

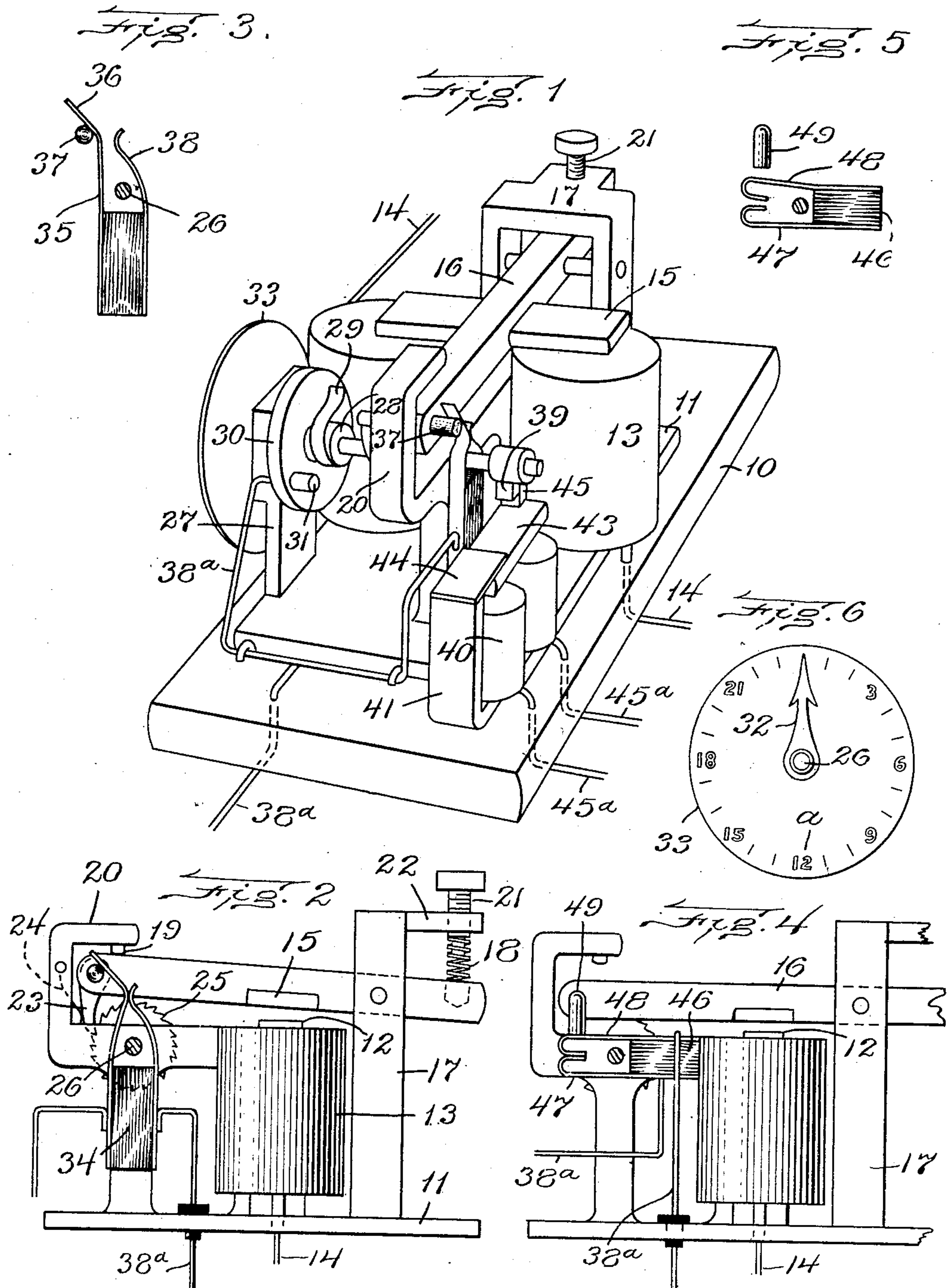
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CONTROLLING MECHANISM FOR ELECTRIC SIGNALING SYSTEMS.

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UNITED STATES PATENT OFFICE.

