O. S. FIELD.

CONTACT FINGER.

APPLICATION FILED SEPT. 30, 1916.

1,269,917. Patented June 18, 1918.

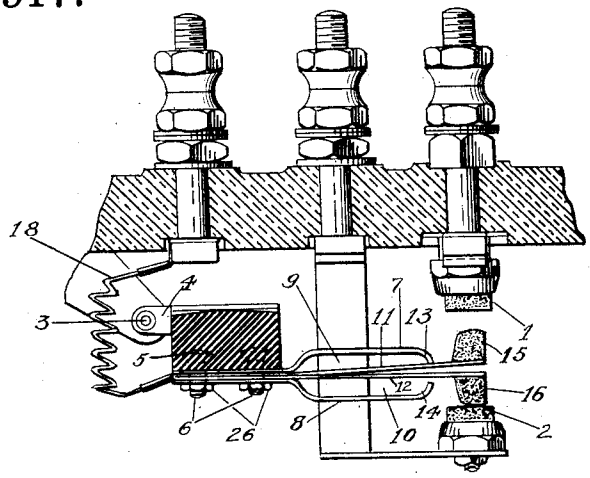


Fig. 1.

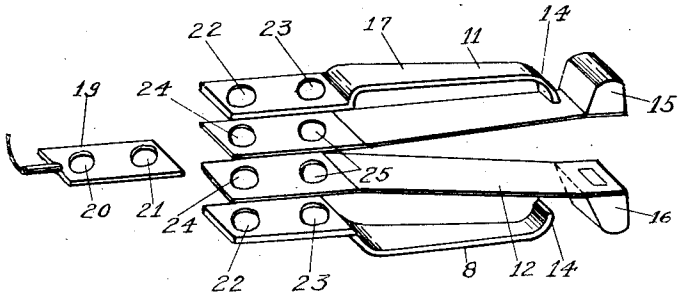


Fig. 2.

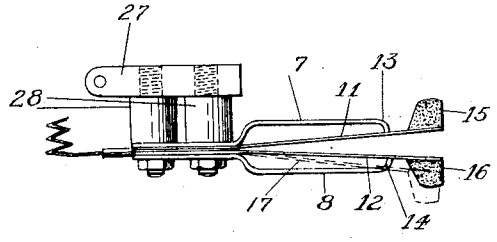


Fig. 3.

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CONTACT-FINGER.

1,269,917. Specification of Letters Patent. Patented June 18, 1918.

Application filed September 30, 1916. Serial No. 123,011.

To all whom it may concern:

Be it known that I, OSCAR S. FIELD, a subject of the King of Great Britain, and a resident of the city of Elizabeth, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Contact-Fingers, of which the following is a specification.

This invention relates to certain new and useful improvements in the method of construction and assembling of contact fingers employed in relays, and other circuit controlling devices.

One object of my invention is to provide a novel and simple means of assembling the contact finger in order to avoid unnecessary riveting of the contact springs to the finger.

Other objects will be seen by the accompanying description, and will be more specifically claimed in the appended claims.

In Figure 1, I show a portion of the relay showing the side elevation of the contact finger.

In Fig. 2, I show a perspective view of the various parts of the finger disassembled.

In Fig. 3, I show a side elevation of the contact finger mounted in a different manner to Fig. 1.

Referring to Fig. 1, I show the front and back contacts 1 and 2 of a relay; carried on a pivot 3 supporting member 4 is provided, which carries an insulating bar 5. On the under side of insulating bar 5 are inserted metal studs 6. The contact finger is composed of an upper clamping plate 7 and a lower clamping plate 8, so formed that they give a clearance space 9 and 10 to the contact carrying springs 11 and 12 which are clamped between the plates 7 and 8, and formed at the ends to provide limiting stops as at 13 and 14.

