

F. B. COREY.
RELAY CONTACT.
APPLICATION FILED SEPT. 3, 1909.

1,002,648.

Patented Sept. 5, 1911.

Fig. 1.

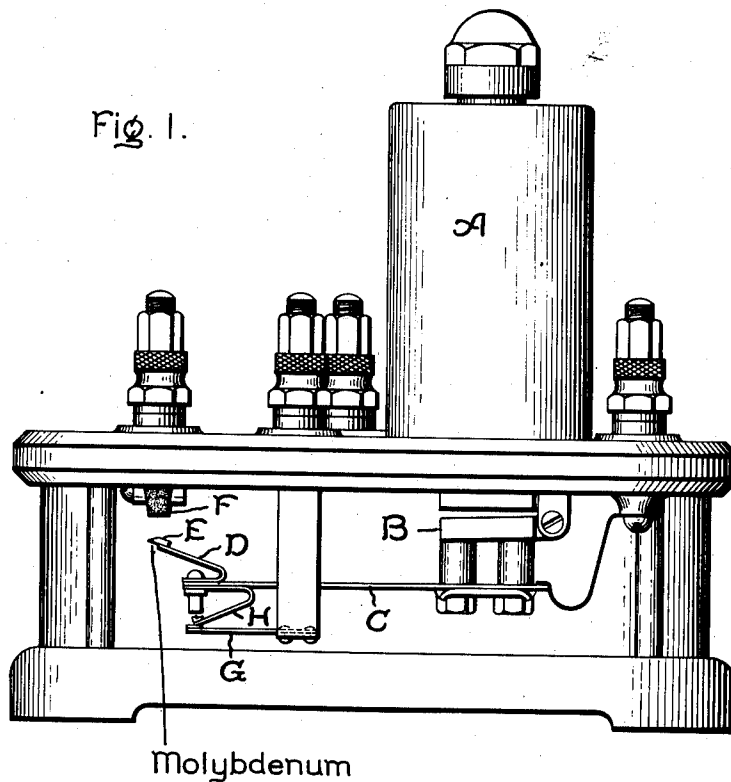
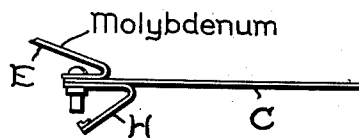


Fig. 2.



Witnesses:
Earl G. Klock.
Marcus L. Byng.

Inventor:
Fred B. Corey,
by *Robert H. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

FRED B. COREY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

RELAY CONTACT.

1,002,648.

Specification of Letters Patent.

Patented Sept. 5, 1911.

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To all whom it may concern:

Be it known that I, FRED B. COREY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Relay Contacts, of which the following is a specification.

My invention relates to contacts for relays and particularly to relays intended for use in railway signal systems.

Since the circuits in which the contacts of railway signals are included are liable to be traversed by excessively large currents, due to lightning discharges and other causes, it is essential that the contacts employed should have high fusing points. Furthermore, it is desirable that one of each pair of cooperating contacts should be of non-fusible material, such as carbon, and that the other contact of the pair should be formed of a material which under very low pressure makes with carbon a contact which is of low resistance, not only when the relay is first installed but after long use. Finally the relay contact should not be brittle. The considerations above specified have resulted in the almost universal use of platinum for one of the contacts of each pair, since this metal possesses each of the qualities desired; it has a fairly high fusing point, makes a low resistance contact with carbon under low contact pressure, and retains this quality because it does not oxidize. Platinum is, however, very expensive and adds materially to the cost of the relays.

I have discovered by experiment that molybdenum, which has a higher fusing point than even platinum and about double the conductivity for both electricity and heat and which can be obtained in a malleable state, gives with carbon, under feeble pressure, an even lower contact resistance than platinum, both initially and after continued use, notwithstanding the fact that molybdenum is liable to become oxidized under working conditions. This is due to the fact that the oxids formed on the surface of molybdenum are either well conducting or are so loosely adherent that they do not obstruct the contact of the metal with the carbon under the feeble impacts of one with the other in the normal operation

of relays. By the use of molybdenum for one of the relay contacts I am enabled greatly to reduce the cost of a signal relay without sacrificing any of the desirable characteristics obtained with platinum contacts.

In the accompanying drawings, Figure 1 shows a relay provided with contacts arranged in accordance with my invention, and Fig. 2 shows a modification.

In the drawing, A represents the magnet coils of the relay and B the armature carrying the contact fingers C.

D represents a somewhat flexible strip of any suitable material, such as German silver, carried at the end of the contact finger C and carrying at its end the contact E which, in accordance with my invention, is made of molybdenum.

F represents the stationary front contact of the relay which is of carbon and with which the contact E lightly engages to close a signal circuit when the magnet coils A are feebly energized and raise the armature B.

G represents the usual stationary back contact and H a contact adapted to engage therewith and carried by the finger C. Contacts G and H may be made of any suitable metals, since fusion of these contacts cannot result in false clear indications in the signal system.

The contact E being of molybdenum has a very high fusing point. With the carbon contact F the contact resistance is low under all working conditions, and being malleable, contact E is not likely to break off.

The arrangement of contact finger C, strip D and contact E is that ordinarily employed where platinum contacts are used. Owing to the much smaller cost of molybdenum than platinum, in the proportion of about 1 to 300, both portions E and D of Fig. 1 may be made of a single piece of molybdenum, as shown in Fig. 2. It is therefore commercially practicable to simplify the construction of the contacts and to make them much heavier than when platinum is employed. In this manner, with a reduction of the cost of labor and material, there is obtained a contact-piece having lower specific resistance than platinum, giving with carbon a lower contact resistance

than platinum, and dissipating the heat much more readily than a platinum contact.

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

- 5 1. A relay contact made of molybdenum.
2. A relay contact made of malleable molybdenum.

In witness whereof, I have hereunto set my hand this 2nd day of September, 1909.

FRED B. COREY.

Witnesses:

BENJAMIN B. HULL,
FRANK J. DORE.