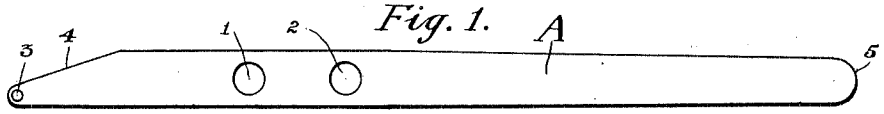
J. F. CADELL.

CONTACT POINT.

APPLICATION FILED JUNE 15, 1907.

1,105,399. **Patented July 28, 1914.**

Fig. 1.



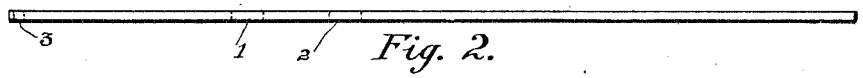
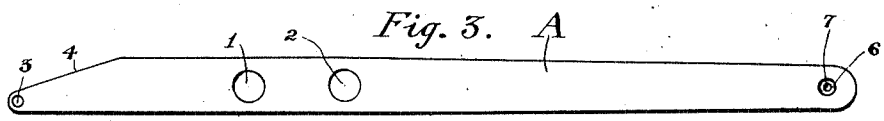


Fig. 2.

Fig. 3.



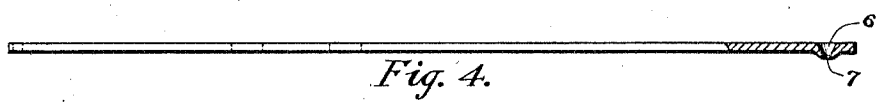
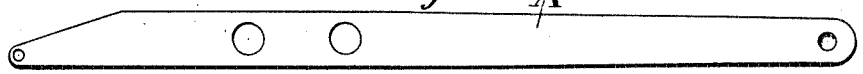


Fig. 4.

Fig. 5.



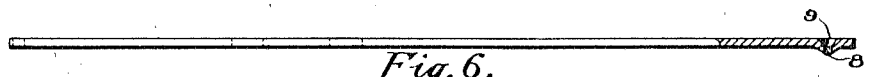
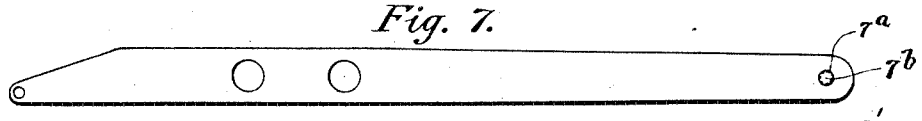


Fig. 6.

Fig. 7.



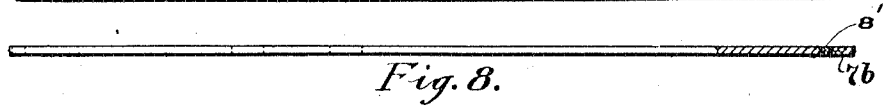
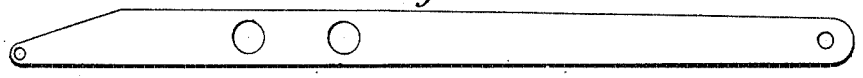


Fig. 8.

Fig. 9.



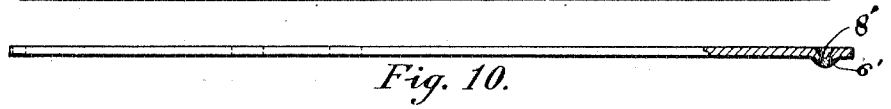


Fig. 10.

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By Edward E. Clement
Attorney

UNITED STATES PATENT OFFICE.

JOHN F. CADELL, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO EDWARD E. CLEMENT, OF WASHINGTON, DISTRICT OF COLUMBIA.

CONTACT-POINT.

1,105,399. Specification of Letters Patent. **Patented July 28, 1914.**

Application filed June 15, 1907. Serial No. 379,166.

To all whom it may concern:

Be it known that I, JOHN F. CADELL, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Contact-Points, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to contact points and the method of forming the same, and it consists in the constructions and arrangements herein described and claimed.

It is well understood in the electrical art that the most suitable metal for forming contact points is platinum. This is due to the facts, first, that it is a good conductor of electricity, second, that it does not oxidize, and third, that it can be hardened so it can resist wear. The high price of platinum is a feature which must be taken account of in the manufacture of contact points, and it will be readily seen that in telephone and other electrical installations where thousands of contacts are necessary the item of platinum amounts to a very considerable figure. Heretofore attempts to economize in platinum by making contact points small have been unsuccessful, because the contact resistance has been increased as the contacting surface has been diminished and the durability of the points has been impaired.

