B. P. RUCKER.

FEEDER VOLTAGE REGULATOR.

APPLICATION FILED SEPT. 20, 1910.

1,011,855. Patented Dec. 12, 1911.

Fig. 1.

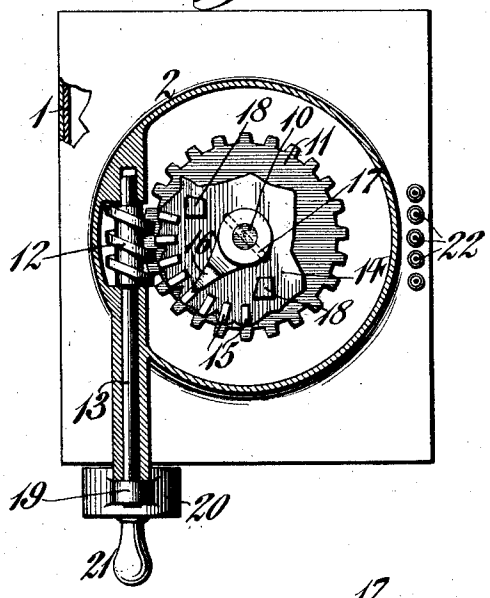


Fig. 2.

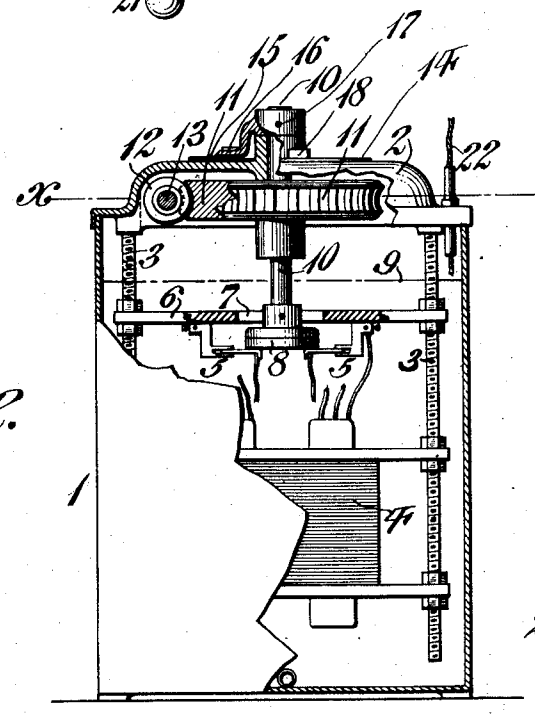
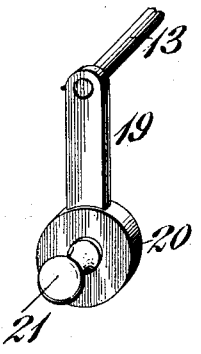


Fig. 3.



WITNESSES

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1,011,855. FEEDER VOLTAGE-REGULATOR. Benjamin Parks Rucker, Charlotte, N. C., assignor to General Electric Company, a Corporation of New York. Filed Sept. 20, 1910. Serial No. 582,032.

To all whom it may concern:

Be it known that I, Benjamin Parks Rucker, a citizen of the United States, residing at Charlotte, in the county of Mecklenburg, State of North Carolina, have invented a new and useful Feeder Voltage-Regulator, of which the following is a specification.

This invention relates to a new and useful regulator for non-automatically compensating the voltage of an alternating current circuit and can be used with equal facility on single or polyphase circuits and has for its object to actuate a regulating transformer where the voltage has fallen or risen above the desired point.

It has for a further object to provide a regulator which is self adjusting to maintain a closed circuit whereby it becomes substantially impossible for the contact mechanism to come to rest between two adjacent points, that is, the circuit closer is at all times in exact engagement with one of the several contacts.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a section of a voltage regulator embodying my invention, said section being taken on line *x*—*x* of Fig. 2. Fig. 2 represents an elevation in partial section of my novel regulator. Fig. 3 represents a perspective of one of the parts shown in Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a casing or other suitable tank in which the operating parts of the mechanism are inclosed. 2 designates a cover for the same which, in the present instance, serves as a support for a plurality of rods 3 preferably threaded and adapted to carry a suitable transformer 4 of any desired step type. Stationary contacts 5 for this transformer are suitably mounted on a support, such as a board 6 or the like, also carried by the rods 3, said board having an opening 7 therethrough to permit the contacts on disk 8 to pass into engagement with the stationary contacts 5. This step transformer 4 and its contact mechanism are of any desired type, and I preferably show them herein operating in oil or the like, the level of which is indicated at 9, whereby all the parts are submerged in oil and are protected from the outside.

