

B. GWOZDZ.

PROCESS OF MANUFACTURING HOT WIRES FOR THERMOTELEPHONES.

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998,965.

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Fig. 1.

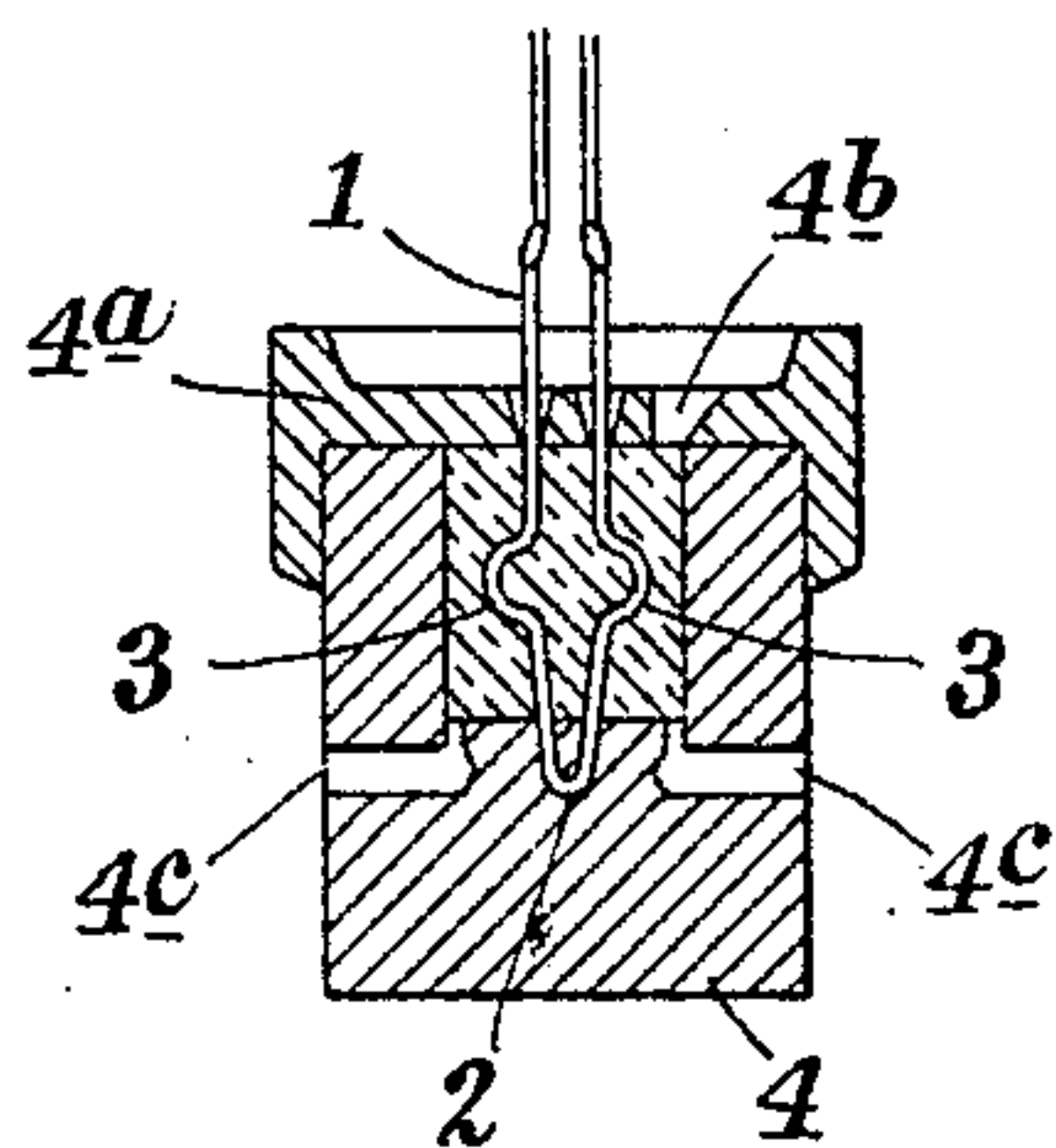


Fig. 2.