The purpose of my invention is to provide a contact point which has a relatively large contact surface and therefore a low resistance, but in which the platinum is so disposed and the surrounding metal is so fashioned that much less platinum is required than in the ordinary form of contact, while the point itself is not weakened thereby. I accomplish this purpose by forming only the crest of the contact of platinum, the body being formed up out of other material.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a plan view of an ordinary contact spring. Fig. 2 is an edge view of the contact spring shown in Fig. 1. Fig. 3 is a plan view of the spring showing an opening for the reception of the platinum. Fig. 4 is an edge view partly in section of the contact spring shown in Fig. 3. Fig. 5 is a plan view showing the finished contact point. Fig. 6 is an edge view partly in section of the contact spring shown in Fig. 5. Fig. 7 is a plan view showing a modified form. Fig. 8 is a side view partly in section of the contact spring shown in Fig. 7. Fig. 9 is a plan view of the modified form shown in Fig. 7 showing the completed contact point. Fig. 10 is an edge view partly in section of the contact spring shown in Fig. 9.

Referring to Figs. 1 and 2, A denotes a contact spring made of any suitable conducting material and provided with the usual openings, 1 and 2, for the passage of securing means not shown in the drawing, and with the opening 3 at one end thereof for the accommodation of the ends of the terminal wire or conductor to which the contact is attached. One end of the contact spring is tapered as shown at 4, the other end being rounded at 5 in the usual manner. It is obvious of course that the ends of the contact spring may be fashioned in any other suitable manner, depending upon the use to which the spring is to be put.

Figs. 3 and 4 show the first step in the process of forming the contact point. In these figures, 6 denotes a boss formed on one side of the spring in any suitable manner, such as by a punch and die. At the apex of the conical boss an opening 7 is formed, said opening being for the insertion of a small piece of platinum.

Figs. 5 and 6 show a contact spring with the completed contact point. After the boss has been formed in the manner shown in Figs. 3 and 4 the platinum point 8 is inserted in the opening 7 and is riveted therein in the manner clearly shown in Fig. 6. An inspection of this figure will show that the apex of the completed cone is formed by a piece of platinum with a relatively large contacting surface due to the spreading of the platinum in the act of riveting the same to the adjacent edges of the boss. By the operation thus described there is formed on the opposite side of the spring a cavity 9. In the ordinary methods of construction this space is filled with platinum and it is thus in dispensing with part of the expensive metal that I reduce the cost of manufacture while at the same time I secure the full benefits of a contact piece provided with platinum points of comparatively large contact surface.

In the formation of the contact points, in

spring contacts, it is necessary to have the platinum points firmly secured and of sufficient size to withstand the strain occasioned by contact with the anvil. It will be noticed that in the above construction the boss formed from the metal of the spring itself provides a base raised from the surface of the spring and of sufficient breadth to eliminate all chances of being broken off, while at the same time the method of riveting the platinum to form the apex of the conical element insures the permanent retension of the platinum tip in the opening in which it is secured.

Figs. 7 to 10, inclusive, show a modified method of making the contact points. In Figs. 7 and 8 there is shown a contact spring provided with slight inwardly tapering recesses 7^a on opposite sides thereof connected by a central bore 7^b. A piece of platinum 8′ is inserted in the bore and its ends are slightly upset to fill the tapering recesses 7^a. The boss 6′ is now formed by means of a punch and die in the manner already described and the platinum piece 8′ is firmly riveted to the sides of the opening as clearly shown in Fig. 10.

The above description is sufficient to show the importance of this invention.

The process herein described is a simple one requiring no expensive machinery and at the same time producing an article which may be used under any of the ordinary conditions where a contact point possessing relatively high conductivity and durability is essential.

Some other metals than platinum may of course be employed without departing from the scope of my claim, in which the word platinum is therefore to be construed as covering that metal or any similar and equivalent precious metal, such as gold.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

As an article of manufacture, a contact comprising a metallic strip having a recess formed in one side thereof with a conical boss on the opposite side thereof, the axis of said recess and said boss being coincident, said boss having an opening, a piece of platinum disposed in said opening, one end of said piece of platinum being upset to engage inside the recess, the other end being upset over the edges of the conical boss.

In testimony whereof I affix my signature in presence of two witneses.

JOHN F. CADELL.

Witnesses:
M. E. Gilson,
Joseph L. Wright.