No. 675,675. Patented June 4, 1901.

U. G. ROGERS.

ARMATURE AND MAGNET ADJUSTING DEVICE FOR RELAYS OR OTHER ELECTRIC INSTRUMENTS.

(Application filed Mar. 5, 1901.)

(No Model.)

Fig. 1.

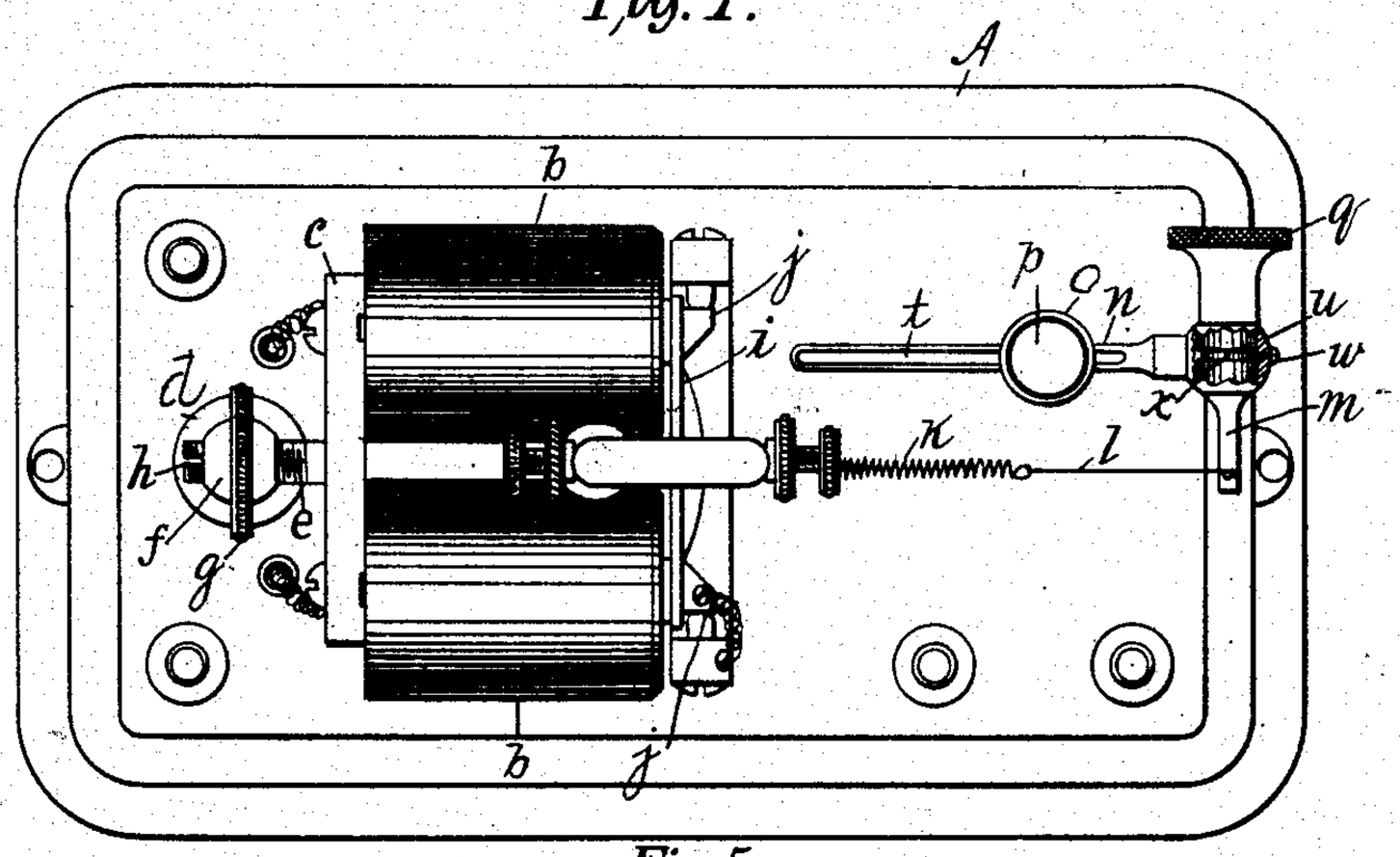


Fig. 5.

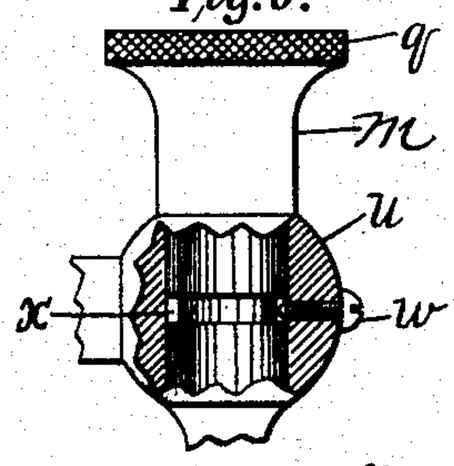


Fig. 2.