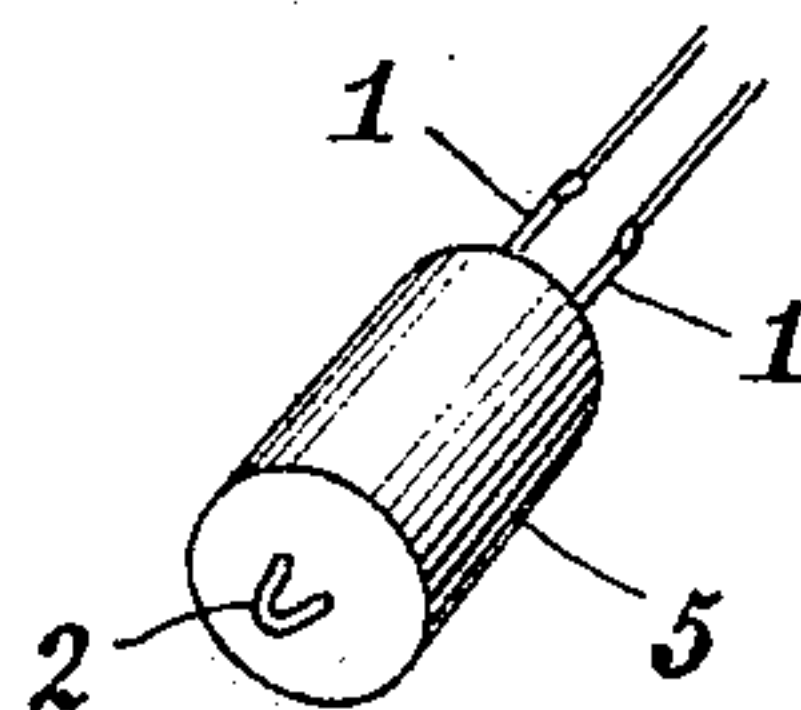


Fig. 3.