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TO INTERNATIONAL TELEMETER COMPANY, A CORPORATION OF ARIZONA TERRITORY.

CONTROLLING MECHANISM FOR ELECTRIC SIGNALING SYSTEMS.

No. 864,129.

Specification of Letters Patent.

Patented Aug. 20, 1907.

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To all whom it may concern:

Be it known that I, WILLARD H. GILMAN, of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Controlling Mechanisms for Electric Signaling Systems, of which the following is a specification.

The present invention has reference to controlling mechanisms, and more especially to those adapted for use in connection with the selective operation of various electrical organizations, such as may be found in telegraph, telephone or lighting systems. Its principal objects are to provide simple and effective means for closing individually and at will one or more of a number of local circuits, and also to provide a lock operable from a distance for preventing unauthorized use of the apparatus and for synchronizing the instruments of a system.

In the accompanying drawing,—Figure 1 is a perspective view of one embodiment of the invention. Fig. 2 is a vertical longitudinal sectional detail taken adjacent to the relatively fixed contact members. Fig. 3 is a sectional detail showing said contact members in their separated relation. Fig. 4 is a broken sectional elevation similar to Fig. 2, but showing another form of the invention, and Fig. 5 is a sectional detail of the contact members of Fig. 4 showing them separated. Fig. 6 is an elevation of a dial and movable pointer therefor.

Similar characters designate like parts throughout the several figures of the drawing.

As here illustrated, my improved controlling apparatus, which I prefer to call a "telemeter," includes a base 10, upon which is mounted a plate 11 carrying and furnishing the yoke for the cores 12 12 of an electro-magnet 13. The coils of this magnet have terminal conductors 14 14, and cooperating with the cores is an armature 15 carried by a lever 16. The armature lever is trunnioned upon a yoke or double standard 17 rising from the plate and is shown as forced upwardly by a spring 18 cooperating with the shorter end of the lever and bringing it into contact with its back stop 19, this stop depending from the overhanging portion of a standard 20. An adjusting screw 21 threaded through a bracket 22 extending from the upper extremity of the standard 17 has its inner end cooperating with the spring 18, allowing the tension of the latter to be varied.

Pivoted upon the extremity of the longer arm of the lever 16 is a pawl 23 which is forced by a spring 24 fixed to the standard 20 against the teeth of a ratchet wheel 25 fast upon a spindle 26, this being journaled in a standard 27 fixed to the plate and in the back stop standard 20. Secured to or formed upon the spindle is a collar 28 having projecting from it a spring contact brush or flexible member 29 which, as illustrated, is

of generally helical form, but having at its outer end a portion curved in a reverse direction. Situated adjacent to this brush, it being conveniently carried by the standard 27, is a disk or plate 30 preferably of insulating material. Near the periphery of the disk is mounted a relatively fixed contact pin 31 which is of such length that it projects into the path of the outer end of the brush 29. By securing the disk to the standard at different angles or by varying the circumferential position of the opening in which the pin 31 is mounted, the location of the relatively fixed element of this pair of contacts 29 and 31 may be adjusted so that where the instruments are used at different stations upon the same system the contacts may be made at different times and successively. Carried upon the extremity of the spindle 26 is a hand or pointer 32 which corresponds in angular position to the brush and which moves over a dial 33 having about its outer face near its edge a series of numerals *a* corresponding to different stations.

Situated near the lever 16, conveniently mounted upon the standard 20, but insulated therefrom by a block 34, is a contact spring 35 having an inclined end portion 36 with which coöperates a stud 37 projecting from the end of the lever. Upon the opposite side of the block is a companion contact spring 38. A conductor 38^a connects the pairs of contacts 29 31 and 35 38 in series, the brush being included through metallic elements of the instrument.

Secured to the opposite extremity of the spindle 26 from the dial is a stop arm 39 and adjacent to it upon the plate 11 of the telemeter is mounted an electro-magnet 40. This in the present instance is of the club-foot type having a combined yoke and upright 41, to the upper extremity of which is attached an armature 43 by means of a supporting spring 44 which retracts the armature to bring a stop projection 45, rising from its free end into the path of the arm 39. When the armature is attracted by the magnet, its projection 45 is withdrawn from coaction with the stop arm, leaving the spindle and brush 29 free to rotate. These elements constitute a locking mechanism for the controlling apparatus, terminal conductors 45^a permitting the connection of the windings of the magnet 40 with the circuits of the system in which the apparatus is to be employed.