The contact carrying springs 11 and 12 are arranged to carry suitable contacts 15 and 16 of any desired make in this instance being represented by graphite blocks 15 and 16. The contact carrying springs 11 and 12 are normally provided with an initial set as shown in dotted lines at 17. A flexible lead 18 is provided with a special terminal 19 with holes at 20 and 21 arranged to coincide with the holes 22 and 23, and 24 and 25 of the clamping plates 7 and 8, and contact carrying springs 11 and 12.

In assembling the contact fingers, the clamping plate 7 is first placed over the studs 6. The contact carrying springs 11 and 12 are next placed back to back with the special terminal 19 in between the rear ends thereof and passed over the studs 6. The clamping plate 8 is then put on, and the whole contact finger is clamped in place by means of nuts 26.

It will be seen from the above that on account of the initial set which has been given the contact carrying springs as shown at 17, that when the nuts 26 are drawn up tight that the contact carrying springs 11 and 12 will be exerting a pressure against the stops formed at 13 and 14 in proportion to the initial set which was given to the contact carrying springs. The object of this is to insure a full contact pressure being made between the contacts 1 and 15 and 16 and 2 upon the operation of the relay.

In Fig. 1, I have shown the normal position of the contact finger when the relay is deenergized.

It will be seen that the contact carrying spring 12 is forced away from the stop 14, this being acomplished by means of suitable counterweighting of the contact carrying bar 5 and its operating mechanism. Upon the operation of the relay, the contact finger bar 5 will rotate about pivot 3 raising the clamping plates 7 and 8. The stop 14 will first engage contact carrying spring 12 and thereby raise contact 16 from contact 2, opening the circuit between these contacts. Upon the continuation of the upward movement of the clamping plates 7 and 8, the contact 15 will next engage with contact 1 almost instantaneously applying a pressure between contacts 15 and 1 which is equivalent to the initial set which was originally put in contact carrying spring 11. At the completion of the upward movement of the clamping plates 7 and 8, the stop 13 will be drawn away from contact carrying spring 11 leaving a clearance between these two parts.

It will be seen from the above description that in this form of contact finger, I have provided a construction which is exceedingly simple to assemble, which eliminates the riveting of the contact carrying springs to the fingers, as has been done of old, and which provides a substantial contact pressure at the instant of making or breaking

contact, thereby avoiding undue arcing of the contacts when making and breaking of the same.

In Fig. 3 I show the manner in which this contact finger may be mounted upon the armature 27 of a direct current relay; the finger being mounted upon the insulating studs 28 in place of the metal studs 6 in Fig. 1.

It is obvious that various modifications in the design of this finger may be made without departing from the spirit of the invention.

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

1. The combination in a contact finger of clamping plates, a contact carrying spring, and means comprising insulating studs, for jointly clamping the contact carrying spring between said clamping plates and supporting the finger.

2. The combination in a contact finger of an upper clamping plate, having a limiting stop formed thereon, a clearance formed between the clamped end and the limiting stop to allow adjustment of the set in the contact spring, a lower clamping plate, a contact carrying spring, and means comprising insulating studs for jointly clamping the contact carrying spring between said clamping plates and supporting the finger.

3. In a contact finger clamping plates having limiting stops formed thereon, a clearance formed between the clamped end and the limiting stop to allow adjustment of the set in the contact spring, contact carrying springs inserted between said clamping plates, and means comprising insulating studs for jointly clamping said springs between said plates and holding the finger in position.

4. In a contact finger, clamping plates having limiting stops formed thereon, a clearance formed between the clamped end and the limiting stop to allow adjustment of the set in the contact spring, contact carrying springs having an initial set, and means comprising insulating studs for clamping said contact springs between said clamping plates so that said springs will engage the limiting stops, said means also supporting the contact finger.

5. In a contact finger, the combination of an upper and lower clamping plate having limiting stops formed thereon, a clearance formed between the clamped end and the limiting stop to allow adjustment of the set in the contact spring, contact carrying springs having an initial set inserted between said clamping plates, a terminal inserted between said contact carrying springs, and means comprising insulating studs for clamping the whole together and forming a means of support for the same.

In testimony whereof, I have signed my name to this specification.

OSCAR S. FIELD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."