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DEVICE FOR CONTROLLING POWER CIRCUITS
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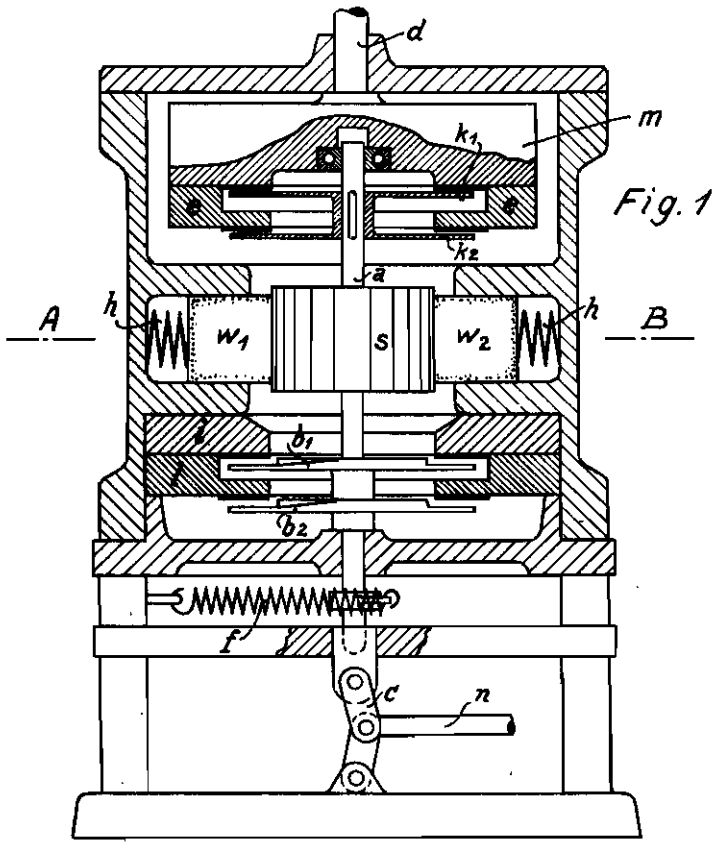


Fig. 1

Fig. 2

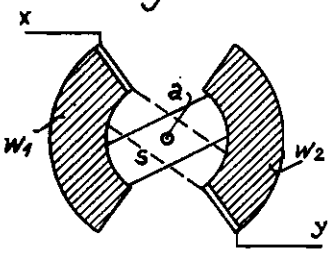
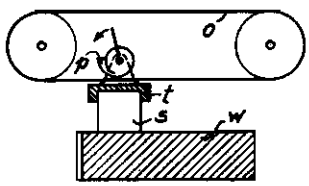


Fig. 3



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DEVICE FOR CONTROLLING POWER CIRCUITS

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This invention relates to a device for controlling power circuits in which instead of the usual power circuit breaker a rapidly varying resistor is employed in the circuit to be interrupted. It has been found that it is necessary to displace this resistor with a very high speed, particularly when interrupting overloads. To this end, the movable part of the variable resistor is provided according to the invention with a drive which displaces it under a sudden blow or impact. The resistor is preferably designed in the form of a resistor with a sliding contact.

To operate the device the movable part of the variable resistor may be coupled, for instance, with a movable mass. In this case the material may be stressed by the impact approximately up to the limit of permanent deformations in order to attain as high an acceleration as possible of the part to be moved. The driving mass consists preferably of a revolving body which is to be brought into engagement with the movable part of the variable resistor. However, the mass may also be associated with a revolving endless flexible member, such as, for instance, with a band or a chain. The mass itself may be designed as a flexible member or the flexible member may be employed as a support for the driving mass. If the stroke of the variable resistor is short its movable part may also be driven by a mass moved in the direction of displacement of the movable part or perpendicularly thereto and whose path along which it moves is straight at least in the region in which the mass acts upon the movable part of the resistor. The control movement may be derived, for instance, by a wedge action from a transverse movement of the driving mass.

To connect the resistor with the drive also a coupling with a short travel and a small mass of its driven part may be employed. This has the advantage that no time is lost during the coupling before the resistor has been displaced.

In the accompanying drawings is shown an embodiment of the invention in diagrammatic form.

In Fig. 1 the variable resistor consists of two resistance bodies *w1*, *w2* between which a contact *s* is rotatably mounted. Fig. 2 is a sectional view taken along the line A—B of Fig. 1 and represents schematically the form and the arrangement of the resistance bodies and contact and their connection with the circuit *xy* to be interrupted. The resistance bodies are mounted in the housing *g* of the device and are under the influence of the springs *h* which establish the contact pressure necessary between the resistance bodies and the contact *s*. The contact is mounted on a vertical shaft *a* provided at the upper end thereof with two disks *k1*, *k2* which form a part of a friction coupling. A flywheel mass *m* suspended from the shaft *d* rotates above these disks and is driven by a motor not shown. The friction surfaces cooperating with the coupling disks *k1*, *k2* are arranged beneath the mass *m* and beneath a ring *e* secured to the mass. If the lower end of the shaft *a* is raised by means of a toggle joint lever *c* the coupling disks come into engagement with the friction surfaces of the flywheel mass and are driven by friction. The toggle joint lever c is actuated through a control lever *n* by means of an electromagnet (not shown).

The contact *s* does not make a complete revolution but performs only a portion of a revolution until it comes into the end position shown in dotted lines. The movement may be braked by a disk brake secured also to the shaft *a*. The disks *b1* and *b2* are designed in the form of helical surfaces in such a manner that at the beginning of the movement of the contact there is a clearance between the braking surfaces carried by the rings *i* and *l* and the disks. At the end of the movement the disks come into engagement with the braking surfaces so that a braking occurs. To return the contact to its initial position a spring *f* is employed secured to the shaft *a*.

Fig. 3 shows schematically another form of the invention in which the movable part *s* of the variable resistor is driven by a revolving band *o* whose mass is so chosen that it displaces the contact *s* under a sudden blow after the latter has been connected therewith. This connection is brought about by friction in the manner that the eccentric *p* presses the band o against the back of the contact *s* or its support *t*.

If a rigid coupling serves to connect the movable part with its drive, known devices are preferably provided to facilitate the engagement of the coupling in order that the latter does not break under a sudden blow. If a revolving chain is, for instance, employed for the drive a rigid coupling member, for instance, a hook or a pin which establishes the connection with the movable part of the variable resistor may be brought before coming into engagement into a favorable position with respect to the links of the chain by means of a guide device, for instance, by means of an auxiliary chain or the like.

Also elastic members which damp the shocks occurring when coupling may be employed in the drive.

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