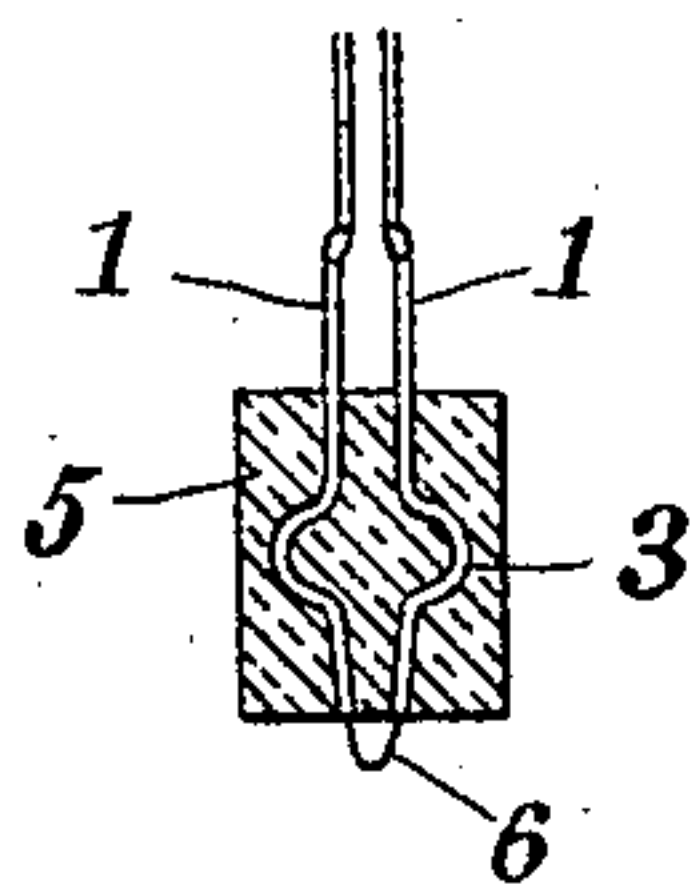
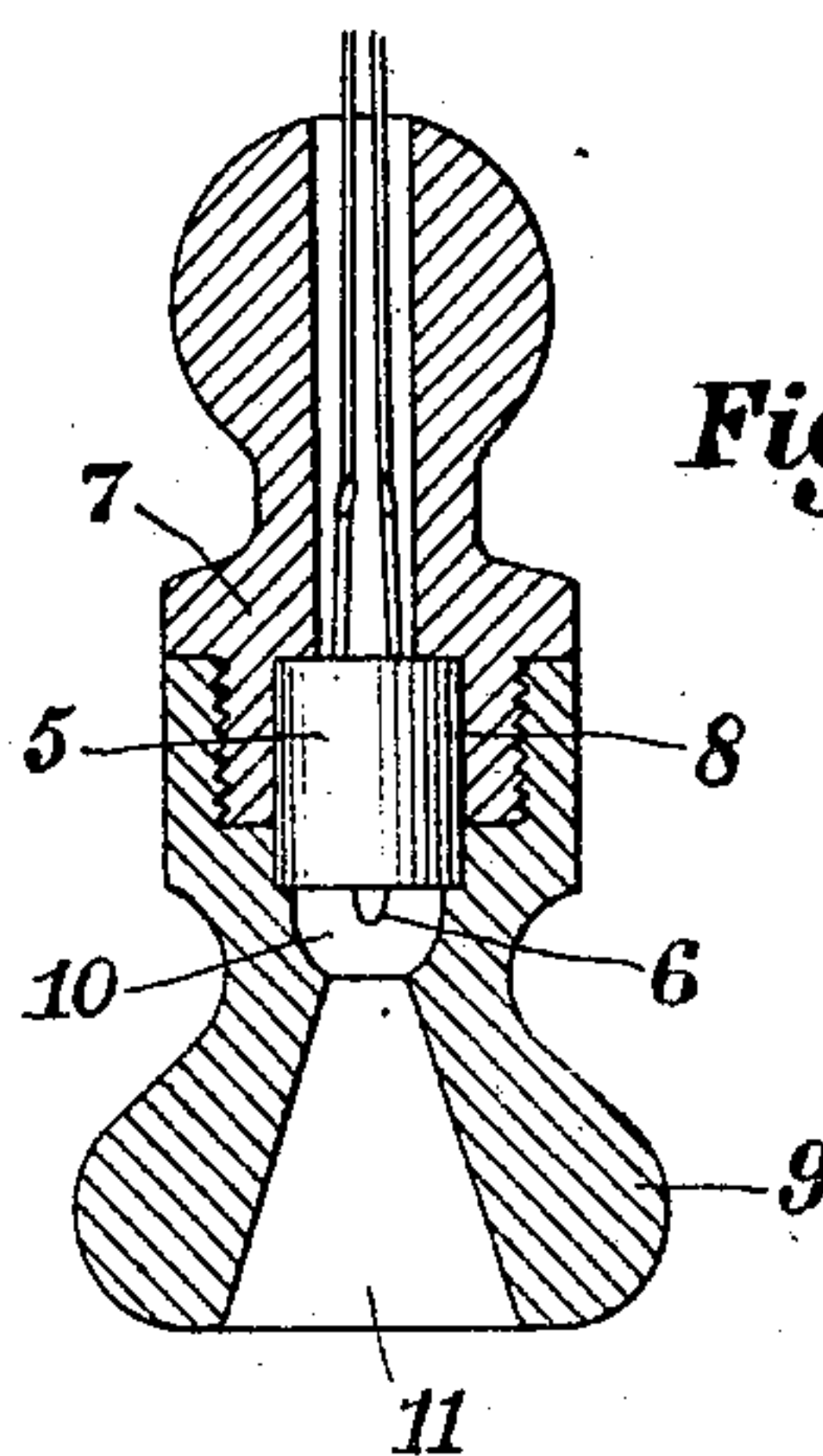


Fig. 4.



