

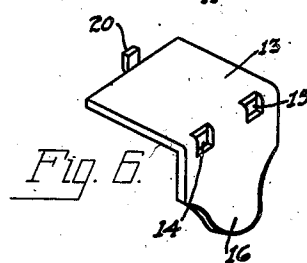
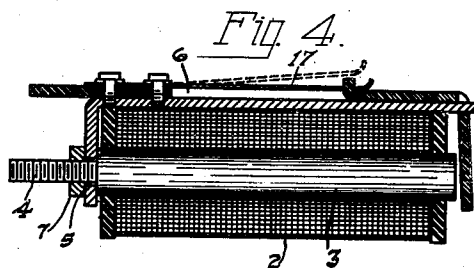
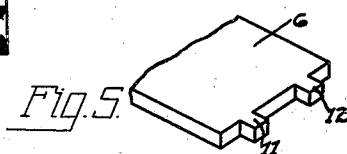
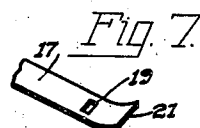
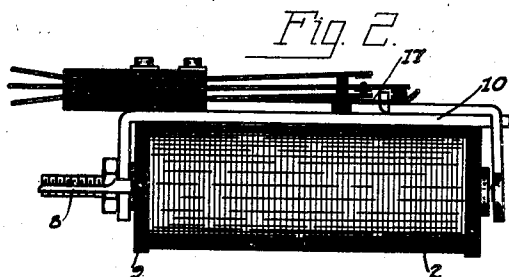
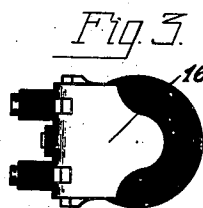
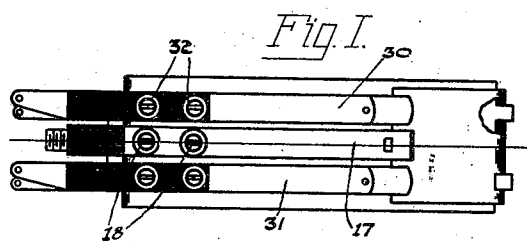
March 16, 1926.

W. KAISLING

1,577,031

RELAY

Filed Jan. 10, 1920



Inventor:
William Kaisling
By Arthur S. Camp,
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM KAISLING, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RELAY.

Application filed January 10, 1920. Serial No. 350,590.

To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States of America, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Relays, of which the following is a specification.

My invention relates to electromagnets for use in electrical circuits and has to do more particularly with relays such as are used in connection with telephone circuits, although relays of this type are also applicable for other uses.

Relays of the present type, as commercially used, are provided with screws or nuts for holding the armatures thereof in position. The screws or nuts for holding the armatures are objectionable, for the reason that it requires some sort of tool or socket wrench to loosen the screws or nuts to remove the armatures of the relays. To overcome this objection, I have arranged a simple but an efficient device consisting of a spring latch secured to the heel iron of the relay for maintaining the armature in its pivoted or fulcrumed position.

For a better understanding of my invention, reference may be had to the accompanying drawings, in which I have illustrated a preferred embodiment of my invention and in which like reference characters in the several views denote like parts, and in which

Fig. 1 is a plan view of the relay of my invention;

Fig. 2 is a bottom view of Fig. 1;

Fig. 3 is a right end view of Fig. 1;

Fig. 4 is a sectional view along the line 4-4 of Fig. 1;

Fig. 5 is a perspective view of the supporting end of the heel iron;

Fig. 6 is a perspective view of the armature; and

Fig. 7 is a perspective view of part of the latch spring.

Referring now more in detail to my invention as illustrated, the relay A comprises an energizing winding 2 wound upon a suitable core 3, which core 3 is provided with a screw-threaded extension 4 which passes through a suitable opening in the angular extension 5 of the heel iron 6. The core 3 and winding 2 are suitably held in place or secured upon the angular extension 5 of

the heel iron 6 by means of a nut 7, which nut 7 has screw-threaded engagement with the threaded extension 4 of the core 3. Suitable terminals 8 for the energizing winding 2 of the relay A are provided and are secured to the rear head 9 of the relay spool and form terminals for the exterior circuit connections.

The arm 10 of the heel iron 6 extends parallel with the coil 2 and is provided with integrally formed lugs 11 and 12, which form supporting means for the armature 13. The armature 13 is provided with orifices 14 and 15 in its arm 16, the said orifices 14 and 15 being of a size to receive the lugs 11 and 12, respectively, of the heel iron 6. A spring latch 17 is secured to the arm 10 of the heel iron 6 by means of screws 18, which have screw-threaded engagement with suitable tapped orifices in the said arm 10 of the heel iron 6. The spring latch 17 is provided with an opening 19 in its free end, which cooperates with the angular lug 20 formed integrally with the armature 13.

To secure the armature 13 in its fulcrumed position against displacement, it is placed upon the heel iron so that the lugs 11 and 12 on the arm 10 of the heel iron 6 extend through the orifices 14 and 15, respectively, of the armature 13. The angular lug 20 engages the turned up free end 21 of the spring latch 17, lifting it against its normal tension, and when the lug 20 registers with the orifice 19 in the free end 21 of the latch spring 17, the said lug 20 enters the orifice 19. When the parts are in this position, the armature 13 is firmly held against displacement, as is readily apparent.