10 designates a shaft suitably journaled, in the present instance, in the cover 2 and carrying thereon the contact carrying disk 8 and also a worm wheel 11, which latter is in mesh with a worm 12 carried by a spindle 13 suitably mounted.

14 designates a dial suitably secured to the cover 2 and having thereon a plurality of index points 15 spaced apart and alined with respect to the contacts 5 of the transformer. These index points 15 are respectively ridden by an index finger 16 fixedly secured to the shaft 10 by a pin 17 or other suitable fastening means, and it will be apparent that if the worm 12 is rotated a similar movement will be imparted to the worm wheel 11, thus turning the shaft 10 and causing the index finger 16 to move from one point to another as desired, thus showing position of contacts on disk 8. Suitable stops 18 are provided to limit the movement of the index finger in either direction.

19 designates a crank arm suitably secured to the spindle 13 and carrying a counterweight 20 to which the operating handle 21 in the present instance is attached. It will thus be noted, should the crank arm 19 be partially rotated in one direction or the other and released, that the weight of the end thereof is sufficient to return the same to normal position, that is, in the present instance in a vertical position, and thus shifting the worm wheel 11 so as to bring the index finger 16 over one of the index points 15. The efficiency of this arrangement will be appreciated when it is seen that the index finger 16 is thereby prevented from stopping between any of the index points 15 and thus contacts on disk 8 will not stop between contacts 5, and therefore no interruption of the circuit is permitted.

22 designates feed wires receiving current from any suitable source and delivering the same to the transformer as will be readily apparent.

In the operation of the device the parts are positioned as indicated in Fig. 1 for any particular voltage, and should at any time the voltage fluctuate, taking for example, a drop in voltage, the transformer may be

compensated by rotating the spindle 13 through the medium of the crank arm 19 so as to cause a shifting of the contacts on the disk 8 with respect to the contacts 5, whereby the transformer is immediately regulated for the change in the voltage.

It will be noted, if for any reason the crank arm 19 is released before a complete revolution, that the rotation of the index point 16 and contact carrying disk 8 will still continue due to the counterweight 20 dropping and thus bringing the parts to rest in a closed circuit position. It will of course be understood that should the voltage rise, the spindle 13 is to be turned in the opposite direction to effect the reverse compensating action.

It will now be apparent that I have devised a novel transformer regulator which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character stated, a current controlling device, a plurality of contacts for said controlling device, a shaft carrying one set of said contacts, a spindle rotatably mounted adjacent said shaft, gearing between said spindle and shaft, a crank arm for manually operating said spindle, and a counterweight carried by said crank arm.

2. In a device of the character stated, a current controlling device, a plurality of contacts for said controlling device, a shaft carrying one set of said contacts, a spindle rotatably mounted adjacent said shaft, a worm wheel fixedly secured to said shaft, a worm mounted on said spindle and meshing with said worm wheel, a crank arm for manually operating said spindle, and a counterweight carried by said crank arm.

3. In a device of the character stated, a current controlling device comprising a plurality of stationary contacts and a movable contact, a shaft carrying said movable contact, a spindle rotatably mounted adjacent said shaft and operatively connected thereto, means to rotate said spindle and gravity controlled means for causing said movable contact to positively engage one or another of said stationary contacts.

4. In a device of the character stated, a current controlling device comprising a plurality of stationary contacts and a movable contact, a shaft carrying said movable contact, a spindle rotatably mounted adjacent said shaft, means between said spindle and shaft to shift said movable contact to either of the next adjacent stationary contacts during one revolution of said spindle and gravity controlled means for causing said movable contact to positively engage said adjacent contact.

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