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PROCESS OF MANUFACTURING HOT WIRES FOR THERMOTELEPHONES.

998,965.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BRONISLAW GWÓZDZ, a subject of the Czar of Russia, and residing at Schöneiche, near Berlin, Germany, have
5 invented an Improved Process of Manufacturing Hot Wires for Thermotelephones, of which the following is a specification.

The subject-matter of my invention is an improved process of manufacturing hot
10 wires for thermo-telephones, and more especially hot wires made according to the process proposed by the English physicist Wollastone, who inserted a platinum-wire of the required size into a silver-cylinder and
15 then drew out both wire and covering to the required thinness so that silver-coated wires having a thickness of 0.0009 mm. can be obtained. When these wires are to be freed from their silver-coating, they are subjected
20 at those parts where the coating is to be removed to the action of nitric acid or to the electrolytic process. But in treating these wires there are still great difficulties to be overcome, so that it has heretofore not been
25 possible to manufacture thermo-telephones on a commercial scale and, consequently, in spite of the superiority of such telephones over electro-magnetic telephones, they could not be introduced into practice on account of
30 their excessive price.

A primary object of my invention is to provide a materially simpler mode of manufacturing the hot wires for thermo-telephones such that even the average workman
35 can readily obtain uniform results, in spite of the fineness of the hot wires which comes into question, and that consequently thermo-telephones of this kind can be made on a commercial scale.

My invention is characterized by the employment of a block which is formed in such manner in a mold, of acid-proof and electrically non-conducting material, on a suitably-shaped Wollastone wire that it unites
40 the ends of this wire, only so much of the latter being left projecting out of one end of the cast after it has congealed as is to be subjected to the corrosive process and subsequently employed as a hot wire. Simul-
45 taneously, such a form is imparted to the block that after the corrosive process the block can be used as the final mount for the hot wire in the telephone itself. This circumstance, which is another material simpli-
50 fication in the mode of treatment of the exceedingly delicate hot wire has, in addition,

a special advantage inasmuch as it is consequently possible readily to exchange the hot wire in the telephone, in the event of its being worn out or possibly destroyed, with
60 great readiness and speed.

I will now more particularly describe how my process may be carried into practice with reference to the accompanying drawing, wherein:—

Figure 1 is a vertical section through one form of my apparatus, Fig. 2 is a perspective view showing a hot wire having a block cast about it, Fig. 3 is a section through the latter and Fig. 4 is a vertical section through a
65 telephone comprising the block carrying the hot wire made according to my invention.

Referring firstly to Fig. 1, the substantially U-shaped wire 1, e. g. a Wollastone wire, having a bent end or bow 2, and limbs
70 having one or more nose-like projections or bends 3, is made by a die or in other suitable manner. This wire is placed into a mold 4 of suitable shape, the bow 2 resting in a special recess provided in the bottom of the
75 mold. The mold 4 is closed by a cover 4^a having an inlet 4^b, while in its center there are preferably two holes through which the ends of the wire can be led outside. The
80 bottom part of the mold has holes 4^c for allowing the air to escape. A suitable plastic mass, in a liquid state, capable of resisting acids and being a non-conductor of elec-
85 tricity, is then poured, pressed or otherwise put into the mold in such manner that the
90 same surrounds and unites the limbs of the wire including their bends, but leaves free both the end bend resting in the recess in the bottom of the mold, as well as the ends of the wire led outside. A wax or wax-like
95 composition may be used as the plastic mass; such for instance as that used for the cylinders of the Edison phonographs or for the plates of the gramophones.