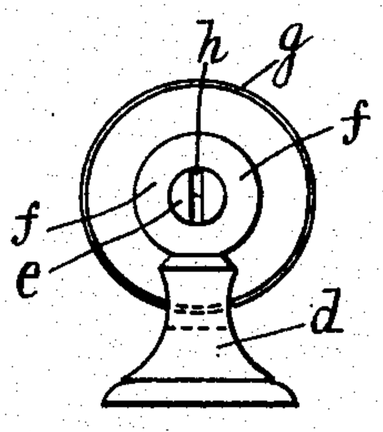


Fig. 3.

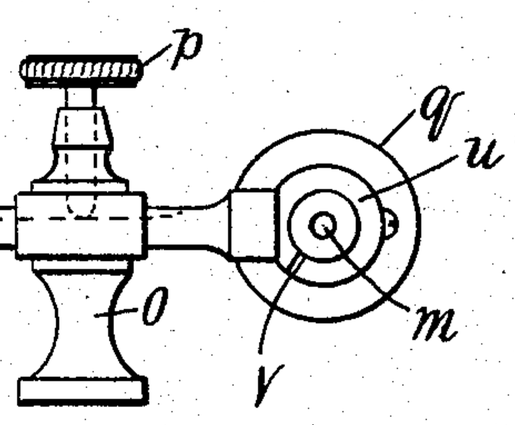
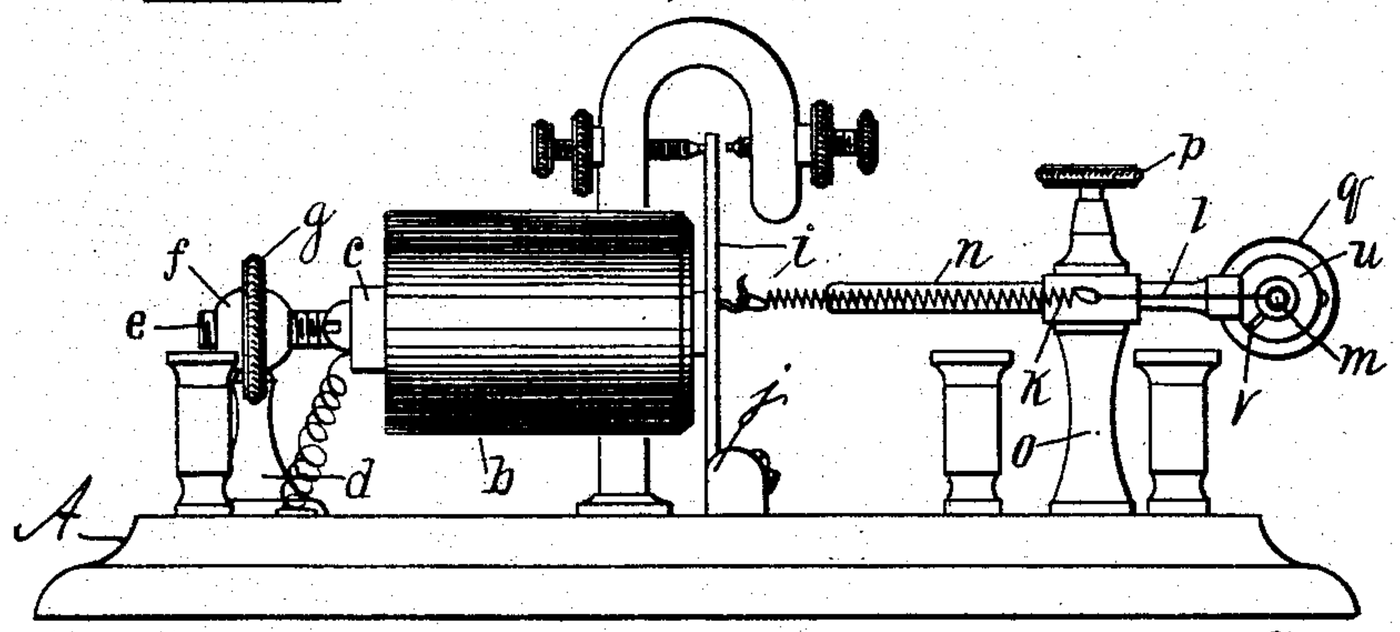


Fig. 4.



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ULYSSES G. ROGERS, OF NEW YORK, N. Y.

ARMATURE AND MAGNET ADJUSTING DEVICE FOR RELAYS OR OTHER ELECTRIC INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 675,675, dated June 4, 1901.

Application filed March 5, 1901. Serial No. 49,911. (No model.)

To all whom it may concern:

Be it known that I, ULYSSES G. ROGERS, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Armature and Magnet Adjusting Devices for Relays or other Electric Instruments, of which the following is a specification.

