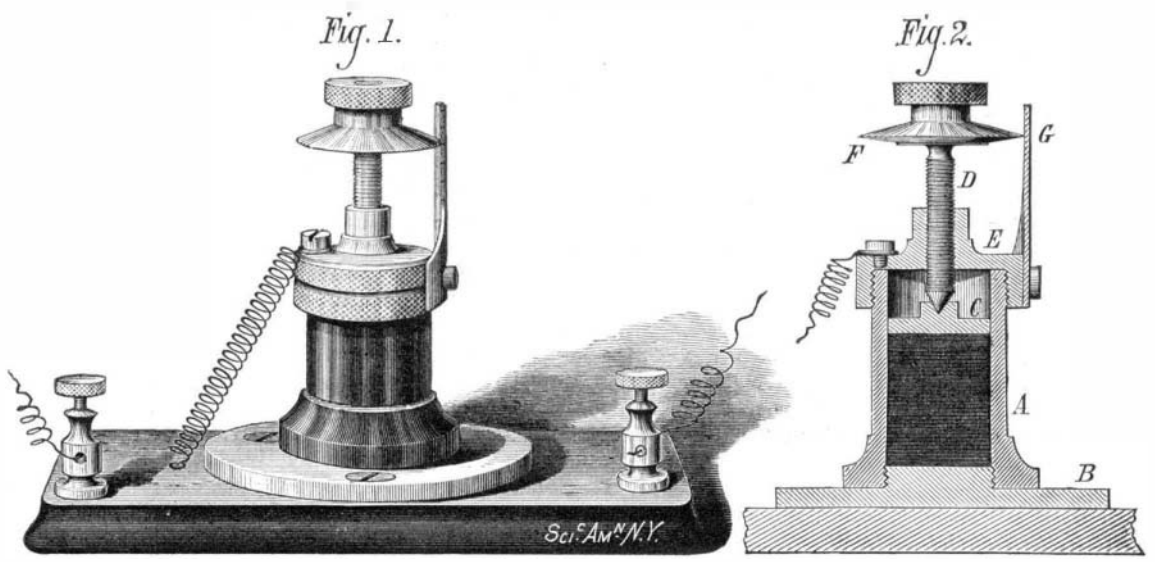
To remedy this difficulty Mr. Edison has devised the instrument represented in the engraving, Fig. 1 being a perspective view and Fig. 2 a vertical section.

A hollow vulcanite cylinder, A, is screwed on a boss on the brass plate, B. Fifty disks—cut from a piece of silk that has been saturated with sizing and well filled with fine plumbago and dried—are placed upon the boss of the plate, B, and are surmounted by a plate, C, having a central conical cavity in its upper surface. A pointed screw, D, passes through the cap, E, at the top of the cylinder, A, and projects into the conical cavity in the plate, C. The screw is provided with a disk, F, having a knife edge periphery which extends to the scale, G, and serves as an index to show the degree of compression to which the silk disks are subjected.

The instrument is placed in the circuit by connecting the cap, E, with one end of the battery wire and the plate, B, with the other end.

The principle of the instrument is identical with that of Mr. Edison's carbon telephone. The compression of the series of disks increases conductivity; a diminution of pressure increases the resistance. Any degree of resistance within the scope of the instrument may be had by turning the screw one way or the other.

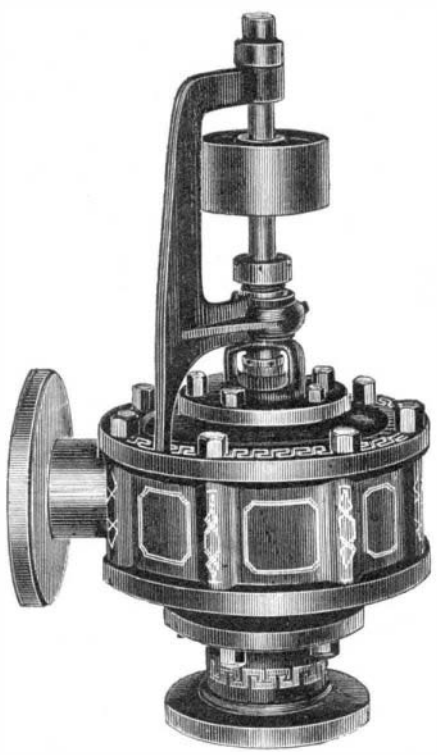
In this instrument the resistance may be varied from 400 to 6,000 ohms, and any amount of resistance may be had by increasing the number of silk disks.