The wire 1 provided with the block 5 is
100 now removed from the mold when it has the form shown in Fig. 2, in which only the end bend 2, which is to serve as the hot conductor projects out at one end of the cylindrical or otherwise shaped block 5, while the
105 opposite ends of the wire, which are subsequently to serve for connecting the wire to the telephone line, project at the other end. The bend 2 is now subjected to the corrosive action of nitric acid, or to an electrolytic
110 process, in which the projecting bend of the wire is used as the cathode so that under the

influence of the current the silver-coating is removed and the bared platinum-wire obtained, as shown in Fig. 3.

It will be readily understood from the above that it is exceedingly simple by means of the described mode of manufacture to liberate from its metallic coating the entire length of the platinum core which is to serve as the hot wire, even when such hot wires are manufactured in large quantities, because during the currosive process it is now no longer necessary to limit the immersion in the acid only to the part of the wire to be liberated from its envelop, but a part of the block may be immersed into the acid, no disadvantages being caused when a considerable part of the block is immersed, because only the bend 2, projecting out of the acid-proof cast, by which the length of the hot conductor is determined in each case, can be attacked by the acid.

The block 5 produced in the above described manner, from which only the scarcely visible hot wire projects after the corrosive process, simultaneously serves as the holder for the wire, this having the advantage that the hot wire with certainty retains the form which it receives before the corrosion. Therefore, the hot wire and its block can be handled in any desired manner without any fear of injuring or destroying it owing to its fineness. The same block is, however, also suitable as a mount for the hot wire within the telephone. To this end, the block 5 having the projecting hot conductor 6 is inserted into a box-like holder 7 (Fig. 4) having a cylindrical recess 8 corresponding to the block. The fitting 9 is screwed onto the holder 7 so that the sound chamber 10 in this fitting closely surrounds the hot wire 6. In spite of the exceedingly difficult treatment of such fine wires, according to the Wollastone process the wires receiving, after being shaped, a block uniting its ends, it is possible to use this block as the mount for the hot wire in the telephone, various difficulties met with heretofore are overcome, because any contact of the hot wire with the hand or with tools is unnecessary, and the entire process involves only such simple manipulation that, on the one hand, when made in large quantities thoroughly uniform products are obtained and, on the other hand, as no specially practiced hands are required, the average workman can readily execute all the operations which come into question.

The holder in the illustrative embodiment

represented in Fig. 4 is for the arrangement of a telephone in the ear itself, which is advantageous for special purposes, *e. g.* for telephone operators or as a telephone for the deaf. It is, however, obvious that the holder may have any other desired shape, especially when the telephone is to be held in the usual manner at the ear, and the telephone arrangement, as such, is not comprehended by my invention.

Although in the above specification and in the claims a Wollastone wire is mentioned, my invention is not limited to the same, because it is obvious that instead of a wire proper of round section, a ribbon of rectangular or similar section can be employed.

I claim:—

1. The process herein described of manufacturing hot wires for thermo-telephones, which consists in bending a Wollastone wire substantially into the shape of a U, forming a rigid block composed of a suitable, acid-proof material around the same so that the bent end of the wire and the ends of the limbs thereof are left free, and then removing the silver-coating from the bent end of the wire projecting from the block.

2. The process herein described of manufacturing hot wires for thermo-telephones, which consists in bending a Wollastone wire substantially into the shape of a U having bends in the limbs thereof, forming an acid-proof block around the bent parts of the limbs of the same in such a manner that the bent end of the wire and the ends of the limbs thereof are left free, and subsequently immersing the bent end of the wire projecting from the block into a suitable acid and thereby removing its metallic coating.

3. The process herein described of manufacturing hot wires for thermo-telephones, which consists in bending a Wollastone wire substantially into the shape of a U, forming a rigid block composed of a suitable, acid-proof material around a portion of the same, so that the bent end of the wire and the ends of the limbs thereof are left free, next removing the metallic coating from the bent end of the wire projecting from the block, and inserting the wire and its surrounding block into the casing of a thermo-telephone.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

BRONISLAW GWÓŹDŹ.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.