The object of the invention, generally stated, is to provide an alloy for use in electrical instruments, such as temperature controlled or indicating instruments, which are idle for long periods but must have contact surfaces which will make certain and reliable contact when called upon to function and which contact terminals must, therefore, be proof against deleterious atmospheric or other influences which would otherwise render them unreliable and uncertain or inoperative in action. As an example of a temperature controlled instrument of the character referred to, reference may be made to thermostatic switches for fire or other alarm circuits whose contacts are commonly exposed to the oxidizing effects of air or steam and in many cases to the corrosive influences of nitric and sulphuric acid vapors or chlorine or other gases.

Heretofore, so far as I am aware, no contacts for instruments of such type have been made which have been successful in meeting in full the regulations of the Insurance Underwriters' Laboratories requiring such contacts to be proof against oxidation and corrosion, and, consequently, it has been necessary in practice to employ instruments which are satisfactory only to a certain degree, but fall short of what a theoretically and practically reliable instrument should be.

As a result of long and extensive experiments I have succeeded in producing and perfecting an alloy which is eminently suitable for use in making contact terminals for such class of instruments, and which alloy meets all the requirements of the Insurance Underwriters' Laboratories regulations, that is to say, is of low resistance and high electrical conductivity and proof against the oxidizing action of air or steam and against the corrosive effects of the vapors of nitric, sulphuric and other acids or chlorine or other gases, and which, therefore, while of no particular value for use in the make and break instruments influences, but which must be proof against such influences and reliable and infallible in action, although idle for long periods.

The particular object of my invention, therefore, is to provide an alloy which will fully meet the Insurance Underwriters' Laboratories regulations and which, in addition to its value for use in instruments of the particular type preferred to, is adapted for highly efficient use where high conductivity and low resistance are important factors, such as in telephone, telegraph and radio instruments and circuits.

In carrying my invention into practice, I provide a new alloy for the purposes described comprising gold, approximately 30%, and fine silver, approximately 70%. These proportions may be varied to some slight degrees dependent upon the sources and characteristics of the metals themselves, but the proportions named are desirable and essential under general conditions. Such proportions, for example, provide an alloy of suitable medium hardness, whereas the metals alone are too soft or if used in proportions materially different from those given will be of insufficient hardness or be objectionable as not meeting required conditions in other respects. The alloy of gold and silver in the stated proportions is inexpensive to produce, can be readily welded or worked or machined for making welded or staked contacts in baser metals, is proof against oxidation and corrosion under the influences of air, steam, water, nitric or sulphuric acids or chlorine or other gases, a quality given it by the gold in the proportion employed, and has low electrical resistance and high electrical conductivity, a quality given it by the silver in the proportion employed. These qualities in general make it particularly valuable for use as electrical contacts in telephone, telegraph and radio instruments where small currents are employed, and high conductivity, low resist-

example, thermostatic circuit closers or switches controlling fire alarm or similar apparatus. Such devices, when used in factories and various industrial plants, are exposed to the oxidizing or corrosive influences of air, steam, water, nitric, sulphuric or other acid vapors, and chlorine or other gases, and are liable to be functionally or physically impaired or destroyed by such influences if not sufficiently resistant against them. Contacts made of my novel alloy are proof against such influences or so highly resistant against them that they may be exposed to them for very long periods without being functionally or physically impaired to such a degree as to prevent them from making certain and reliable contact.

The contact terminals may be made and applied for use in any suitable way. I do not limit myself in this particular, but, for purposes of exemplification, I may state that in the use of the alloy for the contact terminals of a thermostatic circuit closing device embodying a bowable metallic contact strip having a contact terminal at its free end engageable with a pointed contact terminal on the end of a contact pin or screw, the alloy terminal on the strip may be in the form of a disk or button welded or fastened to the strip, while the contact terminal on the pin or screw may be welded or otherwise fixed on one end of the pin or screw. These terminals may be quite small and therefore, inexpensive, and by constructing them to have a wiping contact on a circuit closing action, they will not only be proof against oxidation or corrosion, but also will cut through a dust, dirt or grease coating and thereby make positive contact.

In addition, this composition of gold and silver, in the stated proportions, produces an alloy which is of particular value in a circuit closing device in which a pointed contact terminal has a wiping engagement with a metallic contact strip, as the alloy is of just the right degree of hardness and softness to allow such wiping contact to be made under considerable pressure without injury to the contacts, while allowing any adhering film