PROFESSOR EDISON'S NEW CARBON RHEOSTAT.

THE CHASE ELEMENTAL GOVERNOR.

The Chase governor is constructed on the following principles: First, to inclose the centrifugal mechanism in the same chamber with the governor valve; and, second, to locate the centrifugal force in the valve or valves themselves. The first is claimed to obviate friction of steam packing, and unbalanced pressure; for, since the centrifugal mechanism is itself immersed in the steam, there is no need of a steam-tight connection between it and the valve, and for the same reason there can be no unbalanced pressure. The



THE CHASE ELEMENTAL GOVERNOR.

avoidance of lost motion is accomplished in a manner claimed to be equally effectual. The governor valves, two in number, are themselves made to revolve about an axis in such a manner that the centrifugal force acts on them directly without the intervention of any supplementary parts whatever; they are, in fact, centrifugal valves. A spiral spring is employed as the complement of the centrifugal force, to open the valves when the speed slackens, and this spring is attached directly to the valves, stretching from one to the other across the axis of revolution.

In the annexed engravings, Fig. 1 is a vertical longitudinal section, and Fig. 2 is an end view of the interior parts, the cover of the case being removed to show the same. The governing mechanism consists of the hollow revolving flier, B, with its two pairs of flat hollow arms, C C C C, the two valves, D D, and the spring, E. The hollow arms, C, have ports, O O O O, near their outer ends, opening inward toward each other, and the two valves, D D, are flat blocks of metal, one being fitted between each pair of arms, so that by moving out and in they cover and uncover the ports. The steam, as shown by the arrows, enters the flier, B, through a pipe screwed into the case, thence passing through the hollow arms, C, and ports, O, into the interior of the case, A; from thence it passes out through the base flange to the engine. A ring on the open end of the flier, B, bears against a shoulder in the case, forming a metallic packing, which prevents steam passing to the engine, except through the governing mechanism.

The valves, D D, as seen in Fig. 2, are pivoted and supported at F F, so as to move in arcs of circles. The spiral spring, E, Fig. 2, is attached to the valves, D D. The flier and valves are driven by the shaft, S. When the speed is too fast the valves, D D, fly out by centrifugal force and cover the ports, O, and when it is too slow, the spring draws the valves together so as to uncover the ports.

The upper valve, Fig. 2, has a slotted arm projecting downward from the pivot, F, and the lower valve has a similar arm projecting upward with a fork at right angles with the former, and furnished with a square swiveled block which plays in the slot of the upper valve, the object being to cause the two valves to move together. An equalizer of this kind is necessary to counteract the alternating action of gravity on the valves in their upper and lower positions.

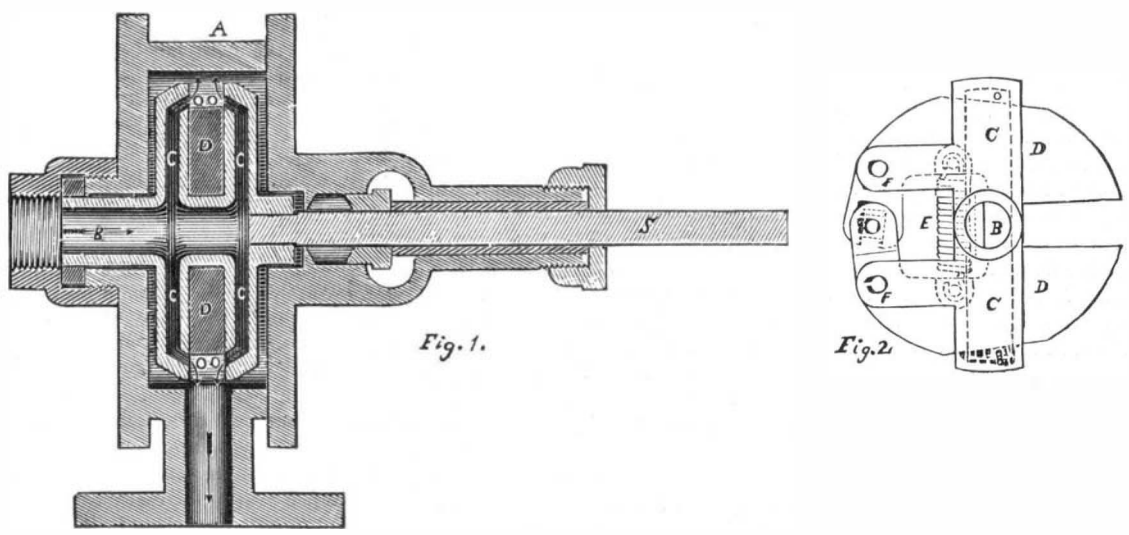
It is claimed that the two valves, being entirely guided and supported by the pivots, and suspended between two vertical valve seats, so that their weight does not bear upon the same, and with no attachments whatever, are as nearly frictionless as possible; and that as the spring is attached to the valves themselves, there can be no lost motion, whether the governor is new or old. The valves will act through minute distances with accuracy, which is the chief requisite of a good governor. The flier, with its hollow arms, lugs for pivots, etc., is cast in one piece, with nothing to unscrew or get loose. The interior parts are readily accessible by removing the cover of the case.