To remove the armature 13 from its support on lugs 11 and 12, the spring latch 17 is lifted until the lug 20 leaves the orifice 19 in the free end 21 of the spring latch 17, as shown in dotted lines in Fig. 4. When in this position, the armature 13 may be readily withdrawn from the supporting lugs 14 and 15 of the heel iron 6.

I show a pair of spring combinations 30 and 31 mounted upon the heel iron 6 by means of screws 32, the free ends of the springs extending forward so that one of them may be acted upon by the attracted armature to bring about the closure or opening of the spring contacts, depending upon the spring combination.

In illustrating my invention, I have shown an embodiment worked out for commercial purposes, but it will be obvious to those skilled in the art that minor changes may be made without departing from the spirit of my invention, and I, therefore, do not wish to be limited to the exact structure as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

What I claim as new and desire to secure by United States Letters Patent, is:

1. A relay structure of the class described, including a heel iron having integrally formed lugs at its one end, an armature provided with orifices through which said lugs protrude, and means secured to the other end of said heel iron and adapted to cooperate with the armature to retain the said armature in its pivoted position.

2. A relay structure of the class described, including a heel iron having lugs integrally formed at its forward end, an armature for said relay having two arms at an angle to each other, orifices in said armature adapted to receive said lugs, an edge on said heel iron for fulcruming said armature, a lug for said armature, and a spring secured to said heel iron adapted to cooperate with said lug to hold the armature in position.

3. A relay structure of the class described, including a heel iron having lugs integrally formed at its forward end, an armature for said relay having two arms at right angles to each other, orifices in one of said arms adapted to receive said lugs, and spring means carried by said heel iron for retaining said armature in its fulcrumed position upon said heel iron.

4. In a relay, the combination of a heel iron, an armature carried thereby, two arms for said armature at an angle to each other, orifices cut in the said armature intermediate of its ends, lugs integrally formed upon the forward end of said heel iron and adapted to enter said orifices, and a latch secured to said heel iron adapted to cooperate with a member secured to one arm of said armature to maintain the same armature in its fulcrumed position upon the heel iron.

5. In a relay, the combination with an angular heel iron, an angular armature fulcrumed on one end of said heel iron, a pair of lugs formed integrally on the forward end of said heel iron, a pair of orifices in said armature intermediate of its ends adapted to receive said lugs, a latch secured to said heel iron provided with an orifice, and an angular extension on one end of said armature adapted to enter the said orifice in said latch to maintain the said armature in its pivoted position.

6. In a relay, the combination of a heel iron and an armature carried thereby, a pair

of orifices in said armature intermediate of its ends, a pair of lugs on said heel iron adapted to enter said orifices, an angular extension on said armature, and a latch secured to said heel iron adapted to cooperate with said extension to maintain the said armature in its fulcrumed position on said heel iron.

7. In a relay, the combination with a magnet and a core, of an armature having two arms at an angle to each other, a heel iron provided with a pair of lugs at its forward end, a pair of orifices in said armature intermediate of its ends adapted to receive said lugs, a latch secured to said heel iron provided with an orifice, an angular extension integrally formed upon the arm of the armature which extends parallel with the said heel iron, the said extension entering the orifice in the said latch when the armature is fulcrumed to the forward end of the said heel iron to maintain the said armature in operative relation with the core of said magnet.

8. A relay structure of the character described including an angular heel iron, an electromagnet secured to said heel iron, an angular armature fulcrumed upon one arm of said heel iron, an orifice in said armature, a lug for said heel iron extending into said orifice, a lug for one arm of said armature, and a spring secured to said heel iron and provided with an orifice to receive said lug to secure the armature in position.

9. A relay of the character described including an angular heel iron, an electromagnet provided with a core attached to one arm of said heel iron, the core of said magnet extending parallel to the other arm of said heel iron, an armature fulcrumed upon the forwardly extending arm of said heel iron having one arm extending across and in front of the core of said magnet, a lug for said heel iron extending into an orifice in said armature, a lug for said armature, and a spring secured to said heel iron provided with an orifice adapted to receive said last lug to secure said armature in position.

10. A device of the character described, including an angular heel iron, an electromagnet provided with a core secured to one arm of said heel iron, an angular armature fulcrumed upon said heel iron and having one of its arms extending across and in front of the core of said magnet, cooperating recessed and projecting means for said armature and heel iron for preventing sidewise movement of said armature relative to said heel iron, a projecting member for said armature, and a member secured to the said heel iron for cooperation with said projecting member for securing said armature in its fulcrumed position.

11. A relay structure of the class described, including a heel iron, an angularly

shaped armature pivotally supported on one end of said heel iron, an ear integrally formed with said armature, a member secured to the other end of said heel iron and adapted to engage the ear of said armature to maintain the same in its pivoted position on said heel iron.

12. A relay structure of the class described, including a heel iron, a spring member secured to one end of said heel iron, an angularly shaped armature pivotally supported on one end of said heel iron, and maintained in its pivoted position by lugs

integrally formed with said heel iron and by said spring member.

13. A relay structure provided with a heel iron, an armature fulcrumed thereon, a lug for said heel iron, and a spring secured to said heel iron having an orifice cooperating with said lug for preventing displacement of said armature.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 7th day of January, 1920.

WILLIAM KAISLING.