My invention consists of improvements in the constructions of armature and magnet adjusting devices whereby it is designed to simplify the same and cheapen the cost and also to provide better and more reliable instruments, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of a relay instrument provided with my improved adjusting devices, with a part in section. Fig. 2 is a rear elevation of the magnet-adjusting devices. Fig. 3 is a side elevation of the armature-adjusting devices. Fig. 4 is a side elevation of the relay instrument. Fig. 5 is a detail on an enlarged scale.

A represents the base of the instrument; *b*, the magnet-spools; *c*, the iron bar connecting the cores of the magnets; *d*, the post, and *e* the stud attached to the iron bar and fixed in the head *f* of the post for supporting and adjusting the iron bar and the magnet-cores attached to said bar. This stud *e*, which projects backward horizontally from the center of the iron bar through a hole in the head *f* and is screw-threaded in the part extending through said hole, is in the common construction provided with an adjusting-nut each side of the head for being adjusted by slackening the nuts and setting the stud along one way or the other and then tightening up the nuts to hold it in the fixed position, or in some cases a nut is used on one side of the post and a spring on the other side.

According to my improvement the head *f* of the post is slotted from the top downward centrally and transversely of the hole, and a disk-nut *g* for the stud *e* is fitted snugly therein, and the stud *e* is slotted from the end along the screw-threaded part, as shown at *h*, whereby the natural tendency of the parts of a dense rolled or drawn rod thus slotted to spring apart is made available for producing friction in the nut to hold the nut in any position in which it may be set, so that the nut has only to be turned for adjusting the magnets, while in the common construction an extra nut has to be provided, or a spring and two nuts have first to be unscrewed in the one case, then adjusted, and then tightened up; but while in the other case only one nut has to be adjusted the spring is not desirable for various reasons. Moreover, when the two nuts are slack the stud *e* is slack in the post, while in my construction the stud is as firmly held while being adjusted as when fixed in its position.

The armature is represented at *i* and is pivoted at *j*, as usual.

k represents the tension-spring; *l*, the cord connecting the spring to the adjusting-pin *m*; *n*, the reach-rod supporting the adjusting-pin; *o*, the post supporting the reach-rod, and *p* the binding-screw for the reach-rod, said screw being set in the top of the post *o*.

In the common construction of these instruments the reach-rod is made in angular cross-section in the part sliding in the post *o*, and the hole is of corresponding shape to prevent the rod from turning by the weight of the milled head *q* when the set-screw *p* is slackened for adjusting the rod. Such form of hole and also the angular form of the rod are more expensive to make than round forms, and I have contrived to make use of round forms instead by providing a groove *t* in the upper side of the round reach-rod for reception of the point of the set-screw *p* in such manner that while sufficiently slack to permit the reach-rod to be shifted for adjustment it will effectually prevent said rod from turning.

The reach-rod *n* and its head *u* are formed in one integral construction, the head being of globular or equivalent form, such as may be produced integrally with the rod more cheaply than a head may be made separately and attached to the rod, and the head is bored for reception of the adjusting-pin *m*.

For a constantly-effective friction device in lieu of the adjusting-screw commonly used to prevent the adjusting-pin *m* from turning in the head *u* of the reach-rod by the pull of the tension-spring *k* I saw a radial slit *v* in the head, cutting through to the bore, and fit

the part of the pin bearing therein slightly larger than the hole, so as to expand the head slightly when forced in, and provide a retaining-pin *w*, screwing into the head *u* and at its inner end entering a groove *x*, formed in the pin, so as to prevent the pin from working out, but not obstructing the turning of the pin. Thus the pin *m* is always free to be turned by its head *q* without having to manipulate a set-screw, as is the case with all such adjusting-pins as commonly arranged. The head *u* may be of ample size to afford lasting strength of grip by contraction on the pin. The adjusting-pin *m* and its head are also constructed in one piece, so that with head *u* bored for the adjusting-pin and split for producing the friction by contraction and the adjusting-pin being secured by a retaining-pin *w* and the groove *x* this adjusting device is provided in simpler construction and fewer parts besides being simpler to manipulate. It will be seen that with the exception of the supporting-post *o* only three pieces are used.

I am aware that a reach-rod having an attached tube formed with a taper split end in the form of a chuck having a series of spring-jaws has been used for holding the adjusting-pin; but such construction is manifestly more expensive and the grip less durable.

What I claim as my invention is—

1. The combination in a magnet-adjusting device, of the split expansive screw-threaded stud of the core-connecting iron bar, the supporting-post having the hole for reception of the stud and the slot for the adjusting-nut traversing said hole, and the nut for the stud fitting the slot and constricting the expanding members of the stud.

2. The reach-rod and its adjusting-pin-holding head, formed in integral construction and bored for reception of an adjusting-pin slightly smaller than said pin, and radially split for expanding to receive the pin and to grip and hold said pin by the natural contracting effect of the expansion produced by the pin.

Signed at New York city this 26th day of February, 1901.

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