The working edges of the ports and valves are faced with composition to resist steam cut. The pivots have long bearings and very slight motion, and all parts are amply strong and heavy. The shaft is steel, and is supported by a long bearing on each side of the pulley.

We are informed that these machines have been in use for the past three years, having been applied to reversing elevator engines and in other situations, the most difficult that could be found, and have proved themselves capable of enduring the severest tests. The manufacturers believe them particularly adapted for marine engines, on account of their compact form, sensitiveness, and the fact that they cannot be affected by the motion of the vessel. They are also suitable for all portable and traction engines, as the position of the engine does not at all impair the efficiency of the governor.

Small sizes, down to three eighths inch, are made, as it is further claimed that the peculiar construction permits the very smallest size to work with the same accuracy as those of the larger sizes.

For further information address Chase Machine Company, 36 Charlestown street, Boston, Mass.



THE CHASE ELEMENTAL GOVERNOR.

Chinese Wine Powder.

A recent number of the *Journal Officiel* describes an extremely curious method of wine manufacture employed by those odd people, the Chinese, who make a powder or cake of what might be called the concentrated extract of wine. A little of this powder, or a pellet of the cake, dissolved in a glass of water, makes a beverage that is consumed in large quantities in China; and a beverage which, it is said, resembles more or less, as to flavor, the different sorts of wines or spirits. This drink is rather an alcohol than a wine, properly so called; and the powder of which it is composed is obtained by the pulverization either of oats or of barley or rye, or, indeed, of the three grains united (with or without the addition of aromatic or medicinal herbs), after having undergone a certain degree of fermentation.

The flour, or powder, thus obtained, is known in China under the name of *kin-tsee*, and when properly prepared it may be preserved for two or three years. Certain manufacturers in the Celestial Empire have a great reputation for the excellent quality of the *kin-tsee* that they produce, and many different processes are in use for the preparation of the powder, and for improving its flavor. Rice, very carefully cleaned, is also used for making different varieties of wines, and has this particular property, that although in certain methods of manufacture much water is used, its evaporation in this case becomes perfect, and the powder is sold in a state of complete dryness.

Amber Varnish.

Mr. S. Meredith says that the varnish he produces is capable of giving a very superior polish or surface, and is especially valuable for coach and other high-class work. In carrying out his process he first bleaches the amber by placing a quantity—about, say, 7 lbs.—of yellow amber in a suitable receptacle, such as an earthen crucible, of sufficient strength, adding 14 lbs. of sal gemmæ (rock or fossil salt), and then pouring in as much spring water as will dissolve the sal gemmæ. When the latter is dissolved more water is added, and the crucible is stood over a fire until the color of the amber is changed to a perfect white. The bleached amber is then placed in an iron pot and heated over a common fire until it is completely dissolved, after which the melting pot is removed from the fire, and when sufficiently cool the amber is removed from the pot and immersed in spring water to eliminate the sal gemmæ, after which the amber is put back into the pot, and is again heated over the fire until the amber is dissolved. When the operation is finished, the amber is removed from the pot and spread out upon a clean marble slab to dry, until all the water has evaporated, and is afterward exposed to a gentle heat to entirely deprive it of humidity.

To make a varnish, white amber prepared as above described is reduced to powder in a mortar, or otherwise, and