In using my controlling mechanism the conductors 14 and therefore the magnet 13 may be connected in the main or controlling circuit, while the conductor 38^a and connected contacts form a part of a local circuit or circuits, associated with which is the mechanism to be controlled. The magnet 40 and terminal conductors 45^a through a suitable circuit may receive current to hold the armature projection out of the path of the

spindle arm. On the other hand, if this last-mentioned circuit is left open, the brush 29 will be locked against advance at its zero position, as indicated upon the dial, this occurring when the spindle arm contacts with the armature projection 45 and furnishing a means of bringing into step all instruments in a system. In this manner the operation of all the telemeters is made susceptible to control from a single distant point at which is located means for governing the current flowing through the magnet 40.

It being assumed that the instrument is unlocked by the attraction of its armature 43, every electrical impulse sent over the circuit including the magnet 13, will draw down the armature lever, and its pawl will advance the brush 29 to a point opposite the succeeding numeral of the dial. This will eventually bring the brush into contact with its pin 31. At this time the pressure of the stud 37 is removed from the contact spring 35 so that this is permitted to separate from its companion contact, thus opening any local circuit connected with the conductor 38^a, and consequently no current flows therethrough. Thus an inactive condition of the apparatus is maintained during the normal closure of the line. Upon the upstroke, however, the elements 29 and 31 are left in contact, since it requires successive reverse movements to bring them together and separate them while 35 and 38 are now pressed together by the stud. If it is desired that the telemeter under consideration shall operate the apparatus which it controls, this closure of the contacts is maintained by leaving the circuit 14 open long enough for said apparatus to act, whereupon the indicating hand and consequently the brush may be returned to zero by further successive current impulses, when it is ready for another operation. If the telemeter is not to exert its control, the opening of the circuit through the main magnet 13 is made so brief during the contact of the elements 29 and 31 that because of inertia, adjustment or some other condition peculiar to the system in which it is used, the apparatus it governs is not operated and its excursion from zero back to zero is without effect.

My improved apparatus is capable of many embodiments which are within the spirit of the invention.

For example, it may be arranged for use upon normally open local circuits, instead of those normally closed, as in the application of the instrument just described. In Figs. 4 and 5 of the drawing such a form of the apparatus is illustrated. Instead of contacts 35 and 38 closing in the retracted position of the lever 16, an insulating block 46 supports horizontally-extending lower and upper spring contacts 47 and 48, respectively, the latter exerting its resiliency to separate from its companion when the armature lever is raised. When the armature is drawn down a stud 49 depending from its lever presses against the spring 48 to close the conductor 38^a at this point and, during the time that the contacts 29 and 31 are in coöperation, entirely completing the portion of the circuit at the telemeter. Otherwise the construction and operation of the instrument may be as already described.

I claim:

1. A controlling apparatus comprising an electro-magnet and its armature, a contact device made and broken by successive reverse movements of the armature, a second contact device made and broken upon each movement of the armature, and locking means for preventing the operation of one of the contact devices. 65
2. A controlling apparatus comprising an electro-magnet and its armature, a rotatable spindle, means for communicating movement of the armature to the spindle, a contact member rotatable by the spindle, a relatively fixed contact member with which the rotatable member may coöperate, an arm projecting from the spindle, a second electro-magnet, and an armature for the last-named electro-magnet movable into the path of the spindle arm. 70 75
3. A controlling apparatus comprising an electro-magnet and its armature, a lever upon which the armature is supported, said lever being provided with a projection, a rotatable spindle, means for communicating movement of the armature lever to the spindle, a contact spring projecting from the spindle, a relatively fixed contact member with which the spring may coöperate, a pair of contact elements situated adjacent to the armature lever and one of them being movable by the lever projection, a revoluble arm carried by the spindle, a second electro-magnet, and an armature for the last-named electro-magnet provided with a projection movable into the path of the arm. 80 85

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLARD H. GILMAN.

Witnesses:

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