

# UNITED STATES PATENT OFFICE.

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## ELECTRICAL RESISTANCE ELEMENT.

1,057,753.

Specification of Letters Patent.

Patented Apr. 1, 1913.

No Drawing.

Application filed September 30, 1912. Serial No. 723,193.

*To all whom it may concern:*

Be it known that I, ALBERT L. MARSH, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Electrical Resistance Elements, of which the following is a specification.

My invention relates to an electrical resistance element adapted for general use but primarily for the production of heat in heating devices. In devices of this character, the factor of principal importance is durability, which it is practically impossible to predetermine except by actual test under conditions approximating those of use. By such test I have discovered that a resistance element formed of an alloy of iron and aluminum possesses great durability, combined with sufficient resistivity that it may conveniently be built into translators of the character specified, its resistivity being 94 microhms per centimeter cube when 10 per cent. aluminum is used.

In practice, I prefer to use an alloy in which the aluminum is from 5 to 10 per cent. The addition of larger quantities of aluminum renders the alloy difficult to roll, but

the advance in metal working knowledge may make it possible to work higher percentages. Of course it will be understood that my invention comprehends not only the use of the alloy specified, but as well, the same alloy with additions of various other metals, for I have learned that when the suitability of a resistance element is once discovered, it may suffer the addition of considerable quantities of other metals without being materially injured or, in fact, changed to any noticeable extent, although in some cases, the addition of elements produces quite extraordinary changes.

I claim as new and desire to secure by Letters Patent:—

1. An electrical resistance element adapted to withstand a high temperature formed of an alloy consisting of iron and aluminum.
2. An electrical resistance element adapted to withstand a high temperature formed of an alloy consisting of iron and aluminum, the aluminum being in the proportion of from 5 to 10 per cent.

ALBERT L. MARSH.

In presence of—

J. G. ANDERSON,  
J. LANDESMAN.